

Light-year Misapplied

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Although the most distant point in the universe from our planet may be 10 billion light-years or more, that does not mean the universe is 10 billion years old. A light-year is a measurement of distance, not of time. At our deliberate, limited, finite, and relatively simple level of existence, it is easy to interchange the concept of distance, and of time, as when asked how *far* it is from my house to SFO, it is customary to say, “Two hours.”⁽¹⁾ But when it comes to quantum and cosmic levels of being, it is not possible to deduce a perception of time from a measurement of distance.

When we measure the velocity of light, what is observed is finite motion at relative rest, sufficient to govern actions at our level of existence. However, at the cosmic and quantum levels, light in motion travels at near infinite velocity, and this is encoded in the $E=mc^2$ formula.

When astronomers attempt to give an age to the universe, invariably they will provide a time between 8 – 15 billion years. The more dogmatic will even pin down the age at say, 13.7 billion⁽²⁾. They then assert their authority as experts in their field of cosmology, and insist that we must accept these figures; that these numbers represent the only reasonable timeline when it comes to the age of the cosmos⁽³⁾.

Even though we know in our hearts that these numbers are wrong, we are obliged to acquiesce to the incessant drumbeat of *eons* of time promulgated incessantly by a community of scientists who spend most of their waking moments peering into the heavens. But there are at least five problems with a billions-year-old universe:

1. “Light-year” is a measurement of *distance*, not time. This is readily acknowledged within the scientific community, yet when asked how old the universe is, the typical astrophysicist will say something on the order of 10 billion (*light-*)years, as a measurement in units of time (not distance!).
2. When timeframes are considered, whether in terms of the physical sciences, life sciences, or in cosmology, the Uniformitarian Principle is consistently applied. This spurious assumption is never acknowledged in this context; in fact, most people who use a billions-of-years timeframe for the origin of the universe are not even aware that the view they hold is based on classical Uniformitarianism (C. Lyell: “The present is key to the past”). It is important to be aware of this, because when a person considers timelines on a vast scale within the context of our present experience, they tend to have a difficult time distinguishing between current durational processes, and those present at the moment of *the* creation event.
3. The speed of light (SoL) as determined to be 186,000 miles per second (669.6 million miles per hour) is simply light observed within a finite, relativistic context: *light at relative rest*. We know at both the quantum level (small) and the cosmic level (large) that the velocity of light is actually squared, yielding a measurement of *light in motion* (at 99.999...% - near infinite velocity) of 4.863×10^{17} mph. This quantum/cosmic velocity rate is what we find in the Energy//Matter conversion formula, $E=mc^2$.
4. It is not possible to delineate a *past* timeline to the universe (apart from historical record) since, according to the Theory of Relativity, time only works in a usual way when we are in a routine Frame of Reference. The Creation of the universe (including *time*) was a singular event affording its own reference frame.
5. Even though we exist in an empirical timeframe, and experience the seemingly perpetual movement of time at our level of existence, according to Relativity, such perception in the cosmic and quantum realms is really a pragmatic misconception: “The distinction between the past, the present, and the future is only an illusion, even if a stubborn one.” (A. Einstein)

Considering these concerns, it is important to realize that the actual calculations for light speed in the universe (cosmic and quantum levels) are not calculated at finite, observable velocities (186,000 miles per second / 669.9 million miles per hour), but instead at a squared rate of 4.863×10^{17} mph, or nearly *449 quadrillion* miles per hour!

Reflect on the calculations provided on the following page:

⁽¹⁾ Note: When using units of time to describe a measurement of distance, caution is advised, depending on how critical is the arrival at the destination. I would never suggest to someone that if their flight departs from San Francisco International Airport (SFO) at 10 am on a weekday morning that they depart our house at 6 am, allowing for what would normally be a 2-hour drive. That drive, during that time of day, along that route, could take 3 hours, 4 hours, 6, even more!

⁽²⁾ Astronomer Hugh Ross has actually adjusted this time from “...the *secure conclusion* that the universe is roughly 16 billion years old” (FPG, 1989, p158), to 13.7 billion years, which, according to him, is now the *unequivocal* age of the universe – a definitive difference of *merely* 2.3 billion years!

⁽³⁾ Realize that the notion of the Big Bang is not an issue in this discussion. All reasonable persons will acknowledge a *beginning event* of some sort, a singular occurrence that started *every-thing*, whether called Big Bang or *Divine Detonation*. The latter is nicely represented by the command, “Let there be light. . .”

Real Numbers!⁽⁴⁾

Speed of Light (SoL) numbers:

<u>Place Key Legend</u>	
h	= hundreds
th	= thousands / 10^3
m	= millions / 10^6
b	= billions / 10^9
tr	= trillions / 10^{12}
tr ₂	= quadrillion / 10^{15}
tr ₃	= quintillion / 10^{18}
tr ₄	= sextillion / 10^{21}
tr ₅	= septillion / 10^{24}
tr ₆	= octillion / 10^{27}
tr ₇	= nonillion / 10^{30}

Note:
This calculation is based on the premise that we reside at an existence-point located between two infinities (or perhaps a Unity – the *Theory of Everything*) – the micro-cosmic and the macro-cosmic – in a “bounded” universe of finite *Relativity*.

Begin Calculation
↓

$$\begin{aligned}
 & \text{mp/sec.} = 186,000 \\
 & \quad \times 60 \text{ seconds} = \\
 & \text{mp/min.} = 11,160,000 \\
 & \quad \times 60 \text{ minutes} = \\
 & \text{mp/hour} = 669,600,000 \\
 & \quad \times 24 \text{ hours} = \\
 & \text{mp/day} = 16,070,400,000 \\
 & \quad \times 365 \text{ days} = \\
 & \text{(Light-year / at relative rest) mp/year} = \underline{5,865,696,000,000} \\
 & \quad \text{tr b m th h} \\
 & \quad \times 10 \text{ billion years} = \\
 & \text{mp/10 billion years} = \underline{58,656,960,000,000,000,000,000} \\
 & \quad \text{tr}_4 \text{ tr}_3 \text{ tr}_2 \text{ tr b m th h}
 \end{aligned}$$

($E=mc^2$, Energy // Matter conversion formula: 4.484×10^{17} mph)

$$\begin{aligned}
 & \text{light}^2 \text{ mp/hour} = \underline{448,364,160,000,000,000} \\
 & \quad \text{tr}_2 \text{ tr b m th h} \\
 & \quad \times 24 \text{ hours} = \\
 & \text{mp/day} = \underline{10,760,739,840,000,000,000} \\
 & \quad \text{tr}_3 \text{ tr}_2 \text{ tr b m th h} \\
 & \quad \times 365 \text{ days} = \\
 & \text{(Light-year / at near-infinite motion) mp/year} \underline{3,927,670,041,600,000,000,000} \\
 & \quad \text{tr}_4 \text{ tr}_3 \text{ tr}_2 \text{ tr b m th h} \\
 & \quad \times 10 \text{ billion years} = \\
 & \text{mp/10 billion years (at near-infinite motion)} = \underline{39,276,700,416,000,000,000,000,000,000} \\
 & \quad \text{tr}_7 \text{ tr}_6 \text{ tr}_5 \text{ tr}_4 \text{ tr}_3 \text{ tr}_2 \text{ tr b m th h} \\
 & \text{Divided by mp/10 billion at relative rest (58,656,960,000,000,000,000)} = \\
 & \quad \text{(a divisor of) } \underline{669,600,000} \\
 & \text{divided into 10 billion years} = \\
 & \quad \underline{14.934 \text{ (approx. 15) years}}
 \end{aligned}$$

What this number (14.934 years) means:

At the inherent velocity of created, finite light in motion at c^2 , the time in relative space-time years between the most distant galaxy at 10 billion light-years at relative rest⁽⁵⁾, and our present position (earth), would be 14.9 years in units of time. This is the number when light-years at relative rest (186,000 mps) are compared with light-years at the velocity of light at Energy // Matter conversion rates, $E=mc^2$.

This *does not* mean that 14.9 years is the time it took the Creator to fashion heaven and earth. Since God, by definition, is infinite; and because Special Relativity Theory postulates that at the inherent velocity of light, *distance* is of infinite dimension, and *time is without duration*, it is reasonable to assume that at a time contribution factor (“In the beginning. . .”) slightly less than the inherent motion of light (99.999...%), that He would have created at a rate somewhere within the parameter of greater than 0, and less than 15 years.

The Scripture records that God created in 6 days, hung the sun, moon, and stars on *day 4*, and rested on the seventh; and that timeframe fits nicely (beautifully) this parameter and our limited, finite understanding of the singular Creation event. Beyond that, these numbers aren’t the end of the story.

The basic Speed of Light figure of 186,000 miles per second (669.9 million mph) used to measure time in space represents light and matter at relative rest. Einstein’s $E=mc^2$ formula has light at *relative motion*, with matter still at rest; a rate of 4.484×10^{17} . But Einstein postulated another equation to show both light *and* mass in motion: $E^2 = m^2 c^4 + p^2 c^2$ where p equals momentum.

I have not seen the number for this equation in units of distance. Obviously, that number would reduce the 14.9 years dramatically, but never to *absolute* zero (infinity) in a relativistic/reality context. It goes without saying, that the enormous number generated from this equation does play a part in our understanding of how light, matter, and creation actually work, and how energy and light can be transformed and transferred from one place to another instantly (or very nearly so)!

It also shows just how fallacious are suggestions that peering into the heavens essentially means looking back in time to the beginnings of the universe. If a galaxy is in fact billions of light-years *distant* from our position, that has nothing to do with time; the light from that distant galaxy travels from there to here *instantly*!

Another way to look at inferences pertaining to the age of the universe is to consider the counter-intuitive matter of *relative time dilation*. The Theory of Special Relativity demonstrates that at the quantum and cosmic levels of our existence (and at the velocities of matter within these realms), that mass travels at the speed of light, and at that velocity, distance is without dimension (infinite), and time is without duration (instantaneous).

In this realm (the cosmic and the quantum) there is a “Non-Local Reality” – a *meta*-local reality (metaphysical; incorporeal; supernatural) – which is operative pertaining to interactions between entities (material, as well as ethereal -- insubstantial). Interactions under meta-local reality 1.) do not diminish with distance; 2.) can operate and conduct themselves instantaneously (faster than the speed of light); and 3.) can link up locations without crossing space.

At our empirical level of existence, time and distance dilations don’t seem to apply (although they actually do at imperceptible rates) since our observed interactions occur at speeds well below the true velocity of light. However, as velocity (speed) approaches a substantial percentage of the speed of light (at say, 93.89+% SoL), it has an effect on our time scale. What seems a normal 10 seconds in traveling time (“actual” time) would be a much longer period in relative earth time.

The dilation ratios at these velocities of up to 99.99% SoL begs incredulity. But reality (and relativity) shows a ratio of actual to perceived time at non-accelerating, full initial velocity speeds of 99.99%, a measured distance of 10 billion light-years is actually less than 5 minutes in duration. In other words, when a photon of light leaves a galaxy that is 10 billion light-years distant from us, it takes but minutes for that light to reach us, not ten billion years!

The Speed of Light represents the constant in the universe – not time, nor space, nor matter, as our intuition tells us. Time, space, and the motion of matter are relative to the velocity of light. As matter travels through space-time in our frame of reference, we don’t notice this dilation effect. However, at velocities near the speed of light, dilation contracts the dimensions of space to very near infinity, and causes time to become nearly instantaneous. “This means that in spite of the local appearances of phenomena, our world is actually supported by an invisible reality which is unmediated and allows communication faster than the perceived speed of light, even instantaneously.”⁽⁶⁾

⁽⁴⁾ Lest we think that the numbers presented in this section are incomprehensible, and therefore not realistic, Richard Swenson, M.D. provides the following statistics to give some perspective:

- * There are 100 billion galaxies in the universe with 100 billion stars in each. That is 10^{21} stars, or 10 sextillion.
- * There are 10^{28} atoms in the human body, more than the stars in the universe.
- * Your brain stores the equivalent of 25 million books. Since there are 70,000 words in the average book, that equals 1,750,000,000,000 (1 trillion, seven hundred-fifty billion words, or 10 trillion, five-hundred billion characters)!
 - + The brain can function at ten thousand trillion computations per second ($10,000,000,000,000,000 / 10^{12}$).
 - + The typical human brain, at a mere 3 pounds, is considered to be the most orderly matter in the universe.
- * What the retina of your eye does every one-third of a second would take a super computer one hundred years to do.
- * We have 100 trillion cells in our body, and each cell has DNA in its chromosomes. The DNA from just one cell is six feet long. If we stretched out our entire individual DNA, it would reach one hundred billion miles. That’s just from *one* body! Yet, if you took the DNA from every cell in all of the 6.5 billion people alive today, it would weigh just 1/1000 of an ounce.

And, of course, all of this occurs without our being cognitively aware of any of it!

⁽⁵⁾ I have used 10 billion light-years simply as an easy reference number with which to do calculations. Most astronomers hold to a universe that is between 8-15 billion *years old* as measured by light-years at relative rest, and 10 billion is a comfortable/simple working figure within that range.

⁽⁶⁾ McEvoy, J.P., and Zarate, Oscar, *Introducing Quantum Theory*, Totem Books, 1996, p.170.