

that a larger pre-Flood Earth, corresponding to a smaller proposed expansion and a smaller rise in gravitational potential energy, would provide a better model than that proposed by Stenberg. It should not then be difficult to balance global energy changes.

This analysis does not, of course, deal with more detailed issues of, for example, mineral and element distributions and changes in these through the Flood, which requires input from geologists. However one further point needs attention: in Stenberg's model the outer core is given a higher density (15.7 gm/cc) than the inner core (13.0 gm/cc), which is a highly unstable density distribution, since if the core material can flow at all it will be subject to a Rayleigh–Taylor instability.<sup>9–12</sup> This is another reason why, I suggest, changes to Stenberg's model can and should be made. His model certainly seems worthy of further development by creation scientists.

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### References

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### » Don Stenberg replies:

I appreciate William Worraker's analysis showing how the increasing potential energy of an expanding Earth during the Flood could serve as a significant heat sink for heat from accelerated radioactive decay. He sensibly suggests that perhaps the pre-Flood earth was somewhat warmer and larger than I propose in my model to account for the amount of energy released during accelerated decay. However, I hesitate to embrace that solution for now for two reasons. The first reason is that if the earth expanded less than I proposed in my model, then the mystery of pre-Flood corals which appear to record ~400-day years (or ~22-hour days) would remain unsolved. The second reason is that a warmer pre-Flood Earth could not have had a permanently magnetized core, thus leaving unsolved the mystery of the changing lifespans of the biblical patriarchs. In light of the significant heat sink that an expanding Earth provides, my preference is to consider instead if there are heat sources that I have not yet accounted for. For instance, my calculations have thus far assumed negligible heat from extinct radionuclides, but it is conceivable that they could have provided as much or more heat during accelerated decay as the four major isotopes that I included in my analysis. Clearly more work is needed on these important questions.

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## Starlight, time and the new physics

Since John Hartnett published his young universe model in 2007 in *Starlight, Time and the New Physics*,<sup>1</sup> he has met with little challenge, at least

publically. Yet, upon investigation, the construction of his model demonstrates striking weaknesses, one of which may be dire. About four difficulties are discussed below. While his math may seem robust, it is only as good as the structure it builds. Surprisingly, it is something so elementary in nature which may undermine his efforts and ultimately bring the model down. Since, in the discussion of his ideas, Hartnett was deliberately silent about the beginning, his response to this challenge should evoke a full disclosure of the mechanics of the model from the very outset of creation. On that explanation will hang the fate of his ideas.

Hartnett may himself be using a fudge factor to help eliminate another 'fudge factor'. A key motivation for his work (*Starlight, Time and the New Physics*, p. 122) is to obviate the need for dark matter, which to him is only another big bang fudge factor (p. 14). However, to attain his goal, he overreaches and upsets physical convention to add a new dimension to the spacetime metric—'spacevelocity'. In truth, his 5D universe adds a second temporal term to our otherwise conventional 4D spacetime. To him, there are two time dimensions. But if you know even the basics of metrics and the physical orientations of their terms, it is not at all surprising that a bonus dimension might well give the appearance of solving the problem of galaxy rotation curves (a feat to which he lays claim in Appendix 3). This may prompt another physicist to insist that what Hartnett has found is a mathematical explanation for the effects of halo dark matter on galaxy rotations, which mimics a fifth dimension in the spacetime metric! And who could argue? After all, neither dark matter nor the spacevelocity dimension currently exist as anything more than theoretical constructs. Neither has yet been demonstrated to be a physical feature of our universe. So which is the real 'fudge factor'? It's all a matter of perspective and bias. Hartnett says

dark matter is not real but convention says a five-dimensional universe is not real. So, we should expect mainstream physicists to remain underwhelmed about his findings, especially in light of the fact that one has to swallow down a 5D universe to go along. Besides, Hartnett's is not the only 'new physics' around. MOND, a new twist on the physics at galactic scales, and one which by the way upholds 4D convention, has recently enjoyed success in explaining galaxy rotation curves.<sup>2</sup> Of course, Hartnett will argue that MOND is an empirical approach while his is theoretical, and so his is preferred (p. 47). But again, at what cost? To surrender longstanding convention to aid in his effort to rid the universe of the need for dark matter is not viewed as an even trade in a cosmic economy. Hartnett's big claims may flounder until he is somehow able to show that the spacevelocity dimension must really be there. A series of falsification tests are needed. Until then, physicists and cosmologists are only right to shelve the idea and regard it as not much more than a curiosity.

Hartnett shows ambivalence in his treatment of the cosmic microwave background, the CMB. On page 102 he says, "This assumes that the CMB is somehow related to that original light source God created and that it has been adiabatically cooled from 9,000 K to 2.7 K through the expansion of the cosmos." But this statement is unmistakably big bang in nature! Where in creationist literature has Hartnett ever conceded that the CMB has found its way to us via an 'original light source'? We are left to wonder whether he is using the nature of the CMB out of convenience to aid in his model-building endeavour or out of compulsion, knowing that it is an integral component of the cosmos and must be addressed at some point in his discussion. To be sure, there is nothing formal or thorough in his discussion about this most important cosmic feature. Hartnett's mention of

the CMB on page 102 amounts to a scientific gloss. In truth, he remains uncommitted on the subject, a liberty modern-day cosmologists are never allowed to take—nor would ever want to. One of the basic rules of cosmology model-building says that unless the CMB is explained, there is no model. Isn't it time creationists solicit a definitive answer from John Hartnett regarding the CMB, especially in light of the mixed signals he is sending? The demand to answer this question falls equally on all practising cosmologists, including creationists like Hartnett: "What is the cosmic microwave background and what is its source?"

Hubble Law may not in fact be operative in Hartnett's universe model. On page 182 he states, "it is fundamental to the theory that, because of the Hubble expansion, the null condition  $ds = 0$  is required [in the metric]." Unfortunately, since Hartnett's model requires an instantaneous and miraculous creation of space and some matter (possibly just the earth?) in spherical geometry out to a radius as far as 8 Ma light-years through the third 24-hour period of creation time (p. 103), there is the possibility that the metric may be limited to constraints on  $dt$  and  $ds$ , such that  $dt \geq 3$  days and  $ds \geq 8$  Ma light-years. It is only on Day 4, after the miraculous 8-Ma light-year interval has been in place for three days, that the spacevelocity term in the metric is turned on, so to speak, and the cosmic expansion ensues. That means it may be impossible to show that his equation (A1.2) on page 123 has been satisfied. Rather than his rendering, equation (A1.2) may more properly take on this form:

$$dr^2 = H_0^{-2} dv^2 - [8 \text{ Ma light-years}]^2,$$

a situation which would seriously call into question any Hubble spacing of galaxies in the expansion. Worse, it may overthrow the entire model. For instance, how fast does light

traverse the divinely created 8 Ma light-year radius? If the answer is, 'instantaneously', then its measure is not truly 8 Ma light-years (since light speed is the measuring stick), but profoundly more diminutive, like the size of the super-dense, super-hot cosmic egg of the big bang, and Hartnett is left with space, matter, energy, and time expanding in a big bang-like model. If the answer is, "light traverses the 8 Ma light-year radius in the usual 8 Ma years," then we will not see distant starlight in a young universe because the conclusion of Hartnett's incredible Day 4 expansion event *can essentially bring us no more light along our line of sight than what we witnessed at its start!* As the Day 4 expansion 'supersizes' the universe from 8 Ma light-years to 13.54 Ga light-years, our total four day view into space will grow in step from 0.011 light-years to 18.62 light-years. Since the model declares that all clocks everywhere will begin to tick at the same rate after the universe recovers from its 24 hour cosmic jerk, we will still only see 6,019 light-years into space after 6,000 years of Earth time have elapsed. Distant starlight will not be ours to witness.

Apparently, John Hartnett's unstated, non-negotiable requirement for his universe to bring distant starlight to a young earth is that *the surface of the earth must maintain full communication with the edge of the initial 8-Ma light-year space interval from the beginning.* Two choices come to mind. God can either postpone 'the beginning' for 8 Ma while Earth waits for full communication to happen, or it can communicate instantly and find itself caught up in a hot big bang scenario. Either choice voids the model and its claims. If, in response, Hartnett appeals to a divine suspension of physical laws allowing for an instantaneous superluminal meeting of the earth's surface and the universe edge 8 Ma light-years away, then he has adopted an inflationary

cosmology, an action which to many will be just an ad hoc rescue of the model—a fudge factor.

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**References**

1. This letter is not intended as a book review. Its purpose is to challenge, at a fundamental level, the John Hartnett creation cosmology, a model best codified in a single location—that is, his book (already named). Key elements of his model, herein challenged, appear only in his book and not in *Journal of Creation*—an important example being the initial size of his universe.
2. See More Evidence Against Dark Matter? *Science Now*, 25 February 2011.

» **John Hartnett responds:**

I heartily agree with Mr Speir’s first point, dark matter, that in positing a new dimension the velocity of the expansion of space (not *spacevelocity* as he suggests) may be just as bad, since it also is a theoretical construct that may be found to be unsubstantiated. I am under no illusion. I do not hold tightly to any cosmology. In fact, all cosmology is faced with the same dilemma. One cannot really differentiate from one model over another where they do not contradict the available observational evidence. All I presented was a new model that contained only one new ‘unknown’, whereas the standard  $\Lambda$ CDM model requires many to sustain it; not only dark matter but dark energy and also inflation. I think Speir has taken this too seriously. Maybe he believes cosmology will ultimately find the true description of the universe. I have my doubts. Besides, I do not know what expansion of space, nor what accelerating space, really means, let alone a velocity dimension describing it. True it is “just mathematics” but so are all cosmologies. One cannot do an experiment on the universe to test it or sample many universes to see what a typical universe should look like. We are stuck with what we

have and therefore we are limited to describing what we observe locally. And to make a point, I think MOND, though empirical, has been an excellent approach. Now, a solid theoretical basis must be established. Interestingly in galaxy and cluster dynamics Carmelian cosmology produces a result very similar to MOND.

Yes, it is true I am ambivalent about the CMB radiation. I do not know its true source. Who can? As described above, we are limited by cosmic variance, the very uncertainty that comes from astronomers only observing a single Hubble volume, and that imperfectly. To say “One of the basic rules of cosmology model-building says that unless the CMB is explained, there is no model” is absurd because that concedes the argument before you have begun to respond. What if the source of the CMB is local, hence the cosmological principle is violated and the standard model also must be rejected. This is the very suggestion of the data from Dr Richard Lieu (see [creation.com/images/pdfs/tj/j20\\_3/j20\\_3\\_15-16.pdf](http://creation.com/images/pdfs/tj/j20_3/j20_3_15-16.pdf)). If the source is in the foreground, then it could not have come from the fireball of the big bang and therefore it does not follow that it must be explained by any cosmology. It is just a local artefact. So if that is the case it behoves me also not to take it too seriously in constructing any cosmology.

Regarding the last point concerning the Hubble Law, I unfortunately cannot understand what Speir is saying. I feel he is taking it all too seriously. If God wants us to understand this He’ll show us. In the meantime we should read the Word; it alone contains the key to eternal life.

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**Errata**

**Journal of Creation 26(2)**

Stenberg, D., A new magnetic field theory and Flood model—part 1.

Credit for the use of the Polonium 218 halo micrograph published on p. 57 (figure 1) should have been ascribed to Mark H. Armitage of the Creation Research Society, who prepared and photographed that specimen. We regret the oversight on our part.

