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THE AGE OF OUR UNIVERSE

If we assume that the observed Redshift of starlight is due to the Doppler effect we end up with models of the universe which contradict the basic laws of science. If we assume that the red shift may be due to a tiring of light, an assumption still to be tested, we end up with no contradiction with the laws of science. You the reader must choose.

Throughout the ages, man has come up with different ideas about the past of our universe. On one hand, some peoples saw the sky above us as a giant surface or ceiling sprinkled with lights, coming up and going down, night after night. Ancient Greece, historical China, Hinduism and most other cultures of the ancient world had this type of view. But opposed to this are teachings of Judaism, Christianity and the Muslim holy books which speak of a seven-day (or seven period) creation of the universe, about 6000 years ago.

The 20th century saw a radical change in our thoughts. We began to acquire some experimental clues plus some concepts from science on this matter, which may get us closer to resolving this puzzle about the nature of our universe.

First of all, Albert Einstein, just thinking about the laws of motion, gravity fields, and other scientific ideas suggested that the whole universe was created about 15–16 billion years (byr) ago. This came from his General Theory of Relativity [1]. This was an absolutely magical creation of the human mind.

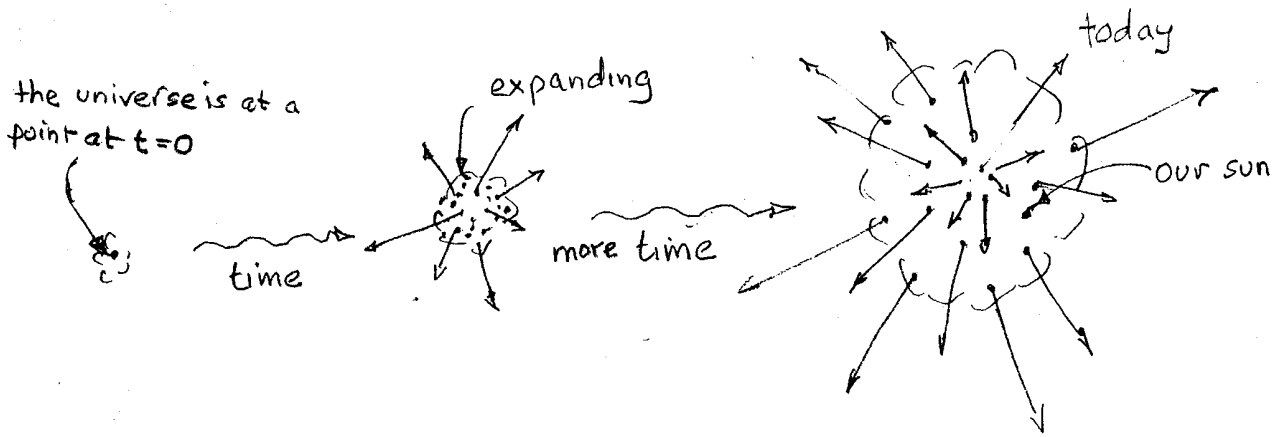
Then Miss Henrietta Leavitt [2], a volunteer at Harvard University's astronomy laboratory, studying the photographic images of telescope observations of the particular cluster of stars in the southern skies called the Cepheid variables came up with a brilliant discovery. She was the first person in history to be able to come up with a measure of how far away from us are the stars and galaxies. She had come up with an astronomical ruler.

Next, Edwin Hubble [3], after a very careful examination of starlight, discovered an unexpected shift to the red of the light black lines from the different atoms in the spectrum of starlight. This is called the *Redshift*.

So, here we had two observational findings about our stars. First, some stars are close to us while others are far away, and secondly, those far away had a large Redshift while those close to us had a small Redshift.

At this point, we have to make a guess for the cause of this Redshift. Here we have quite different views. At one extreme, we have the infinite universe, while at the other we have the finite universe.

Guess a. Some astronomers guessed that the Redshift is caused by the Doppler Effect which tells how fast stellar object are moving away from the observer. This leads to a number of models, the most popular being the *Big Bang Model* of Georges LeMaitre [4] with its unbelievable assumption that the whole universe started at a mathematical point and was expanding ever since:



A mathematical point? This is what mathematiccians say, so of course cosmologists accept this. Using this explanation of the Redshift astronomers have found that the farthest away object that we have ever seen is moving away at over 95% of the speed of light.

Another model of this type is the *Steady State Model* of Fred Hoyle and coworkers [5] where atoms just appear from nowhere like little popcorn kernels. But this approach has other internal inconsistencies, concerned with what happens with time, so we leave this model aside.

Guess b. Here we have Hannes Alfven's *Plasma Model* [6]. This also assumes that the Doppler effect is

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the cause of the Redshift, but otherwise insists that only known physical laws should enter cosmology − hence no creation of matter, either all at once (the BB model), or atom by atom (the SS model), or by any other non physical means.

Guess c. The *Tired Light Model* assumes that the Redshft is caused by some sort of frictional or gravitational drag on the light waves as they travels for their millions or billions of light years into and out of the countless gravitational fields of stars and galaxies to eventually reach us.

According to Einstein, the frictional drag cannot slow the speed of light so the only way it can lose some of its energy is to vibrate more slowly, thus giving the Redshft. Thus, farther away objects have a greater Redshift.

With this Tired Light Model, stellar objects can essentially be stationary or wandering about slowly. The far away objects do not have to be fleeing away from us, according to the Doppler effect, at incredible speeds of over 95% that of light. We have not been able to verify this guess in the laboratory because the speeds and times needed would be astronomical, but in principle, it could be verified because it would be an actual physical measurement, not some sort of magical quantity which defies the basic laws of science.

Guess a leads us to a finite universe with birth and probably death sometime in the future, while Guesses b and c leads us to an infinite universe.

HOW TO WEIGH SCIENTIFIC MODELS

In general, in weighing scientific models Richard Feynman [7] stated:

First you guess.
Don't laugh, this is the most important step.
Then you compute the consequences.
Compare the consequences with experience.
If your guess disagrees with experience, your guess is wrong.
In that simple statement is the key to science.
It does not matter how beautiful your guess is or how smart you are,
If it disagrees with experience then it is wrong.
That's all there is to it.

In science, all statements form a consistent whole. So, you can go from one statement to another; from Newton's laws to Einstein's relativity without contradiction. However, in theoretical astronomy we have not been able to design any experiment to check these extra-science "truths" against scientific facts. However, we do know that they are inconsistent with the fundamental laws and ideas of science, in particular the laws of thermodynamics.

Here is an extra-science statement widely accepted in cosmology.

The whole universe, stars, galaxies and everything else that we can and
cannot see, in fact everything, started as a point.

What in the world does that mean? It makes no sense.

By accepting the explanation that the Hubble Redshft was caused by the Doppler effect, by ignoring all other possible explanations we are led to all sorts of magical phenomena. In particular, it led to the Big Bang explanation which says that the universe started at a point. But this goes against the truths of science, in particular:

You cannot create matter from nothing.

From this magical assumption, astronomers have created stories which violate the truths of science, in particular the laws of thermodynamics.

Other models such as Hoyle's Steady State Universe and Alfven's Plasma Model also rest on the Doppler explanation of Hubble redshift and these models also are beyond science.

So dear reader, what should you believe?

Would you prefer to believe a picture of our universe that violates the laws of science, such as:

– creating matter out of nothing,

– or the cooling of hot expanding matter without doing work (expansion into a vacuum),

or would you prefer to believe in a picture of the universe that is accepted by or is consistent with science.

It is up to you.

Here is another problem. The BB model, accepted by a large majority of cosmologists, astronomers and scientists today, also has a fatal internal inconsistency. Taking the Doppler speeds and going backward in time, Hubble, in 1931, concluded that the universe was formed (exploded in the big bang) 1.8 byr ago. This was laughed away by the BB critics because the earth's age is 4.6 byr, and the universe could not be younger than the earth's age.

In the early 1950´s, Walter Baade [8] tried his own fit of the data and found an age of 3.6 byr. That was still not good enough, so in the middle 1950's Allan Sandage [9] with his own curve fitting procedure came up with 5.5 byr. Well, that did not result in any contradiction with the earth's age but it was not near enough to the Einstein value of 15–16 byr. Since then, there have been numerous other estimates, all from the BB model. From the following books I have read:

From "***Einstein's Greatest Blunder***", D. Goldsmith, Harvard University Press, 1995:

10−15 byr (p. 97);

8−9 byr (p.98);
8−13 byr (p. 98);
15−20 byr (p. 99);
2−3 byr (p.99);
14−16 byr (p.110).

From "***The Evolutionary Universe***", G. Gamow, Scientific American, 1976:
5 byr.

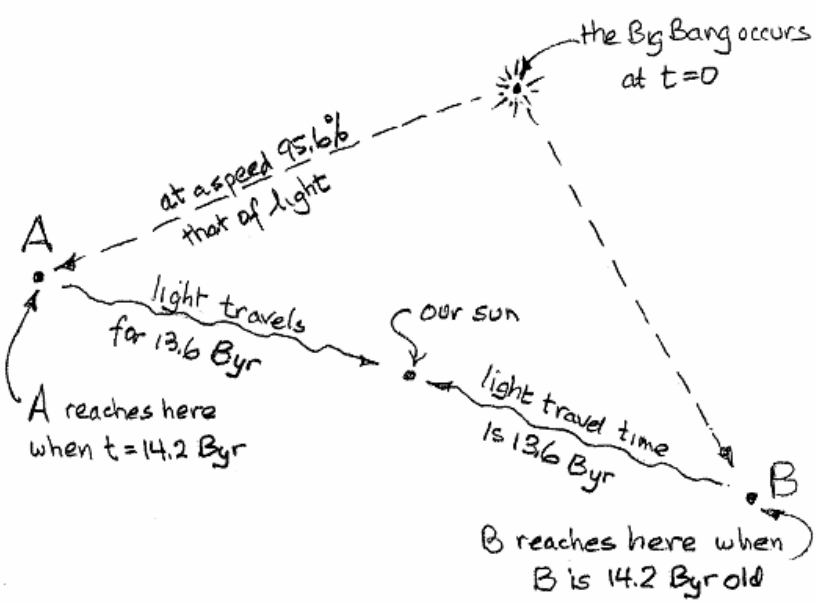
From "***Will the Universe Expand Forever?***", J. Gott *et al*., Scientific American, March 1976:
8−18 byr.

From "***Magnificent Universe***", K. Cresswell, Simon and Schuster, 1999:
10−15 byr.

These estimates all are trying to creep up to Einstein's 15−16 byr. However, I **think that they are all wrong**. Here I want to tell why I think that today's most popular model, the BB model, is wrong.

If **A** and **B** start slower than 95.6% the speed of light (today's latest idea) then it would take even longer than the 14.2 byr to get where they were 13.6 billion light years ago, In addition, if the Big Bang occurred close to either **A** or **B** then the age of the universe would have to be greater still. In either case, the age of the universe would have to be greater than 27.8 byr. The calculated time here (> 27.8 byr) is very much greater than all the estimated times reported in the literature (see above). This shows a contradiction between the reported BB model's values and this analysis. In addition, the Big Bang model rests on a non-scientific assumption, that you can create something, in fact everything, from nothing.

This is absolute fiction, and for these reasons the BB model is not a scientific model and we have to look elsewhere for an explanation for the universe. I discuss this problem elsewhere [10].



Imagine that today we observe two galaxies, **A** and **B**, on opposite sides of us, far far away, and speeding away (as the Doppler effect claims) at 95.6% of the speed of light. Since galaxies **A** and **B** were originally created by the BB model at time $t = 0$, and then flew off in opposite directions at very high speeds, they would need at least 13.6/0.956 = 14.2 byr of time to get to where they were when they sent out the light signal which reaches us today, after their 13.6 byr travel time. So the age of those galaxies **A** and **B** today, or of the universe as a whole, will have to be greater than 14.2 + 13.6, or > 27.8 byr.

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IZVOD

STAROST NAŠEG SVEMIRA

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Ako pretpostavimo da je opaženi crveni pomak svetlosti zvezda posledica Doplerovog efekta, dolazimo do modela svemira koji protivreči osnovnim zakonima fizike. Ako pretpostavimo da je crveni pomak možda zbog „umorne svetlosti“, pretpostavka koja se još uvek mora proveriti, dolazimo tada do toga da nema protivrečnosti sa zakonima nauke. Ti čitaoče moraš izabrati.

Key words: Redshift • Big Bang • Scientific Models
Ključne reči: Crveni pomak • Veliki prasak • Naučni modeli