

Space Is Basis

Space is the modern equivalent of zero. It took math a long time to accept the essential importance of nothing as a property and physics is still trying to define the void away.

If we take away all physical qualities from space, the two non-physical attributes of infinity and absolute equilibrium remain. If you want to build a theory of reality from the bottom up, these qualities need no cause and are the ultimate conceptual freebie.

Currently space is assumed to be an effect of geometry, rather than geometry the mapping of space. Three dimensions are the xyz coordinate system, which is located by a center point; 0,0,0, yet that is a specific point, therefore it is subjective. There could be many zero points and thus coordinate systems describing the same space. Much as we as individual beings are the center point of our existence and overlap with all others.

Space has also been included with time in an extended geometry, by using light speed to correlate measures of duration and distance, while assuming the geometry is more platonically real than what is being mapped.

Is time really a dimension?

Our thought process manifests as flashes of perception and so we think of time as a flow of events, from past to future. Which physics codifies as measures of duration, between events.

A more efficient explanation for time is that change turns future to past, as in tomorrow becomes yesterday because the earth turns. As an effect of action, it has more in common with temperature, than space.

This explanation solves the many problems of block time.

Duration is the state of the present, as events coalesce and dissolve. Not evidence of some underlying dimension.

The reason time is asymmetric is because action is inertial. The earth turns one direction, not both.

Clocks can run at different rates because they are separate actions. A faster clock will use energy quicker, much as an animal with a higher metabolic rate will age quicker than one with a lower rate. Yet they remain in the same present.

The simultaneity of the present is disputed by observing that different events are perceived in different order from different locations, so time must be extended like space, but this is no more consequential than seeing the moon as it was a moment ago, simultaneous with seeing stars as they were years ago. It is the energy that is conserved, not the information it is manifesting. It is because the energy manifesting an event is radiated away that we can perceive it having occurred, as well as why it no longer exists, except as stored information.

The conservation of energy means there is no energy left in the past to manifest prior events, or coming from a physical future. It is the very changing dynamic of this energy that creates the effect of time. Energy is “conserved,” because there is only the physical present.

Consequently energy and information constitute opposing directions of time. Energy, by coalescing and dissolving form, goes from past to future, while forms come and go, future to past.

We could use ideal gas laws to correlate measures of volume and temperature, but we have a better perspective on the cause of temperature.

Currently cosmology uses the theory of spacetime to explain the redshift of distant galaxies and contend the entire universe began 13.8 billion years ago. While there is considerable institutional faith in this theory and all evidence is framed by it, various anomalies remain.

While Inflation, Dark Matter and Dark Energy fill gaps between theory and observation, there was a much earlier patch that became integral to the theory.

When redshift was first observed, it was assumed to be basic Doppler shift and galaxies were moving away in space, yet when observations showed them to be moving away from our location, in all directions, at speeds proportional to distance, it appeared we were at the exact center of the universe. So then spacetime was used to argue that space itself is expanding and every point would appear as the center.

For some reason it was totally overlooked that the essential argument of General Relativity is that the speed of light will always be measured at a constant speed in any frame. Yet using spacetime to explain redshift means the light has to take longer to cross the expanding frame of inter-galactic space, in order to be redshifted, therefore it is NOT Constant to this space.

Two metrics of space are based on the same intergalactic light. For light to be redshifted, there are increasing lightyears between galaxies, so the metric based on the speed of light, is stable, while the metric based on the spectrum of this light, expands. Which is the real space???

Since we appear at the center of this expansion, a logical conclusion would be that redshift is an optical effect, but this is dismissed as impossible, as there is nothing to slow light, that wouldn't also distort it and it doesn't appear distorted by anything other than gravity.

Using two papers in FQXI archives, I would argue there is a possible explanation.

In the first, C.I.Christov; https://fqxi.org/data/forum-attachments/2008CChristov_WaveMotion_45_154_EvolutionWavePackets.pdf, argues that multi spectrum “wave packets” do redshift over distance and it is only single spectrum wave packets which remain unshifted.

In the second; Eric Stanley Reiter, in the “Questioning the Foundations” contest, argues for and tests the loading theory of light. That quanta of light are not irreducible units, but trip levels of measurement, by macroscopic measuring devices.

If you combine these arguments and apply them to light that has been traveling across the universe for billions of years, then it would seem logical the quanta of light we detect from distant galaxies would be multi-spectrum. That we are detecting wave fronts, not particular photons that traveled the entire distance. If individual photons traveled the entire distance, then we would only be able to extract the specific information they carried. Given some of these sources are so far away and the resulting light is so faint, we are only getting a few photons of light from them, yet manage to extract considerable information.

If Big Bang Theory is flawed, than space is infinite. I suspect that when the James Webb Space Telescope becomes functional(hopefully), we will be finding cosmic structures that can no longer come close to being shoehorned into the current model.

There are quite few observations pushing this limit already; <http://fqxi.org/community/forum/topic/1578> and more all the time; <https://phys.org/news/2017-12-alma-massive-primordial-galaxies-vast.html>, though Big Bang Theory remains as unquestioned as String Theory prior to the LHC.

If space is infinite, why would it be in equilibrium and what would that mean? Didn't Michelson Morley prove there is no universal ether?

Though ether was assumed to be a physical substance, through which waves of light traveled. It is Relativity that assumes an equilibrium to space itself, since the speed of light and measures of distance dilate in a moving frame, then the frame with the longest distances and fastest clocks would be closest to the equilibrium of the universal vacuum. What are these frames moving relative to otherwise? We can't measure a universal frame, but that is not the issue. Like getting close to zero, we might always find something just a little closer, but it is still that completely neutral state toward which we are going.

Look out on a clear night try to say space is just an effect of relations between those tiny points of light and how enormous they would be up close. Yet it is space that makes them small.

The vacuum might fluctuate, but first you need the vacuum.

Space is basis.