How Sensical Is the Universe?

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In this essay, the word "sensical" is intended to convey the meaning implied by such words as rational, logical, credible, tenable, organized, systematic, or perhaps even believable, explicable, predictable, fathomable, or describable. It would certainly have the meaning of "sensible," except when that word is taken to mean *observable by the senses*. What it excludes are the meanings of adjectives such as whimsical or arbitrary. Reluctantly, it will allow a case that contains a random or stochastic element, provided that the case can be analyzed statistically.

Before we leave the subject of definitions, it must be mentioned that this essay will try to avoid the idea of multiple universes. That strange concept is completely nonsensical when the word "universe" is taken to mean *the entirety of all that exists*, as it is in what follows.

A universe that was created by an omnipotent deity simply because the deity decided to do so would not be a very sensical universe, since it would not have an explicable origin. The same must be said for a universe that came into existence with the causeless event called the *big bang*.

When science proposes a *law of nature*, it assumes that the universe must be sensical enough to permit general descriptions of its behavior. According to these laws, if the conditions of the universe can be measured with sufficient accuracy, then the behavior of the universe can be discerned precisely. That is a reliance on the universe being extremely sensical.

A belief that the universe is sensical is probably why there are biologists who are convinced that there is no doubting the *theory of evolution*. (That theory *is* very systematic.) This conviction causes them to become baffled when faced with cases where the principle of the *survival of the fittest* would appear not to apply. An extreme instance of this bafflement is the reaction of paleontologist Michael B. Habib to the occurrence of the pterosaurs in the Mesozoic Era. He asks himself, "Why would any animal be so ridiculously proportioned?"[1]

It is common to assume that anything originated by human beings is sensical. The idea of dividing the year into *twelve* months may be sensical and is related to the moon's orbit in a crude way, but the arrangement chosen for the number of days in those months is nonsensical. One of the least sensical systems developed by humans is the spelling of words in the English language. Why a phonetic system was not chosen is utterly incomprehensible and has retarded our efforts to learn how to read and write as much as has dyslexia.

The conception of the abacus may have been sensical, as was the development of the stored-program digital computer; but what they have led to—the internet and all—is questionable. Could a similar process have occurred with the universe? Suppose Mother Nature, or whoever (or whatever?) was responsible, had the simple idea of a neutron, say. That neutron then somehow grew into all of those elements in the periodic table and then into the billions of galaxies and, eventually, into living tissue and then consciousness. How sensical should we consider such a seemingly accidental result? Would it be less or more sensical than a universe resulting from that causeless big bang in non-space and non-time?

What would be the most sensical universe we could imagine? I guess it would be one that is describable by mathematics—or is *that* just a quirky notion the physicists have taught us? Anyway, I would hope that it could be described with exactitude and completeness in some comprehensible language. I would hope that to comprehend the description does not require that we *believe* the description is true or that we are in some sort of altered state of mind. I would hope that, after it was all explained to me, I would say, "Oh, yeah, I get it now."

A description of a sensical universe should be such that it predicts behavior of the universe that corresponds with observations of the sensical universe. Its predictions should not contradict the observations. The predictions of the current description—the current theories of gravity—contradict the observed velocities of stars within galaxies and galaxies within galaxy groups.

Rather than alter their current theories of gravity, the physicists have chosen to be content with their predictions corresponding with non-observations. That is, they have calculated what the observations would have to be in order to avoid contradictions. As it turns out, there would have to be more matter in the galaxies than has been observed. Physicists explain why this extra matter is not observed by describing it as *dark matter*, a form of matter that is not observable. This worked so well—was so generally accepted—that they used an analogous argument when the expansion rate of the universe was observed to be increasing instead of decreasing as their theory predicted. They simply postulated the existence of that certain amount of dark energy that would make their cosmological theory work.

The acceptance by most cosmologists of these dark things—dark mass and dark energy—is an extreme instance of nonsense. That is, dark things are contrary to both meanings of the word *sensible*. They are not sensical in that they are not rational, and they certainly are not detectable by any of the five senses.

This essay has been critical of the current cosmological theories. How could we develop a more sensical one? Well, we should probably start with the assumption that the universe is eternal. That lets us avoid the necessity of a supernatural event where everything that exists emerges out of nothing. Otherwise, we would have to resort to some kind of magic where, for no reason whatsoever, an entire universe would pop into existence. Such an uncaused event is claimed to have happened, just once, about 14 billion years ago. This unique instant in non-time is certainly nonsensical, since no explanation of it is offered.

We ought to accommodate the notion that the universe is not static. The steady state theory was abandoned when it became believed generally

that the universe is expanding. Now, if the universe is both eternal and expanding, we must try to imagine some limits that describe the states of our universe both an infinite time ago and an infinite time ahead. A limit of zero mass density for the future is not difficult to imagine; an infinite mass density limit for the past is non-sensical, isn't it?

Of course, we need not assume that the universe has always been expanding. A way around that is to propose an oscillating universe where there is a mixture of expansion and contraction periods. It has been said that a contracting universe would violate the second law of thermodynamics.[2] If that is so, then an oscillating universe would not be a very sensical one. For now, let's assume that the second law does not apply in this case and proceed with our speculations.

If we are going to have oscillations, we certainly want them to have a sensical regularity. This brings to mind a sine function of time, doesn't it? Let's notate the radius of the universe and its first and second derivatives as

$R(t) = a\sin(bt) + c,$

$R'(t) = dR/dt = ab\cos(bt),$

$R''(t) = d^2R/dt^2 = -ab^2\sin(bt),$

where a, b, and c are positive, real constants to be determined by observation.

These are periodic functions with a period of $T = 2\pi/b$. Each occurrence of these infinite numbers of periods consists of four regions, each of length π/b. Let's label the regions as A, B, C, and D. From the formulas above and from the inexactly represented, qualitative figures below, we see that R(t) has the following attributes:

In region A, R(t) increases at a decreasing rate.

In region B, R(t) decreases at an increasing rate.

In region C, R(t) decreases at a decreasing rate.

In region D, R(t) increases at an increasing rate.

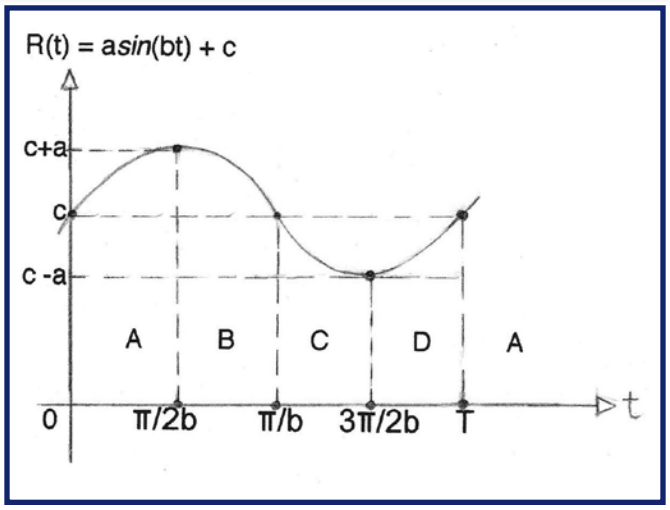

Figure 1: $R(t) = a\sin(bt) + c$.

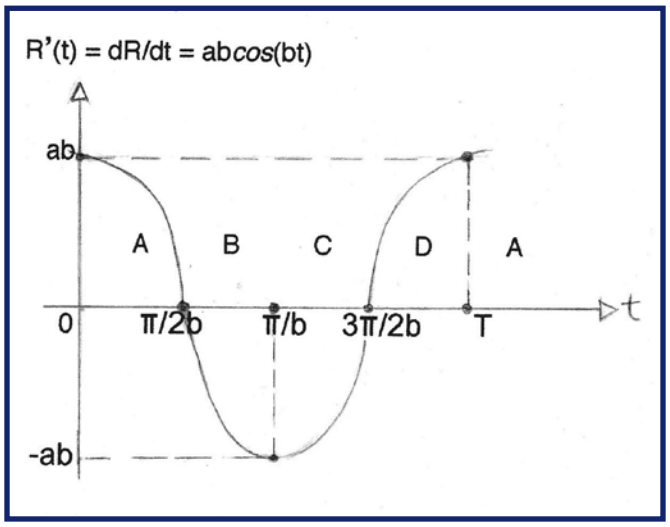

Figure 2: $R'(t) = dR/dt = ab\cos(bt)$.

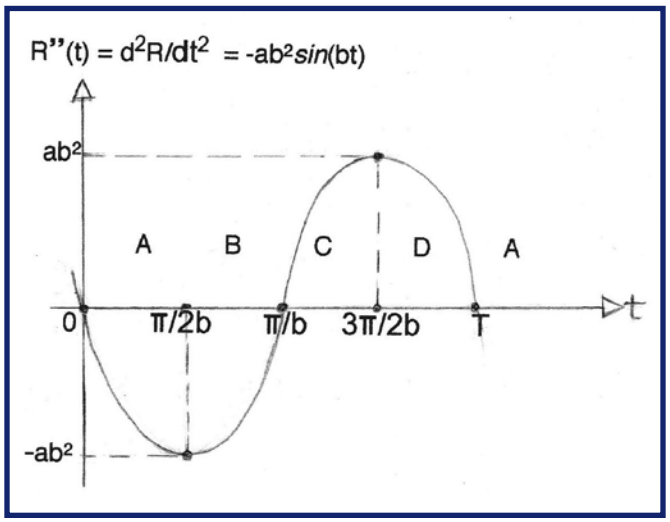

Figure 3: $R''(t) = d^2R/dt^2 = -ab^2\sin(bt)$.

(Figure illustrations by Laurie McKnight.)

Therefore, according to the current claims of astronomers—that our universe is an expanding universe with an accelerating expansion rate—our universe must now be in a region of type D.

So, how could we explain the mechanics of such an oscillation in the radius of the universe? Well, if we are willing to appeal to the Newtonian idea that a force is related to acceleration as F = ma, we can suppose the existence of an oscillating force of $F = md^2R/dt^2 = -mab^2 sin(bt)$. A graph of this function would look just like Figure 3 except with its ordinate scaled by the multiplicative factor m.

There is a complication with this explanation in that not all of the accelerating mass of an oscillating universe would be located along its radius R. Dealing with that complication requires that we treat an infinite number of layers of minute thickness. This is the regular procedure of the integral calculus and will be left as an exercise for the reader.

Is there some simple, toy-like contraption we can visualize that would help us comprehend such motion? Try this. Imagine a coil spring isolated in vacuous space far from any other objects having mass. It has a natural length, which it assumes when not subject to a force. However, further suppose that, somehow, its length was made to vary. The more its length differs from its natural one—either longer or shorter—the greater would be the force exerted by the spring trying to acquire its natural length. There would be no friction in the device, so its length should keep oscillating forever. If this seems possible to you, then perhaps so does an oscillating universe.

But how was the radius set in motion without some special, nonsensical event? Here is where we argue that eternal attributes require no special events. We don't ask for an explanation of an eternal *static* universe. Of course, there is none. Nor should we expect an explanation for any eternal motion that the universe may have. I guess we can tell ourselves that universes always come with radii that oscillate, if that is sensical.

We have criticized the big bang theory for not being sensical. How would the big bang theorists criticize our oscillation theory? We have already mentioned that it may violate a thermodynamic law. Since Newton's gravitation law tends to bring particles with mass together—not push them apart—our theory also is contrary to Newton's law when its universe is in the expansion phases of regions A and D. But that is a problem for the big bang theorists also, one that they tried to explain away with their dark matter and energy.

To end this essay, let's try to answer the question that is its title. A universe as is currently claimed by most cosmologists is not the most sensical universe that is imaginable. Our oscillating universe described above is more sensical.

NOTES

1. Michael B. Habib, "Monsters of the Mesozoic Skies," *Scientific American* (October 2019): 28-33.

2. "Oscillating Universe Theory," Euston 96, https://www.euston96.com/en/oscillating-universe-theory/. **Ω**