

## Time Dilation Cosmological Models: Exegetical and Theological Considerations

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### Abstract

In conjunction with efforts to resolve the light travel time problem, creationists have in recent decades proposed a variety of new cosmological models. Some of these models are contingent on the concept of time dilation, proposing that there was a relatively rapid passage of time—on the order of several billion years—in the distant reaches of the universe while only six days of time elapsed on earth during the Creation Week. This purportedly can account for how starlight from galaxies billions of light years from earth could have reached earth between the time of the creation of the cosmic bodies on Day Four and the creation of man on Day Six. The purpose of this paper is to evaluate such cosmological models from a biblical (exegetical and theological) perspective, seeking to determine if they are consistent with Scripture. The specific interpretive claims of these models will be examined, as well as their overarching implications concerning the principal focus of the Genesis creation narrative and the intent of the biblical author in light of his understanding of the text's original readers. This paper concludes that these cosmological models are dependent on strained exegesis and that they introduce interpretations dependent on modern scientific ideas that would have been foreign to the original readers.

**Keywords:** authorial intent, biblical hermeneutics, Big Bang, communication, cosmological expansion, cosmology, creation narrative, Hartnett, John G., Humphreys, D. Russell, intended audience, light travel time, the new physics, original readers, redshift, relativity, fabric of space, starlight, time dilation, timeless zone, white hole, young-earth creation

### Creationist Solutions to the Light Travel Time Problem and the Age of the Universe

Among cosmologists who reject the biblical view of recent creation, there exists one prevailing theory of cosmological origins: the big bang model. Creationists countering the mainstream view of cosmological origins have proposed a variety of alternative theories. These theories—besides attempting to defend the miraculous origin of the universe by the creative work of a sovereign, unopposed, personal God—commonly attempt also to explain the light travel time problem. The light travel time problem—in a nutshell—concerns the question of how light, traveling at a finite speed, could have traveled the vast distances from the extreme reaches of the universe in a timescale that reconciles with the biblical record of creation—that is, the record of a creation event occurring on the order of thousands, not billions, of years ago. Understanding that a light year is, by default, a measure of the distance light can travel in one year, the light travel time problem is typically presented as the challenge of how starlight from distances more than thousands

of light years is visible on earth in the present day. However, an analysis of the biblical text indicates that the challenge is considerably greater. The heavenly bodies (including the stars) were created to serve man as markers “for signs and for seasons [i.e., appointed times], and for days and years” (Genesis 1:14). If their light was not visible on the earth shortly after their creation—ostensibly by Day Six with the creation of man (cf. Genesis 1:26–31)—they would not be able to fulfill the purpose for which they were created.<sup>1</sup> So the real question is how starlight, in some cases coming from 13 billion-plus light years away, arrived on earth in a matter of days.

Creationist cosmologies have attempted to answer this question in a variety of ways, invoking such ideas as starlight having been created in transit, a progressively deteriorating speed of light, and alternate synchrony conventions.<sup>2</sup> Also, multiple *relativistic* or *time-dilation* solutions have been proposed. These relativistic cosmologies center on Einstein's theory of general relativity, which maintains that time is not an absolute. One's position relative to gravitational fields may alter

<sup>1</sup> Note that the proper fulfillment of an entity's purpose is assumed in the Lord's pronouncement of “very good” in Genesis 1:31. See Anderson 2013 (394–395) and Keil (1869–1891) 2011 (41–42).

<sup>2</sup> An overview and critique of these, and other, solutions proposed to date is offered in Chapter 11 of *The Created Cosmos: What the Bible Reveals About Astronomy* (Faulkner with Anderson 2016). Notably, one other option that has been proposed, but which sound scientific data demands be dismissed, is that the distances in question are not as great as commonly understood. See the rebuttal to this perspective in Faulkner 2013a.

the passage of time, with time passing slower for one near a massive object than for one further away from that object. This is called time dilation, and has been demonstrated by means of rigorous scientific experimentation. Some creationists have appealed to the concept of time dilation, theorizing that certain cosmological models may allow for a relatively rapid passage of time (on the order of several billion years) in the distant reaches of the universe while only six days of time elapsed *on earth* during the Creation Week. This, they claim, can account for how starlight from galaxies billions of light years away could have reached earth between the time of the creation of the cosmic bodies on Day Four and the creation of man on Day Six.

Physicists D. Russell Humphreys and John G. Hartnett have each proposed cosmologies that capitalize on time dilation. While not desiring to gloss over the distinctions between their models, it is fair to observe that they do share similarities, with the key similarity being that both cosmological models permit for the passage of billions of years of actual time elsewhere in the universe during the Creation Week, but hold that only six normal days transpire on earth in the same period. The purpose of the discussion here will be to present a cursory overview of each of the models currently propounded in the creationist literature, and then assess each model in light of the biblical text. Why do this? First, while it is surely a productive goal to endeavor to explain the light travel time problem without artificially stretching the chronological constraints of the creation narrative, if such an explanation is itself out of sync with the teaching of Scripture, then it must be discarded. Second, while the Bible is not a science textbook, it is authoritative where it speaks to matters of science and is foundational to a properly formulated worldview. Scripture, therefore, must serve to direct and constrain the Christian's development of scientific models. If a model clashes with Scripture, then it needs to be amended or discarded.

### Contemporary Young-Earth Creationist Models that Tacitly Affirm an Old Universe

The first creationist cosmological model to appeal to time dilation as a solution to the light travel time problem was that of D. Russell Humphreys in 1994. His two papers published in that year's *Proceedings of the Third International Conference on Creationism* (Humphreys 1994a, 1994b) laid the groundwork for a

fuller presentation of his perspective in *Starlight and Time: Solving the Puzzle of Distant Starlight in a Young Universe* (see Humphreys 1994c).<sup>3</sup> Humphreys' original model, often referred to as "White Hole Cosmology," asserts that "while God makes the universe in six days *in the earth's reference frame* ('Earth Standard Time,' if you like), the light [i.e., light originating in distant galaxies] has ample time *in the extra-terrestrial reference frame* to travel the required distance" (Humphreys 1994c, 13). Starting with the ostensibly viable assumption of a bounded universe, Humphreys reasoned the entire visible universe was once inside the event horizon of a white hole (see Humphreys 1994c, 24–27).<sup>4</sup> In relation to the biblical account of creation, Humphreys proposed that on Day One of the Creation Week, God created a large three-dimensional space and, within it, a "ball of water" ("the deep"; *Hebrew* תְּהוֹמוֹת) in excess of two light years in diameter (Humphreys 1994a, 264; 1994c, 32; cf. 1994b, 282–283). God's creative pronouncement, "Let there be light," marked the beginning of thermonuclear fusion reactions that unleashed tremendous energy, including visible light (Humphreys 1994a, 264; 1994c, 32). Humphreys maintains that on Day Two God began stretching out space, thus causing the water ball to expand rapidly (at a rate not limited by the speed of light). This was the creation of the "expanse" (*Hebrew* רָקִיעַ), the region between the "waters above" and the "waters below"—a region that Humphreys equated with interstellar space (Humphreys 1994a, 264–265; 1994c, 34–36). This expansion of space, Humphreys argued, continued until at least the end of Day Four (Humphreys 1994a, 265; 1994c, 36). As matter and energy expanded outward from the central ball of water (which had now become the earth, with a solid surface, seas, and vegetation), the event horizon of the white hole gradually shrank. Gravity caused atoms of hydrogen, helium, and other elements left behind by the earlier episode of the expansion of the primordial waters outward to coalesce into stars and other cosmic bodies (Humphreys 1994a, 265). As more and more of the visible universe emerged from the white hole, time began to progress at a rapidly increased pace, with billions of years transpiring outside of the event horizon while only hours (of Day Four) pass on earth (Humphreys 1994a, 265; 1994b, 283–284; 1994c, 37–38). As the earth (located roughly at the center of the universe) finally emerged from the evaporating white hole at the end of Day Four, light from distant galaxies would have already

<sup>3</sup> The title of this work is somewhat confusing, for while Humphreys did propose that the earth was young, he also proposed that the universe was old, as measured by its own temporal reference frame.

<sup>4</sup> Humphreys describes a white hole as "a black hole running in reverse," a theoretical astronomical phenomenon having an event horizon permitting only outward motion through itself. As matter (and energy) expanded forth from within the white hole, the event horizon would shrink until the white hole ceased to exist.

arrived, having traversed the universe at a normal rate during the billions of years that had transpired beyond the white hole's event horizon—all while only hours had elapsed on earth within the event horizon, thus allowing man to see the stars from the time of his creation on Day Six of the Creation Week (Humphreys 1994a, 265; 1994b, 284; 1994c, 37–38). As stars and galaxies formed outside of the event horizon on Day Four, the universe, Humphreys argues, must have continued to expand, with the most distant reaches of space having experienced the most expansion. This phenomenon would account for observed redshifts, as Humphreys explains: “While the light from the most distant galaxy we have seen was traveling to us, the universe expanded by about a factor of five, stretching the light's wavelength by the same factor and giving it a redshift parameter of about four” (Humphreys 1994b, 284). Herein rests the model's explanatory power.

Humphreys, when he developed his original model, asserted that it rested on a straightforward understanding of Scripture (Humphreys 1994a, 256–257). Of particular importance to his model is that the “expanse” described in Genesis 1 is interstellar space, not merely the earth's atmosphere (cf. Gen. 1:7–8, 14–17).<sup>5</sup> Furthermore, the expanse is bordered on its outermost extremity by the “waters above” (Gen. 1:7), strongly suggesting that the universe is bounded (Humphreys 1994a, 257–260).<sup>6</sup> Arguably most central to Humphreys' model, however, is the connection that he draws between the Bible's description of God stretching out the heavens and the expansion of the very fabric of space, a mechanism needed for cosmological red shift (Humphreys 1994a, 260–261). (Here Humphreys appeals mainly to Job 9:8, Ps. 104:2, Isa. 40:22, Jer. 10:12, and Zech. 12:1; he also notes 2 Sam. 22:10, Job 26:7, 37:18, Ps. 18:9, 144:5, Isa. 42:5, 44:24, 45:12, 48:13, 51:13, Jer. 51:15, and Ezek. 1:22.)<sup>7</sup> Also of critical importance to his model is Humphreys' contention, on the basis of 2 Peter 3:5, that the material substance of the primordial water ball mentioned in Genesis 1:2 is

what God used to fashion all the heavenly bodies (Humphreys 1994a, 262–263).<sup>8</sup> Finally, Humphreys' model depends on his assertion that the days of Genesis 1 refer specifically to the passage of time as it would have been measured *on planet earth* (cf. Exod. 20:11; 31:17). Drawing on Genesis 1:5, 14–15, Humphreys (1994a, 263; 1994c, 29) concludes that the creation narrative's perspective is that of a hypothetical observer on earth, and that the descriptions of the narrative related to the passing of time are not binding on the whole universe.<sup>9</sup>

Humphreys' time dilation cosmology met with criticism of its scientific assertions soon after its publication. Conner and Page (1995) averred that the new cosmology was unable to truly resolve the light travel time problem. Furthermore, they concluded, in accordance with their presupposed commitment to a naturalistic cosmology, “The alternative cosmological model proposed by Dr. Humphreys, and any plausible generalization of it to inhomogeneous models, in fact leads to the same conclusions about the age of the universe as are given by the standard Big Bang scenario, namely that the observed expansion of the universe, taken at face value, implies that the universe had its beginning on the order of 10 to 20 billion years ago” (Conner and Page 1995, 16). To this Humphreys responded with a scientific defense of his perspective, along with a challenge for his detractors to stop attempting to accommodate Big Bang cosmology, which depends on atheistic tenets, and instead develop a model that accords with the many verses of Scripture that indicate a young universe (especially, as he notes, Exod. 20:11 and Mark 10:6; Humphreys 1995a, 19).<sup>10</sup> The considerable disagreements with Humphreys' model raised by Connor and Page were more fully developed in their later paper in which they argued, “An accurate treatment of the physics indicates that [Humphreys'] model is actually a trivial variant of the standard Big Bang model, with its attendant implication for the age of the Universe and the Earth time required for light to travel from distant

<sup>5</sup> This necessarily excludes any possibility of the canopy model advocated by Henry Morris.

<sup>6</sup> Humphreys' distinction between the observable heavens, and the “heaven of heavens” referred to in 1 Kings 8:27 and Psalm 148:4 is exegetically unwarranted. The relatively basic Hebrew construct chain  $\text{שָׁמַיִם הַשְּׁמַיִם}$  simply means “the highest heaven,” a poetic expression for the loftiest extent of heaven. It does not, as Humphreys suggests, mean a region of heaven beyond the waters above, though this point is irrelevant to this critique.

<sup>7</sup> Humphreys is decidedly loose in what he counts as textual support for his model, as some of these passages—most notably Job 37:18 and Ezekiel 1:22—likely do not even concern the astronomical heavens. This issue's relevancy will be discussed later in this paper in relation to the exegetical problems of time dilation models. Notably, Humphreys (1994a, 261) also proposes an episode of cosmic expansion during the Genesis Flood based on 2 Samuel 22:10 and Psalm 18:9. The exegetical viability of this interpretation will likewise be evaluated later.

<sup>8</sup> This assertion overlooks the possibility of the *ex nihilo* creation (as opposed to the mere formation) of the cosmic bodies on Day Four. Moreover, as far as the exegesis of the biblical text is concerned, it overlooks the fact that Peter only states that the earth (not the heavenly bodies) “was formed out of water and by water.”

<sup>9</sup> This assertion will be key within the following evaluation of Humphreys' model, especially given the introductory verse of the creation narrative, which, by means of the merism (“heaven and earth”), appears to indicate a universal focus. If the focus is universal, what does that suggest about the temporal reference frame?

<sup>10</sup> Ostensibly, Humphreys here means “young” from the temporal reference frame of earth.

galaxies to the Earth” (Conner and Page 1998, 174). In particular, their paper struck at the central tenet of Humphreys’ model, that movement beyond the event horizon of a white hole could have led to the profound time distortion required by Humphreys to allow light from distant galaxies to reach the earth in the amount of “earth time” afforded by his model, as indicated by Genesis 1 (Conner and Page 1998, 188–190). Humphreys subsequently responded to these criticisms, asserting that Conner and Page’s criticisms were based on an incorrect metric and were therefore invalid (and biblically misguided; see Humphreys 1998).

As this exchange concerned the scientific merit of Humphreys’ time dilation model, and not its exegetical and theological rigor, it is not centrally relevant to this paper’s critique—although it is important historically as it concerns the continuing refinement of Humphreys’ cosmology. More integral to this discussion is Phillips’ criticism of Humphreys’ model on hermeneutical grounds, wherein he evaluates Humphreys’ “Timothy test,” the “interpretive key” to his understanding of the biblical text in the construction of his model (Phillips 1997). The “Timothy test” refers to the application of certain hermeneutical principles relevant to the interpretation of Scripture within its proper historical context; in brief, it suggests that Scripture must be understood today the way it was understood by its original readers—whom Humphreys characterizes (using Timothy as an example) as individuals who had a solid grasp of prior scriptural revelation, and who were fluent in the language of the text, but who had no real familiarity with the mode of scientific thought in their day (and certainly no awareness of contemporary scientific ideas; Humphreys 1994a, 256–257). Phillips’ disagreement with the “Timothy test” is two-fold: First, he claims that it *assumes* to know how the original readers would have understood the text. Second, it allegedly discounts everything that Christian interpreters have learned since the time the biblical text was inspired (Phillips 1997, 190). Somewhat oddly, the direct response to Phillips’ criticism of Humphreys’ hermeneutical principles came not from Humphreys, but from Jonathan Sarfati, who sought to defend the doctrine of the sufficiency of Scripture (appealing to 2 Tim. 3:15–17), and then went on to respond,

point by point, to Phillips’ list of specific biblical texts where Phillips claimed the “Timothy test” would mislead the interpreter (Sarfati 1997).<sup>11</sup> Humphreys himself opted instead to respond on the level of principle, considering where Phillips’ own hermeneutical approach would lead if applied consistently (Humphreys 1997, especially 201). (This exchange highlights the considerable importance of hermeneutics in developing a biblical cosmology. The evaluation to follow in the next section of this paper will, accordingly, seek to determine if Humphreys [and Hartnett] have correctly defined the relevant hermeneutical principles, and, if so, if they properly abide by these principles in the construction of their cosmological models.)

Subsequent writings by Humphreys concerned further defense of his model (Humphreys 2000b); they also provided certain clarifications and discrete refinements in his model (Humphreys 2001; see also Humphreys 2002a in response to confusion evidenced in a 2001 letter to the *Technical Journal* [now *Journal of Creation*]). Humphreys also considered a corollary hypothesis suggested by his theory (and allegedly corroborated by “quantized” red shifts)—that the Milky Way Galaxy is situated approximately at the center of the universe (Humphreys 2002b).<sup>12</sup>

In 2007, Humphreys began to introduce substantial changes to his time dilation cosmology (see Humphreys 2007), with the result being what arguably may be regarded as a sufficiently distinct and genuinely new model. In further articulating his new view, Humphreys gave consideration to “an apparent small Sunward anomalous acceleration of the Pioneer 10 and 11 spacecraft.” In his interpretation of the data, he concluded that the universe has a center of mass, with all the matter of the universe surrounded by a large volume of empty space in a “deep gravitational potential ‘well.’” As the universe expands, according to general relativity, the gradually decreasing depth of the well continuously shortens “radar” distances within the well, and so causing the observed apparent acceleration. Accordingly, Humphreys argued that the Pioneer effect supports the idea of recent time dilation (Humphreys 2007, 61, 64–65). In this new view, Humphreys contended that the “waters above” (cf. Ps. 148:4) exist as a “shell” of liquid water (or perhaps ice particles) that encompasses all of the

<sup>11</sup> The concerns which Phillips claimed defeated the “Timothy test” are Joshua’s account of the long day (Josh. 10), the chronology of Judges (seemingly sequential, but in fact containing many instances of chronological disjunction), the chronology of Kings and Chronicles (which rely on different regnal dating practices), the genealogies of Genesis 5 and 11 (which Phillips takes as chronologically useless), and list of Israel’s border cities set forth in Joshua 14–19 (but here Phillips incorrectly presumes this list as anachronistic because he misdated key events in Israel’s history, opting for a 13th-century Exodus and conquest, rather than a biblical 15th-century date).

<sup>12</sup> It is noteworthy that recent work by Jason Lisle and Jake Hebert has challenged this perception. See their abstract from the annual Creation Research Society Conference, to be published in the forthcoming volume of the *Creation Research Society Quarterly*.

matter of the universe and which is gradually expanding outward into empty space (Humphreys 2008).<sup>13</sup> On Day Two of Creation Week, the Lord created the spherical “expanse” (astronomical space) that is bordered all around by the “waters above” (Gen. 1:7–8) (Vardiman and Humphreys 2010, 15). According to the new metric developed by Humphreys to explain the relationship among mass, space, and time (Humphreys 2007, see especially 65–69), “The distribution of mass controls the fabric of space, the fabric of space controls the speed of light, and the speed of light controls time,” and “Time is speeded up or slowed down throughout space according to the distribution of mass” (Vardiman and Humphreys 2011a, 13). How does this cosmological model attempt to solve the light travel time problem?

The answer to this question is fairly complex. Humphreys proposes that in the Lord’s creative workings prior to Day Four, space had been expanded such that the shell of the “waters above” had been moved out to a radius of about one billion light years (with earth at the center). This leaves the earth and the nearly-flat fabric of space within the sphere of the waters just above the level of *critical potential* (beneath which exists the “achronous region,” in which the passage of time ceases). On the fourth day of creation, the newly created star masses would have created a “linearly-dented perturbation in the otherwise flat potential of the fabric of space,” consequently causing the fabric of space to drop beneath the critical potential into the achronous region. “For slow-moving objects in that region [including any hypothetical observers on earth] time would be stopped” (Humphreys 2008, 89). Once the creation of the celestial bodies on Day Four had ended, Humphreys contends that God increased the tension in the fabric of space, simultaneously causing a movement of the line of critical potential, with the achronous region (the zone wherein the earth was situated and no time passed) decreasing in size. Humphreys describes what would have then happened assuming that God set the values of the relevant factors to give a contraction of the boundary of the achronous region at the speed of light: “As each galaxy emerged from the receding timeless region, it resumed emitting light. Some of the emitted light would have gone inward toward the center. Since the timeless sphere was moving inward at the speed of light, the inbound light would follow right behind as the sphere shrank.” Accordingly, he

notes, “When the sphere of timelessness reached zero radius and disappeared, the earth [in this model at the center of the achronous region] emerged, and immediately the light that had been following the sphere reached earth, even light that had started billions of light years away. The stretching of the fabric of space had been occurring continuously all along the light trajectory, thus red-shifting the light wavelengths” (Vardiman and Humphreys 2011a, 14; cf. Humphreys 2008, 89–90). Once again, in this model, eons of time pass in the distant reaches of the universe—all during the space of a single day (Day Four of Creation Week) as measured on planet earth. As such, the hermeneutical defenses related to Humphreys’ earlier model still apply. He contends, based on indicators in the creation narrative (note especially Gen. 1:5, 14–15) that the days of Genesis 1 refer specifically to the passage of time *as it would have been measured on planet earth* (cf. Exod. 20:11; 31:17), and that time is not measured according to some universal clock.<sup>14</sup>

Sometime after the development of Humphreys’ original model, John Hartnett sought to offer corroboratory evidences for certain elements of Humphreys’ cosmology (see, for example, his discussion of quantized redshifts in Hartnett 2002c), while also seeking to point out aspects of Humphreys’ cosmology which he considered problematic (such as the observation of apparently “old” stellar objects such as white dwarf stars in the halos of galaxies relatively near the Milky Way, the *near-field problem*; see Hartnett 2002b). Hartnett’s enthusiasm for Humphreys’ appeal to time dilation was soon thereafter followed by Hartnett’s introduction of his own cosmological model (Hartnett 2003b) as well as a new solution to the light travel time problem based on that model (Hartnett 2003c). The cosmology Hartnett proposed, like Humphreys’, relied heavily on the process of expanding (“stretching out”) the heavens, resulting in a time differential between the solar system and the region beyond (Williams and Hartnett 2005, 181), with maximum time dilation occurring within the solar system. “On earth, time was passing according to the rotation of the earth, that is, one day per 24 hours, but because the rest of the universe was stretched out from small to vast size in a single earth day, this resulted in physical transformations occurring at rates far exceeding what would have been measured by clocks here on earth” (see Williams and Hartnett 2005, 181;

<sup>13</sup> Here again Humphreys notes the 17 aforementioned scriptural passages (see 2 Sam. 22:10; Job 9:8; 26:7; 37:18; Ps. 18:9; 104:2; 144:5; Isa. 40:22; 42:5; 44:24; 45:12; 48:13; 51:13; Jer. 10:12; 51:15; Ezek. 1:22; and Zech. 12:1) which he claims indicate the [past and present] outward expansion of space.

<sup>14</sup> Consistent with his original model, Humphreys argues that there was an episode of cosmic expansion during the Genesis Flood based on 2 Samuel 22:10 and Psalm 18:9 (Vardiman and Humphreys 2011b, 13–14; cf. Humphreys 2008; 2016). The exegetical viability of this view will be considered later in this paper.

cf. Hartnett 2003b, 73–78). In his model, Hartnett places the “waters above” not at the edge of the universe, but just beyond the outer reaches of the solar system, reasoning that the placing of the lights in the expanse (Gen. 1:14–17) concerns only the Sun, Moon, and planets—not the stars (Hartnett 2003b, 77).<sup>15</sup> The “waters above” Hartnett associates with the ice bodies of the Kuiper Belt, which he believes may have supplied the solar system’s comets, and also supplied impacting bodies to trigger the onset of the Genesis Flood (Williams and Hartnett 2005, 180). Also, Hartnett argues, this halo of water/ice would have served to protect the earth from the excessive radiation that would ostensibly have been experienced during the episode of rapid cosmic expansion occurring on Day Four (Hartnett 2006, 97–98).

In what other ways does Hartnett’s model, as originally conceived, differ from Humphreys’? Hartnett lists the following concerning the distinctiveness of his view: “Time after the end of Day 4 is linear in the whole universe and may be understood in the normal commonsense way. Time during Creation Week up to Day 4 is highly non-linear but only on earth (and possibly the surrounding solar system), and nowhere else throughout the cosmos.” Also, “The general matter distribution of the stars and galaxies in the universe is the universal frame of all reference clocks. Generally these *astronomical* clocks have ticked at the same rate. Clocks on Earth since Day 4 also have ticked at the same rate as these universal clocks. Only clocks on Earth up to the close of Day 4 ticked much slower compared to the universal reference clocks.” Additionally, in this model, Hartnett asserts, there is no dependence on any general relativistic effects, which is a key to understanding Humphreys’ model (Hartnett 2003c, 100, emphasis his). However, this is not necessarily a problem, even for a scientific proposal, as Hartnett rightly observes, “*The Creation Week period, by definition, is not expected to be a period where natural law explanations apply*” (Hartnett 2003c, 101, emphasis his). These are meaningful distinctions. However, at its core, the model developed by Hartnett is fundamentally the same *type* of model as Humphreys’, in that it depends on the stretching of the fabric of space to induce a time-dilation episode, in which the progress of time on earth (and possibly in the solar system) proceeds at a much slower rate

than the progress of time in intergalactic space—thus allowing sufficient time for light from distant stars to have reached earth by the end of Day Four, even though that day, as measured on earth, was a normal 24-hour day (Williams and Hartnett 2005, 181).

There have been many subsequent refinements and revisions in Hartnett’s cosmological model. Hartnett’s interaction with Halton Arp’s work concerning observations of quasars and red shifts led him to offer certain proposals about the *mechanism* of God’s creative work on Day Four—namely that there is evidence of the creation of galaxies from the active nuclei of other galaxies, an indicator of a grand cascading creative process (Hartnett 2003a, 97; 2005d, 6). In summary, on Day Four, Hartnett argues, God “created the Milky Way Galaxy and other large elliptical and spiral galaxies from the hot plasma he had created on Day 1” (Hartnett 2005a, 98).<sup>16</sup> Then, “God stretched out space, by some enormous factor,<sup>17</sup> and spread out the parent galaxies that He then caused to eject more galaxies as quasars in ongoing creative episodes during the course of Day 4” (Hartnett 2005a, 98). The time necessary for this progressive cascade of creation events was afforded by the time dilation caused by the continuous stretching out of the fabric of space during Day Four. Also, because of time dilation, Hartnett maintains that observed instances of matter being ejected from galaxy nuclei may actually be a window into God’s creative processes, as the things presently seen in distant intergalactic space actually took place (throughout the potentially billions of years of local time) during the 24 hours of Day Four as time was measured from the perspective of planet earth (Hartnett 2003a, 97). Notably, God’s unique creative activity need not be bound, Hartnett insists, by all the laws of physics in operation today; some of these laws would have been suspended during Creation Week (Hartnett 2004, 112).

Beginning in 2005, Hartnett’s cosmology began to be influenced increasingly by the physics of Moshe Carmeli (Hartnett 2005a, 2005b, 2005c). Carmeli’s approach to physics is characterized by a total of four spatial dimensions (plus the fifth dimension of time), and assumes the Hubble Law as a fundamental axiom of the universe (Hartnett 2005b, 77). The implications of Carmeli’s metric, as they were incorporated into Hartnett’s more fully

<sup>15</sup> The exegetical challenges of Hartnett’s claim about the עֲקֵי, specifically as they concern the syntax of the passage in question, will be discussed at length in the following critique offered in this paper.

<sup>16</sup> Hartnett apparently takes Genesis 1:1 as a reference to the initial creation of matter and energy on Day One, and not as an instance of introductory encapsulation, in which God’s activities during the Creation Week are summarized. This issue will be discussed in this paper’s following critique of time dilation models.

<sup>17</sup> On this point Hartnett invokes many of the same verses describing the “stretching” of the heavens that Humphreys used in defense of his model—especially Psalm 104:2; Isaiah 40:22; 42:5; 44:24.

developed solution to the light travel time problem, were published subsequently (Hartnett 2008, 2010), though the introduction of the new metric did nothing to affect the *exegetical* aspects of Hartnett's view. His defense of cosmic expansion during Creation Week remained centered on a handful of biblical texts (Ps. 104:2; Isa. 40:22; 42:5; 44:24), and the "waters above" (cf. Gen. 1:7–8) were still situated at the outer edge of the solar system. All activity related to the creation of the celestial bodies was relegated to Day Four and, consequently, Hartnett's model (as with Humphreys' model) remained dependent on time dilation (albeit in a five-dimensional universe) caused by cosmic expansion taking place on Day Four (Hartnett 2010, 85–88). Hartnett's verdict therefore remained: "The time it took light to travel from the most distant sources to Earth was a matter of only one day, in local time units," and, "In cosmic time, 'billions of years' is available for the light to travel. In effect, although  $c$  (the two-way measured speed of light) remains constant, the one-way speed of light to Earth has been dramatically increased by expansion, enabling light to reach Earth within a short (Earth) time" (Hartnett 2010, 109, 111).<sup>18</sup> Indeed, it seems that the main driving factor behind Hartnett's adoption of Carmeli's perspective on physics was not to serve in refining Hartnett's solution to the light travel time problem, but rather to provide a means by which to dispense with any need to appeal to dark matter and dark energy (Hartnett 2005c; 2010, 31–51).

Subsequently, however, Hartnett began moving away from the relativistic cosmology which he had developed. Having concluded that the scriptural text does not actually indicate an expanding universe (Hartnett 2011b; cf. 2011c),<sup>19</sup> he then began to investigate the scientific evidence for the expansion of the universe. As a result of this investigation, Hartnett maintained, "It is impossible to conclude either way whether the universe is expanding or static. The evidence is equivocal" (Hartnett 2011d, 120; cf. 2014,

453, 456). Assuming a static universe, an explanation other than time dilation must be sought to explain the light travel time problem. Indeed, Hartnett now finds the evidence for time dilation lacking (Hartnett 2011c, 111–114). Beginning in 2011, Hartnett had begun interacting with the Anisotropic Synchrony Convention (as developed by Jason Lisle; see Newton 2001<sup>20</sup>; Lisle 2010) as a viable solution to the light travel time problem (Hartnett 2011a; 2011e).<sup>21</sup> Apparently, he regarded Lisle's proposed convention as more readily compatible with his developing idea of a static universe (Hartnett 2011a, 58). Despite some earlier concerns about the compatibility of Lisle's Anisotropic Synchrony Convention with the biblical text (especially Exod. 20:9–11), Hartnett later came to fully embrace the position, regarding his new model as an extension, adaption, or refinement of Lisle's perspective. He writes:

Under the assumption of the Einstein Synchrony Convention (ESC)...the travel time of light at constant  $c$  (the canonical two-way speed of light) may be up to many billions of years, but all light originally arrived at the earth *for the first time on Day 4 of Creation Week*. Under the alternative assumption of the Asynchronous Synchrony Convention (ASC) the one-way speed of light towards us may be assumed to be infinite, that is, there is no travel time. Thus we see all events in the cosmos as they are happening, or, they are time-stamped by the moment the light arrives at the earth under the ESC...But this is a choice of convention.<sup>[22]</sup> Since the one-way speed of light has no physical meaning in the universe, under the ASC this means we are free to choose our timing convention. (Hartnett 2015b, 81; cf. page 82)

Hartnett also stated, "What I propose here is essentially Lisle's ASC model but with additional refinements and a mechanism for cosmological redshifts, but not resulting from expansion of the universe. The universe in this model can be *static*, but more likely *temporally static*, with the potential

<sup>18</sup> Hartnett likewise maintained in his paper published two years previously, "For Carmeli's cosmological relativity to be true on the largest scales in the universe and for Einstein's relativity to be true on the local scale, including in our solar system where it has been tested, it is required that enormous time dilation must have occurred at Creation. This resulted from massive expansion of the fabric of space itself—even at superluminal speeds, because it is space that expanded, it is not limited by the motion of particles through that space. This effect caused clocks on earth to run much much slower than clocks on the galaxies that expanded out during Creation week. The acceleration of that expansion ceased at the close of Creation week, God no longer stretched out the heavens. This meant that galactic clocks then began to run at the same rate as earth clocks. However, during the days of Creation (primarily Day 4 I contend) this meant that light filled the universe—it had billions of years of cosmic time—and therefore Adam was able to see the stars when he first opened his eyes" (Hartnett 2008, 203).

<sup>19</sup> Later Hartnett went on record, saying, "Numerous verses have been used by creationists (e.g. Psalm 104:2; Isaiah 40:22; 42:5; 44:24; Job 9:8; 37:18), myself included, to say the universe has undergone cosmological expansion, as part of God's creation. But it would seem that this is pure eisegesis, and not good exegesis" (Hartnett 2014, 457). In the subsequent section, this paper will give consideration to the interpretive claims Hartnett advanced for his original model, as well as those he later advanced for his newer view. It will address, from an exegetical angle, the intended meaning of passages commonly claimed in support of cosmic expansion.

<sup>20</sup> Robert Newton is a pseudonym formerly used by Jason Lisle while he was in doctoral studies. Robert Newton's 2001 paper thus represents the earliest development of Lisle's convention.

<sup>21</sup> This is surprising, as Hartnett had previously expressed certain misgivings about Lisle's Anisotropic Synchrony Convention, at least concerning its physical implications (Hartnett 2002a).

<sup>22</sup> Previously, Hartnett had expressed concern about determining what synchrony convention Scripture employs (see, e.g., Hartnett 2011a, 61); but there is no evidence he addressed this concern.

to collapse, because all we can see in this model is 6000 years of history, as measured by earth clocks. The evidence for expansion is equivocal... and hence this model does not rely on that expansion for a relativistic time dilation effect to solve the light travel time problem” (Hartnett 2015a, 17–18; see also his conclusions on page 19).

In this new model, redshifts are caused by “tired light,” the exponential decay of photons’ energy. Appealing to Isaiah 51:6, Psalm 102:25–26, and Hebrews 1:10–12 as scriptural support for this phenomenon, Hartnett offers this conclusion, “The universe was created by God in an inherently unstable condition. It was only the sustaining power of God that could hold it in place. But since the curse that power has been withdrawn, and the whole universe is headed for destruction and collapse. God had foreknowledge of the choices man would make anyway.” And, “The universe is ruled by the inexorable laws of thermodynamics. It has a finite energy content and is trending to follow the path that those laws (God’s creation) set. As part of that wearing out (‘waxing old’) process (second law of thermodynamics; Hebrews 1:11) photons began losing energy from their creation about 6000 years ago” (Hartnett 2015b, 79). Hartnett’s assertions here are contingent on particular exegetical and theological assumptions that he does not develop (particularly, that the Lord’s foreknowledge of man’s sin would lead Him to create an inherently unstable universe, an idea that arguably clashes with God’s categorical judgment of the state of His creation in Genesis 1:31, that it was “very good”). But a full evaluation of the biblical support for Hartnett’s current model is far afield of the purpose of this paper, to review the exegetical and theological support for *relativistic, time dilation models* proposed by biblical creationists.

In any case, though Hartnett has now rejected a cosmological model dependent on gravitational time dilation, the fact remains that the influence of his earlier time dilation model looms large in the creationist community. Humphreys’ models (both the original version and the updated view) likewise remain quite popular. Directly or indirectly, to a lesser or greater extent, several recent creationists’ publications are indebted to the principles and arguments advanced in Humphreys’ and Hartnett’s writings on the role of gravitational time dilation in a creationist cosmology (see, e.g., DeRemer, Amunrud, and Dobberpuhl 2007; Pace 2016; Samec 2016; Samec and Figg 2012; and Sarfati 2015; note that the author is also aware of submissions to the upcoming *International Conference on Creationism* advancing

perspectives on cosmology that owe their existence—to at least in part—to the foregoing work of Humphreys and Hartnett).

Having now overviewed the arguments which have been advanced for relativistic, time dilation cosmological models, it is necessary now to give consideration to the various objections that may be raised against the assumptions and arguments of these cosmological models, especially where those assumptions and arguments intersect with exegesis and theology.

### **Biblical and Logical Problems with Models Affirming a Young-Earth and Old Universe**

The relativistic time dilation cosmological models advanced (both currently and previously) by Humphreys and Hartnett are complex, but they each depend on certain fundamental assumptions and basic lines of argumentation. Many of these assumptions and arguments—at least as far as what will be addressed in this paper—are shared between the cosmological models which have been proposed to date, though there are some distinctive elements of particular models that will also be singled out for discussion. For ease of organization, this paper breaks down the claims of these cosmological models that are markedly relevant to biblical exegesis and theology into five principle categories for critique: (1) the extent of the “expanse” (עֲקֵי) and, relatedly, the position and composition of the “waters above”; (2) the intended meaning of biblical statements about the “stretching” of the heavens; (3) the earth as the alleged temporal frame of reference for the text’s description of events during the Creation Week; (4) the relationship of the biblical author’s intent to the understanding of the original readers in light of the historical context; and (5) the claimed possibility of episodes of time dilation subsequent to the Creation Week (i.e., during the Genesis Flood). The first three categories for discussion are largely exegetical in nature, while the fourth and fifth categories concern questions of method within the broader task of biblical interpretation and theological construction. In addition to these points, brief consideration will also be given to questions about the *logical viability* of time dilation cosmological models.

(1) Both Humphreys’ and Hartnett’s cosmological models make assertions about the extent of the “expanse,” first described in Genesis 1:6, and the location of the “waters above” (Gen. 1:7). Humphreys—in both his original and revised models—considered the expanse to be interstellar space. Furthermore, the expanse is bordered all around by a shell of water—the “waters above” (see Humphreys 1994a, 258–260; 1994c, 34–36; 2008, 84).<sup>23</sup> Hartnett, by

<sup>23</sup> Humphreys appeals to Psalm 148:4 as evidence that the waters above remain beyond the expanse and were not, as some creationists have contended, drained to supply the floodwaters in Genesis 6–8.

contrast, in his original model, argued that the expanse is only the space of the solar system, and that the “waters above” exist at the edge of the solar system within the Kuiper Belt (see Hartnett 2003b, 77; Williams and Hartnett 2005, 180). Despite Hartnett’s contention that the “waters above,” being located closer to the earth in his model, are more relevant as far as are concerned earth’s inhabitants (Williams and Hartnett 2005, 180), *the fact remains that the textual evidence favors Humphrey’s view, that the expanse is outer space, devoid of qualifiers.* God’s pronouncement equating the expanse with “heaven” (thus setting רָקִיעַ parallel to שָׁמַיִם; Gen. 1:8) very forcefully suggests that the expanse is to be equated with the entire domain defined by the term “heaven.”<sup>24</sup> Further evidence for this is found in the Genesis creation account’s repeated use of רָקִיעַ (“expanse”) in construct with שָׁמַיִם (“heaven”; Gen. 1:14, 15, 17, 20), which suggests that the two are to be understood as equivalent within that literary context. Elsewhere in the Old Testament, “expanse” is used as a closely related term for “heaven” (note especially the parallelism in Ps. 19:1 equating רָקִיעַ and שָׁמַיִם).

Additionally, Genesis 1:14–17 associates the expanse with the realm of the sun, moon, and stars. Hartnett’s contention that the Scriptures are not clear on this point, and that the sun and the moon exist within the expanse, while the stars exist beyond the “waters above” certainly misrepresents the Hebrew syntax. The antecedent of אֹתָם (“them”) in Genesis 1:17 (wherein Scripture indicates the celestial bodies were placed in the “expanse of heaven”) is all objects of the Lord’s creative work in verse 16. In verse 16, “the stars” (הַכּוֹכָבִים) are linked to the verb (עָשָׂה) by means of the direct object marker (אֵת) just as are “the sun” and “the moon.” The intervening description of the function of the two major lights does not negate this association in the Hebrew (though the point may be obscured in some English translations). Accordingly, the Hebrew text demands that the stars were placed “in the expanse of heaven” just as the sun and moon. If the “expanse” does not extend much beyond the edge of the solar system, this is impossible. *Thus, Hartnett’s model violates the plain sense of the text and must be regarded as invalid on this point.* Understanding, therefore, that the “expanse” encompasses the vast extent of the

astronomical heavens, it may be concluded that the “waters above” exist at the edge of the universe.

The present composition of the “waters above” is another question discussed in relativistic time dilation cosmological models. While both Humphreys and Hartnett would agree that the waters were simply that—water—at the time God formed the expanse on the second day of the Creation Week, both have speculated that the “waters above” separated from the deep described in Genesis 1:2 now exist as ice (Hartnett 2003b, 77; Vardiman and Humphreys 2011a, 15). However, as has already been observed by Humphreys, Psalm 148:4 indicates that the “waters above” were there in David’s time (Hartnett has previously suggested the “waters above,” in the form of icy comets contributed to the supply of water during the Genesis Flood, though he apparently agrees that the waters are mostly still there; see Hartnett 2006, 93). Psalm 148:4 speaks of the water as simply that—water (Hebrew מַיִם). Although מַיִם may on rare occasion be used for liquids besides water, it by far most commonly means water, and invariably refers to a liquid. Had the author of Psalm 148 wanted to indicate the presence of cosmic ice bodies far beyond the earth, the Hebrew word שֶׁלֶג (“snow,” appearing in Psalm 147:16) or the word קָרָח (“ice,” appearing in Psalm 147:17 and elsewhere) would have been more appropriate. This concern may sound like a mere quibble, but it is nevertheless relevant to the question of whether or not the cosmological models proposed by Humphreys and Hartnett are properly grounded in the biblical text.<sup>25</sup>

(2) Likewise intensely relevant to the time dilation cosmological models is the claimed biblical support for the expansion of space. Indeed, the expansion of the space is the *mechanism* argued to cause gravitational time dilation. Humphreys has claimed 17 verses which he argues speak of the expansion of the cosmos: 2 Samuel 22:10; Job 9:8; 26:7; 37:18; Psalm 18:9; 104:2; 144:5; Isaiah 40:22; 42:5; 44:24; 45:12; 48:13; 51:13; Jeremiah 10:12; 51:15; Ezekiel 1:22; and Zechariah 12:1 (Humphreys 1994a, 260; cf. 2008, 89; Vardiman and Humphreys 2011a, 14). Hartnett has also incorporated such verses into arguments for the cosmology he had previously maintained (at least as late as 2010; see Hartnett 2005a, 98; 2010, 86). Notably, both Humphreys and Hartnett in their

<sup>24</sup> The extent to which this might be true of the abode of God, the “third heaven” of Paul’s discourse in 2 Corinthians 12, may be debatable, but is beyond the purview of this paper. Also, whether the Hebrew readers of Genesis 1 would have conceived of any real line of demarcation between the atmospheric heaven and the astronomical heaven also is worthy of discussion. The fact that Genesis 1:20 describes birds as flying “upon the surface” (עַל־פְּנֵי) of “the expanse of heaven” (רָקִיעַ הַשָּׁמַיִם) suggests the original readers did conceive of the expanse as having a near interface, with the atmosphere representing the very edge of the heavens. Indeed, other texts do not seem to demarcate between the two realms of heaven. Flying creatures are said to fly “in” the heavens (Deuteronomy 4:17), and the heavens are likewise said to be the abode of the sun, the moon, and the stars (see Deuteronomy 4:19, et al.).

<sup>25</sup> Humphreys’ speculation about some of the waters separated out from the earth transforming into the elements that were formed into the cosmic bodies (planets, stars, etc.) is an intriguing notion (see Humphreys 1994a, 263). While it may be scientifically feasible, though, it is sheer conjecture from a textual standpoint.

models require an episode of cosmic expansion on Day Four of the Creation Week, accompanying the formation of the stars, in order to bring light from distant reaches of the universe to earth in the time of a normal 24-hour earth day.

However, it is highly questionable if these verses actually have in view cosmological expansion associated with God's work during Creation Week. First, it should be noted that a number of the claimed verses do not even speak of God "stretching out" the heavens in the sense of creating or fashioning or expanding them (see especially 2 Samuel 22:10; Psalm 18:9; 144:5). Rather, these verses employ vivid theophonic language in the context of imagery-laden poetry to describe God's act of bowing the heavens in order to personally come to the aid of His anointed and to fight against the enemies of Israel.<sup>26</sup> Another verse (Job 37:18) concerns not the stretching out of the astronomical heavens, but is confined to God's mighty acts in controlling the weather within the atmospheric heavens, and speaks of God "spreading out" (רקע) the "clouds" (שחקים).<sup>27</sup> Also, in Ezekiel 1:22, the *Qal* passive participle of נטה ("to extend, to stretch out, to spread out") is used to describe the radiant crystalline (or perhaps "ice-like") entity, compared to (note כִּי) the heavenly expanse (רקיע). It must be stressed, however, that this verse does not have in view the actual expanse of heaven, but rather something which is being compared to it. Thus, the idea of "stretching out" mentioned in this verse does not concern cosmic expansion.

That leaves only 12 of Humphreys' claimed 17 Bible verses as possible descriptions of cosmic expansion. In these 12 verses, 11 times the verb נטה is employed to describe the stretching of the heavens (Job 9:8; 26:7; Ps. 104:2; Isa. 40:22; 42:5; 44:24; 45:12; 51:13; Jer. 10:12; 51:15; Zech. 12:1); once each the synonyms מטה and טפח are used (both verbs are *hapax legomena*, and appear in Isa. 40:22 and 48:13, respectively).<sup>28</sup> While these verbs do legitimately mean "to spread out, to stretch out," it is not clear that they relate, in their respective contexts, to the expansion of space.<sup>29</sup> Indeed, these verses may be describing, through vivid poetic metaphor, God's creation of the tremendously vast universe (where the verbs relate—in a general sense—to the fashioning of the heavens and their host, rather than to a distinct act of making the universe larger in size by means of the expansion of the fabric of space). Even if, though, these verses do concern the physical expansion of space, they are more likely associated with the formation of the "expanse" (רקיע) on Day Two of the Creation Week rather than the populating of the heavens on Day Four.<sup>30</sup> If anything, the language of the Day Two account in Genesis 1:6–8 concerning the creation of the expanse (identified with "heaven" in verse 8) allows for a logical connection with verses elsewhere describing the stretching out of the heavens. What textual warrant is there for the association of such verses with an act of God expanding space on Day Four? There is none.<sup>31</sup> Such is a requirement of time dilation models, but not of the biblical text.<sup>32</sup> Clearly, there exists a need to guard

<sup>26</sup> Moreover, it deserves to be noted, regardless of whether this verse concerns the "bowing" or "stretching out" of the heavens (cf. Ezek. 1:22), the fact remains that these verses pertain to events that occurred during the life of David, not during the Creation Week.

<sup>27</sup> The tendency for major English translations (other than the New English Translation) to render שחקים as "sky" or "skies" rather than "clouds" is curious, especially since the word also appears in Job 35:5, 36:28, 37:21, and 38:37, where it clearly refers to "clouds" (note also Koehler and Baumgartner 2001, s.v. שחק).

<sup>28</sup> Hartnett errs in claiming the verb רקע with the stretching out of the heavens is in Isaiah 40:22, but the word does not appear there (cf. Hartnett 2011b, 126). Incidentally, רקע is employed in verses speaking about the stretching out of the heavens, but never is the verb in those verses linked with the noun שמים ("heaven").

<sup>29</sup> Here Humphreys and Hartnett come very close to committing a semantic fallacy identified by Carson (1996, 34–35) of reading into a particular term used in the biblical text a concept, that though now associated with that term in modern contexts, was not associated with the term in the historical context of the passage wherein that term is used. The common translation of the Hebrew נטה, "to stretch/spread out" may suggest to the modern reader some kind of elastic or inflationary expansion, which he might well associate with scientific ideas about cosmic expansion. But the Hebrew word carries with it a very different sense of "spreading [something] out." The Hebrew נטה is commonly used in reference to rolling out the fabric of a tent (Gen. 12:8; 26:25; etc.), a sense not at all foreign to the context of verses talking about the "stretching out" of the heavens (e.g., Ps. 104:2; Isa. 40:22; etc.).

<sup>30</sup> One reviewer's comment is on this point particularly worthy of mention: "Verbs like נטה and רקע when used to describe the creation of the heavens or 'firmament' probably have more the sense of the unrolling of a tent or scroll, than that of stretching out like some elastic material. In fact, I'm not sure that the notion of 'stretching' in the sense of stretching something elastic is even a concept found in Biblical Hebrew. Our English translations do use the word 'stretch' quite a number of times, but it is usually in the sense of 'extending forth' (one's hand, for example), rather than stretching something to make it larger. I suspect that reading the notion of the expansion of the universe into the Hebrew words sometimes translated 'stretch' is semantically unwarranted."

<sup>31</sup> There is likewise no textual justification for a post-Creation Week episode of cosmic expansion/time dilation, as Humphreys repeatedly suggested. Such will be discussed in point 5 of this critique.

<sup>32</sup> Hartnett eventually came to recognize this and so retreated from his original cosmological model, as is expressed in his later works, where he calls appeals to the aforementioned passages in support of cosmological expansion as part of God's creative work "pure eisegesis" (Hartnett 2014, 457; cf. 2011b, 127). However, if there is a legitimate connection (thematically and/or logically) between these verses and God's creation of the רקיע on Day Two, this is not genuinely eisegesis, just a misidentification of the day on which God engaged in the act described in the verses in question. In any case, it is rather harsh for Hartnett to accuse so bluntly other creationists of engaging in eisegesis when he himself does not in any place in his writing on this topic engage in robust, methodical lexical, grammatical, syntactical, structural, contextual, or theological analysis of the biblical text. Nor does he consult any commentaries, Bible dictionaries, lexicons, grammars, or other appropriate theological resources. Indeed, such interaction may have led creationist scientists to take a more nuanced approach to this issue in the first place.

against the real possibility that one's allegiance to a particular scientific model will lead to eisegesis—reading into the biblical text a foreign meaning.

(3) Time dilation cosmological models are necessarily dependent on the assumption that planet earth provides the temporal frame of reference for the creation narrative. If such is the case, the argument goes, then it is permissible for eons of time (billions of years' worth) to have transpired in the distant reaches of the universe, provided that only six normal days passed on earth—as per Exodus 20:11 and 31:17. However, for this argument to be valid, it needs to be demonstrated that the creation narrative focusses on planet earth (insofar as it concerns the passage of time) to the exclusion of the rest of the cosmos. Humphreys rightly identifies that the passage of time in the creation narrative is described with reference to the earth, with a “day” marked by the passage of both an “evening” and “morning” (Gen. 1:5). “God quite reasonably tells us periods of time in terms of our own frame of reference, and not in terms of some otherworldly frame of reference, as some authors would have it. So Genesis 1, Exodus 20:11, and other passages are telling us that God made the universe in 6 days E.S.T.—Earth Standard Time” (Humphreys 1994a, 263). This scheme thus allows for indefinite amounts of time to pass elsewhere in the universe provided that the earth experiences no more than six days, as defined by its own rotation. Time, in the creation narrative, is localized. Hartnett also notes, “Once we realize that time is relative, any discussion of the age of the universe has to ask ‘by which clock?’ The reference frame God has given us in Genesis 1 is clearly from an earth-rotation perspective, i.e., by earth clocks. The creation of the whole universe was thus in six days, about 6,000 years ago in [relativistic time dilation models]. And

the whole universe is about 6,000 years old. There is no suggestion of a ‘billions-of-years ago’ date for creation, nor are the stars ‘older’ than the earth (by earth clocks).” Nevertheless, the model allows that, “tucked away within day 4—an ordinary-length day by earth time—we find billions of years of cosmic time” (Williams and Hartnett 2005, 178).

But, is the passage of time as described in the creation narrative localized? And is the narrative so singularly focused on earth to suggest that—special though earth truly is—the passage of time on earth is the only temporal frame of reference that matters?<sup>33</sup> The creation narrative in Genesis 1:1–2:3 has a focus which extends beyond earth, as indicated by several features in the narrative: First, Genesis 1:1, which likely represents an instance of introductory encapsulation,<sup>34</sup> contains a merism (“heaven and earth”) indicating the universal focus of the narrative. This is reinforced by the use of inclusio—a literary device which envelopes or brackets a unit of text by presenting a word, phrase, or theme at the beginning of that unit, and again at the end of that unit. Genesis 1:1 forms an inclusio with Genesis 2:1–3 in that the key terms contained in the narrative's opening verse—בָּרָא (“created”), אֱלֹהִים (“God”), and הַשָּׁמַיִם וְהָאָרֶץ (“the heavens” and “the earth”)—are repeated in reverse order in Genesis 2:1–3 (הַשָּׁמַיִם and הָאָרֶץ in 2:1; אֱלֹהִים, initially, in 2:2; and בָּרָא in 2:3), thereby bracketing the contents of the creation narrative (Mathews 1996, 114), and thus revealing the scope of the narrative's focus. Moreover, nine of the narrative's 34 verses (6–8, 14–19) concern themselves with the creation of the heavens and the celestial bodies. As the narrative is concerned with the whole cosmos, is it fair to say that the narrative's perspective on the passage of time is governed by the rotation of the earth, irrespective of how much actual time transpires in other regions of the universe? The

<sup>33</sup> The consistency of this notion with the authorial intent of the author of Genesis in relation to the understanding of the original readers (15th-century BC Hebrews) will be addressed in the next point of this critique.

<sup>34</sup> On this point, Cassuto perceptively notes concerning Genesis 1:2 that the Hebrew construction וְהָאָרֶץ הִיְתָה תְהוֹ וְבִהוּ (“Now the earth was formless and void”) plainly shows that verse 2 begins a new subject. “It follows, therefore, that the first verse is an independent sentence that constitutes a formal introduction” (Cassuto 1961, 20). Reinforcing this fact, if Genesis 1:1 were not introductory encapsulation, the narrative would invite confusion. Genesis 1:1 states that God made the “heavens” (שָׁמַיִם). Later, in verses 6–8, the text indicates that God made an “expanse” (רָקִיעַ) and that He then called the expanse “heaven” (שָׁמַיִם). If Genesis 1:1 is just a statement about God's first creative act, and not a case of introductory encapsulation, the reader is thus forced to conclude that there are two different occasions—on Days 1 and 2, respectively—on which God creates a material entity that He refers to as “heaven.” The only way to avoid inherent contradiction at this juncture is to understand the reference to “heaven” in verse 1 and that in verse 8 as speaking of two distinct things. But such a reading conflicts with the sense of רָקִיעַ and its relationship to the word שָׁמַיִם; it requires that the reader apply two distinct meanings to the same word used within the same literary context (which, though not impossible and is sometimes warranted by the context, typically is an inadvisable hermeneutical practice). However, there is no contradiction in the narrative if the statement in Genesis 1:1 is understood as representing an instance of introductory encapsulation. Responding to this position, Humphreys objects that if Genesis 1:1 was an instance of introductory encapsulation, then there remains no explicit statement about the creation of original matter: “We would no longer know for certain that God created the original matter” (Humphreys 1994a, 259). This alarmist objection fails to take account of the whole tenor of Scripture. Even if Genesis 1:1 does not inform its readers about the creation of primordial matter, Exodus 20:11 and 31:17 indicate that God made all matter in the space of six days during the Creation Week. Other biblical passages—such as John 1:3 and Hebrews 11:3—echo this truth and remove all doubt about the identity of the Creator. Collectively, they leave no room for any suspicions about preexistent matter. The Lord God made everything.

narrative gives no indication that the passage of time it describes is applicable only to the earth or the solar system. Thus, any argument for time dilation on Day Four (or any other day) is an argument from silence. Just because such a theory might be *permitted* by the biblical text (again, *assuming* the statements about the passage of time pertain only to the earth), it is in no way clearly *warranted* by the text.

(4) Coupled with the preceding point, there exists also a question about authorial intent relative to the understanding of the original readers of the biblical text. Traditionally, evangelicals have understood the proper understanding of Scripture to be that which recognizes the meaning that was *intended by the author* as conveyed by the text (see Stein 1994, 20ff.).<sup>35</sup> Authorial intention, Poythress says, is “supremely important” in dealing with divinely inspired Scripture. He agrees with Hirsch that the goal of biblical interpretation is (or ought to be) the recovery of the author’s intended meaning (Poythress 2009, 173–174). Not only is this a practical requirement of actually *understanding* the text, it is an ethical obligation, lest the reader do a disservice to the authors by misrepresenting the meaning they intend to convey (Poythress 2009, 173).

But in seeking to rightly interpret the biblical text it is necessary to consider the original readers and the historical context that they shared with the human author of a given passage. Vanhoozer states, “Authorial intention is always located in a network of beliefs and practices that form the background for communicative action” (Vanhoozer 1998, 250). Quoting Wendell Harris, he also observes the tremendous importance of “shared contexts”: “Meaning is dependent on the author prospectively and the reader retrospectively sharing the context. . . . What others know and know we know are shared contexts” (Vanhoozer 1998, 251).<sup>36</sup> Brown calls this the “audience context” (Brown 2007, 192). Consequently, as Boyd writes, in endeavoring to communicate successfully, “the author shaped his text commensurate with the particular historical, cultural, linguistic and ideological context he had

in common with his original readers.” The author would have looked at the event he was describing, and then, taking into account his intended audience, would have produced his text (Boyd 2005, 640).<sup>37</sup> The question, therefore, is, Would Moses have expected his original audience, in hearing the words of Genesis 1:1–2:3, as well as Exodus 20:11 and 31:17, to conclude that the “six days” mentioned in those texts refers to time as measured from earth’s perspective, and not some universal frame of reference?<sup>38</sup> Would they have conceived of billions of years of time transpiring in the universe as only six days elapsed on earth? Would the original readers have understood texts such as Job 9:8, Psalm 104:2, and Isaiah 40:22 in terms of cosmic expansion? A fair evaluation of their historical context strongly suggests not.

Humphreys, however, maintains that interpreters must not look merely to the intended meaning of the *human author*, but must also recognize that the divine author could have intended more than did the human author in the inspired scriptural text (Humphreys 1994a, 256). In support, he appeals to 1 Peter 1:10–11 and notes that the human authors of the text did not fully understand the meaning the Holy Spirit moved them to write. Accordingly, Humphreys claims, “If we were to limit ourselves to the intent of the [human] speaker or writer as he spoke or wrote, this passage says we would miss a lot of rich truth,” and, “The principle [of seeking out the intended meaning of the human author] essentially shuts us away from God and what he intended to say to us. We don’t study Genesis in order to know the mind of Moses; we study to know the mind of God” (Humphreys 1994a, 256). These statements are misguided for several reasons.

First, they fail to rightly understand the point of Peter’s statement. Peter does not claim that the writers of old were oblivious to the *meaning* of what they wrote; they *understood* their writings spoke of a coming Messiah. What they did not know was the ultimate *referent* of their prophecy or the *time* of his coming. The reason for their incomplete

<sup>35</sup> Vanhoozer (1998, 262) states this more formally: “*the meaning of a text is what the author attended to in tending to his words*” (emphasis his). The presence of definite meaning thus depends on the author.

<sup>36</sup> Communication through human language involves the speaker’s (i.e., the writer’s) meaning and the addressee’s (reader’s) understanding (Clark 1996, 23). This is not to say that the reader in any way controls textual meaning, but it does suggest that any text which fails to account for how it will be understood by the intended audience is likely to fail in the task of communication. All good authors take account of their intended audience.

<sup>37</sup> Citing cognitive linguists Tomlin, Forrest, Pu, and Kim (“Discourse Semantics”), Winther-Nielsen writes, “The speaker (or author) becomes the architect of his text who guides his listener (or reader) in construing a conceptual representation of events and ideas. The speaker (author) as the architect and the hearer (reader) as constructor must both construe a coherent text through their integration of knowledge and management of information. The hearer (reader) makes pragmatic implicatures from the contextual situation and builds cognitive inferences from the text and the world knowledge he shares with the speaker (author).” (Winther-Nielsen 2002, 69).

<sup>38</sup> Note that the passage of time was not, for the Hebrew readers, inextricably linked to the progressive rotation of the earth, as Humphreys (1994a, 263) seems to suggest. When the sun and moon were miraculously made to stand still in Joshua 10:12–14, and when the shadow moved backward ten steps for King Hezekiah in 2 Kings 20:8–11, the rotation of the earth stopped (Faulkner with Anderson 2016, 115–127); time did not stop.

understanding doubtlessly had to do with the fact that the prophecies imparted only limited information; the full picture of the person of whom they spoke (Christ) became clearer as more information was progressively revealed in the course of time.<sup>39</sup>

Second, these statements risk violating the principle of *single meaning* (see Thomas 2001, 44–46; N.B. his defense of this principle from Genesis 1:27–30; cf. Ramm 1970, 112–113). For supporters of time dilation models, the meaning of “six days” is quite different for the original readers than it is for contemporary readers; “stretched out” means one thing to the original readers and quite another to contemporary readers who have benefited from interaction with modern science. Individual passages in this view could be argued to contain more than one meaning—with the particular meaning determined by which audience (original or contemporary) is tracking with the intention of which author (human or divine). Worse still, this notion risks setting God’s intended meaning in opposition to the human author’s intended meaning, and so making the text an instrument of confusion.

Third, these statements imply that the Lord actually failed to communicate with His original audience. There was only partial access to the meaning of special revelation until scientists came along some 3400 years later and enlightened readers of the text to the fuller meaning. Accordingly, scientific interpretation becomes the final arbiter of meaning, potentially undermining the authority of Scripture. This surely is not the intention of Humphreys and Hartnett, though it seems to be (at least potentially) a natural consequence of such an outlook on hermeneutics.

Finally, these statements could potentially allow contemporary readers to find in the text whatever “fuller” meaning suits their purposes. Once the constraint of the audience’s historical context is removed in interpreting meaning, it can become very easy to twist the grammatical context in order to “find” deeper meaning in the text.

As Boyd correctly observes, “The timelessness of the text is a testimony that the divine Author had a wider readership in mind. Nevertheless our starting point [for interpretation] must be the understanding

of the first readers” (Boyd 2008, 185). Discounting how the text would have been understood by the original readers quickly opens the door to eisegesis.

(5) A final point of critique concerns Humphreys’ model (both his original and revised models) exclusively. Humphreys claims that, subsequent to Day Four of the Creation Week, there was a distinct episode of cosmic stretching and accompanying time dilation during the year-long Flood event (Humphreys 1994a, 261; 2008, 90; Vardiman and Humphreys 2011b, 13–14). Humphreys claims as biblical support for this element of his model 2 Samuel 22:10 and Psalm 18:9.<sup>40</sup> There are serious problems with Humphreys’ assertion. First, as it was demonstrated above, 2 Samuel 22:10 and Psalm 18:9 are parallel passages that employ theophonic language to describe God’s act of bowing the heavens so to personally come to the aid of His anointed.<sup>41</sup> These verses have nothing to do with an act of stretching out the heavens in any way relevant to cosmic expansion. Furthermore, even if they did speak of cosmic expansion, there is nothing in the context of these verses to indicate that the time of the Genesis Flood is in view. (2 Samuel 22:5 and Psalm 18:4 mention floodwaters, but the Hebrew word is *נַחַל*, meaning “torrent,” not *מַבּוּל*, the term reserved exclusively for the Genesis Flood. In any case, David’s vivid description of the “floods/torrents of destruction” is a metaphorical one; it has in view the violent nature of David’s enemies who came upon him swiftly and angrily, like an uncontrolled torrent of water.)

The bottom line is that there is *no exegetical evidence* for an episode of time dilation during the Genesis Flood. Why then does Humphreys propose there is? Ostensibly, it is to help prop up the tentative conclusions of the RATE initiative with respect to accelerated nuclear decay during the year-long Flood (Humphreys 2000a, 367–369; 2005b, 67–74; Vardiman, et al. 2005, 763). But this turns proper theological method on its head. In building creationist models, it is critical that they begin with *biblical theology*, that is, the analysis of the doctrinal content of each individual book of the Bible (or group of books by a single author) giving due consideration to a book’s place in the history of God’s progressive revelation. This is where the difficult work of detailed

<sup>39</sup> Even assuming Humphreys’ understanding of 1 Peter 1:10–11, as it concerns the creation account, Boyd writes, “In historical narrative, there is much less linguistic latitude than in poetic prophetic passages, which are frequently metaphorical, and thus more difficult to understand. I believe that in 1 Peter 1:10–12, Peter is referring to texts of the latter type” (Boyd 2008, 185, fn. 62). Either way, Humphreys places too much stock in Peter’s brief remark, almost as a sort of rescuing device for his interpretation (and the model he bases on it) which does not easily fit the apparent meaning of the Genesis text. It seems essentially to be an excuse to counterread the text.

<sup>40</sup> Here Humphreys commits a semantic fallacy of arbitrarily selecting a supposed “primary” meaning of the word *נַחַל*, ostensibly because it suits his model—even though that meaning is much less likely in light of the surrounding literary context. On this form of semantic fallacy, see Osborne (2006, 90–91). On the importance of proper original language study within the task of biblical interpretation, see Kaiser and Silva (1994, 48–51).

<sup>41</sup> This paper assumes the basic definition of theophany: an appearance of God perceptible to humans.

exegesis takes place. Biblical theology is to be followed by the integration or synthesis of the messages of individual texts across the boundaries of history and authorship. This leads to an organization of biblical truth in a categorical or *systematic* fashion, which, in turn, *provides the doctrinal basis for the validation and appropriation or (alternatively) the rejection of extrabiblical truth claims that arise out of the study of history, science, and other disciplines* (see Faulkner with Anderson 2016, 324; cf. Osborne 2006, 350–357). In other words, it is essential for creationist models to be *drawn from* the biblical text (properly interpreted with careful adherence to proper hermeneutical method, and going through the appropriate stages of theological development) rather than, as it seems Humphreys is doing in this instance, *imposed on* the biblical text.

To attempt to fit the tenets of a particular model into the text, when no clear evidence for that model is to be found subsequent to going through the appropriate steps of biblical exegesis and theological development, risks violating Paul’s warning against “going beyond what is written” (see 1 Cor. 4:6). And, while it is acceptable for human interpretations coming from science and other fields of study to spur the interpreter back to the study of the text, to ensure that he or she has correctly worked through all of the many aspects of exegesis, synthesis, and systematization (Faulkner with Anderson 2016, 330), never should they be used as a basis to insert into the text a meaning unsupported by the relevant literary and contextual information.

One final point of critique regarding relativistic time dilation models needs to be raised, although it is neither an exegetical nor a theological critique. Rather, it is a critique of the inherent logic of such models in relation to the broader (scientific) argument for recent creation. Creationists have appealed to a variety of evidences in support of a recent creation for the earth and the cosmos. In particular, many have argued that the persistence of the arms of spiral galaxies (which rotate at different velocities relative to their distance from a galaxy’s center) are evidence of the recent creation of those galaxies (and hence, the universe). Humphreys has been among those who use this line of argumentation (see Humphreys 2005a, i–ii cf. Humphreys 2006). However, time dilation models require that there has been billions of years of time in the distant reaches of the cosmos, as measured in local time (not earth time). If this is the case, why

are not the arms of very distant spiral galaxies twisted beyond recognition? In order to preserve the conclusions of time dilation cosmological models, it is necessary for the creationists who hold them to appeal to the same types of ad hoc explanations for the persistence of spiral arms used by secular (old-age) cosmologists. This is a gross inconsistency for creationists who promote time-dilation models.<sup>42</sup> Either this particular argument for recent creation (spiral arm wind up) must be abandoned, or time dilation models must be abandoned. Creationists cannot *consistently* hold on to both.

### The Need for Exegetical and Theological Accuracy in Addressing the Age of the Universe

This paper has surveyed the historical development of the relativistic time dilation cosmological models of Humphreys and Hartnett, examining their primary assumptions, supporting arguments, and conclusions relative to exegesis and theology. It concludes that these cosmological models are dependent on strained exegesis and that they introduce interpretations of the biblical text that are dependent on modern scientific concepts that would have been foreign to the original readers. At the risk of being exceedingly blunt, it must be stated that this paper witnesses a problem that has become an epidemic in the modern creationist movement: Scientists, both professionals and amateurs (as well as medical doctors, engineers, and general enthusiasts) are naïvely approaching the tasks of biblical exegesis and theological development, improperly deriving from the biblical text scientific models (or, worse, imposing preconceived models on the Bible by means of proof-texting), and then are using those models as a framework for the interpretation of other scientific data, and even the interpretation of other biblical passages. It is increasingly wearisome to this author and other committed recent-creationist biblical scholars to see physicists and astronomers who attempt to do the work of theologians and Hebraists, especially when they presume to speak authoritatively on theological or linguistic topics and do not interact with qualified experts in the respective fields of research that they endeavor to address.

In a summary of his contributions to the *International Conference on Creationism*, wherein his views on a time dilation cosmology were first discussed, Humphreys (1995b) noted that his two

<sup>42</sup> Ron Samec has, quite commendably, sought to specify the maximum apparent age for a time-dilated universe (see Samec 2016; Samec and Figg 2012). He argues that “only some ~100 million years (not 13.80 billion!) years [sic] of apparent history is exhibited at least in the nearby (<2 kiloparsec, or about 6000 [lightyear]) cosmos—and probably for the “deep” universe as well” (Samec 2016, 47). Thus, the approximate maximum apparent age for a time-dilated universe proposed by Samec will not accommodate the time necessary to resolve the light travel time problem—at least not taking into account the requirements and assumptions of Humphreys’ and Hartnett’s respective models as they have been proposed. Considerably more work still needs to be done in this area.

papers—one biblical and the other scientific—“had to pass...rigorous peer review by experts before they could be presented.” Peer review of academic material is highly beneficial, as it is a safeguard against errant material having an undue influence on readers. However, the creationist movement has commonly suffered a lack of quality peer review when it comes to the appeals to the biblical text made by scientists to support their theories. To summarize the sentiments that were expressed by one of the author’s former professors, it risks bringing reproach on the modern creationist movement when well-meaning but theologically-untrained people present rigorously-developed scientific concepts and then attempt to ground them in the Bible with out-of-context quotes from English translations (devoid of attention to the original languages), or (worse) with matter-of-fact appeals to Strong’s *Concordance* as if that proves their point.<sup>43</sup>

Creationists who truly care about the biblical text can and must do better than this.

As it concerns cosmology, creationist scientists do need to advance in developing their models. But in doing so, they need to be committed to doing solid work in biblical theology, making a concerted effort to determine what each relevant passage of Scripture is communicating in light of its author’s historical context (and its author’s original readership) and in a manner consistent with the lexical, grammatical, syntactical, and structural elements of the passage. It is critical to foster a commitment to a sound grammatical-historical hermeneutic and to a robust theological method (moving from biblical theology, to systematic theology, to worldview development, to interaction with scientific data) so as to avoid inadvertently imposing on the biblical text models that are foreign to the Scriptures. Faulkner’s proposal for a new solution to the light travel time problem does this (albeit in a basic fashion; see Faulkner 2013b; Faulkner with Anderson 2016, 199–220). It would be encouraging to see more works that take a similar approach.

Specifically concerning time dilation cosmological models, the foregoing considerations of the exegetical and theological evidence suggests they should be

discarded. *If* they are promoted, it should be with open admission of their exegetical and theological shortcomings.

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<sup>43</sup> David Fouts in a letter to the editor of a creationist journal (1998, 39) rightly observes, “As I understand the level of Biblical scholarship coming from both the progressive creationist (and theistic evolutionist) and young-Earth perspectives, I see two problems. Both of these must be addressed on either side of the issue. First, many on both sides act in seeming ignorance (generally speaking) of scholarship done by Biblical scholars in basic grammar, syntax, etymologies and semantics. Our tendency is to think that every believer can properly interpret the Word of God. While this may be theoretically true, what has resulted is an amazing amount of difference of opinions. I think that perhaps we often involve ourselves in eisegesis to support our scientific models rather than yielding our models to solid exegesis. This tendency may be symptomatic of the second problem: both sides seem to be placing natural theology (general revelation) on the same plane as the supernatural (special revelation). This is certainly the case for the progressive creationists and increasingly the case for the young-Earthers.” Fouts then appropriately implores, “I would appeal to creation scientists to thoroughly employ Biblical scholars and scholarship in an effort to develop scientific models which are consistent with the Biblical records as interpreted within the grammatical-historical milieu in which they were written, and cease basing those same models on a stroll through Strong’s *Concordance* alone.”

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