

The Primordial Creation of Light in Genesis 1:3: A Theological and Cosmological Reassessment

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ABSTRACT

The relationship between Genesis 1:3 and modern cosmology remains sharply contested. Some read the sequence of light before the sun as a scientific error; others claim it predicts the Big Bang's Photon Epoch. Both positions commit category errors by treating an ancient functional text as modern material science. This study addresses two core problems: whether the distinction between first-day light ('ôr) and fourth-day luminaries (ma'ôr) represents a coherent theological claim, and whether empirical tools can assess non-material realities. The methodology integrates four phases: textual and hermeneutical analysis of Genesis 1:3–5 and 1:14–19 using historical-grammatical and ancient Near Eastern comparative methods; synthesis of peer-reviewed astrophysical literature on the Photon Epoch, stellar formation, and radiometric dating; epistemological analysis of methodological naturalism and the noetic effects of sin; and construction of an integrative model respecting domain incommensurability. Key results show that 'ôr and ma'ôr refer to different functions (time vs. time-keeping), not material categories; the Photon Epoch precedes stellar ignition by hundreds of millions of years, offering a structural parallel without evidential weight; methodological naturalism is a procedural constraint, not ontological materialism; and spiritual perception requires grace and regeneration, not technique. The main significance of this study is the provision of a robust framework that avoids concordism (The attempt to harmonize or reconcile religious texts (especially the Bible) with modern scientific discoveries) and conflict, affirming that Genesis 1:3 provides theological not scientific-truth about creation as a divine gift mediated through Christ, while respecting the legitimate domains of both scriptural interpretation and empirical cosmology.

Keywords: Genesis 1:3, light, cosmology, Photon Epoch, concordism, patristic exegesis, methodological naturalism

INTRODUCTION

The opening verses of Genesis have shaped Jewish and Christian theology, liturgy, and art for more than two millennia. Among them, Genesis 1:3 stands as a pivotal and dramatic moment: "And God said, 'Let there be light,' and there was light." With this sovereign command, the biblical author announces the beginning of ordered creation. Yet this simple, majestic statement has become a flashpoint of controversy when placed alongside modern cosmology. The light appears on the first day, but the sun, moon, and stars are not created until the fourth day (Genesis 1:14–19). For many modern readers, this sequence appears scientifically impossible. Some conclude that Genesis is pre-scientific mythology, a relic of an outdated worldview. Others, equally convinced of biblical authority, claim that Genesis anticipates the Big Bang's Photon Epoch, when light (in the form of photons) existed for hundreds of millions of years before any star ignited.

This paper argues that both conclusions rest on a shared but mistaken assumption: that Genesis 1 is making claims about material origins that can be verified or falsified by modern physics. In fact, the ancient Near Eastern context of Genesis operated with a functional ontology, not a materialist one. The question the text answers is not "How did matter come into existence from nothing?" but rather "When did the cosmos begin to function as God's ordered temple, and how were its functions assigned?" (Walton, 2009, 2011). The distinction between the Hebrew words 'ôr (day one) and ma'ôr (day four) is therefore not about photons versus stars, but about the function of time versus the functionaries that measure time. This insight, rooted in both lexical analysis and

comparative ancient Near Eastern studies, dissolves the alleged contradiction—provided one reads the text on its own terms.

The persistent tension between biblical creation narratives and empirical cosmology has generated a polarized literature. Mainstream critiques dismiss Genesis 1:3–5 as scientifically untenable, while some theological responses reject or selectively reinterpret cosmological data. Without a framework that respects both domains, dialogue remains polarized, and potential points of convergence are either overinterpreted as proofs of inerrancy or dismissed as irrelevant. This study provides a theologically and scientifically informed reassessment that avoids both concordism (reading modern science into the Bible) and conflict (claiming irreconcilable opposition). The overarching goal is not to prove that Genesis predicts science, nor to dismiss Genesis as irrelevant, but to clarify the terms of engagement and propose a model of respectful, rigorous dialogue between theology and cosmology.

Statement of the Problem

The sequence of light before the sun in Genesis 1:3–5 appears to contradict modern cosmology. Critics call it a primitive error; apologists call it a miraculous prediction. Both miss the point. The real problem is hermeneutical and epistemological: readers routinely impose a materialist framework onto an ancient functional text. Genesis 1 was never intended to describe photons, plasmas, or nucleosynthesis; it describes the assignment of roles and functions in God’s ordered cosmos. Consequently, the distinction between first-day light (*’ôr*) and fourth-day luminaries (*ma’ôr*) is either ignored as irrelevant or forced into a concordist mold that dishonors the text’s original context.

At the same time, empirical tools—radiometric dating, cosmic microwave background measurements, and stellar formation models—are routinely misused to adjudicate theological claims they were never designed to address. Critics claim science has “disproved” Genesis; apologists claim science has “confirmed” it. Both conflate methodological naturalism (a procedural constraint) with metaphysical naturalism (an ontological stance). The result is a polarized stalemate that helps neither biblical scholarship nor scientific inquiry. This paper cuts through the false dichotomy by recovering the original meaning of the text, respecting the legitimate limits of scientific method, and articulating a Christological framework that honors both divine revelation and created order.

The core problem is therefore twofold: (a) whether the distinction between first-day light and fourth-day luminaries represents a coherent theological claim rather than a contradiction, and (b) whether empirical tools are epistemologically capable of assessing non-material or pre-material realities. Without a framework that respects both domains, dialogue remains polarized.

Research Purpose

The purpose of this study is to provide a theologically and scientifically informed reassessment of Genesis 1:3 that avoids both concordism and conflict. Specifically, the research aims to:

- i. Exegetically demonstrate that the distinction between *’ôr* (day one) and *ma’ôr* (day four) is a functional, not material, distinction. This is supported by Hebrew lexicography, ancient Near Eastern comparative studies (Walton, 2009, 2011), and patristic interpretation (Basil, 1963; Blowers, 2012; Aquinas, 1948).
- ii. Cosmologically describe the standard Λ CDM model’s sequence of the Photon Epoch followed by stellar formation (Planck Collaboration, 2020; Tanabashi et al., 2024; Bromm, 2013; NASA/WMAP, n.d.) while rejecting any claim that this sequence proves biblical inerrancy or that Genesis predicts modern cosmology. The structural parallel is acknowledged but not given evidential weight.
- iii. Christologically integrate the light of creation with the New Testament identification of Christ as the Logos and the true light (John 1:1–5, 4–9; Colossians 1:15–17; Athanasius, 2011). This corrects the tendency to treat the light of Genesis 1:3 as either merely physical or as uncreated divine energy.

iv. Epistemologically clarify the proper boundaries of methodological naturalism (Pennock, 1999, 2011; Donahue, 2025), radiometric dating (Reimer et al., 2013), and claims about non-material realities. The paper argues that empirical methods are limited to the empirical domain and cannot adjudicate metaphysical or theological claims.

v. Reevaluate spiritual perception in light of the noetic effects of sin (Plantinga, 2000), biblical teaching on regeneration, and empirical studies of religious experience (Walter, 2022; Demir, 2022; White, 2021). The paper rejects the popular “frequency” metaphor in favor of a “new creation” metaphor.

vi. Propose an integrative model that respects the incommensurability of scientific and theological categories while allowing for structural parallels, mutual constraints, and respectful dialogue.

The study does not present original empirical research but synthesizes existing peer-reviewed literature from astrophysics, patristics, biblical studies, philosophy of science, cognitive neuroscience, and psychology of religion.

METHODOLOGY

This study employs a qualitative, interdisciplinary, and comparative methodology. No original empirical data are collected or analyzed. Instead, the research integrates findings from established disciplines using a structured four-phase framework. Each phase is designed to respect the integrity of its source discipline while allowing for cross-disciplinary dialogue. Source selection followed three criteria: (a) academic peer review or established scholarly reputation, (b) relevance to the specific research questions (lexical, cosmological, epistemological), and (c) representation of diverse viewpoints within each discipline.

Phase 1: Textual and Hermeneutical Analysis

The first phase involves a close reading of Genesis 1:3–5 and 1:14–19 in the Hebrew Masoretic Text, with careful attention to lexical semantics specifically the distinction between *’or* (אור) and *ma’or* (מאור). The study employs historical-grammatical hermeneutics, which interprets the text according to its original linguistic, cultural, and literary context. This is supplemented by comparative ancient Near Eastern studies, drawing on Walton’s (2009, 2011) analysis of Egyptian (Memphite Theology), Mesopotamian (Enuma Elish), and Canaanite (Baal Cycle) creation texts to establish the functional ontology of the biblical author. Patristic exegesis is examined through primary sources (Basil of Caesarea’s *Hexaemeron*, 1963; Athanasius’s *On the Incarnation*, 2011) and secondary scholarship (Blowers, 2012; Van Till, 1996). Medieval theology is represented by Thomas Aquinas’s *Summa Theologica* (1948, I.67). Contemporary theological interpretation is drawn from Fretheim (1994) and Collins (2003). The goal is to recover the original sense of the text without imposing modern materialist categories, while acknowledging that all interpretation involves presuppositions.

Phase 2: Scientific Literature Synthesis

The second phase synthesizes peer-reviewed literature from astrophysics and cosmology. The primary sources are: (a) the Planck Collaboration’s 2018 results (Planck Collaboration, 2020), which provide the most precise measurements of the Cosmic Microwave Background and cosmological parameters (Hubble constant, dark matter density, dark energy density); (b) the Particle Data Group’s review of Big Bang cosmology (Tanabashi et al., 2024), which summarizes the standard timeline from the Planck epoch to the present; and (c) Volker Bromm’s (2013) review of Population III star formation, which describes the conditions under which the first stars ignited. The NASA/WMAP Science Team’s overview (n.d.) is used for accessible explanation of the CMB. Radiometric dating is examined through the IntCal13 calibration curves (Reimer et al., 2013), which are the international standard for radiocarbon dating. The study does not challenge these scientific findings but interprets their relevance for the theological question. The synthesis identifies the sequence of events (Photon Epoch → recombination → CMB release → first stars) and the timescales involved (10 seconds to 380,000 years for the Photon Epoch; 100–250 million years for first stars).

Phase 3: Epistemological and Philosophical Analysis

The third phase analyzes the epistemological boundaries between science and theology. It draws on the philosophy of science literature on methodological naturalism, including Robert Pennock's Tower of Babel (1999) and his later demarcation essay (2011), as well as Donahue's (2025) systematic analysis of methodological naturalism in the journal *Erkenntnis*. Mallary (2024) provides a recent analysis of the debate between Andrew Torrance and John Perry/Sarah Lane Ritchie, demonstrating that the dispute over MN is often semantic. The theology of knowledge is informed by Alvin Plantinga's Warranted Christian Belief (2000), which provides the framework for understanding the noetic effects of sin and the *sensus divinitatis*. The relationship between science and religion is guided by Ian Barbour's typology (2000) and Ernan McMullin's (1985) warnings against assimilationism. Theistic scientists' perspectives are represented by Francis Collins (2006) and John Polkinghorne (1998). The analysis distinguishes between: (a) methodological naturalism (procedural constraint) and metaphysical naturalism (ontological claim); (b) empirical claims (testable) and metaphysical claims (non-testable); and (c) the domain of science (material causes) and the domain of theology (ultimate meaning).

Phase 4: Integration and Model Construction

The fourth phase integrates the findings from phases 1-3 into a coherent model. Integration is not synthesis (which would imply that scientific and theological claims can be combined into a single unified theory) but rather structured dialogue that respects domain incommensurability. The model takes the form of a comparative table that aligns empirical frameworks with theological frameworks for each key concept: first light, stellar bodies, Christ as Logos, spiritual perception, methodological naturalism, and limits of measurement. The model also incorporates empirical correlates of spirituality from cognitive neuroscience (Walter, 2022) and psychology of religion (Demir, 2022), as well as insights from the cognitive science of religion (White, 2021), without reducing theological claims to brain states. A summary table of key arguments provides a visual conceptual framework.

Limitations of the Methodology

This study does not address all interpretations of Genesis 1 (e.g., young-earth creationism, theistic evolution, framework hypothesis) nor all cosmological models (e.g., eternal inflation, cyclical cosmologies, string theory landscapes). It focuses specifically on the light of Genesis 1:3 and its relation to the Photon Epoch. It does not engage with non-Abrahamic traditions or with atheist critiques beyond epistemological clarification. The study is theoretical and integrative; it produces no new empirical data.

RESULTS AND DISCUSSION

Result 1: Exegetical 'ôr and Ma'ôr as Functional Categories

The Hebrew text of Genesis 1 uses two distinct words for light. On day one, God creates 'ôr (אור), which is then called "Day" and separated from darkness. On day four, God makes ma'ôr (מאור) the sun, moon, and stars-to "govern" the day and night. A lexical analysis reveals that 'ôr refers to light as a phenomenon or quality, while ma'ôr denotes a light-bearing apparatus (an instrument that generates or emits light). The Septuagint translation reflects the same distinction: φῶς (phōs) for day one versus φωστήρ (phōstēr) for day four.

Walton (2009, 2011) demonstrates that this lexical distinction operates within a functional ontology pervasive in the ancient Near East. In Egyptian and Mesopotamian creation texts, the focus is on assigning roles, functions, and names to cosmic entities, not on describing material origins. For example, the Egyptian Memphite Theology describes the god Ptah creating through the "thoughts of his heart" and "words of his mouth," assigning functions to other deities. Genesis 1 participates in this cognitive environment. Day one establishes the function of time: the cycle of light and darkness that constitutes a "day." God calls the light "Day" and the darkness "Night," emphasizing function rather than substance. Day four installs functionaries: the luminaries are appointed "to govern the day and the night, and to separate light from darkness" (Genesis 1:18). Thus, the sequence is not about the physical origin of photons but about the ordering of cosmic roles.

Critique of Walton's Functional-Only View. While Walton's emphasis on functional ontology is illuminating, critics argue he overstates his case. Some scholars (e.g., Currid, 2013) note that the ancient Near Eastern texts Walton cites do include material creation alongside functional assignment. The Egyptian Memphite Theology, for instance, describes the creation of material objects like the sun and moon. Walton responds that the biblical text's primary concern is still functional, but the debate continues. This study adopts a mediating position: the text's primary concern is functional, but this does not preclude material creation. The distinction between 'ôr and ma'ôr remains valid, and the absence of a materialist framework does not mean the text denies material reality. Rather, it prioritizes what matters most: the cosmic order as God's temple.

Patristic interpretation confirms a functional reading. Basil of Caesarea (1963, Homily 6.2) explicitly states that the fourth-day lights are "instruments" (ὄργανα) of time measurement, not the original source of light. He writes that the light produced on the first day "was not at that time according to solar motion, but it was when that first created light was diffused and again drawn in according to the measure ordained by God, that day came and night succeeded" (Basil, 1963, Homily 2.8). Augustine, as analyzed by Blowers (2012), distinguished between the "formless light" of day one (intelligible, spiritual) and the "formed light" of day four (sensible, material). Both fathers treated the first-day light as created not uncreated divine energy. Thomas Aquinas (1948, I.67.1) affirms: "Light is a quality, and therefore a created accident." The light that God commanded into existence is a creature, not the divine essence. Van Till (1996) notes that Basil and Augustine both understood creation as possessing "functional integrity" the capacity to develop and operate according to its own inherent properties without requiring that the text be read as modern science.

DISCUSSION

The exegetical results demonstrate that the distinction between 'ôr and ma'ôr is theologically coherent and does not present a scientific contradiction. The text is not making a material claim about photons but a functional claim about time and its governance. Interpreters who treat Genesis 1:3 as a failed scientific prediction are imposing an alien category onto the text. Conversely, interpreters who claim that Genesis 1:3 predicts the Photon Epoch are also imposing a materialist category onto a functional text. Both errors are avoided when the text is read in its ancient context.

Result 2: Alternative Interpretations of Genesis 1

The scholarly literature offers several alternative approaches to interpreting the creation days. Brief engagement with these demonstrates the study's awareness of the broader field and avoids the appearance of a one-sided reading.

The Framework Hypothesis. Associated with Meredith Kline and Lee Irons, the framework hypothesis holds that Genesis 1 presents a figurative or literary framework rather than a strictly chronological sequence. The six days are divided into two parallel triads: days 1-3 establish "kingdoms" (light/darkness, sky/sea, dry land/vegetation), while days 4-6 create corresponding "kings" (sun/moon to rule day/night, fish/birds, land animals/humans). Irons (2000) argues that "the first three days are in fact solar days" and that the fourth day may represent "temporal recapitulation" rather than sequential creation. Critics charge the framework hypothesis with abandoning literal chronology and reading modern literary categories into the text. The present study affirms the value of recognizing parallelism in Genesis 1 but finds Walton's functional ontology more persuasive as an account of the ancient Near Eastern cognitive environment.

Day-Age Theory and Progressive Creationism. Popularized by Hugh Ross, the day-age theory proposes that the "days" of Genesis 1 represent long, sequential ages (billions of years) rather than 24-hour periods. Progressive creationism holds that God intervened repeatedly over these long ages to create new life forms. Critics note that day-age theory stretches the Hebrew word *yôm* beyond its normal usage and struggles to account for the evening-morning refrain, which suggests a diurnal cycle. McGee (2023) provides a recent critique of Ross's position, arguing that progressive creationism raises significant theological concerns for biblical inerrancy. The present study avoids the day-age approach because it remains a form of concordism—attempting to map modern scientific timescales onto the biblical text—which this paper rejects as methodologically problematic.

Theistic Evolution. Represented by Francis Collins (2006), theistic evolution accepts mainstream evolutionary biology and cosmology while affirming God as the ultimate creator. Theistic evolution typically reads Genesis 1 theologically rather than scientifically, which is consistent with the functional ontology approach. However, theistic evolution often sidesteps the question of whether Genesis 1 intends any historical referent. The present study does not oppose theistic evolution but argues that a functional reading provides a more robust hermeneutical foundation.

Result 3: Cosmological—Structural Parallel without Evidential Weight

Standard Λ CDM cosmology, as summarized by the Planck Collaboration (2020) and the Particle Data Group (Tanabashi et al., 2024), establishes the following well-attested sequence. The universe began approximately 13.8 billion years ago in an extremely hot, dense state (the initial singularity). From approximately 10 seconds to 380,000 years after the Big Bang, the universe was in the Photon Epoch, during which photons dominated the energy density. The universe was filled with a hot plasma of photons, electrons, and protons. Photons constantly scattered off free electrons, making the universe opaque. After recombination (around 380,000 years), the temperature dropped to about 3,000 K, allowing electrons and protons to combine into neutral hydrogen. The universe became transparent, and the photons released at that moment now form the Cosmic Microwave Background (CMB) radiation (NASA/WMAP, n.d.). The first Population III stars did not form until hundreds of millions of years later—current models place this between 100 million and 250 million years after the Big Bang (Bromm, 2013). These stars were massive, short-lived, and composed almost entirely of hydrogen and helium. Thus, light (photons) existed long before any star—a structural parallel to the Genesis sequence (light on day one, luminaries on day four).

However, this parallel does not constitute evidence for biblical inerrancy. Barbour (2000) and McMullin (1985) have argued convincingly that concordism is a failed project. Three reasons are decisive:

Temporal incommensurability: Genesis 1:5 speaks of “evening and morning,” a 24-hour cycle. The Photon Epoch lasted 380,000 years. Any attempt to map Genesis days onto cosmic epochs is arbitrary and textually unwarranted. Even the most sophisticated “day-age” theories cannot explain why evening and morning are mentioned if the days represent millions of years.

Category mismatch: *’ôr* is about the function of time (the rhythm of light and darkness). The Photon Epoch is about electromagnetic radiation in a plasma. These are different categories of description. One cannot map a functional category onto a material category without doing violence to both. The Photon Epoch has no “function” in the ancient Near Eastern sense; conversely, the *’ôr* of day one has no physical properties such as frequency or wavelength.

Genre mismatch: Genesis 1 is ancient Near Eastern temple theology (Walton, 2009, 2011), not protoscience. Its purpose is to declare that the cosmos is Yahweh’s ordered sanctuary, not to provide a physics textbook. Reading it as a scientific prediction is a category error analogous to reading a love poem as a weather report.

Van Till (1996) correctly notes that the doctrine of creation’s “functional integrity” allows the cosmos to unfold according to its own lawful processes, without requiring concordist readings. The universe is not a puppet but a creation endowed with its own consistent properties. The fact that light preceded stars in both Genesis and cosmology is a striking coincidence, but it does not validate one particular hermeneutical approach over another.

Discussion

The structural parallel is interesting and may be providential—a “resonance” between two different ways of describing the same underlying reality. But it cannot bear evidential weight for biblical inerrancy. To claim otherwise is to commit the concordist fallacy, which most mainstream theologians and philosophers of science reject (Barbour, 2000; McMullin, 1985). Therefore, the proper response is neither triumphalism (claiming Genesis predicted science) nor dismissal (ignoring the parallel altogether), but humble acknowledgment of a curious correspondence that does not settle any theological or scientific question on its own.

Result 4: Christological-Light Through and For the Logos

A robust theological interpretation of Genesis 1:3 requires a Christological framework -a dimension conspicuously absent from many science-religion dialogues. The New Testament identifies Jesus Christ as the agent of creation and the “true light that enlightens everyone” (John 1:4-9). John’s prologue deliberately echoes Genesis 1: “In the beginning was the Word” (John 1:1) recalls “In the beginning God created” (Genesis 1:1). “Through him all things were made” (John 1:3) identifies the pre-incarnate Logos as the creative agent. And “that life was the light of all people” (John 1:4) connects the light of creation with the light of salvation.

The Apostle Paul makes a similar identification in Colossians 1:15-17: “The Son is the image of the invisible God, the firstborn over all creation. For in him all things were created: things in heaven and on earth, visible and invisible, whether thrones or powers or rulers or authorities; all things have been created through Him and for Him. He is before all things, and in him all things hold together.” The phrase “firstborn over all creation” (πρωτότοκος πάσης κτίσεως) does not mean that the Son is a creature (as Arius wrongly claimed), but that he holds the status of firstborn heir over all creation. Colossians 1:16 explicitly states that all things—visible and invisible—were created “through him and for him,” which would be false if the Son Himself were part of the created order.

Athanasius of Alexandria (2011, §3), the great defender of Nicene orthodoxy, develops this Christological reading of creation: “He, the Word of God, the first-born of all creation, took away the power of darkness and preserves and enlightens creation, making it light in the Lord.” For Athanasius, the light of Genesis 1:3 is not only a physical phenomenon but a type and shadow of the true light that would come into the world in the incarnation. The light that appeared on the first day is a creaturely anticipation of Christ, who is the uncreated Light.

Crucially, this Christological reading does not mean that the first-day light is itself uncreated or divine. As Aquinas (1948, I.67.1) and Basil (1963) affirm, the light is created (*lux creata*). But it is created through the Word and points to the Word. Physical light—whether the Photon Epoch, sunlight, or a candle flame—is a creaturely sign of the uncreated Light. The theological meaning of primordial light is therefore not exhausted by cosmological photons; rather, cosmology provides the physical trace, and theology provides the ultimate significance. To quote Athanasius again, the Word “enlightens creation, making it light in the Lord.” The Photon Epoch is not the gospel, but it is part of the stage on which the gospel is proclaimed.

Discussion

The absence of Christology in many science-religion dialogues is a serious lacuna. Without Christ, the light of Genesis 1:3 becomes either a purely physical phenomenon (and then the question is whether Genesis got the physics right) or an abstract “divine energy” (which risks pantheism or confusion of Creator and creature). A Nicene Christology avoids both errors: the light is created, but it is created through the Logos and reveals the Logos. Therefore, the proper response to the Photon Epoch is not to ask “Does this prove Genesis?” but to ask “What does this tell us about the Logos through whom all things were made?” This reframes the entire debate.

Result 5: Epistemological-Methodological Naturalism as Procedural Constraint

A common source of confusion in science-religion debates is the conflation of methodological naturalism (MN) with metaphysical naturalism. MN is the principle that, within scientific inquiry, explanations should be confined to natural phenomena. It is a procedural constraint, not an ontological commitment. As Robert Pennock (1999, p. 184) explains, “the term ‘methodological’ indicates that naturalistic presumptions are a matter of scientific practice only.” Scientists assume natural causes not because they have proven that supernatural causes do not exist, but because invoking supernatural causes would halt inquiry: “God did it” is not a testable hypothesis.

Metaphysical naturalism, by contrast, is the philosophical claim that only natural entities exist and that there is no supernatural realm. This is a metaphysical position, not a scientific one. A scientist can consistently practice MN while affirming the existence of supernatural realities (Collins, 2006; Polkinghorne, 1998). As Pennock (2011, p. 179) notes, “methodological naturalism neither needs nor supports metaphysical naturalism.” The two are logically independent.

Donahue (2025) provides a recent systematic analysis in Erkenntnis, presenting three interpretations of MN: (a) unrestricted (MN is an essential feature of science), (b) provisional (MN is a pragmatic guideline based on the historical failure of supernatural hypotheses), and (c) restricted (a synthesis). Donahue argues for a restricted version, placing MN on a firmer theoretical foundation while acknowledging that MN does not entail metaphysical naturalism.

Mallary (2024) critically analyzes the debate between Andrew Torrance (who rejects MN) and John Perry/Sarah Lane Ritchie (who defend MN). Mallary demonstrates that “both science and MN are conceived of differently between the two parties, indicating that this is primarily a semantic debate” and proposes “methodological flexibility wherein the nature of the question being asked determines the appropriate method one should employ.” This is a helpful resolution: when asking empirical questions, MN is appropriate; when asking metaphysical or theological questions, other methods are needed.

Radiometric dating (Reimer et al., 2013) is a classic example of MN in practice. It measures decay rates of radioactive isotopes (carbon-14, uranium-238, etc.) within the existing material universe. It assumes that decay rates have been constant over time (a natural regularity) and that the sample has not been contaminated. These are methodological assumptions, not metaphysical dogmas. Radiometric dating cannot, by definition, measure pre-material conditions (before the existence of atoms) or non-physical realities. This is not a weakness but a proper limitation. Science is powerful within its domain, but it is not omniscient.

Discussion

The claim that “science disproves Genesis” rests on a category error: it assumes that empirical methods can adjudicate theological claims, which they cannot. Conversely, the claim that “Genesis disproves science” (e.g., young-earth creationism) also commits a category error by treating a theological text as a scientific textbook. The proper relationship is not competition but complementarity. Science answers how questions about the material world. Theology answers why questions about ultimate meaning and purpose. There are points of contact (e.g., cosmology constrains theological claims about the age of the universe), but the domains are not reducible to one another.

Result 6: Spiritual Perception-Grace, Not Technique

Empirical studies have identified neural correlates of religious experiences. Walter (2022) used EEG microstate analysis to investigate default mode network (DMN) involvement during worship, finding distinct patterns of brain activity associated with self-reported spiritual experiences. Demir (2022) conducted a serial multi-mediation analysis showing a positive correlation between spirituality and psychological well-being, with meaning in life and social support as mediators. White (2021) outlines how cognitive science of religion (CSR) investigates agency detection, ritual behavior, and belief formation without necessarily reducing religious experience to illusion. CSR, White argues, provides a “testing ground” for cognitive theories but does not itself settle the truth or falsity of religious claims.

These findings are valuable, but they must be interpreted within a proper theological epistemology. The biblical witness teaches that spiritual perception is not a matter of “tuning” natural faculties but of regeneration by the Holy Spirit. Jesus declares, “No one can see the kingdom of God unless they are born again” (John 3:3). The Greek word *anōthen* means both “again” and “from above,” indicating a divine gift, not a human technique. Paul writes, “The person without the Spirit does not accept the things that come from the Spirit of God but considers them foolishness, and cannot understand them because they are discerned only through the Spirit” (1 Corinthians 2:14). The “natural person” (*ψυχικὸς ἄνθρωπος*) lacks the capacity to discern spiritual realities.

Alvin Plantinga (2000) provides a philosophical framework for these teachings. He distinguishes between the *sensus divinitatis* (Calvin’s term for a natural, innate disposition to believe in God) and the noetic effects of sin (the damage that sin inflicts on human cognitive faculties). According to Plantinga, the *sensus divinitatis* was part of original human nature, enabling human beings to have properly basic beliefs about God. However, the Fall damaged this faculty, rendering it dysfunctional. The noetic effects of sin include cognitive consequences (the *sensus divinitatis* becoming “diseased and dysfunctional”) and affective consequences (disordered desires

and emotions that distort perception). Restoration requires grace—not merely a change in technique or mental state.

The biblical cases of spiritual perception (Elisha’s servant seeing the angelic army, Stephen seeing the heavens opened, Saul’s encounter with the risen Christ) are graced events, not universally replicable techniques. In Saul’s case, his spiritual perception came at the cost of temporary physical blindness (Acts 9:8-9)—hardly a therapeutic technique. In Elisha’s case, the vision was a divine gift for a specific moment of crisis, not a permanent state.

Lari Launonen (2023) examines the compatibility of CSR with Plantinga’s model, noting that “a Plantingian response would point to the noetic effects of sin. Such a response, however, would have to assume that God is restoring the minds of believers. This paper considers empirical reasons to doubt that such a process is taking place.” This presents an important challenge that future research must address: if the noetic effects of sin have been partially reversed in believers, what empirical differences should we expect to observe? The question remains open. However, the absence of clear empirical markers does not falsify the theological claim; it simply means that the claim is not testable by current methods.

Discussion

The popular “frequency” metaphor (spiritual realities are like radio waves; one just needs to tune the receiver) is theologically inadequate. It implies that spiritual perception is a matter of adjusting existing equipment, which contradicts the biblical teaching that the natural person cannot discern spiritual things (1 Corinthians 2:14). A better metaphor is new creation (2 Corinthians 5:17). Spiritual perception is not like tuning a radio that already exists; it is like being given a new radio with new capacities. The old radio cannot receive the new frequency, no matter how carefully it is adjusted. Only when the old radio is replaced—or, more accurately, only when the person is born again—does spiritual perception become possible. Empirical correlates (DMN activity, well-being measures) do not disprove the reality of spiritual perception any more than brain activity during visual perception disproves the existence of trees. But neither do they prove that spiritual perception detects transcendent realities. The question is philosophically and theologically underdetermined by neuroscience alone.

Result 7: Integrative Model

The following table synthesizes the results into a single, coherent integrative model. It aligns empirical frameworks with theological frameworks for each key concept, respecting domain incommensurability while allowing for structural parallels.

Concept	Empirical Framework	Theological Framework	Integrative Proposal
First light	Photon Epoch / CMB (Planck Collaboration, 2020; Tanabashi et al., 2024; NASA/WMAP, n.d.)	’Ôr as functional time-rhythm; created light (Walton, 2009, 2011; Aquinas, 1948; Fretheim, 1994)	Incommensurate categories; parallel sequences without identity. The ’ôr of Genesis 1:3 is not the Photon Epoch, but both describe a “light before luminaries” sequence for different purposes.
Stellar bodies	Stellar nucleosynthesis (Bromm, 2013)	Ma’ôr as functional time-markers (Walton, 2009; Fretheim, 1994)	Different referents; no contradiction. The sun, moon, and stars are physical objects and also created instruments for time-keeping.

Concept	Empirical Framework	Theological Framework	Integrative Proposal
Christ as Logos	N/A (beyond empirical scope)	John 1:4-9; Colossians 1:15-17; Athanasius, 2011	Theological framework for creation's coherence. The light of creation is "through Christ and for Christ." Physical light is a creaturely sign of the uncreated Light.
Spiritual perception	DMN activity, EEG microstates (Walter, 2022); positive correlation with well-being (Demir, 2022); CSR findings (White, 2021)	Graced revelation; regeneration (John 3:3); noetic effects of sin (Plantinga, 2000)	Correlation does not reduce; grace is a necessary condition for spiritual perception. Brain activity correlates with but does not explain the reality of spiritual experience.
Methodological naturalism	Procedural constraint on scientific explanation (Pennock, 1999, 2011; Donahue, 2025; Mallary, 2024)	Metaphysical theism (Collins, 2006; Polkinghorne, 1998)	Complementary domains; no logical conflict. Scientists can practice MN while affirming supernatural realities.
Limits of measurement	Empirical domain only (Reimer et al., 2013)	Metaphysical realities	Boundary awareness. Empirical methods cannot adjudicate non-empirical claims. Radiometric dating is irrelevant to pre-material conditions.

This model does not attempt to force an identity between biblical 'ôr and the Photon Epoch. Instead, it respects the incommensurability of the categories while acknowledging a structural parallel. The model also integrates a robust Christology and a proper understanding of methodological naturalism, avoiding the errors of concordism and conflict.

Additional Engagement with Alternative Viewpoints

This section briefly engages two competing viewpoints that represent opposite poles of the debate.

Alternative 1: Young-Earth Creationism (YEC). YEC reads Genesis 1 as literal 24-hour days and a young universe (6,000–10,000 years). YEC scholars (e.g., Morris, 1974) reject the Photon Epoch and radiometric dating. The present study argues that YEC commits the same category error as concordism: treating an ancient functional text as a modern material science text. Moreover, YEC requires rejecting well-established cosmological and geological evidence without a compelling epistemological warrant beyond a particular reading of Genesis. However, YEC rightly emphasizes divine action and the authority of Scripture—concerns this study shares but addresses through non-concordist hermeneutics. The functional ontology approach does not diminish Scripture's authority; it simply reads it according to its original genre.

Alternative 2: Agnostic Scientism. Some critics (e.g., Coyne, 2015) claim that methodological naturalism necessarily supports metaphysical naturalism, and that theology is cognitively meaningless. The present study rejects this on epistemological grounds: MN is a procedural convention, not a metaphysical proof. The claim that only scientific claims are meaningful is self-refuting (it cannot be verified scientifically). Furthermore, the existence of neural correlates of religious experience does not explain away the experience any more than neural correlates of visual perception explain away the external world. Agnostic scientism overreaches the legitimate domain of empirical inquiry.

These engagements are not exhaustive but demonstrate the study's awareness of competing frameworks. A full treatment of YEC or scientism would require separate papers; here, the goal is to show that the proposed model does not ignore alternative positions but offers reasoned responses.

Study Limitations and Practical Implications

Limitations

Theological scope: This study does not address all interpretations of Genesis 1 (e.g., young-earth creationism beyond the brief engagement above; the framework hypothesis and day-age theory are summarized but not exhaustively critiqued; theistic evolution is partially represented via Collins, 2006, but not fully explored).

Cosmological scope: It focuses only on the Λ CDM model; alternative cosmologies (e.g., eternal inflation, cyclical models, string theory landscapes) are not examined. Λ CDM (Lambda Cold Dark Matter) is the standard scientific model of the universe's history. In this article, it's used only to show one thing: that light (photons) existed for hundreds of thousands of years before any star ignited. That's a structural parallel to Genesis (light on day one, stars on day four). But the article insists this does NOT mean Genesis predicted the Big Bang because the Bible is talking about God's purpose and order, not about photons or dark matter.

Source reliance: The study relies on secondary sources and theoretical synthesis. No original linguistic or empirical data are presented. The exegetical claims are based on standard lexicons and published analyses, not new manuscript discoveries.

Confessional stance: The authors write from an orthodox Christian perspective, which inevitably shapes the Christological and epistemological conclusions. Readers from other traditions (Jewish, Muslim, secular) may interpret the data differently. The paper does not claim to be neutral but strives for reasoned argumentation accessible across traditions.

Patristic selection: Basil and Athanasius are emphasized; other church fathers (e.g., Ephrem, Gregory of Nyssa, John Chrysostom) are mentioned only as future research directions. A more comprehensive patristic survey might reveal additional nuances.

Noetic effects challenge: As Launonen (2023) notes, empirical tests of Plantinga's model are possible but underexplored. The present study does not conduct such tests, nor does it claim to have resolved the empirical questions surrounding religious experience.

Limited engagement with non-Abrahamic traditions: The study does not compare Genesis 1 with Hindu, Buddhist, or Indigenous creation texts. Such comparison could test whether the "light before luminaries" motif is universal or specific to ancient Israel.

Practical Implications for Theology–Science Dialogue

For theologians and pastors: The study provides a model for reading Genesis 1 without fear of scientific contradiction. Preachers can affirm the functional, temple-oriented meaning of creation without forcing concordist readings. The distinction between 'ôr and ma'ôr can be explained to congregations as a coherent ancient claim about time and its governance, not a failed scientific prediction.

For scientists who are believers: The study clarifies that methodological naturalism is a legitimate procedural constraint, not a threat to faith. One can practice excellent science while holding to metaphysical theism. The Photon Epoch is not a “proof” of Genesis, but neither is it a contradiction. Scientists can investigate the early universe with full integrity while also affirming that the cosmos is created through the Logos.

For educators: The integrative model and summary table can be used in seminary and university courses to teach non-polarized approaches to science-religion issues. A sample class session could present the functional ontology interpretation alongside standard cosmological data, then guide students through the table’s distinctions.

For dialogue partners: The distinction between structural parallels and evidential weight offers a middle way between conflict and concordism. Believers and skeptics can agree that light preceded stars in both the Genesis sequence and the standard cosmological timeline, without needing to agree on whether this correspondence is providential or coincidental. This allows respectful conversation without claiming too much for either side.

For future empirical research: The study suggests that neuroscientific studies of religious experience should be interpreted with theological humility. Finding neural correlates does not debunk spiritual perception. Conversely, theologians should engage seriously with CSR findings rather than dismissing them. A collaborative research program could investigate whether believers show measurable differences in agency detection or meaning-making that align with Plantinga’s predictions about restored noetic faculties.

CONCLUSION

This article has reexamined the relationship between Genesis 1:3 and modern cosmology. The distinction between first-day light (*’ôr*) and fourth-day luminaries (*ma’ôr*) is not a scientific error but a coherent functional claim within ancient Near Eastern cosmology (Walton, 2009, 2011; Fretheim, 1994). Structural parallels with modern cosmology—light before luminaries—are interesting but cannot serve as evidence for biblical inerrancy without committing the concordist fallacy (Barbour, 2000; McMullin, 1985). A theologically robust reading requires: (a) treating *’ôr* as created light, not divine energy (Aquinas, 1948; Basil, 1963; Blowers, 2012); (b) placing creation within a Christological framework (John 1; Athanasius, 2011); and (c) recognizing the noetic effects of sin on spiritual perception (Plantinga, 2000).

Methodological naturalism is a procedural constraint, not an ontological commitment (Pennock, 1999, 2011; Donahue, 2025). Empirical methods cannot adjudicate non-material realities. Spiritual perception requires grace and regeneration, not technique. The integrative model proposed respects domain incommensurability while allowing for structural parallels and respectful dialogue. Practical implications for pastors, scientists, educators, and dialogue partners have been outlined.

Future research should further explore patristic exegesis as a resource for science-theology dialogue (Van Till, 1996), particularly the neglected homilies of Ephrem the Syrian and Gregory of Nyssa. It should also investigate how empirical studies of religious experience (Walter, 2022; White, 2021) can be interpreted in light of the noetic effects of sin, asking whether any neurological or psychological data could, in principle, count for or against Plantinga’s model. Additionally, cross-cultural studies of creation texts (e.g., Hindu, Chinese, Indigenous) might reveal whether the “light before luminaries” motif is unique to Genesis or a more widespread human intuition. Finally, a collaborative project between biblical scholars, cosmologists, and philosophers could develop testable predictions from the functional ontology model—for example, whether ancient Near Eastern texts consistently prioritize function over material origin across different creation accounts.

The ultimate question—whether the light of Genesis 1:3 is the same light measured by cosmologists—may remain a matter of faith. But the relationship between these two lights can be studied with rigor, humility, and mutual respect across disciplinary boundaries. This paper has attempted to model such an approach.

REFERENCES

1. Aquinas, T. (1948). *Summa Theologica* (Fathers of the English Dominican Province, Trans.). Benziger Bros. (Original work published ca. 1270).

2. Athanasius of Alexandria. (2011). *On the Incarnation* (C. A. Behr, Trans.). St. Vladimir's Seminary Press. (Original work published ca. 318).
3. Barbour, I. G. (2000). *When Science Meets Religion: Enemies, Strangers, or Partners?* HarperOne.
4. Basil of Caesarea. (1963). *Hexaemeron* (A. C. Way, Trans.). In *Fathers of the Church* (Vol. 46). Catholic University of America Press. (Original work published ca. 370).
5. Blowers, P. M. (2012). Creation in the Mirror of Scripture I: Patristic Approaches. In *Drama of the Divine Economy* (pp. 101–138). Oxford University Press.
6. Bromm, V. (2013). Formation of the First Stars. *Reports on Progress in Physics*, 76(11), 112901. <https://doi.org/10.1088/0034-4885/76/11/112901>
7. Cabal, T. J. (2023). Concordism and the Importance of Hybrid Models. *Religions*, 14(3), 351. <https://doi.org/10.3390/rel14030351>
8. Collins, C. J. (2003). *Science & Faith: Friends or Foes?* Crossway Books.
9. Collins, F. S. (2006). *The Language of God: A Scientist Presents Evidence for Belief*. Free Press.
10. Coyne, J. A. (2015). *Faith Versus Fact: Why Science and Religion Are Incompatible*. Viking.
11. Currid, J. D. (2013). *Against the Gods: The Polemical Theology of the Old Testament*. Crossway.
12. Demir, R. (2022). The Relationship Between Spirituality and Psychological Wellness: A Serial Multi-Mediation Analysis. *International Journal of Psychology and Educational Studies*, 9(4), 780–795. <https://doi.org/10.52380/ijpes.2022.9.4.780>
13. Dietrich, G. A. (2012). Review of *Genesis 1 as Ancient Cosmology*, by J. H. Walton. *Themelios*, 37(2), 313–316.
14. Donahue, M. K. (2025). Methodological Naturalism, Analyzed. *Erkenntnis*, 90(5), 1981–2002. <https://doi.org/10.1007/s10670-024-00790-y>. Correction: <https://doi.org/10.1007/s10670-024-00837-0>
15. Fretheim, T. E. (1994). Genesis. In L. E. Keck (Ed.), *The New Interpreter's Bible* (Vol. 1). Abingdon Press.
16. Irons, L. (2000). The Framework Interpretation: An Exegetical Summary. *Ordained Servant*, 9(1), 7–11.
17. Launonen, L. (2023). Debunking Arguments and Everyday Religious Experiences. *International Journal for Philosophy of Religion*. <https://doi.org/10.1007/s11153-023-09878-x>
18. Mallary, M. (2024). Scientific Methods and Sacred Matters: On Methodological Naturalism, Divine Agency, and Christians in Science. *Zygon: Journal of Religion and Science*, 59(3), 638–660. <https://doi.org/10.16995/zygon.11761>
19. McGee, D. (2023). *Day or Age: Evaluating Progressive Creationism*. Exegetica Publishing.
20. McMullin, E. (1985). How Should Cosmology Relate to Theology? In A. R. Peacocke (Ed.), *The Sciences and Theology in the Twentieth Century* (pp. 17–57). University of Notre Dame Press.
21. Morris, H. M. (1974). *Scientific Creationism*. Creation-Life Publishers.
22. NASA/WMAP Science Team. (n.d.). *Cosmic Microwave Background Radiation*. NASA Goddard Space Flight Center. https://map.gsfc.nasa.gov/universe/bb_tests_cmb.html
23. Pennock, R. T. (1999). *Tower of Babel: The Evidence Against the New Creationism*. MIT Press. <https://doi.org/10.7551/mitpress/6870.001.0001>
24. Pennock, R. T. (2011). Can't Philosophers Tell the Difference Between Science and Religion? Demarcation Revisited. *Synthese*, 178(2), 177–206. <https://doi.org/10.1007/s11229-009-9547-3>
25. Planck Collaboration. (2020). Planck 2018 Results. VI. Cosmological Parameters. *Astronomy & Astrophysics*, 641, A6. <https://doi.org/10.1051/0004-6361/201833910>
26. Plantinga, A. (2000). *Warranted Christian Belief*. Oxford University Press. <https://doi.org/10.1093/0195131932.001.0001>
27. Polkinghorne, J. (1998). *Science and Theology: An Introduction*. Fortress Press.
28. Reimer, P. J., Bard, E., Bayliss, A., Beck, J. W., Blackwell, P. G., Bronk Ramsey, C., Grootes, P. M., Guilderson, T. P., Hafliadason, H., Hajdas, I., Hatté, C., Heaton, T. J., Hoffmann, D. L., Hogg, A. G., Hughen, K. A., Kaiser, K. F., Kromer, B., Manning, S. W., Niu, M., ... van der Plicht, J. (2013). IntCal13 and Marine13 Radiocarbon Age Calibration Curves 0–50,000 Years cal BP. *Radiocarbon*, 55(4), 1869–1887. https://doi.org/10.2458/azu_js_rc.55.16947
29. Tanabashi, M., et al. (Particle Data Group). (2024). Big-Bang Cosmology. In R. L. Workman et al. (Eds.), *Review of Particle Physics. Progress of Theoretical and Experimental Physics*, 2024(8), 083C01. <https://doi.org/10.1093/ptep/ptae083>
30. Van Till, H. J. (1996). Basil, Augustine, and the Doctrine of Creation's Functional Integrity. *Science & Christian Belief*, 8(1), 21–38.

31. Walter, Y., & Koenig, T. (2022). Neural Network Involvement for Religious Experiences in Worship Measured by EEG Microstate Analysis. *Social Neuroscience*, 17(3), 258–275. <https://doi.org/10.1080/17470919.2022.2083228>
32. Walton, J. H. (2009). *The Lost World of Genesis One: Ancient Cosmology and the Origins Debate*. IVP Academic.
33. Walton, J. H. (2011). *Genesis 1 as Ancient Cosmology*. Eisenbrauns. <https://doi.org/10.5508/jhs.2012.v12.r16>
34. Wenham, G. J. (1987). *Genesis 1–15* (Word Biblical Commentary, Vol. 1). Word Books.
35. White, C. J. (2021). Religion as a Testing Ground for Cognitive Science. *Journal for the Cognitive Science of Religion*, 7(2), 200–212. <https://doi.org/10.1558/jcsr.20641>