

THE END?

(By: Joseph Rees – April 2008)

I. Universal Death March

Scientists currently believe that the Universe has one of two possible fates. The first theory is that the Universe will eventually be pulled back together by its own gravity, until it is compressed and heated into one singular point. The fate of all life in this scenario would be to burn. This theory is known as “The Big Crunch”, possibly because the term “The Big Burn” was unavailable for copyright. This theory leaves room for the possibility that the Universe might again explode into yet another “Big Bang”. Scientists surmise that this process could be cyclical.

The second theory states that the Universe may continue to expand until everything has ripped apart, even at the very smallest of measures. Everything would be pulled apart to distances of impossible comprehension. The fate of all life would be to freeze, alone and apart. This theory is known as “The Big Rip”, assuming, of course, that the lawsuit with the fashion companies goes away quietly.

Both of these theories end with the total and complete annihilation of all life in the Universe, and the destruction of all matter and energy. Sadly, this includes all fast food restaurants and movie theatres. Apparently, scientists are not known for their optimism.

Skeptics counter these theories by stating that since we can barely predict our own weather a few days in advance, how is it possible to predict the fate of the Universe, let alone the weather, in billions and trillions of years from now. Also, if scientists are that accurate at predicting the far future, why aren't more scientists winning the Lottery? Scientists counter, powerfully, with the recitation of two laws of their own making: The first and second laws of Thermodynamics.

Law #1:

$$dU = \delta Q - \delta W$$

The first law of Thermodynamics, or the law of conservation, states that matter and energy cannot be created or destroyed, but rather, only changed.

Law #2:

$$\int \frac{\delta Q}{T} \geq 0$$

The second law of Thermodynamics, or the law of entropy, states that the amount of entropy in a system always increases. Entropy can be defined as the

amount of disorganization or disorder in any given system. This law is also referred to as the Chaos law; meaning that the amount of Chaos in any system increases with time.

Law #3:

$$T \Rightarrow 0, S \Rightarrow C$$

The third law of Thermodynamics states that as a system approaches absolute zero (temperature), all processes cease and the entropy of the system approaches a minimum value. This law states that it is impossible for any system to actually reach the temperature of absolute zero. If a system were to reach absolute zero, its entropy would be zero.

Scientists generally believe that, based upon the first two laws of Thermodynamics; while the amount of matter and energy in our Universe may be forever constant, entropy will eventually overtake the usefulness of all matter and energy. They will be, in a sense, rendered “inert and useless”... they being matter and energy, and not the scientists, who may arrive at such a point within the very near and foreseeable future.

II. A Law Here or A Law There

The First Law Revisited:

The Prophet Joseph Smith made a statement that can be correlated to the first law of Thermodynamics. He taught that matter and energy are eternal realities. He referred to intelligence, matter, and energy as eternal elements.

"The elements are eternal. That which had a beginning will surely have an end; take a ring, it is without beginning or end - cut it for a beginning place and at the same time you have an ending place." (Scriptural Teachings of the Prophet Joseph Smith, pg. 205)

"Matter and energy are eternal realities..." (James E. Talmage, Articles of Faith, pg. 34)

The Second Law Revisited:

It is important to note that the second law cannot be derived from any more basic underlying principle. Rather, it is an experimental law in that every experiment to date has confirmed the validity of this law in nature. While this law seems accurate in our present state, the idea that it exists in every system is mere speculation. The Prophet Joseph Smith stated that “All truth is independent in that sphere in which God has placed it, to act for itself, as all intelligence also; otherwise there is no existence.” (D&C 93:30) He further stated that in a

Celestial System "...thy dominion shall be an everlasting dominion, and without compulsory means it shall flow unto thee forever and ever." (D&C 121:46) This does not sound as a system that shall fall apart over time. We are advised in the New Testament to "...lay up for yourselves treasures in heaven, where neither moth nor rust doth corrupt, and where thieves do not break through nor steal." (Matthew 6:20) If a better statement against the idea of entropy existing in the Celestial Realm exists in all of revealed truth, I have not found it.

The Third Law Revisited

It is interesting that this law declares that a state wherein all matter and energy become without chaos is impossible (absolute zero). The corollary would declare that it should be impossible for matter and energy to reach a state of total entropy (absolute chaos). The very basis for the argument of the "Big Rip" and the "Big Crunch" seem to point at states of pure entropy or the perfect lack of entropy. Somehow this law seems to be absent in the arguments of scientists when dealing with these two end-case scenarios. Interesting...

III. Inert and Useless

Since the proposition of the idea of the atom in ancient Greece, we are constantly discovering new and exciting ways to convert matter to energy and back. We have been led to unimaginable breakthroughs in almost every area of knowledge. Einstein led us to discover that the amount of energy in a single atom is mind-boggling ($E=mc^2$). Vast amounts of matter and energy exist in the very world around us. We have discovered that our world is only one among countless. Our star, the Sun, is merely one among numberless stars. At recent count, there was an estimated 100 Billion stars in our galaxy, and over 100 Billion galaxies that we have detected. In other words, the Universe is a big place, and constantly getting bigger (if not only made larger by our own ability to detect it).

The amazing leap of arrogance comes in the statement of an "inert and useless" Universe that will occur after any amount of passing time.

How can scientists know that the current form of matter and energy in the Universe will eventually turn useless? Have they discovered every form of matter and energy? Have they discovered every way to convert between the two? Have they discovered a form of matter or energy that cannot be converted and, therefore, can be deemed useless? Have they shown that every form of matter and energy must arrive at such a state? Clearly, they have not begun to understand even the minimal amounts of matter and energy that they have access to study. We as a race are only on the edge of understanding even the most basic of the laws of physics which we merely observe. How can we assume that we understand them all today? Further, why is it that we assume that all systems must be like our own current system, and in its currently observed state? How can we be so arrogant in our conclusions?

How do we even know that entropy will continue to increase, even in our own system, let alone, others? Given the incredible age and size of the Universe, both before and after us, no scientist would consider the infinitesimally small amount of space-time data that we have, compared to such a massive amount of space-time data availability, to be accurate. It is as if we have, for the first time, picked up a grain of sand, among all the grains in the world, and consider this grain to be fully representative of the whole, even on every world. This application of the scientific method is truly ridiculous.

IV. The End of The End

As we look to revealed truth, we discover that matter and energy are, in fact, going to be around forever...which is slightly longer than the time that we will be forced to pay taxes. Entropy, or chaos, will also be around forever in some spheres. We understand this by the simple statement, "For it must needs be, that there is an opposition in all things." (2 Nephi 2:11)

Earlier we stated that "All truth is independent in that sphere in which God has placed it, to act for itself, as all intelligence also; otherwise there is no existence." (D&C 93:30) While our own sphere of mortal existence experiences an observable amount of entropy, God and His Celestial Systems do not experience this decay and chaotic state. He is endless and his creations continue, thus, as creations are the imposition of order upon disorder, order will continue to abound in the Universe. Chaos, will never overtake Order at any future time. If this imbalance was to occur at any future point, all things would eventually come to an end, which we have been told will not be the case.

Some things are eternal, including matter and energy (as stated by the first law of Thermodynamics). God has stated that with Him, all things are one eternal round. His ways are set and cyclical. Never do matter and energy become "inert and useless". We read in the Book of Moses, in the Pearl of Great Price (Chapter 1, vs. 37-38), "And the Lord God spake unto Moses, saying: The heavens, they are many, and they cannot be numbered unto man; but they are numbered unto me, for they are mine. And as one earth shall pass away, and the heavens thereof even so shall another come; and there is no end to my works, neither to my words."

Does this scripture point to the end of each creation, or rather, does it point to the end of each creation in the sphere in which it was placed? Does this point to the theory of the cycle of the Big Bang and the Big Crunch? Never in the scriptures does it state that God's Kingdom will be destroyed, to once again, be created anew. His works are forever expanding and being made perfect, not cycling from imperfect to perfect and back again. His statement that all things are "one eternal round" is a reference to His pattern of a cyclical creation process. He creates the same as He has created before, and in this way, He continues

forever, always with the same pattern or cycle of creation. We have been told that even though our own Earth will pass away (be cleansed from its fallen state), it shall receive of its eternal paradisiacal glory (continue in a new state). We should not think that after receiving its paradisiacal glory, time shall pass and then it shall be destroyed and recreated in never-ending cycles. Rather, new earths shall be created in like manner, for eternity.

In conclusion, the Prophet Joseph teaches us, "Now, the word create came from the word baurau which does not mean to create out of nothing; it means to organize; the same as a man would organize materials and build a ship. Hence, we infer that God had materials to organize the world out of chaos - chaotic matter, which is element, and in which dwells all the glory. Element had an existence from the time he had. The pure principles of element are principles which can never be destroyed; they may be organized and re-organized, but not destroyed. They had no beginning, and can have no end." (Scriptural Teachings of the Prophet Joseph Smith, pg. 395)