Humphreys' cosmology

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Over recent years I have developed a keen interest in cosmology and am quite excited by current creationist research into this area. I found Humphreys' model quite promising and more recently I became aware of Robert Gentry's series of papers in this area.[1]

While I am excited by Humphreys 'White-hole' cosmology, I feel there are some issues, Biblical and scientific, that need to be resolved or further explained. The first issue relates to Scripture: Humphreys postulates that God's stretching of the heavens (i.e. the creation of the expanse) merely began on Day 2, and continued until at least the end of Day 4.[2] However, the clause 'And it was so', strongly suggests that the command God issued was completely fulfilled on Day 2 (although Day 1 doesn't contain this clause, it does contain a clause that is functionally equivalent: 'And there was light'. The same can be said about the creation of man on Day 6). This is made clear in verses such as Judges 6:38 and 2 Kings 15:12 where the same phrase, *wayehi ken*, is also used. Therefore, the Biblical text appears to indicate other than what Humphreys suggests.

Second, even if we assume that the expansion of space occurred during the second, third and into the fourth day, it is difficult to see how this solves the light travel problem. Young-Earth creationists try to explain how light from light sources billions of light years away can reach Earth when the entire universe is no older than ten thousand years in Earth time. However, according to Scripture, these distant light sources were not created until Day 4, which means that the expansion during Days 2 and 3 contributes in no way to solving the problem even if it results in gravitational time dilation and a Euclidean timeless zone. Having plenty of time for light to travel to Earth is of no consequence because at this point in (Earth) time there are no distant light sources—unless Humphreys' concept of different clocks allows for the creation of light sources prior to the fourth day in Earth time, or for light sources to be created on Day 4, Earth time, but billions of years ago in galactic time. Either way, the idea seems to lack coherence.

The real problem here is that Humphreys has yet to provide any quantitative analysis of the relationship between Earth time and other clocks, so it is impossible to perform any kind of mapping from Earth time to some other (distant) clock. This is required in order to determine whether the approximately 12 hours of Day 4 maps to enough galactic time to allow light to travel billions of light years to Earth from their newly created light sources.

Third, Humphreys model employs the concept of a white hole which he equates with the expansion of space.[3] However, while a black hole emits a massive gravitational force which pulls matter and photons toward it, a white hole is the opposite—it is a dense mass which freely allows matter and photons to escape. How then can Humphreys equate a white hole with space-time expansion?

Fourth, Humphreys claims the stretching of space would cause the cosmic microwave background radiation. Recall that Humphreys posits (with sound Biblical support) that the 'deep' created on Day 1 was a massive ball of liquid water. Now, to have liquid water, the temperature range (at 1 atm pressure) must be 273–373 K. Thus the initial temperature of space must have been in this range and therefore Humphreys needs to show that this initial temperature results in the observed 2.7 K microwave background radiation by whatever process he envisions in his cosmology.

Fifth, even if we assume that Humphreys model does provide a coherent solution to the light travel problem, his model, like the big bang, is based on the concept of Friedmann-Lemaître (F–L) space-time expansion—a purely mathematical concept which has never been physically tested, let alone observed and verified, and which Robert Gentry claims has actually been falsified by what is currently known. For example, F–L space-time expansion would result in a massive energy loss and therefore violates the law of conservation of energy—a fundamental principle of physics by which all physical theories must abide. Furthermore, F–L space-time implies that the wavelength of photons are lengthened in-flight. However, the operation of the Global Positioning System (GPS) provides physical proof that this does not happen. If these arguments and others offered by Gentry are correct then not only has he dealt a fatal blow to big bang cosmology but a fatal blow to Humphreys' cosmology as well.

Furthermore, Humphreys even suggests that the expansion may have occurred at a rate greater than the speed of light.[4] Gentry notes that this idea is also problematic and violates relativity theory. Humphreys believes such objections are simply misconceptions, and merely appeals to the fact that secular cosmologists like Alan Guth employ the same idea.

Sixth, Humphreys claims his cosmology can explain the quantization of the redshift data but does not really give any details apart from some vague remarks about standing waves created by a bounce back effect.[5] But this would only work in a static universe not one that was expanding—and especially if it was expanding at greater than the speed of light! Of course, one can always say 'God did it', and I certainly have no problem with that answer, but the purpose of Humphreys' cosmology is surely to offer a physical mechanism for *how* God did it.

Finally, I wish to encourage Humphreys and others in their efforts in this area, and I think it may be beneficial for organisations like *Answers in Genesis*, Creation Research Society and Institute for Creation Research to sponsor such research and co-ordinate researchers' efforts. Indeed, a

good first step would be to see another forum in the pages of *TJ* involving Humphreys and Gentry discussing the evidence for and against F–L space-time expansion and how this affects creationist research into cosmology.

References

1. See <www.orionfdn.org>.
2. Humphreys, D.R., *Starlight and Time*, Master Books, Green Forest, p. 36, 1994.
3. Humphreys, Ref. 2, p. 77.
4. Humphreys, Ref. 2, p. 98.
5. Humphreys, D.R., Our galaxy is the centre of the universe, 'quantized' red shifts show, *TJ* **16**(2):95–104, 2002.

D. Russell Humphreys replies and clarifies cosmology

I'm glad Andrew Kulikovsky is thinking carefully about creationist cosmologies, and I encourage him and other creationists to continue doing so. Since he touches on several areas people frequently ask me questions about, I welcome the chance to amplify upon them here. Here are my replies to Kulikovsky's specific points, numbered to correspond to his 'first … second … third', etc.:

1. *Continued stretching of the heavens*. He might be right that 'and it was so' applies to the stretching of the heavens on the second day, and thus would imply the stretching ceased on that day. However, the phrase might quite reasonably apply to the verb 'separated' (KJV 'divided', Hebrew *yâv^{e}ddāl*) immediately preceding it (Gen. 1:7). In that case the separation might be what God completed, while the stretching might continue beyond that day, for the reasons I mentioned in my book.[1] There are a number of possibilities for the stretching: (1) it stopped on Day 2 and restarted later in Creation week, or (2) it went on continuously during the week, or (3) it was continuous until now, or (4) there were episodes of rapid stretching during Creation Week and the Genesis Flood, or (5) various combinations of those scenarios. It doesn't make much difference to me, because it appears we can successfully build various creationist cosmologies on most, and possibly all, of the various options.
2. (A) *Value of 2nd day stretching*. In the option I favour, events (including stretching) during the fourth day would cause a timeless (Euclidean) zone to appear and disappear, as Figure 1 (which I have published previously[2]) illustrates. That would enable light from stars and galaxies created on the fourth day to reach the Earth at the end of the same day, which would be of ordinary length as measured by clocks on Earth. However, contrary to Kulikovsky's assertion, there would be some value to expansion on the previous days, the second and possibly the third. One benefit would be to stretch out the wavelengths of first-day light (Gen. 1:5), and the infrared thermal radiation of the waters above the heavens (Gen. 1:7). Either one of those could be the source of today's cosmic microwave background radiation, as I remarked in my book.[3]
   (B) *Lack of time dilation equations*. Figure 1 provides enough information to generate the time-mapping equations (at least one sample of the possibilities) for which Kulikovsky asks. I leave it as an exercise for the student, pointing out the time relations: billions of years on the right, one day on the left.
3. *How a white hole works*. Kulikovsky shares the general misunderstanding about how a white hole would work, which in turn is due to lack of clear explanations in the popular literature. According to the basic equations,[4] a white hole would not repel matter. Instead, the matter in it gravitates normally, but has enough *outward momentum* to overcome its own self-attraction. The next three figures illustrate the essentials of black and white holes.
   Figure 2 shows a cross-section of the 'fabric' of space-

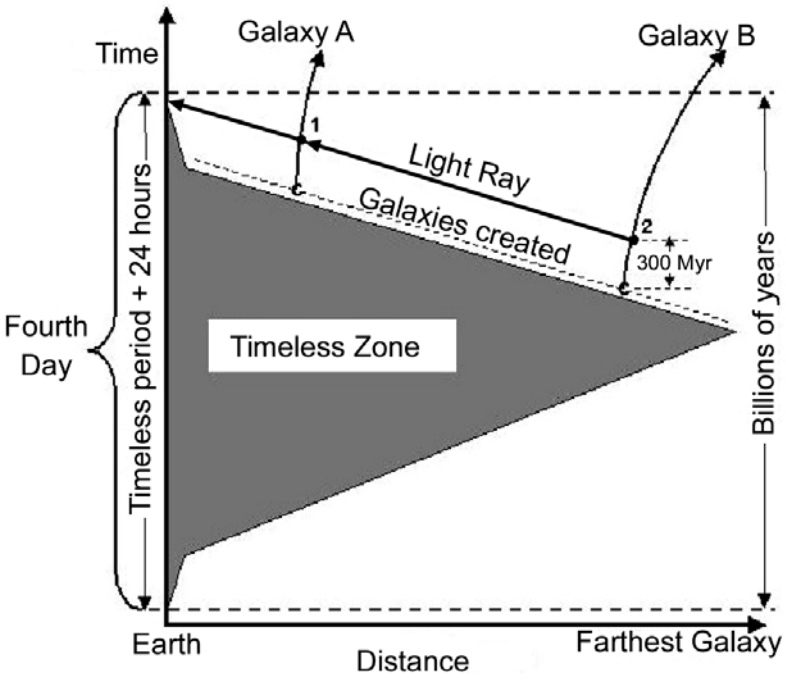

Figure 1. *Trajectories of light and galaxies on the fourth day.*