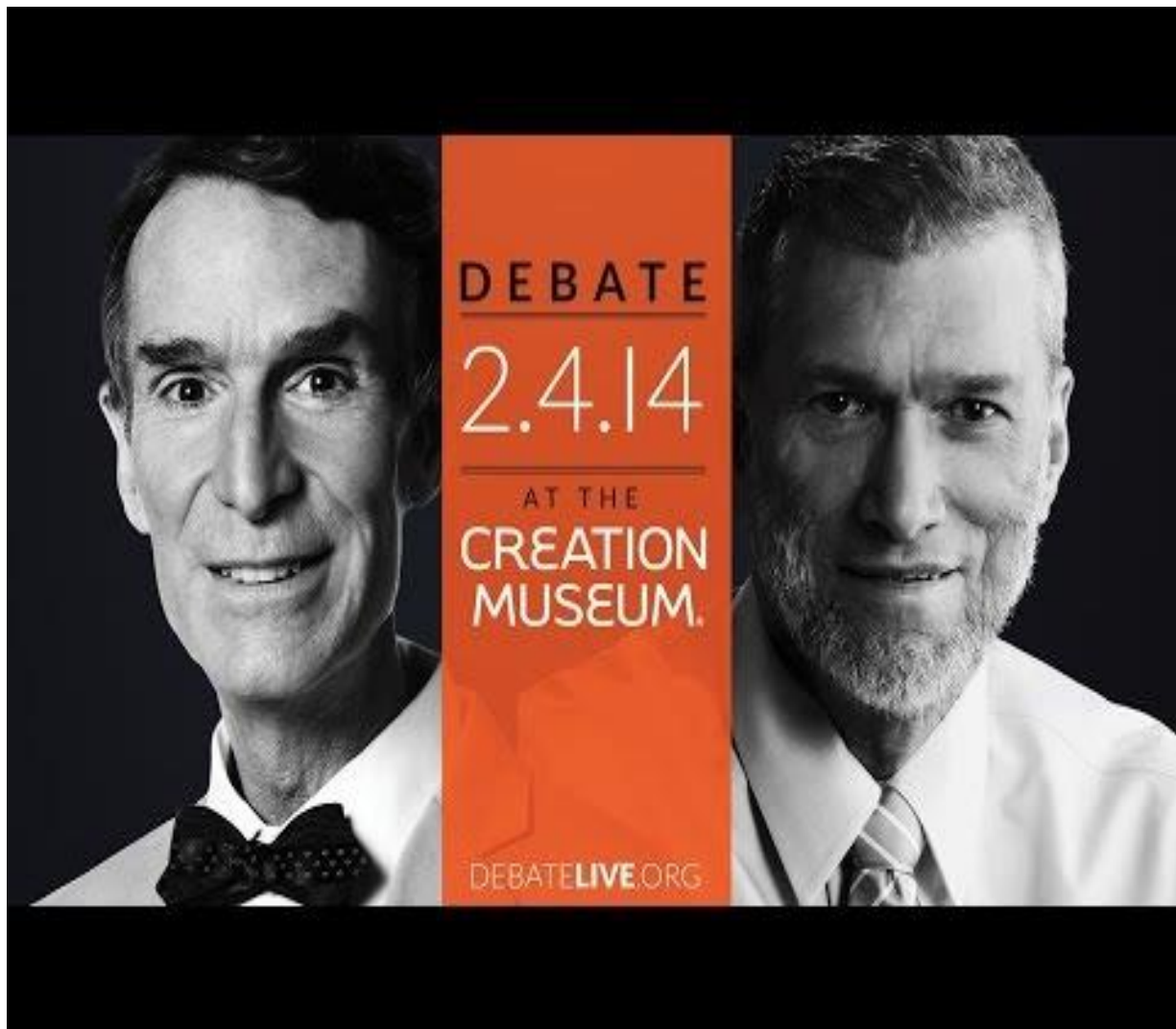
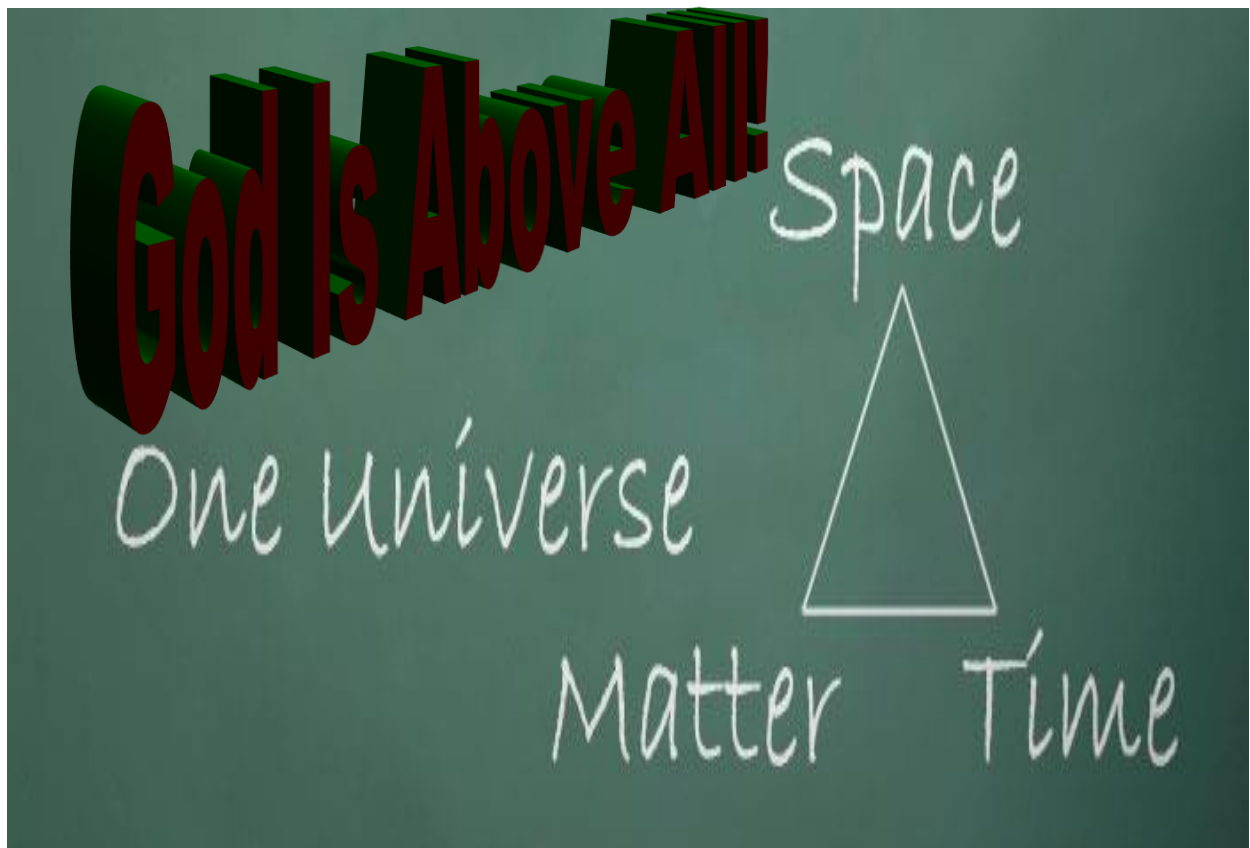


**AN INQUIRY INTO HUMAN ORIGINS & THE AGE OF THE EARTH » PART 1 OF 3**  
**DEBATES - HISTORICAL ADAM - INFORMATION CODE - CHAOS/NOTHING**  
**BIG BANG - CATASTROPHE - PUNCTUATED EQUILIBRIUM - EPIGENETICS**

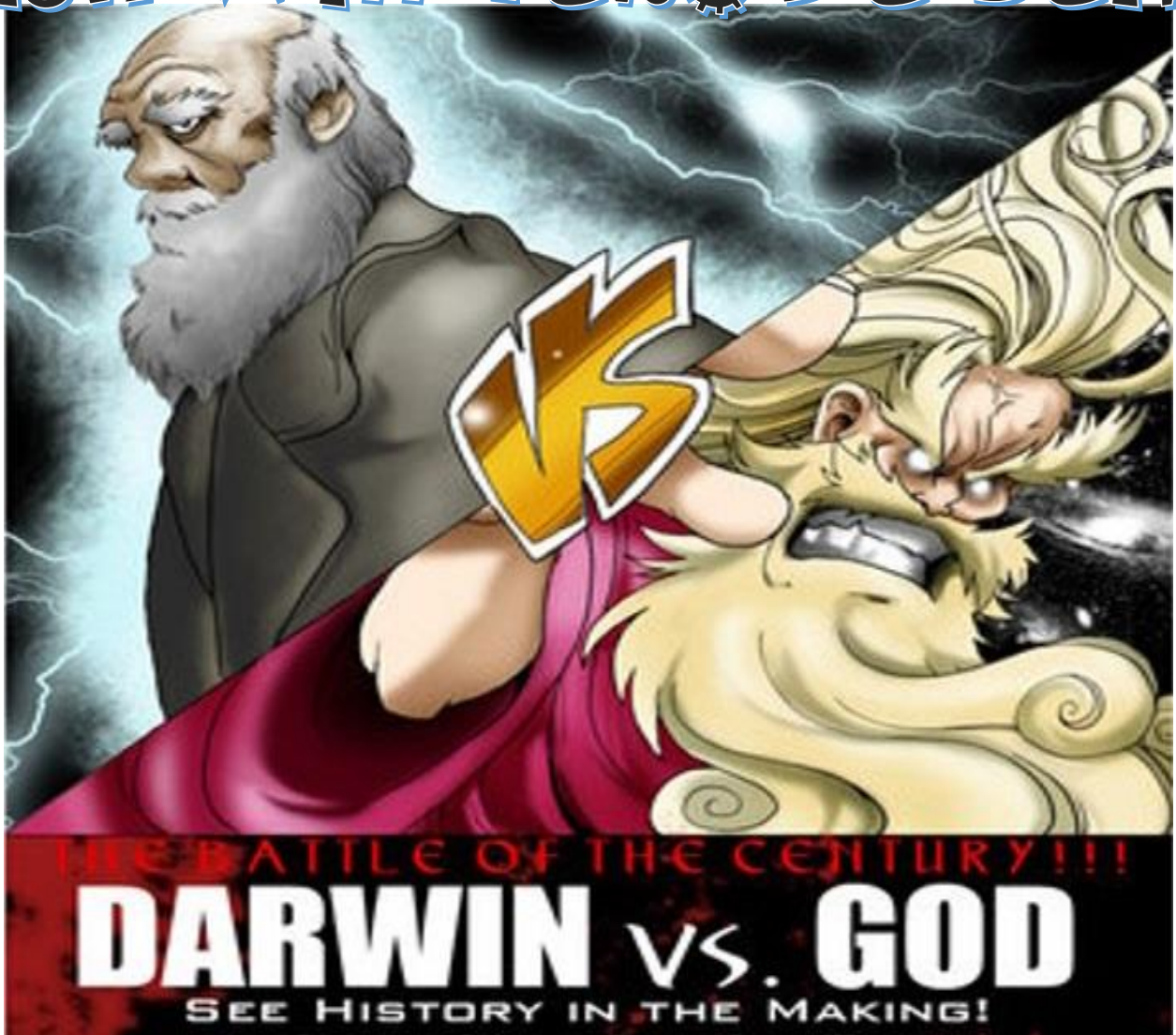
By David L. Burris

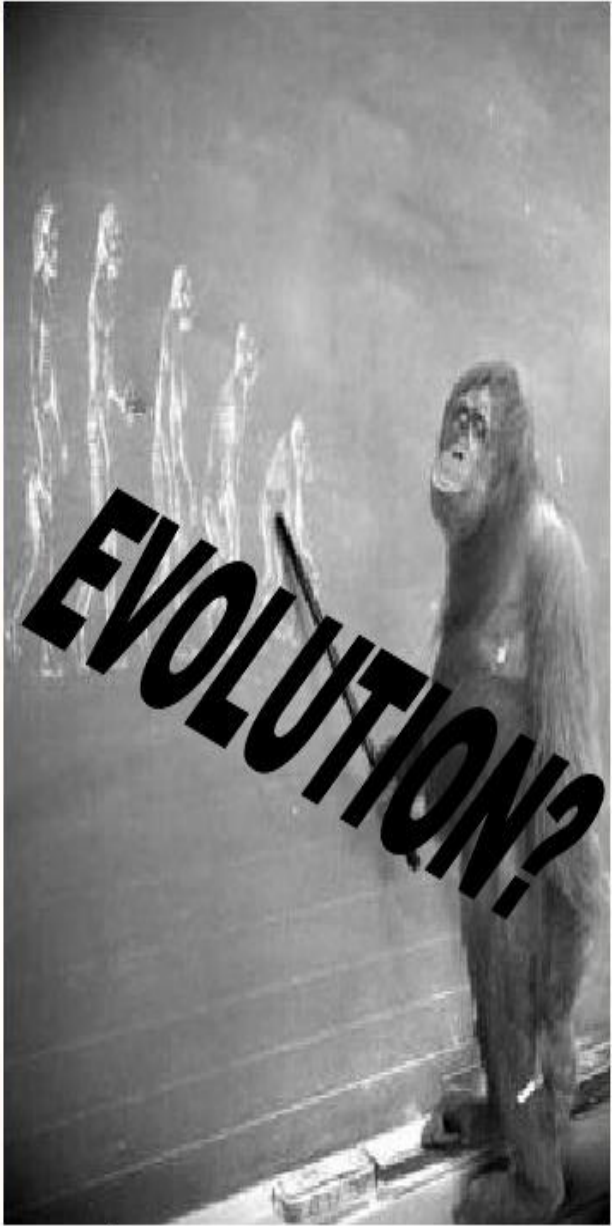
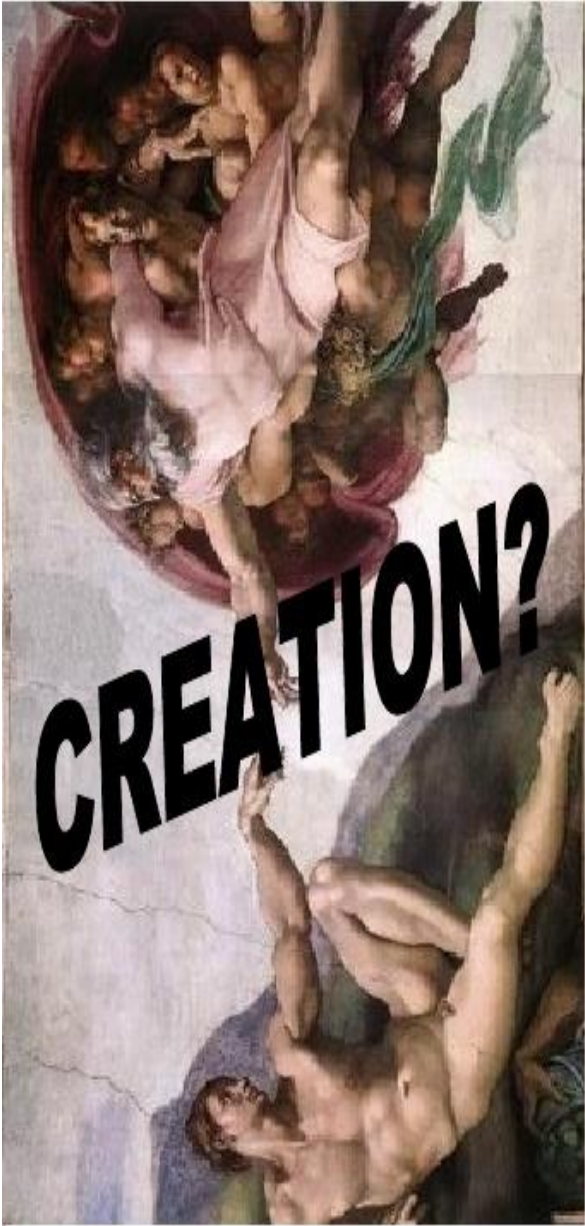
# Creation Versus Evolution Debates





# Fish Will Take Da Bait!









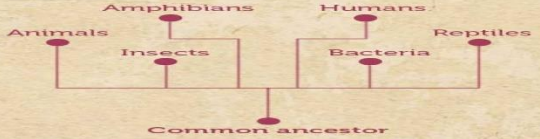

# THE THEORY OF EVOLUTION

**Charles Darwin** was a British naturalist born in **1809**. He was known for his famous work "**On the Origin of Species**."





Darwin changed the way the people of the world viewed themselves through his amazing ideas on **evolution and natural selection**.

For **thousands of years** many philosophers believed that **life must have been created by a supernatural being or God**.





According to Darwin, the **millions of species present today evolved slowly over billions of years from a common ancestor**.

He called this process, **natural selection**. It emphasized that the **individuals** that **best adapted to their habitat**, passed on these **traits** to their offspring.




Over a period of time, these **individuals** were transformed into a **species that were different from their ancestors**. For instance, **reptiles were transformed into birds** and **apes were transformed into humans**.

The traits which are heritable traits are controlled by the **genes**. **Genotype** is the complete **set of genes** in an organism's genome.



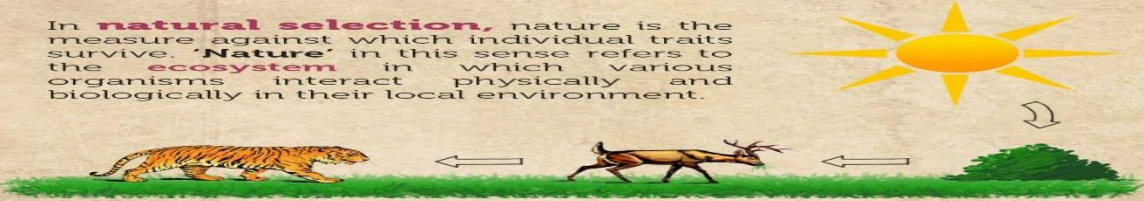
The traits that are a part of the **organism's structure and behavior** are called **phenotype** and evolve from the **interaction between genotype and its environment**.

So an **organism's suntan** arises due to the **interaction between sunlight and the organism genotype**.




This is the reason why **suntan is not passed on** to the next generation.

In **natural selection**, nature is the measure against which individual traits survive. '**Nature**' in this sense refers to the **ecosystem** in which various organisms **interact physically and biologically** in their local environment.



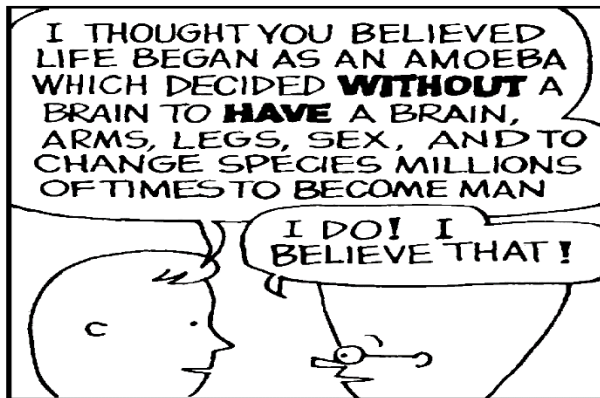
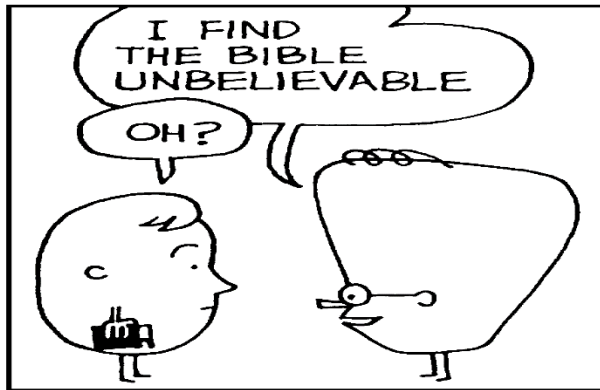
There is **competition** for the **limited resources** available between the **organisms**. So, it's '**survival of the fittest**,' which is Darwin's famous phrase.



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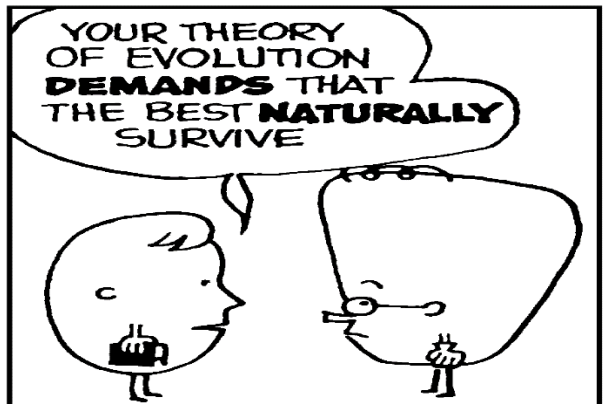
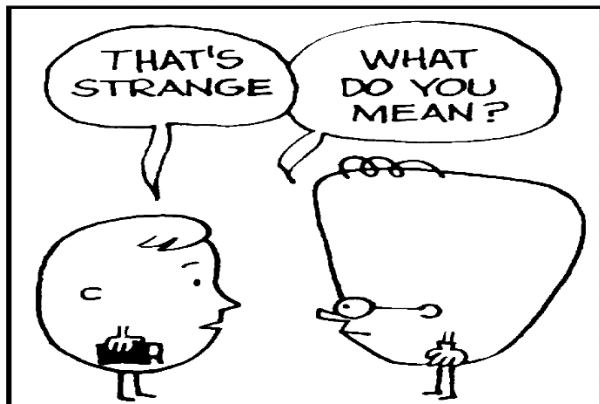
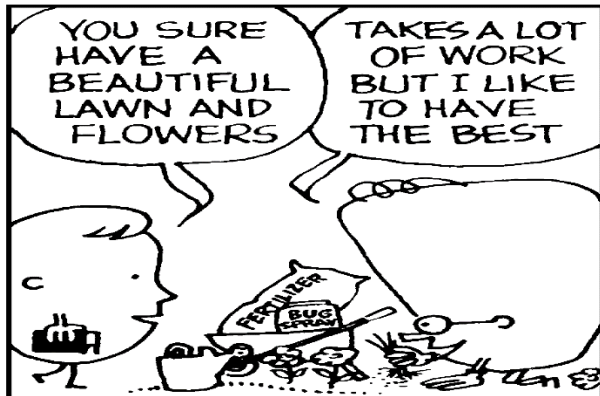
### THEOPHILUS

### A Matter of Faith

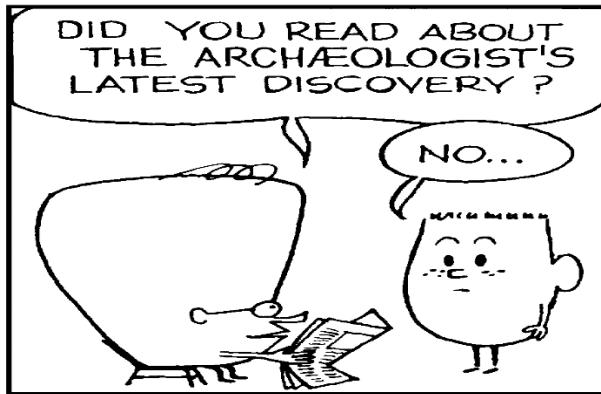


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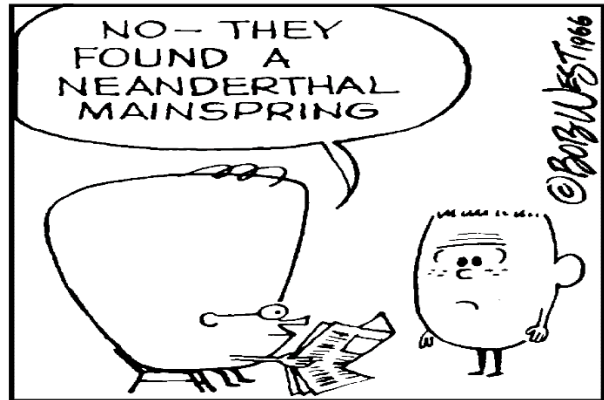
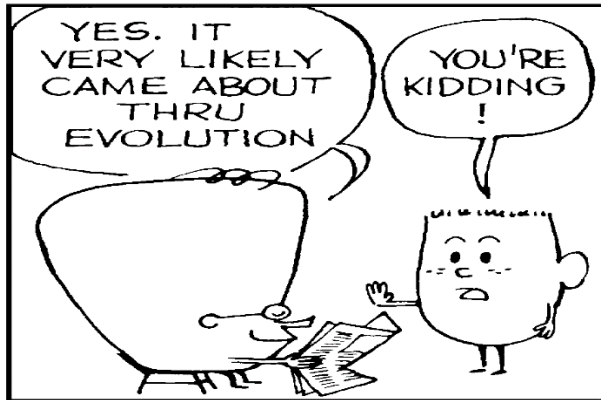
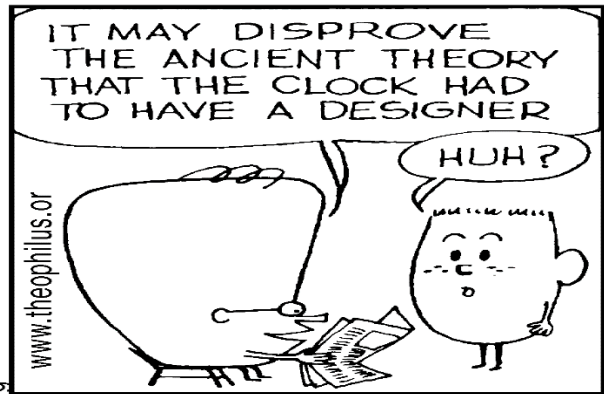
### Helping the Fittest Survive



### THEOPHILUS

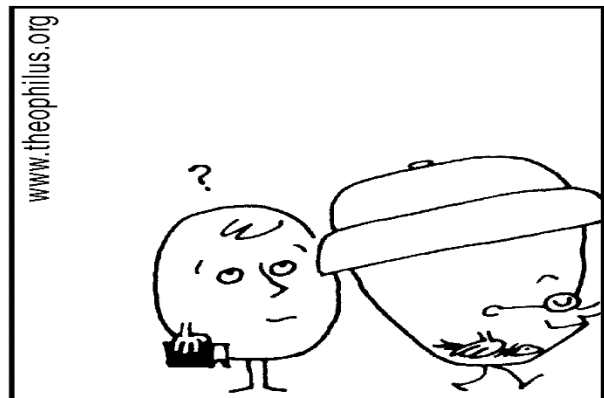
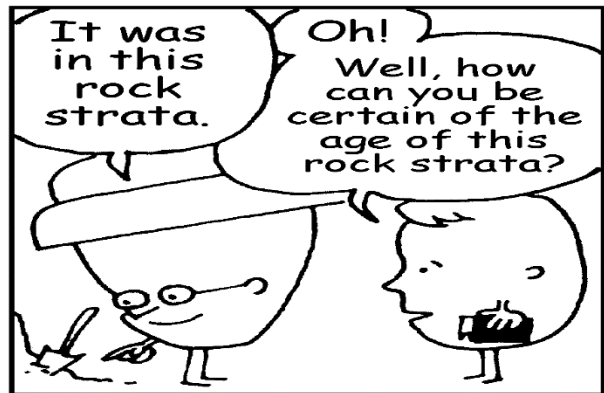


### Evolution of the Clock



### THEOPHILUS

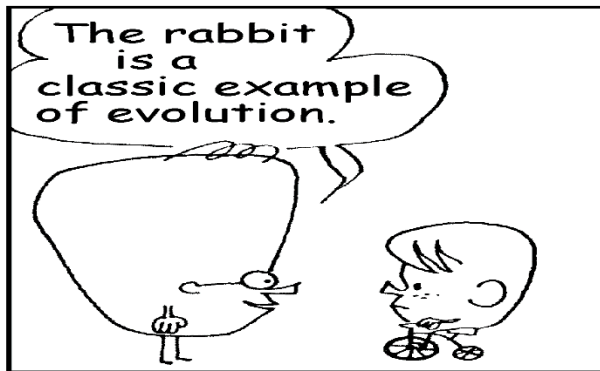
### Dating Technique



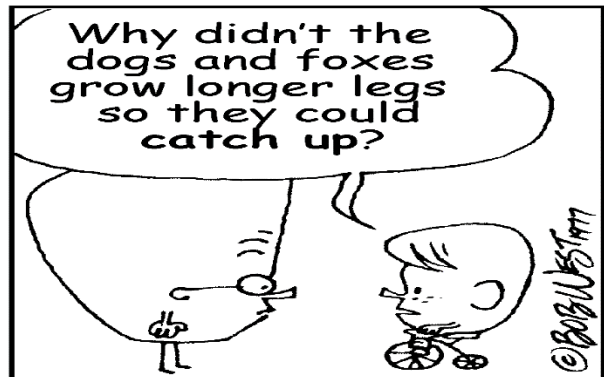
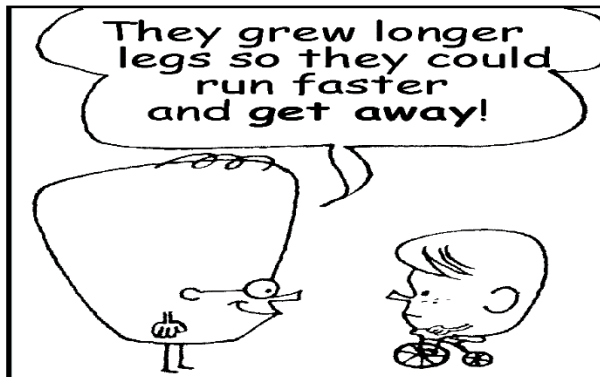


### THEOPHILUS

### Classic Evolution



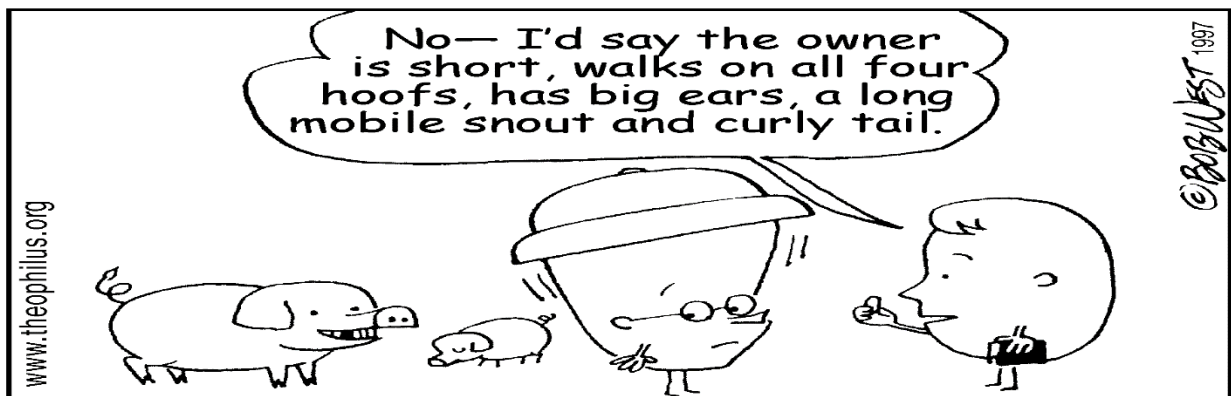
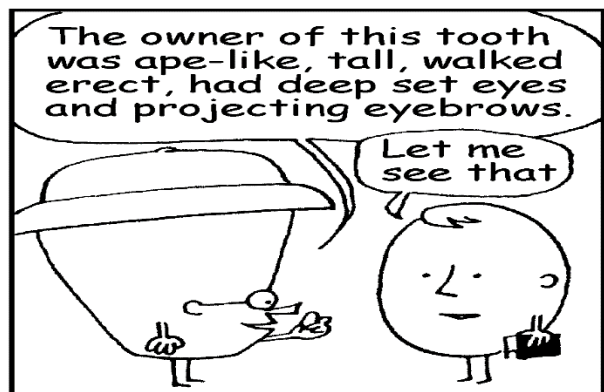
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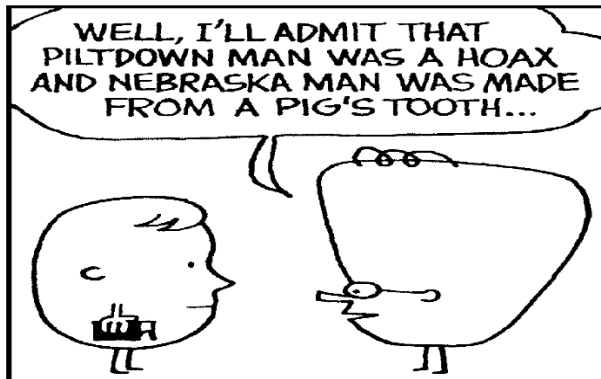
### Discovering Nebraska Man



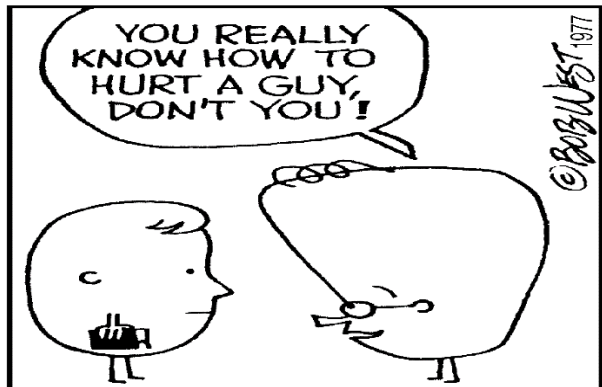
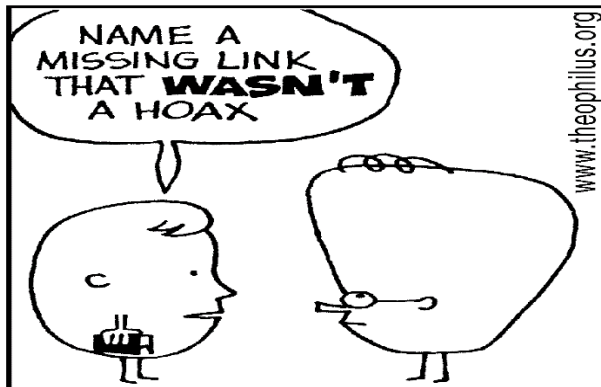
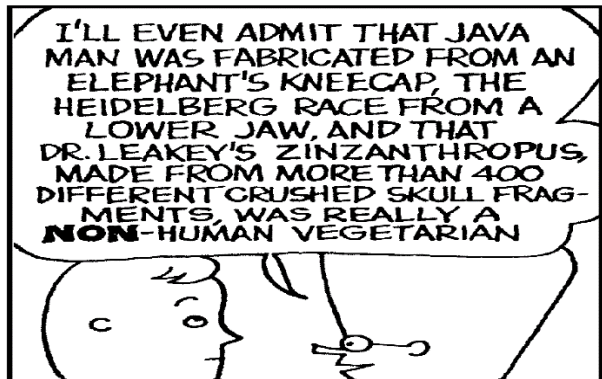
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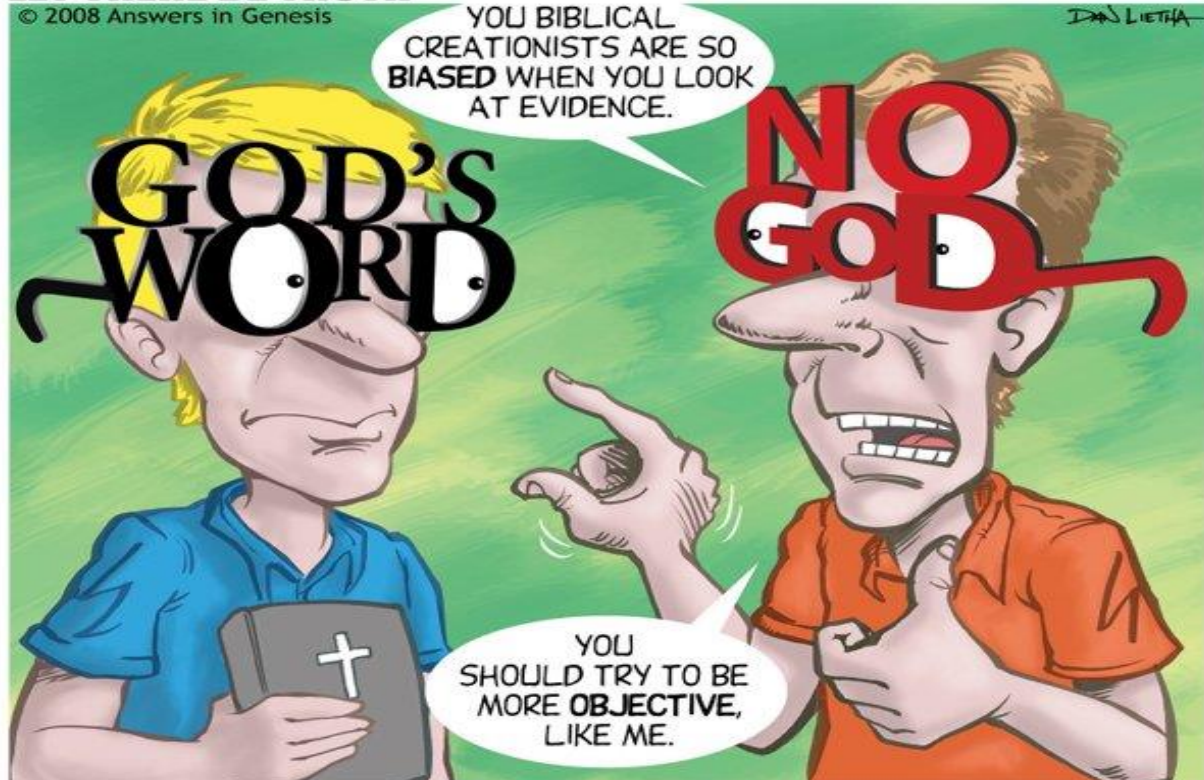


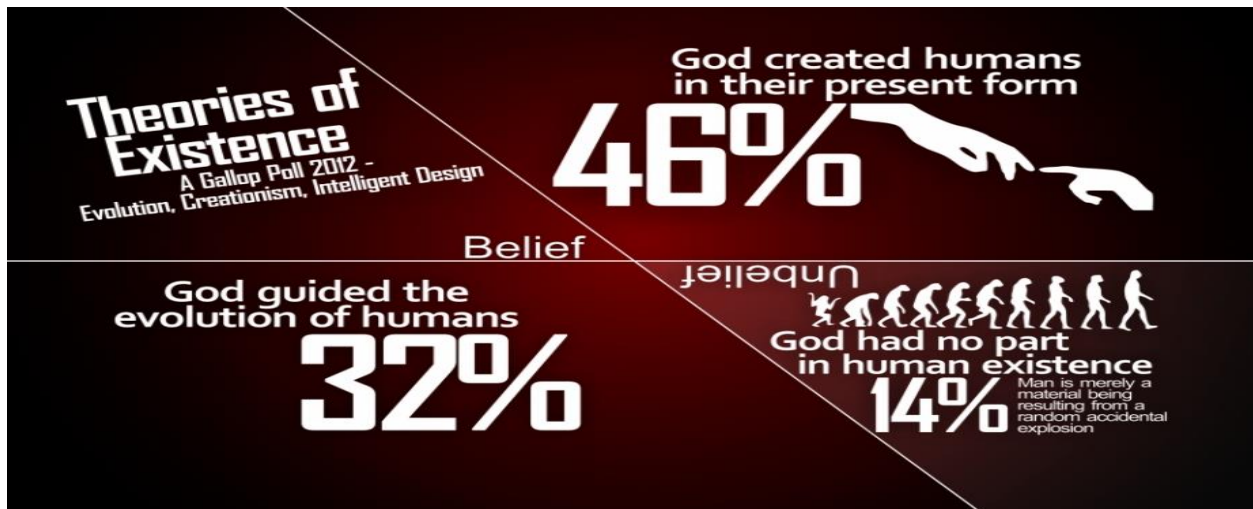
### The Evolution of Hoaxes



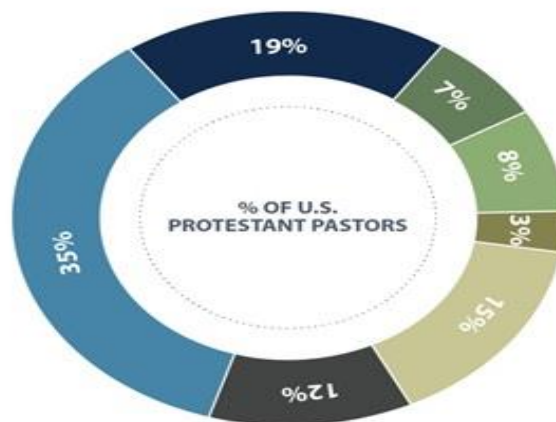
### LET THERE BE TRUTH

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## CLERGY VIEWS: CREATION AND EVOLUTION



### YOUNG EARTH CREATION

#### CORE

Believe that God created life in its present form in six 24-hour days

Assert that the earth is less than 10,000 years old

Absolutely certain of these perspectives

#### LEANING

All others who believe that God created life in its present form in six 24-hour days, but who express qualified certainty or who doubt "young" age of the earth

#### UNCERTAIN

Believe that God created life, but they admit they are not certain how

### PROGRESSIVE CREATION

#### CORE

Believe that God created life in its present form over a period of time, but not via evolution

Absolutely certain of this perspective

#### LEANING

All others who embrace an old earth view, but who express qualified certainty

### THEISTIC EVOLUTION

#### CORE

Believe God created life, used a natural process like evolution

Absolutely certain of this perspective

Express the belief that natural selection can explain the rise of new species

#### LEANING

All others who embrace the idea that God used a natural process to bring about life in its present form, but who express some qualified certainty

Methodology:  
Conducted by Barna Group  
Commissioned by BioLogos  
Nationally representative sample of U.S. Protestant churches; n=602 senior pastors  
Sampling error: +/- 4.1 percentage points  
February-March 2012  
Cooperation rate: 96%

## Creation Versus Evolution Debate: Theist Versus Naturalist Worldview

	<b>Theism</b>	<b>Naturalism</b>	<b>Pantheism</b>
<b>God</b>	Personal	Non-existent	Impersonal
<b>World</b>	Creation	Phy. Evolution	Spir. Evolution
<b>Human Nat.</b>	Like God	Like Animals	Is God
<b>Body/Soul</b>	Unity	Body Only	Soul Only
<b>Immortality</b>	Resurrection	Annihilation	Reincarnation
<b>Destiny</b>	Glorification	Extinction	Absorption
<b>Authority</b>	Divine Revelation	Human Reason	Spiritual Experiences
<b>Truth</b>	Absolute	Relative	Personal
<b>Jesus</b>	Son of God	Good Man	Enlightenment
<b>Salvation</b>	Redemption	Education	Meditation
<b>Evil</b>	Rebellion	Ignorance	Illusion
<b>Ethics</b>	God-centered	Man-centered	World-centered
<b>History</b>	Linear	Chaotic	Cyclical
<b>Culture</b>	God ordained	Man-centered	World-centered

# Introduction to the Human Origins Debate

## Evolutionary Principles

- Nature selects from **random** variations. mutation/natural selection
- An organism strives to survive and **reproduce**.
- The **species** persists through time not individuals

## Origin of Complex Adaptations

“But how can a series of reasonable intermediates be constructed? . . . The dung-mimicking insect is well protected, but can there be any **edge** in looking only 5 percent like a turd?”

S. J. Gould quoted in *Natural Limits*, p. 97.

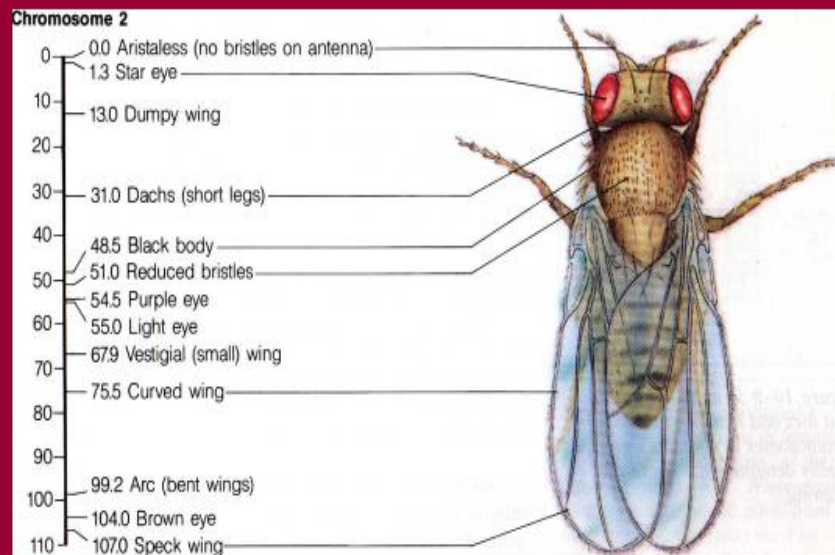
**The Peppered Moth**  
**Moth**  
**demonstrates**  
**natural selection**  
**though the**  
**details are now**  
**under suspicion**

**Landmark**  
**1950s study is**  
**under fire**



**Found in every**  
**high school**  
**and college**  
**textbook**

**Documents**  
**change in**  
**frequency but**  
**not new**  
**adaptation**





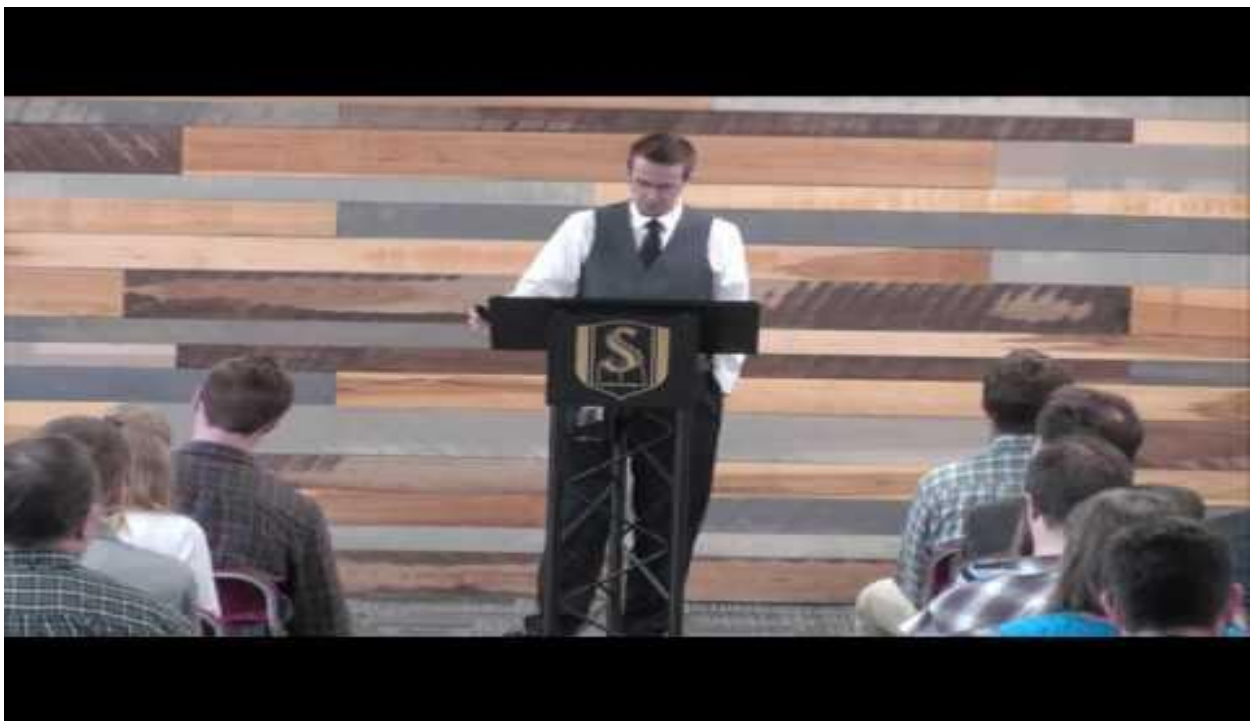
***Drosophila* fruit flies have been mutated endlessly. Geneticists have made some strange looking fruit flies but they are still fruit flies.**

## **Origin of Complex Adaptations**

“What is the use of their unceasing mutations? . . . a swing to the right, a swing to the left, but no final evolutionary effect.”

Pierre-Paul Grasse' quoted in *Natural Limits*, p. 88.

# Theistic Evolution @Adam & Eve





## “Let Us Make Man in Our Image ...”

*(Gen. 1:26)*

### GENESIS

*Reveals* that God makes man in His own image.

### EVOLUTION

and

### THEISTIC EVOLUTION

*Surmise* that man has evolved from the animal—which of course has no image to pass along, at least none that man would care to inherit.

**G**od chooses to start man from the top. So Genesis reveals.

Evolution chooses to start man from the bottom. So men surmise, thus rejecting or perverting the Genesis revelation.

Theistic evolution pretends to bridge this yawning chasm, but finds no way to harmonize man as image-bearer of God with man as heir of the animal.

Christianity OR evolution!

And what does creation in God’s image mean to you?

Much in every way.

1. To begin with, that is the true source of your own self-image. Do you see yourself when the poet speaks of fallen man as “a wounded angel”? There is great hope in that poetic license when tempered in the light of the Word.

**OR** do you see yourself as what one writer calls “the trousered ape,” the best that the animal can produce so far?

No hope in it. All those billions of years to get to this? With an animal yesterday and no real tomorrow?

2. You can have a high destiny, promised all who believe, through the same creating Word who will recreate the new heaven and new earth. This is the Genesis theme as developed throughout the Scriptures and into Christianity.

**OR** are you mired in the improbable hope that across aeons of time some man may altogether shrug off his animal ancestry? This is the extent of evolutionary hope, which theistic evolution tries to drape a little in trappings it selectively purloins from the Scriptures.

3. This is how the psalmist describes you as seen through the eye of faith and in the light of revelation: “When I look at thy heavens, the work of thy fingers, the moon and the stars which thou hast established; what is man that thou art mindful of him, and the son of man that thou dost care for him? Yet thou hast made him a little less than God, and dost crown him with glory and honor. Thou hast given him dominion over the works of thy hands; thou hast put all things under his feet, all sheep and oxen, and also the beasts of the field, the birds of the air, and the fish of the sea, and whatever passes along the paths of the sea” (Ps. 8:3–8).

This is but a variation on a Genesis theme: “Then God said, ‘Let us make man in our image, after our likeness; and let them have dominion over the fish of the sea, and over the birds of the air, and over the cattle, and over all the earth’ ” (Gen. 1:26).

Christianity views us as God’s image-bearers, an image marred indeed but not wholly lost in man’s Fall.

4. Observe with the eye of faith how the gift of God’s image is reflected in man’s ability to create civilization, and to develop the vast mosaic of human culture. The animal has no such resources to give.

5. The image is key to invention, to vision, to the breathtaking achievements of true science and technology. The gift of the image provides the Holy Spirit with all the talents He deploys to make the “City” possible.

Compare this Christian view with the pitiful antecedents postulated by evolution of either variety.

1. If man be but some variety of the animal, how does one account for the rise and extent of human accomplishment? Does the beehive, the ant hill, the animal pack account for the glories of human creativity, the vast extent and organization of Metropolis? Surely only the gullible can believe that, those who want to “suppress the truth in unrighteousness” (Rom. 1:18).

2. Still more, what base, then, for the future?

Must you forlornly seek hope with some theistic evolutionists in fantasizing that man may one day, aeons hence, evolve into an immortal species? Some evolutionists so delude themselves, rather than yield to faith, thus fulfilling the apostle’s prediction: “Therefore God sends upon them a strong delusion, to make them believe what is false, so that all may be condemned who did not believe the truth but had pleasure in unrighteousness” (2 Thess. 2:11–12).

The Divide looms clear enough: man as heir of the image, to which all of man’s achievements bear eloquent witness; or man as heir of the animal, a fantasy contradicted by civilization and culture themselves. What legitimate claim has animal ancestry on the marvels man has wrought?

We may learn something of the dimensions implicit in God’s image by reflecting on what must have been God’s anticipations for man as originally created—surely to be fulfilled in man’s re-creation by the Word.

Say that “in the beginning” this Father made the universe as a kind of “playhouse” for His children, and gave them His image so that they could “subdue” the earth and, no doubt, lift their eyes to further conquests.

No true father, least of all God the Father Almighty, provides his children with a playhouse which they cannot use and enjoy.

What God had in view for man to subdue is suggested by the dimensions of the universe. The vastness, depth, and detail of the creation all point to the potential which God invested in man. What outskirts of the creation might even now be ours, what glories of culture and attainment, had man *not* fallen (see chapter 10). And what anticipation beckons redeemed image-bearers in the New Heaven and New Earth promised those who believe: “What no eye has seen, nor ear heard, nor the heart of man conceived, that God has prepared for those who love him” (1 Cor. 2:9).

Yes, theistic evolution wants “in” on promises like these, while evolution rejects them as myth.

But like evolution itself, theistic evolution abandons the entire framework which Christianity erects, starting with Genesis, which alone founds such promises upon reality.

A Bible out of which the theistic evolutionist selects just those passages which please him, while he lives in the disobedience of unbelief in regard to the rest, is a Word which he wishes to bend to his service. The Word is to serve him; not he the Word.

Theistic evolution makes an idol, according to its own image, by highly selective use of the Bible. It is repetition of an old blunder.

The idolater cuts a tree, Isaiah says, and “takes part of it and warms himself, he kindles a fire and bakes bread; also he makes a god and worships it, he makes it a graven image and falls down before it. Half of it he burns in the fire; over the half he eats flesh, he roasts meat and is satisfied; also he warms himself and says, ‘Aha, I am warm, I have seen the fire.’ And the rest of it he makes into a god, his idol; and falls down to it and worships it; he prays to it and says, ‘Deliver me, for thou art my god’ ” (Isa. 44:15–17).

But what future was there, then, for such as these forerunners of theistic evolution?

“They know not, neither do they discern,” the prophet says, “for he has shut their eyes, so they cannot see, and their minds, so that they cannot understand” (Isa. 44:18).

The Divide: are you made in the Image of God, **OR** in the image of the lower animal? Or did God somehow, somewhere intrude His image on the evolutionary process in which, remember, the principal of uniformity forbids Him to interfere? If you can believe that man is thus able to twist God into the service of his theories, while flouting the Word as revealed in the Scriptures, you are exactly what evolutionists are looking for, someone gullible enough to believe anything.

## “And Man Became a Living Soul ...”

(Gen. 2:7)

### GENESIS

*Reveals* that God made man “a living soul” by breathing into his nostrils the breath (Spirit) of life.

### EVOLUTION

and

### THEISTIC EVOLUTION

Theorize that human life is no different in kind from that of the animals, from which man’s life presumably came.

**T**he Bible takes its own view of “life” and of its opposite “death.”

Evolution and theistic evolution limit the concept of “life” to what man could inherit from the animals. This is totally at odds with what the Bible reveals about “life”—and about “death” (see chapter 11).

The Bible makes clear that man, once called by God into being, *is* in being forever, something evolution ignores. For each of us the crucial issue is not whether we will survive time into eternity, but only how and where. Obviously, the animal world has no such eternity of being to give. There *is* a Divide between Christianity and evolution.

For evolution, what becomes animal “life” inexplicably emerges from the “dust” of inanimate matter. One, C. Lloyd Morgan, called it “emergent evolution”—without explanation, of course.

But Genesis flatly rejects the notion that dust can give birth to life. Dust has no such capacity.

This is clear from Genesis where God reveals that the dust out of which man was made has no “life” to pass along.

It was the boast of “science” not so long ago to have disproved the possibility of “spontaneous generation,” that is of life originated out of the non-living.

But it has become the claim of evolution that a universe which started out as simply a burst of energy at some time mysteriously produced “life.”

But hear the Genesis report: “And the Lord God formed man out of dust from the ground....”

But, did the dust, then, become a “living” human being?

No, the dust, even when shaped as man by God Himself, clearly had no “life” to endow. Life came to man only after God “... breathed into his nostrils the breath of life; and man became a living soul” (Gen. 2:7–8).

Three steps there. Take note of them:

1. God forms man out of the dust from the ground. No life yet.
2. God breathes into man's nostrils. God's breath is His Spirit.
3. Then, and then only, does man become "a living soul."

In sum: even when God Himself has formed man out of the dust, there is no life in him. Obviously, the dust generates no life. The gift of life waits upon God's breathing into man's nostrils "the breath of life."

The impotency of dust is confirmed when God describes physical death as "return" to the dust (Gen. 3:19)—to precisely that lifelessness out of which evolution supposes life came by spontaneous generation.

This means that when the Bible speaks of "life," and evolution speaks of "life" they are talking about two very different things.

Now cross the Divide into evolutionary theory.

Evolution imagines that life somehow arose naturally out of lifeless matter. Theistic evolution supposes that through the "Bang" God somehow endowed the dust with its own power to generate life.

The Divide:

*Either*

"Life" is a supernatural endowment by God upon an otherwise lifeless creature of the lifeless dust—this is biblical;

*Or*

The dust acquires the power to produce "life" through the evolutionary process—which is not biblical at all.

The Divide becomes the sharper when we consider what the Bible refers to as the human "soul." Genesis, we observe, reports that in consequence of God's breathing into his nostrils, man becomes "a living soul."

Evolution thinks of man as a living animal, so much so that some theorists are fond of drawing parallels between human behavior and that of animal species. But God "breathes" nothing, of course, into evolutionary man. How could He interfere with the "principle of uniformity"?

Mysteriously, God's gift of the soul energizes the life of the body.

Man is a "living soul" through communion with God. This is the "life" which man forfeits at the Fall (see chapter 10), the "life" man can find restored through faith in Jesus Christ, according to the Plan of Redemption.

Physical life ceases at physical death, and the body is laid aside. Reunited as body/soul man stands before God at the Last Judgment. The redeemed are joined with God for "life" eternal, while the damned are alienated from Him in the "second death" (Rev. 21:8).

Participation in that "life" of communion with God which becomes eternal at the Last Day is available to us through the faith which opens the self to control by God's Word.

Of all this, evolution chooses to be ignorant.

For evolution the human being is but another instance of living organisms, so similar that the life of animal species can evolve into the animal life of man.

The themes of “soul” and “life” are mysterious. But we note once again the Great Divide widening here between Christianity and evolution.

1. For Christianity, man is made “a living soul” in the act of creation; for evolution man inherits “life” from the animal.

2. For Christianity, man forfeits all claim to “life” in the act of our first parents’ disobedience; for evolution there has been no such act of original disobedience.

3. For Christianity, man finds access to “life” restored through faith in the Word first revealed as, “And God said....;” for evolution Jesus is at most the “Reconciler” also evolved, lest the principle of uniformity be violated, out of animal antecedents.

God inspires Moses to say:

“See, I have set before you this day life and good, death and evil. If you obey the commandments of the Lord your God, which I command you this day, by loving the Lord your God, by walking in his ways, and by keeping his commandments and his statutes and his ordinances, then you shall live ... therefore choose life ...” (Deut. 30:15–16, 19).

Yes, choose life!<sup>1</sup>

---

<sup>1</sup> Berghoef, G., & DeKoster, L. (1988). [\*The Great Divide: Christianity or Evolution\*](#) (pp. 47–59). Grand Rapids, MI: The Christian’s Library Press.

\* If we assume evolutionary position—that man’s existence began 500,000 years ago—then the world’s population has reached its current level by doubling on an average of every 16,500 years. Simple mathematics reveals this figure to border on the foolish. (See fig. 12.)

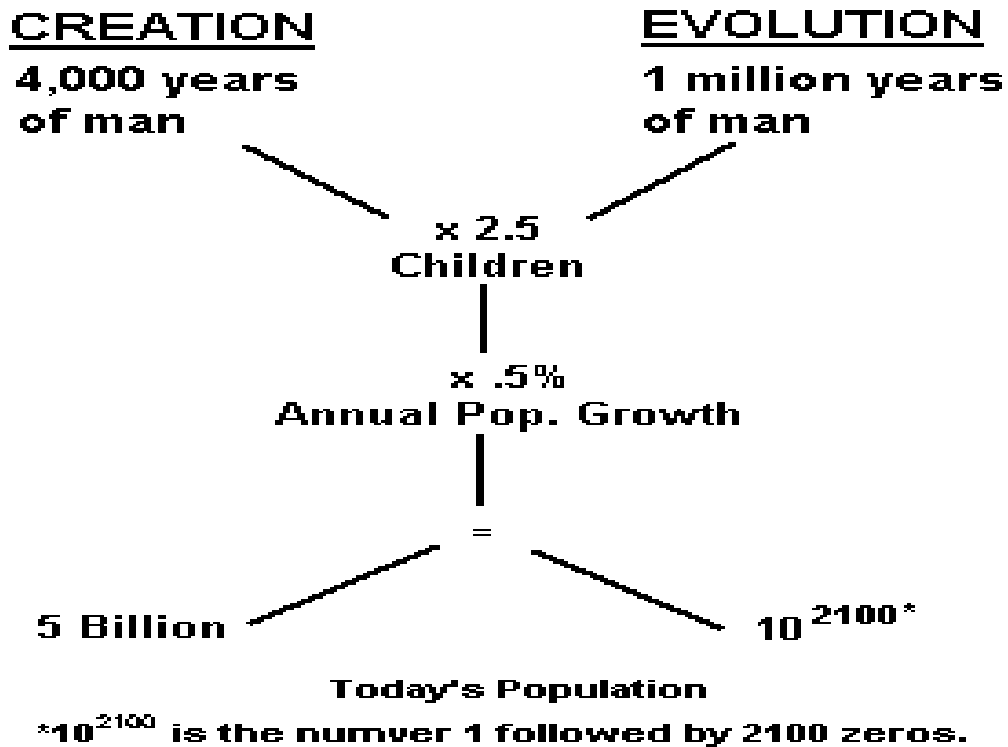
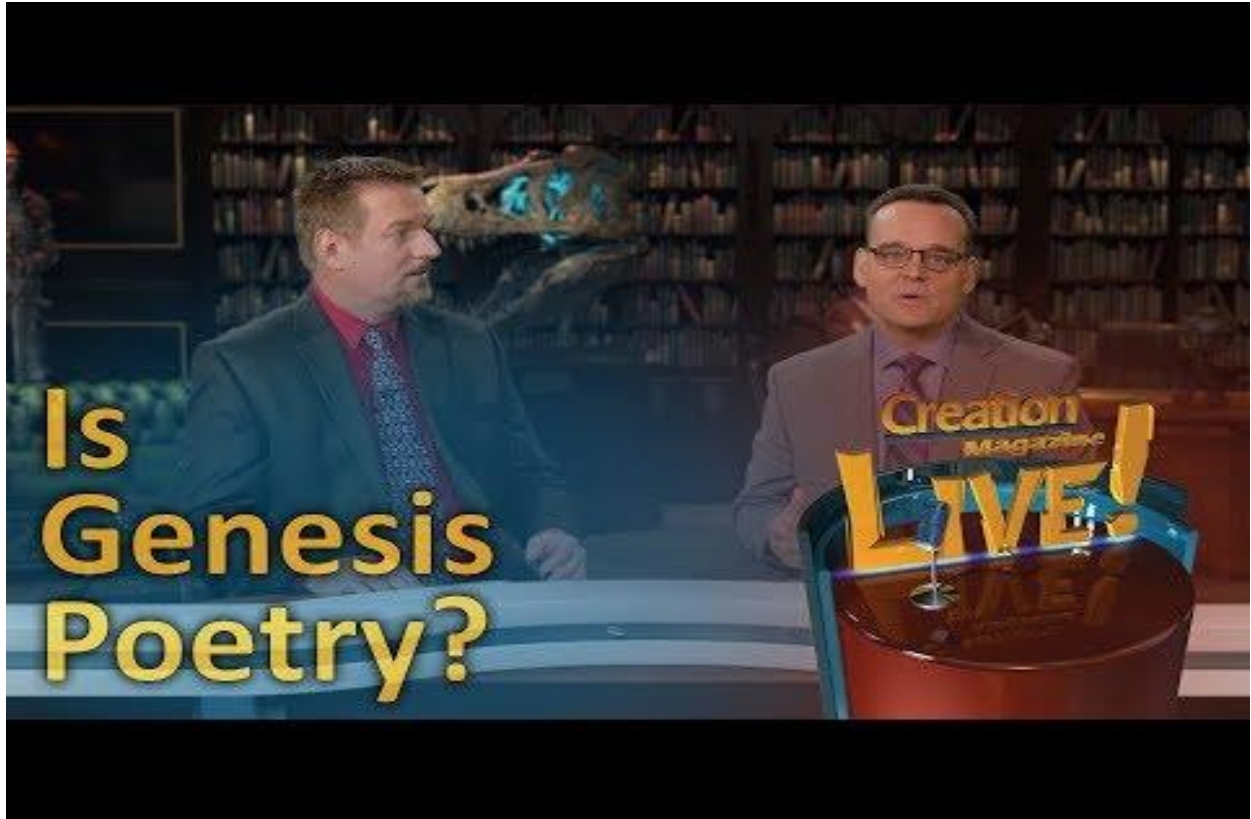


Figure 12. WHICH FORMULA REFLECTS TODAY’S WORLD POPULATION?

<sup>2</sup> Lindsay, D. G. (1992). [The genesis flood: continents in collision](#). Dallas, TX: Christ for the Nations.







\* Genesis Account Does Not Support Calvinist Claim of Justification by Faith Alone as is wrongly stated.



**ADAM, CRITICAL ISSUES** Overviews how biblical scholarship has interpreted the story of Adam in Genesis.

### **Adam in Old Testament Scholarship**

In Old Testament scholarship, scholarly debates surrounding Adam have largely involved three interrelated issues:

1. the relationship between the two creation accounts (Gen 1:1–2:4a; Gen 2:4b–3:24)
2. the manner in which these accounts reflect historical reality
3. the nature of the connection between Adam and Israel.

In early Old Testament scholarship the two creation accounts were generally viewed as complementary (or at least compatible with each other) and were also seen as basically mirroring historical reality (Postell, *Adam as Israel*, 5–13). Adam was seen as God’s vicegerent on earth and the progenitor of humanity, whose fall led to God’s subsequent election of Israel and the pattern of whose rise and fall foreshadows Israel’s national destiny.

#### *Wellhausen*

Historical critical scholars, however, have focused on various enigmatic features in the text (e.g., repetition, duplicate narratives, different divine names), and this has led them to look behind the text for solutions, by positing differing sources from which the Old Testament text was presumably composed. They also imagine complex religious-political dynamics that might have driven such appropriation of the sources. The paradigm-setting model of this historical critical approach was Julius Wellhausen’s documentary hypothesis. According to this theory, the Pentateuch is a composite of four independent written sources from different periods in Israel’s history—the Jehovist or Yahwist (J source, 10th—ninth centuries BC), Elohist (E source, ninth—eighth centuries BC), Deuteronomistic (D source, seventh century BC), and Priestly (P source, sixth—fifth centuries BC)—which were integrated to legitimize the postexilic priestly government of Second Temple Judaism (Wellhausen, *Prolegomena*, especially 41–82). This legitimization was supposedly done by taking the post-exilic priestly source (P) pertaining to Second Temple Judaism and applying it to the description of the earliest Israel (e.g., the tabernacle, the Mosaic law) to make a point that the post-exilic temple-centered, priest-controlled hierocracy was indeed Israel’s religious-political structure from its inception.

For historical-critical scholars, who in one way or another adopt this Wellhausenian paradigm, the two creation accounts tell little about actual historical events both in terms of content and chronology, as they are merely the literary products of the post-exilic Jews’ politically motivated and anachronistic use of the sources. Nor, they claim, is there textual integrity between the two creation accounts, because they simply represent two different sources reflecting two different religious-political situations in Israel’s history. In particular, the second creation account (Gen 2:4b–3:24) is typically associated with the J source (presumably produced during the last years of the Solomonic kingdom). This is argued because its narrow focus on the creation of Adam (as opposed to the first creation account’s cosmic scope) and sustained attention to Adam’s fall and expulsion from the Eden can be seen as illustrating the rise and fall of Israel, and thus can provide a salutary warning for Israel on the verge of division and decline (e.g., Gowan, *From Eden*, 32). By contrast, the first creation account (Gen 1:1–2:4a) is associated with the P source (commonly ascribed to post-exilic Second Temple Judaism) because its triumphal description of Adam being endowed with vicegerency as the climax of God’s creation is thought to reflect the post-exilic Jews’ aspiration to reaffirm themselves as God’s

elect people (e.g., Gowan, *From Eden*, 32). The two Adams of these two different creation accounts, then, for Wellhausenian historical-critical scholars, basically refer to Israel at two different stages in its national history.

### *Beyond Wellhausen*

Subsequent historical-critical scholars have made various attempts to improve on or overcome the Wellhausenian paradigm by:

- reconceiving the nature and range of the putative sources, from four independent written sources to diverse traditions or fragmentary sources developed or preserved orally and textually (e.g., Gunkel, *Stories*, 1–8, 63–92; von Rad, *Genesis*, 24–28)
- reimagining the manner in which different source materials were appropriated in the final text, from simple conjoining of the written sources to purposeful, strategic redaction of the source materials (e.g., Noth, *Deuteronomistic History*, 75–78, 89–99)
- rethinking Israel’s religious-political development, including the priestly structures present from pre-exilic times (e.g., Haran, *Temples*, 5–9, 71–75)
- shifting the focus from the compositional history to the final form of the text, by focusing on the narrative and literary features of the text (e.g., Alter, *Biblical Narrative*, 3–22)

The combination of these efforts to advance in and beyond the historical critical scholarship gave rise to at least two new or renewed tendencies in recent interpretations of Adam and the two creation accounts.

### *Parallels with Babylonian Creation Myths*

Greater flexibility regarding the nature and range of potential source materials led to greater appreciation of the parallels between the two creation accounts and the Babylonian creation myths. Similarities between the Babylonian origin story, the Enuma Elish, and the first creation account were noted. These include the concepts of creation out of chaos, and the sky as the means of holding water (for more similarities, see Heidel, *Babylonian Genesis*, 82–129). Scholars also note similarities between the Mesopotamian stories such as the *Atrahasis Epic* and the *Epic of Gilgamesh* and the second creation account. These include the basic storyline involving creation, fall, flood, and rescue of one family through a boat (for more details and bibliographies, see Enns, *Evolution of Adam*, 55, and Wenham, *Genesis 1–15*, xxxix). These are thought to reflect the Babylonian cultural-religious milieu arising during the time of Babylonian ascendancy, which would have been particularly influential for Israel during the Babylonian exile (Heidel, *Babylonian Genesis*, 130–40; Enns, *Evolution of Adam*, 38–40, 46–50).

### *Redaction Criticism*

Increasing focus on redactional intention(s) and the final form of the text has led many scholars to understand the two creation accounts in terms of the overarching compositional design of the final redactor(s). This final redactor expresses his overall compositional intentions in the J redactional layer rather than in the P layer (Wenham, *Genesis*, xxxix; compare Blenkinsopp, “P and J,” 1–15), and has been associated with the prophetic tradition (Schmitt, “Redaktion,” 170–89; Horbury, *Jewish Messianism*, 25–31). This redactor has often been further identified with the final redactor not only of Genesis, but also of the Pentateuch (e.g., Sailhammer, *Pentateuch*, 33–36; see also Postell, *Adam as Israel*, 33) and even of the whole Old Testament canon (Postell, *Adam as Israel*, 149–68; Dempster, *Dominion and Dynasty*, 42–43; Towes, *Genesis 1–4*, 40). The compositional intentions of the final redactor consist largely of:

- Post-exilic retrospective awareness of Israel's failure and
- Futuristic eschatological hope for the restoration of Israel.

The former is expressed in the designed juxtaposition of the first and second creation accounts, which provides the connected narratives regarding Adam's creation as God's vicegerent and his subsequent fall and expulsion from the Garden. The latter is expressed in the first creation account's representation of Adam as God's vicegerent, which is connected with the expectation for the eschatological Davidic ruler (Postell, *Adam as Israel*, 162–63; Dempster, *Dominion and Dynasty*, 56–62, 90–99, 225–27). This pattern of the rise and fall of Adam serves as either a mythological version of or a historical precursor to Israel's establishment as God's elect nation for the world and its subsequent fall and exile (Gardner, *Mythological Paradigm*, 1–18; Sailhamer, *Pentateuch*, 37–41; Postell, *Adam as Israel*, 124–34). Such redactional interweaving of the element of failure with that of hope in Genesis' presentation of Adam—a pattern repeated throughout the Old Testament in varying scales—functions to reaffirm Israel's identity as God's elect people who will be restored to their original status despite their past record of failure (Postell, *Adam As Israel*, 166–68; Enns, *Evolution of Adam*, 66–67)

It is possible within this interpretative paradigm to view the Adam stories as referring to an actual historical individual who is the progenitor of humanity and of Israel. However, if Genesis' presentation of Adam is based on diverse source materials heavily conditioned by the redactional intention to enhance Israel's self-identity and future hope, it is then difficult to understand the degree and manner of correspondence between the text and historical reality. The socio-cultural situation of the Bible's composition and communication is often emphasized in reaction to some modern tendencies to read Genesis "literally" as a quasi-scientific description of actual events, and to use such a reading for either refuting or harmonizing with theories of evolution (e.g., Enns, *Evolution of Adam*, 137–48).

### **Adam in Intertestamental Scholarship**

Except for a few cases, New Testament scholars have explored intertestamental Jewish literature to study Adam as part of their research on Paul's understanding and use of the Adam motif. John Levison (*Potraits of Adam*, 14–23) has criticized these New Testament scholars for:

- Limited focus on the materials deemed applicable only to Pauline theology (e.g., Davies, *Rabbinic Judaism*),
- Proof-texting manner of appropriating the chosen passages with inadequate respect for their original context (e.g., Barrett, *First Adam*; Dunn, *Christology*),
- Unjustifiably unified "Intertestamental notion" of Adam owing to a failure to recognize diverse views in Intertestamental literature (e.g., Wright, *Adam*, 359–89).

As a corrective to these studies, Levison's work deals with all significant intertestamental instances of the Adam motif in their own literary and historical contexts. He concludes that similar portraits of Adam do not arise across all strands of intertestamental Judaism but only within broad shared traditions and circumstances. In brief, the authors of wisdom literature (Wisdom of Solomon, Sirach) attribute immortal souls to Adam and humanity and speak of the necessity of wisdom in overcoming their bodily mortality and fulfilling their task of ruling the world, because of these authors' common reliance on wisdom tradition. Josephus and Philo, similar to the authors of the wisdom literature, reconceptualize the Adam of the Genesis narrative according to their Graeco-Roman concept of human immortality, with the aim of commending the Jewish heritage to their Graeco-Roman audience. Fourth Ezra and 2 Baruch,

seek to make sense of the catastrophic fall of Jerusalem by probing into the gravity of Adam's sin and its effect upon humanity. The *Apocalypse of Moses* (the Greek version of the *Life of Adam and Eve*) and *Vita Adae et Evae* (the Latin version of the *Life of Adam and Eve*) are similar to 4 Ezra and 2 Baruch in their emphasis on Adam and Eve's sins and universal death. The Dead Sea Scrolls see Adam as being "ontologically coterminous with God's own glory" and believe that such "divine" humanity is restored to the Qumran community through its communal worship (Fletcher-Louis, *All the Glory*, 476–77).

### Adam in New Testament Scholarship

Of the seven places in the New Testament where Adam is mentioned (i.e., Luke 3:38; Rom 5:14; 1 Cor 15:22; 1 Tim 2:13, 14; Jude 14), the two Pauline passages (Rom 5:12–21 and 1 Cor 15:22, 45) have received the most scholarly attention, especially with regard to the manner and background of Paul's use of the Adam motif.

Most interpreters of these passages agree that Paul is presenting Adam as somehow responsible for the universal existence of sin and death in the world. Two differing views can be identified among these scholars, concerning the way in which Paul attributes the universalization of sin and death to Adam. First, according to the traditional view, Paul ascribes to Adam what is loosely understood as a "representative" capacity/status—i.e. the ability to make what is true of him also true of the rest of humanity—and describes the universal reality of sin and death as the result of that representative capacity applied to Adam's primeval act of sin. As a consequence of Adam's sin, in this view, depending on how Adam's "representative" capacity is conceived, humanity is seen as:

- having actually sinned in Adam and thereby become *a priori* guilty and subject to death (Morris, *Romans*, 232; Moo, *Romans*, 326); or
- having been placed under the covenantal curse by Adam's breach of the "covenant of works" (e.g., Fesko, *Last Things*, 91–114); or
- having inherited a corrupted nature which inclines humanity to sin (e.g., Ziesler, *Romans*, 147; Cranfield, *Romans*, 274–79; Kruse, *Romans*, 242; compare Fitzmyer, "Consecutive Meaning", 321–39).

These perspectives vary within themselves (e.g., Dunn, *Romans 1–8*, 273; Wright, *Romans*, 526–27).

An alternative to this traditional view has been suggested by the interpreters who attribute an apocalyptic thought-frame to Paul. According to these interpreters, Paul sees sin and death primarily as humanity-enslaving cosmic powers or quasi-demonic beings to be defeated by superior divine power, rather than as moral-anthropological phenomena needing ethical-relational treatment (Gaventa, *Saint Paul*, 130–31; de Boer, *Defeat of Death*, 182–83). In this paradigm, Adam's act of sin impacts the rest of humanity not by being amplified through Adam's representative capacity, but instead by providing the occasion through which sin and death intrude into the world, usurp God's sovereignty, and rule the world (Käsemann, *Romans*, 143–45; Jewett, *Romans*, 377–78; de Boer, "Paul's Mythologizing," 13–14). The proponents of this interpretation have appealed to Gnosticism (Levison, *Portraits*, 17–18; Brandenburger, *Adam und Christus*) or certain strands of Jewish apocalyptic literature (de Boer, *Defeat of Death*, 132–40) as the origin of Paul's apocalyptic frame of thought (for criticisms of this view, see Perkins, *Gnosticism*, 74–92; Wright, "Anglophone Scholarship", 372–73).

Recently, N. T. Wright has affirmed both the representative dimension of Adam's role and the notion of sin and death as cosmic powers (Wright, *Faithfulness of God*, 756–58, 762, 764, 769). Wright agrees with current Old Testament scholars' emphasis on Adam as Israel when he observes that the Adam-Israel connections made in Second Temple Jewish literature were assumed in Paul's use of the Adam motif in relation to Christ; Adam's role was transferred to Israel and ultimately was fulfilled by Israel's representative Messiah (Wright, *Romans*, 524–30).

Genesis 3 is commonly considered to be the main source of Paul's view of Adam. Some scholars point to early church tradition as a supplementary or alternative source (e.g., Lee, *The Son of Man*) and consider Jewish apocalyptic literature such as 4 Ezra and 2 Baruch as providing informative parallels to Paul's view of Adam as the origin of sin and death (e.g., Wright, *Faithfulness of God*, 752). There are others who believe that Paul's references to Adam, especially in 1 Cor 15, are *ad hoc*, occasioned by Paul's perceived need to provide a corrective to the Corinthian church's misguided belief in the non-necessity of resurrection, putatively influenced by Gnosticism or the Philonian two-Adam theory (de Boer, *Defeat of Death*, 110; see also Perkins, "Adam and Christ," 130, note 11; for criticisms of this view, see Hultgen, "Two Adams," 343–70).

Scholars commonly view Paul as affirming or assuming the historicity of Adam, though some argue that such belief is not necessary for Paul's argument to work (Dunn, *Romans 1–8*, 290).<sup>3</sup>

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<sup>3</sup> Park, J. (2016). [Adam, Critical Issues](#). In J. D. Barry, D. Bomar, D. R. Brown, R. Klippenstein, D. Mangum, C. Sinclair Wolcott, ... W. Widder (Eds.), *The Lexham Bible Dictionary*. Bellingham, WA: Lexham Press.

**EVE, CRITICAL ISSUES** Provides an overview of the role and significance of the first woman, wife of Adam.

### Significance

The role of Eve factors into scholarly discussions about the biblical portrayal of fertility and subordination. Both issues are raised in God’s curse of Eve in Gen 3:16: “I will surely multiply your pain in childbearing; in pain you shall bring forth children. Your desire shall be for your husband, and he shall rule over you” (ESV).

### Eve and Fertility

The early chapters of Genesis emphasize fertility and life. For example:

- God’s first command to humans is: “Be fruitful and multiply” (Gen 1:28).
- Genesis 2:8–19 describes the garden of Eden in lush terms, as being full of plants, rivers, and animals.
- Genesis 3:22 refers to the “tree of life” that would grant immortality (Gen 3:22).

The focal point of this emphasis on fertility is the first woman, Eve. While the exact etymology of the name Eve is debated (עֵוָה, *hwacha*), it may derive from the word “to live” (חַיָּה, *chyh*). Under this interpretation, the name Eve would mean “giving life.” If this interpretation is correct, Gen 3:20 offers a slight wordplay in stating, “The man called his wife’s name Eve (עֵוָה, *hwacha*), because she was the mother of all living (צֶלֶקֶת, *ycho-lka*)” (Gen 3:20 ESV). The translation in the Septuagint offers further support for this interpretation by referring to Eve as “Life” (Ζωή, *Zōē*). Wallace notes that the title “mother of all the living” is akin to various ancient Near Eastern fertility goddesses and thus suggests that Genesis may be historicizing this figure in its picture of Eve (Wallace, *Eden Narrative*, 143–81).

Von Rad points out that the account of Eve’s naming follows the account of the first sin and so presents a picture of ongoing fertility in the face of impending death: Although individuals will die, the human race will not die out. Eve’s power of reproduction now comes with pain (Gen 3:16), but it is not abolished (von Rad, *Genesis*). Eve exercises her power to bring forth life in Genesis 4:1–2, 25 with the births of Cain, Abel, and Seth.

Later Jewish and Christian literature continue to emphasize Eve’s fertility in their depictions of Adam and Eve as the prototypical husband and wife. For example, in Tobit 8:6, prior to consummating his marriage with Sarah, Tobias prays, “You made Adam, and for him you made his wife Eve as a helper and support. From the two of them the human race has sprung.” Jesus uses Adam and Eve as a standard of marriage (Mark 10:1–12).

### The Relationship between Adam and Eve

The relationship depicted between Eve and Adam in the Genesis account is further debated—in particular, whether Eve held a subordinate position to Adam prior to the curse (see Gen 3:16).

#### *Genesis 1–3*

Several details in Gen 1–3 contribute to the debate regarding Eve’s relationship to Adam:

- the timing of Eve’s creation
- Eve’s designation as Adam’s “helper”
- Adam’s assigning Eve a name

**Timing of Creation.** Regarding the order of creation, seniority of age often accords with seniority of position in Scripture (see 1 Tim 2:13). However, the same reasoning applied to Genesis 1:1–2:3 would indicate that plants outrank humans. Similarly, the overriding point of the section is that Adam and Eve complement each other. Both Adam and Eve are essential for the full expression of humanity and are equally made in the image of God (Gen 1:27). That is why, despite the sevenfold “it was good” of Gen 1, it was “not good that man should be alone” (Genesis 2:18).

**Eve as a “Helper”.** The description of the woman as a “helper” (עֲזָרָה, *rze*; Gen 2:20) also contributes to debates regarding whether woman is subordinate to man. In Hebrew, the term “helper” (עֲזָרָה, *rze'e*) typically refers to divine assistance (e.g., Exod 18:4; Deut 33:7, 26, 29; Psa 20:2).

**Adam’s Naming of Eve.** Adam’s naming of animals in Gen 2:19–20 suggests that he holds a position of authority over them. However, it is unclear whether this is indicated by Adam’s naming of Eve. In subsequent chapters, Eve exercises similar authority by naming her sons Cain and Seth (Gen 4:1, 25).

#### *Later Traditions*

Most later interpretations of Genesis 1–3 assume that Adam holds a place of authority over Eve. For example, Philo allegorizes Adam as the ruling power of reason and Eve as the subordinate perception of the senses (Philo, *On the Creation of the World*, 165–70). In the *Life of Adam and Eve*, Eve commonly addresses Adam as her superior, addressing him as “lord” (κύριος, *kyrios*; e.g., *Apocalypse of Moses* 9:2). The *Apocalypse of Sedrach* 7 likens Adam to the sun and Eve to the moon.

Some traditions single out Eve as having caused sin and death to enter the world. For example, Sirach 25:24 states, “From a woman sin had its beginning, and because of her we all die” (NRSV; compare 2 Enoch 30:17; *History of the Rechabites* 7:8). The collection of texts known as the *Life of Adam and Eve* repeatedly portray Adam, the serpent, and Eve herself as blaming Eve directly for the fall. For example, in the Greek version (*Apocalypse of Moses*), Eve accepts blame before God, angels, cherubim, and God’s throne before concluding, “I have sinned, Lord, I have sinned much; I have sinned before you, and all sin in creation has come about through me” (*Apocalypse of Moses* 32:1–2). In these stories, Adam and Eve have a chance for repentance and full restoration by weeping in the Jordan and Tigris Rivers for nearly a month, but Eve is deceived a second time by Satan, disguised as an angel, who bids her to end her penitence before the proper time (*Vita Adae et Evae* 1–11; *Apocalypse of Moses* 29:7–17<sup>4</sup>

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<sup>4</sup> Gabrielson, T. A. (2016). [Eve, Critical Issues](#). In J. D. Barry, D. Bomar, D. R. Brown, R. Klippenstein, D. Mangum, C. Sinclair Wolcott, ... W. Widder (Eds.), *The Lexham Bible Dictionary*. Bellingham, WA: Lexham Press.



**IMAGE OF GOD** A phrase found several times in the book of Genesis (Gen 1:7–27; 5:1–3; 9:6). Distinguishes humankind from the animal and plant kingdoms. Elevates humankind above all terrestrial created things so as to exercise benevolent and ethical stewardship over creation. Image of God language is found in the New Testament as part of the Christian’s responsibility to imitate Christ, who is the image(r) of God *par excellence*.

### **Old Testament Data for the Image of God**

Three Old Testament passages speak to the image of God:

1. Gen 1:26–27: “Then God said, ‘Let us make humankind in our image, according to our likeness; and let them have dominion over the fish of the sea, and over the birds of the air, and over the cattle, and over all the wild animals of the earth, and over every creeping thing that creeps upon the earth.’ So God created humankind in his image, in the image of God he created them; male and female he created them (NRSV).
2. Gen 5:1–3: “This is the book of the generations of Adam. When God created man, he made him in the likeness of God. Male and female he created them, and he blessed them and named them Man when they were created. When Adam had lived 130 years, he fathered a son in his own likeness, after his image, and named him Seth” (NRSV).
3. Gen 9:6: “Whoever sheds the blood of a human, by a human shall that person’s blood be shed; for in his own image God made humankind” (NRSV).

A few observations are evident from these passages:

- The image of God is gender neutral.
- The image of God as a phrase is applied only to humans. Therefore, humanity is to be distinguished from the rest of earthly creation.
- Humanity is, in some way, like God. The copy is like the original Creator in some way.
- There is no hint that humanity grows into the image, or develops the image. There is no “potential” image of God. Whatever the image of God means, it is by definition inseparable from the human species.
- Nothing suggests that the image has been or can be bestowed incrementally or partially. There is no “partial” image.
- Humanity is made the steward-master of creation; the reverse is not the case.
- The “imaging” vocabulary is linked to childbearing. Humans after Adam and Eve are not direct creations of God, but Gen 9:6 recognizes later humans as being in God’s image
- The image of God is described with the language of plurality (“Let us make ... our image”).

The data can be addressed in two lines of inquiry:

1. What the image of God means and does not mean.
2. How the language of plurality is best parsed to inform the meaning of the image.

### **Problematic Interpretations of the Image of God**

#### *The Image of God Refers to External, Visible Form*

The view that “Image of God” refers to external, visible form was predominate beginning in the 1940s due to Gunkel’s commentary on Genesis and an article by Humbert. The four basic arguments for this interpretation are:

1. “Image of God” is a translation of the prepositional phrase **בְּצֶלֶם** (*betsalem*) (preposition [ב, *b*] appended to the Hebrew noun [צֶלֶם, *tselem*]). [צֶלֶם, *tselem*] occurs in 2 Kgs 11:18; Num 33:52; Ezek 7:20; 16:17 for idols, statues, and figurines). In view of the visual referent of (צֶלֶם, *tselem*), Genesis 1:26 may have informed readers that human form was similar to the deity’s own form (Humbert, 153–175; Gunkel).
2. In Genesis 5:1–3, Seth was born “according to the image” of his father, Adam. The phrase used in this instance is (**כְּצֶלֶם**, *ketsalem*). The Hebrew preposition differs from the phrase in Gen 1:26, having the preposition (כ, *k*) instead of (ב, *b*). These two prepositions, used with (צֶלֶם, *tselem*), are interchangeable. The two prepositions (ב, *b*, “in”; כ, *k*, “according to”) are interchanged with the noun (צֶלֶם, *tselem*) and the other noun used in Gen 1:26 (“likeness,” דְּמוּת, *demuth*).

It is argued that the meaning of (צֶלֶם, *tselem*) is to be informed by (דְּמוּת, *demuth*), “likeness.” The latter refers to visual likeness or shape, so the former must as well (Ezek 1:10; 1:22; 10:22; Dan 10:16). This argument presumes a synonymy between the two nouns:

“in our image, according to our likeness” **בְּצֶלְמֵנוּ כְּדְמוּתֵנוּ** Gen 1:26  
(*betsalmenu kidmuthenu*)

“in his image, in the image of God” **בְּצֶלְמוֹ בְּצֶלֶם אֱלֹהִים** Gen 1:27  
(*betsalmo betsalem elohim*)

“in the likeness of God” **בְּדְמוּת אֱלֹהִים** (*bidmuth elohim*) Gen 5:1

“in his likeness, according to his image” **כְּצֶלְמוֹ כְּדְמוּתוֹ** (*bidmutho ketsalmo*) Gen 5:3

“in the image of God” **בְּצֶלֶם אֱלֹהִים** (*betsalem elohim*) Gen 9:6

3. Physical resemblance has something to do with the image in Gen 5:1–3, since the language concerns the physical offspring of Adam. The expression in Gen 1:26 could be viewed in the same way (Gunkel, *Genesis*, 112).

4. Humanity’s creation in the image of God may be described in those terms as a basis for the Israelite rejection of making images of their God. Making a graven image is prohibited because humanity already is such an image (Exod 20:4; the word is not [צֶלֶם, *tselem*] in this passage).

This view began to lose consensus with the publication of an article by Clines. (צֶלֶם, *tselem*) is not always used to speak of a physical object. It can be used metaphorically, to speak of nonconcrete objects or attributes (Psa 39:6; 73:20). The most explicit Semitic parallels (for example, Akkadian *tsalmu*) are also used metaphorically (Clines, “The Image of God in Man,” 74–75; Bray, “The Significance of God’s Image in Man”). In the case of Psa 73:20, a vague

notion of “shape” is still present, though not in concrete terms. (תְּצַלֵּם, *tselem*) may speak of some type of “representation” of God without saying that the thing represented (God) must also be concrete or physical (Westermann, *Genesis 1–11*, 150). This is parallel with John 4:24, which affirms that God has no body, an idea suggested in Isa 31:3 as well.

Anthropomorphisms in the Old Testament also do not argue for understanding God as concrete. Anthropomorphism uses embodied humanity as an analogy toward understanding God. Assuming Yahweh has a physical form requires an explanation for why humanity was created with genders that have absolute physical differences. Rather than enforcing the idea that God inherently possesses physical form, when Yahweh appears to men in human form, there is no suggestion that this form is anything but a temporary manifestation (Clines, “The Image of God in Man,” 72).

Yahweh occasionally assumes a human form in the Old Testament (Gen 18; Exod 24:9–18; Deut 4:12; Ezek 1:26). He is not depicted in human terms because He has a body, but because He is a person. In Israelite thinking, it was impossible to think clearly about personhood without thoughts of embodiment. The Hebrew Bible describes a person in terms of the fusion of material flesh and immaterial inner life (Johnson, *The Vitality of the Individual*).

Recent scholarship has noted logical weaknesses in the idea that “likeness” (דְּמוּת, *demuth*) requires “image” (תְּצַלֵּם, *tselem*) to be understood in visual terms. Since the terms are not always paired, it cannot be said that one is necessary to communicate the other. It also suggests that their meanings are not completely synonymous.

Clines argued that *variation* between the prepositions and nouns might have deliberate intent and communicate something about the meaning of the image of God: “When the reference is to the image of God and not to Adam’s image (Gen 5:3), the preposition with תְּצַלֵּם (*tselem*) is always בְּ (b). This could be accidental, but we suggest that it is not. Genesis 5:1 and 5:3 do not speak of the transmission of the divine image (for it belongs to man as such, and so cannot be transmitted ...) ... but of Seth’s likeness to Adam.... Adam was made ‘in the likeness’ (which is the same thing as ‘according to the likeness’) of God. Thus verse 1 has בְּדְמוּת (b $\bar{d}$ mwt), and not בְּצַלֵּם (b $\bar{t}$ slm). Seth is not Adam’s image, but only like Adam’s shape; so verse 3 has not בְּצַלֵּמוֹ (b $\bar{t}$ slmw), but כְּצַלֵּמוֹ (k $\bar{t}$ slmw). Thus, Genesis 1:26 is not to be interpreted by Gen 5:1, 3, but *vice versa*” (Clines, “The Image of God in Man,” 78n117).

There does not appear to be any secure exegetical link between Gen 1:26 and Exod 20:4. The vocabulary differs, and the commandment fails to ground the prohibition in the narrative about humankind’s creation.

### *The Image as a Physical Attribute*

The image of God is often defined as an ability dependent on the human brain, including:

- Intelligence
- Rationality
- Emotions
- Volitional will
- Consciousness
- Sentience
- The ability to communicate.

Many of these options are coherent, but defining the image of God in any of these ways fails exegetically and creates a problem for beginning of life and end of life ethics:

- All are not equally present among all human beings.
- All are not present in all human beings at all times.
- Some are not unique to human beings.

For example, the fertilized human embryo does not possess these abilities or attributes. To an embryo, they are potential attributes. If the image of God is said to be any of these things, the human only potentially bears the divine image until those attributes are possessed. This means that one must either deny the human personhood of the embryo or produce a more coherent alternative for defining the image of God. Even after birth, these options would mean that a severely retarded or brain-damaged child does not bear the divine image. Such definitions, if held consistently, would result in the loss of the image for some human beings.

Scientific and psychological research question whether some of these attributes are unique to humans. In regard to intelligence, the field of animal cognition has demonstrated that many animals have intelligence that cannot be assigned merely to instinct (Griffin, *Animal Thinking*; Pearce, *Animal Learning and Cognition*). For example, the ability to remember instructions or act contrary to instinct constitutes intelligence. Several species of mammals and birds score higher on simple intelligence tests than human infants or toddlers. Animals have been shown to grieve as well, so human emotion is not unique. Animals also show the ability to communicate (Savage-Rumbaugh, “Language Learning in Two Species of Apes”).

Scripture gives no indication that the divine image is bestowed incrementally or intermittently, and demands that the image must be unique to humans with respect to creation.

#### *The Image of God as the Immaterial Nature of Humans*

Humanity’s inner or “spiritual” nature may offer a better strategy for defining the image of God.

**Spiritual Abilities.** “Spiritual abilities” are “God-directed” abilities or spiritual inclinations of the inner life. Examples include:

- The belief in God
- A desire to know God
- Prayer
- Knowing right from wrong

These abilities require cognition. As with the physical abilities that require brain function, spiritual abilities or desires are not possessed equally by all humans. Furthermore, some animals may possess moral awareness (Putz, “Moral Apes”; Griffin, *Animal Minds*).

The faculty of knowing right from wrong is specifically denied as being part of the image of God. Scripture is clear that this sort of moral awareness only came about after humanity’s creation in God’s image, not in association with it. As Bray points out: “[C]onferred moral awareness is directly contradicted by the narrative in Genesis itself. It is extraordinary that this was never recognized, yet it is plain for all to see that Adam, though he was created in the image of God, was not allowed to eat of the tree of the knowledge of good and evil. When he did so, God said ‘Behold, the man has become like one of us,’ implying that in this particular at least, there had been an important dissimilarity between Himself and His human creature” (Bray, “The Significance of God’s Image in Man,” 207).

**The “Soul”.** The image of God may refer to the possession of a soul or spirit. The ancient Israelite believed that a person was the totality of the body and the inner, animate life force. They were not inclined to define the “parts” of humanity.

The Old Testament terms for “soul” (נֶפֶשׁ, *nephesh*) and “spirit” (רוּחַ, *ruch*) are consistently used to identify that the body is living or attributes dependent on brain function, such as emotions and intelligence. The terms are used interchangeably. Scripture never speaks to the origin of the immaterial part of humans, save for the account in Genesis where God animates the first human, Adam, by breathing into him the “breath” (נְשִׁמָּת, *nishmath*) of life” (Gen 2:7; Josh 11:11). Animals are described as having the “soul” (נֶפֶשׁ, *nephesh*) and “spirit” (רוּחַ, *ruch*) (Gen 1:21, 24; Eccl 3:21). “Breath” (נְשִׁמָּת, *nishmath*) is also interchangeable with “soul” (נֶפֶשׁ, *nephesh*) and “spirit” (רוּחַ, *ruch*). The terms also overlap in usage with “heart” (לֵב, *levav*/לֵב, *lev*). A sampling of the biblical terminology and its usage:

1. The life force/that which animates the body
  - a. (נֶפֶשׁ, *nephesh*)—Gen 1:20–21, 24, 30; 9:4–5; 12:13; 19:19; 35:18; Exod 4:19; Job 11:20; 33:22; 33:28; 33:30
  - b. (רוּחַ, *ruch*)—Gen 6:17; 7:15, 22; 45:27; Zech 12:1; Psa 135:17; Job 7:7
  - c. Both terms are combined with “breath” (נְשִׁמָּת, *nishmath*) to convey this idea as well: (נְשִׁמָּת, *nishmath*) + (רוּחַ, *ruch*) (Gen 7:22; Job 27:3; 32:8; Isa 42:5; 57:16); (נְשִׁמָּת, *nishmath*) + (נֶפֶשׁ, *nephesh*) (Gen 2:7; Josh 11:11)
2. The “inner life” of a person
  - a. The seat of emotions
  - b. (נֶפֶשׁ, *nephesh*)—Lev 26:15; 30, 43; Jer 13:17; 14:19; Lam 3:17; Gen 34:3, 8; 42:21; Exod 15:19; 23:19; Num 21:4; 1 Sam 1:10, 15; 2 Sam 5:8; 17:8; 2 Kgs 4:27; Job 14:22; Pss 6:3; 13:2; 23:3; 35:25; 42:1–2
  - c. (רוּחַ, *ruch*)—Num 5:14; 5:30; Eccl 10:4; 2 Chr 18:22; Isa 54:6; 57:15; Prov 14:29
  - d. (לֵב, *levav*/לֵב, *lev*)—Gen 6:6; Gen 34:3; Judg 16:25; 1 Kgs 21:7; 2 Kgs 6:11
  - e. Internal dispositions, attitudes, and abilities
  - f. (נֶפֶשׁ, *nephesh*)—Lev 26:16; Judg 16:16; 1 Sam 2:33; Pss 42:6; 107:26; Deut 4:29; 6:5; 10:12; 11:13; 11:18; 14:26; 21:14; 23:24; 1 Sam 23:20; Prov 19:2;
  - g. (רוּחַ, *ruch*)—Isa 19:3; 29:24; 57:15; 61:3; Jer 10:14; 51:11, 17; Hag 1:14; Pss 34:19; 51:19; 76:12; Job 32:18; Prov 15:13; 16:19; 17:22, 27; 18:14; 29:23; Ezra 1:1; Exod 6:9; Num 14:24; Josh 2:11; 5:1; Ezek 11:19; 18:31; 21:12; 36:26; Eccl 7:8; Dan 5:12; 6:4; 1 Chr 28:12
  - h. (לֵב, *levav*/לֵב, *lev*)—Gen 6:5; 8:21; 31:20; 42:28; 1 Sam 10:26; 17:32; 24:6; 2 Sam 15:13; 24:10; Exod 28:3; 35:34; 31:6; Num 16:28; Ezek 13:1–3; 1 Kgs 3:9; 2 Kgs 12:5; Eccl 1:16; 2:10; 1 Chr 12:34; Psa 12:3; Lam 3:33

Hebrews 4:12 refers to the Word of God’s ability to “divide the soul and spirit,” but this does not point to an actual division of those two terms—it claims the word of God could penetrate the inner person in such a way, not that such a division already exists before the word of God works its power. The point is actually the hard fusion of the two, separable only by the supernatural

empowerment of the word of God. As in the Old Testament, soul and spirit are two ways of referring to the same immaterial nature. 1 Thess 5:23 may support a separation: “Now may the God of peace himself sanctify you completely, and may your whole spirit and soul and body be kept blameless at the coming of our Lord Jesus Christ.” Paul is probably expressing his wish for believers to be sanctified as completely as possible. He uses the word ὁλοτελής (*holotelēs*) to express his wish for complete sanctification, a term that means “in every way complete.” Although Scripture is clear that humans have an immaterial existence outside the body at death (2 Cor 5:8), that reality cannot be decisively connected to any biblical term for the inner life.

### The Meaning of the Image of God

A more coherent understanding can be found by appeal to Hebrew syntax with respect to the prepositional phrase בְּצֶלֶם (*betsalem*). The preposition (ב, *b*) should be understood as what Hebrew grammarians variously refer to as:

- The “*beth* of essence (*beth essentiae*) or equivalence” (Joüon and Muraoka, *A Grammar of Biblical Hebrew*, 2:487).
- The “*beth* of identity” (Waltke and O’Connor, *An Introduction to Biblical Hebrew Syntax*, 198).
- The “*beth* of predication” (Gordon, “‘In’ of Predication or Equivalence,” 612–13).

The preposition “in” should be understood as meaning “as” or “in the capacity of.” Humanity was created “as” the image of God. The concept can be conveyed if we think of “image” as a verb: Humans are created as God’s imagers—they function *in the capacity of* God’s representatives. The image of God is not a quality within human beings; it is what humans *are*. Clines summarizes: “What makes man the image of God is not that corporeal man stands as an analogy of a corporeal God; for the image does not primarily mean similarity, but the representation of the one who is imaged in a place where he is not.... According to Gen 1:26ff, man is set on earth in order to be the representative there of the absent God who is nevertheless present by His image (Clines, “The Image of God in Man,” 87)”

Every human, regardless of the stage of development, is an imager of God. There is no incremental or partial of the image via some ability, physical or spiritual. No member of the animal kingdom, regardless of any cognitive ability it might have, is an imager of God. The same goes for any intelligent life form, artificial or the hypothetical extraterrestrial.

This understanding lends clarity to the Old Testament passages. Being created as God’s imagers means we are His representatives on earth—the only qualification for this is that we are human. This is why the creation of humankind as God’s image in Gen 1:26–27 is immediately followed by the so-called dominion mandate of Gen 1:28. Humanity is tasked with stewarding God’s creation as though God were physically present to undertake the duty himself. Genesis 9:6’s requirement of capital punishment for murder is because the intentional killing of an innocent human was tantamount to killing God in effigy. Clines’ argument with respect to Gen 5:1–3 is also brought into sharper focus: “Seth is not Adam’s image, but only like Adam’s shape” (Clines, “The Image of God in Man,” 78n117). Seth resembled Adam, but he was not Adam’s representative on earth. The prepositional changes in Gen 5 serve to distinguish the point of Gen 1:26–27 from Gen 5:1–3.

This view means that all human endeavor and enterprise has spiritual meaning—work is a spiritual exercise. Vocation is worship, no matter how mundane. Any task performed to steward creation, to harness its power for God’s glory and the benefit of fellow imagers, and to foster in

the harmonious productivity of fellow imagers, is imaging God. This application of the image has been referred to as the “cultural mandate” or the vocational view of the *imago Dei* (Sands, “The *Imago Dei* as a Vocation”).

## **The Plural Language Associated with the Image of God**

### *Problematic Interpretations of the Plurality*

The plurality in the expression “let *us* create humankind in *our* image” may point to plurality *within* God. Christians see the Trinity in this language. However, an ancient Israelite or Jew never would have presumed this (Wenham, *Genesis 1–15*, 27–28; Hamilton, *The Book of Genesis*, 133–34). This option reads the New Testament back into the Old—the language does not specify (or limit) the plurality to three persons. The Old Testament uses the language of divine plurality in contexts that, were the Trinity to be imported into the passage, would result in its members being corrupt and wicked (Psa 82; Heiser, “Monotheism, Polytheism, Monolatry, or Henotheism?”).

Plurality may be an example of the “plural of majesty,” a grammatical use of the plural to point to “a fullness of attributes and powers” (Wenham, *Genesis 1–15*, 28). However, the plural of majesty is not used with pronouns or verbal forms, the latter of which is present in Gen 1:26 and 11:7.

In reference to Isaiah 6:8, the plural language in Gen 1:26 may be a self-deliberation or self-encouragement. This perspective is akin to the “editorial we.” The plurality describes how people deliberate with themselves. However, it is difficult to see how this view can work with the meaning of the image as God’s representative. It is also difficult to cohere this view with Psa 8, in which humanity is said to have been created a little lower than *elohim* (Psa 8:5). That the word *elohim* is to be taken as a plural is evident from its citation in Heb 2:7, where the writer quotes the passage from the Septuagint, which renders *elohim* as “angels.”

Some look to humanity as the referent of the plurality. Bray writes, “A more awkward question is raised by the use of the plural in Gen 1:26, implying as it does that man, as the image of God, somehow reflects a plurality in God” (Bray, “The Significance of God’s Image in Man,” 197).

### *An Announcement to the Heavenly Host*

In Genesis 1:26, God, the lone speaker, is probably announcing His intention to create humankind to the members of His heavenly host (Psa 82; 89:5–8). Wenham writes, “From Philo onward, Jewish commentators have generally held that the plural is used because God is addressing his heavenly court” (Wenham, *Genesis 1–15*, 27).

As humans, we use this sort of language with regularity. A mother could announce to her family, “let’s make dinner”—and then proceed to do so herself, for their benefit, without their involvement in the event. This is more coherent than a mere rhetorical self-reference since it involves the audience, though without necessarily requiring their active participation. This is also the most coherent explanation for the other plurality language we have touched upon (Gen 11:7; Isa 6:8). God among his heavenly host is a familiar biblical description (Deut 33:1–2; Psa 68:17; 1 Kgs 22:19–23).

Bray notes: “More probable is the idea that God is here speaking to the heavenly hosts, though this raises such questions as whether angels are also created in the image of God, whether angels took part in the work of man’s creation” (Bray, “The Significance of God’s Image in Man,” 198). Clines asserts that this view “would imply that man was made in the image of the

*elohim* as well as of God Himself (‘in *our* image’); it would mean that the *elohim* shared in the creation of man (‘let us make’)” (Clines, “The Image of God in Man,” 66).

The text is clear that the angels did not participate in the creation of humankind. The singular suffix (“so God created humankind in His image”) makes that point as well. There is no contradiction if “let us create” is taken as an announcement of the single Creator to a group.

Angelic beings are also divine imagers—representatives of their Creator. While humans image God on earth, angelic beings image God in the spiritual world. They do God’s bidding in their own sphere of influence. The Old Testament and New Testament describe angelic beings with administrative terminology, such as:

- “Prince” (Dan 10:13, 20–21)
- “Thrones” (Col 1:16)
- “Rulers” (Eph 3:10)
- “Authorities” (1 Pet 3:22; Col 1:16)

First Kings 22:19–23 illustrates the heavenly bureaucracy at work. Angelic beings were created before the earth, and therefore before humans (Job 38:7–8). The notion that God decided to make humans to represent Him and His will on earth mirrors what God had already done in the spiritual world. God announces that, as things are in the heavenly realm, so they will be on earth. Humanity is lesser than angelic beings. However, humans are not their representatives, but are destined to rule over angels and to inherit the nations ruled by some of the sons of God (1 Cor 6:3; Rev 2:26).

### **The Image of God in the New Testament**

The functional view of the image described argues that the phrase means humans are created as God’s image. Taking that understanding to the New Testament’s image of God language brings the meaning and importance of the image doctrine in New Testament theology into clear focus.

Paul argues that believers are destined to be conformed to the image of Christ (Rom 8:29). We are to live as God would, to represent him and his character. Paul elsewhere refers to Jesus as the image of God (2 Cor 4:4). The writer of Hebrews uses the same verbiage, calling Jesus “the express image of God” (Heb 1:3). As humans gave visible form to God, so Jesus is the image of the invisible God (Col 1:15). Jesus was truly incarnate, becoming human to atone for humankind, but also an example for humankind (Phil 2:6–10; 1 Pet 2:21).

These New Testament passages convey that Jesus was the imager of God. As Jesus imaged God, we must image Jesus. In so doing, we fulfill the rationale for our creation. This process is gradual: “And we all, with unveiled face, beholding the glory of the Lord, are being transformed into the same image from one degree of glory to another. For this comes from the Lord who is the Spirit” (2 Cor 3:18). Paul also links our resurrection to Jesus as the image of God in 1 Cor 15:49.<sup>5</sup>

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<sup>5</sup> Heiser, M. S. (2016). [Image of God](#). In J. D. Barry, D. Bomar, D. R. Brown, R. Klippenstein, D. Mangum, C. Sinclair Wolcott, ... W. Widder (Eds.), *The Lexham Bible Dictionary*. Bellingham, WA: Lexham Press.



**ANTHROPOMORPHISM AND ANTHROPOPATHISM** The assigning of human forms, actions, and emotions to God.

### **Anthropomorphism and Anthropopathism in the Bible**

Anthropomorphism and anthropopathism hold the similar functions of enabling people to conceptualize and speak of God. However, they hold slightly different meanings.

Anthropomorphism refers to portrayals of God having human forms and performing human actions. For example, the biblical writings describe God as:

- having hands (Isa 59:1);
- seeing with His eyes (2 Chr 16:9; Isa 63:15; 1 Pet 3:12);
- hearing with His ears (Psa 34:15; Isa 59:1);
- having a face that “the upright shall behold” (Psa 11:7);
- planting a garden (Gen 2:8);
- walking “in the cool of the day” (Gen 3:8);
- standing (Amos 9:1);
- laughing (Psa 2:4);
- smelling the pleasant aroma of offerings (Gen 8:21);
- whistling (Zech 10:8–12);
- whispering (1 Kgs 19:12);
- presiding over the divine council (Psa 82:1);
- judging (Psa 75:7);
- rebuking (Rev 3:19);
- holding (Isa 41:10); and
- lifting up (Psa 145:14; Jas 4:10).

The term anthropopathism, on the other hand, refers to ascriptions of human emotions, feelings, and passions to God, such as:

- anger (2 Sam 24:1);
- regret (Gen 6:6–7; 1 Sam 15:11);
- grief (1 Sam 15:35; Eph 4:29–32); and
- hatred (Prov 6:16).

### **Anthropomorphism and Theophanies**

Biblical accounts of theophanies often use anthropomorphism and anthropopathism (Dearman, “Theophany,” 38). For example, the descriptions of Moses speaking with Yahweh “face to face” “mouth to mouth,” or seeing Him “eye to eye” in Exod 33:9–23 have anthropomorphic elements that connote an intimacy between people and God (Hamori, “*When Gods Were Men*,” 31).

However, the descriptions in this account are unique, as elsewhere God typically appears to people in a veiled form (1 Tim 6:16). Other theophanies that include anthropomorphic elements include:

- Exodus 3:2–4:17 assigns human actions to God in describing Him speaking to Moses from a burning bush.
- The account of Ezekiel’s throne-room vision ascribes a human form to God in referring to the waist of the “likeness with a human appearance” (Ezek 1:26–28 ESV).

- Amos 9:1 assigns human action to God in describing Him as “standing beside the altar” (ESV).

### **Debate over Usage**

Since ancient times, people have debated whether it is appropriate to use anthropomorphism or anthropopathism when describing God or the gods.

#### *Arguments for Usage*

Those who support the use of anthropomorphism and anthropopathism argue that it enables people to speak more simply about a God who is beyond human comprehension (Rom 11:33; Sanders, *The God Who Risks*, 28). Portraying God as having human forms, actions, and emotions that people can relate to helps people to better comprehend Him. Lash argues that, without the use of these tools, discussions of God can become abstract, formal, and philosophically ideal (Lash, “The Question of God Today,” 137).

#### *Arguments against Usage*

Those who object to the use of anthropomorphism and anthropopathism argue that God is “beyond human language and comprehension,” and that speaking of Him in human terms is demeaning to Him and “turn[s] God into a big human being” (Sanders, *The God Who Risks*, 27). Bockmuehl notes that people avoid “anthropomorphic descriptions of God’s activities in order to safeguard God’s transcendence and otherness” (Bockmuehl, *Revelation and Mystery*, 94). For example, Philo of Alexandria argued that “neither is God in human form, nor is the human body God-like” (Philo, *On the Creation of the World*, 69; see van Kooten, *Paul’s Anthropology*, 82). The Greek thinker Xenophanes similarly criticized the use of anthropomorphism in regard to the Greek gods, particularly the descriptions of the gods moving, exhibiting moral weakness, wearing human clothing, speaking in human voices, and having human figures (Jaeger, *Theology*, 47; Sanders, *The God Who Risks*, 27).

Using anthropomorphism and anthropopathism also presents the risk that people may misunderstand or misrepresent God (e.g., Francks, *Descartes’ Meditations*, 125; Greib, *Understanding God’s Love*, 53). For example, von Rad points to the prohibition in Exod 20:4 against representing God in any images and forms of the natural world as a safeguard against idolatry (von Rad, *Old Testament Theology*, 145). Shin acknowledges that this verse is sometimes read as a prohibition against making images of other gods, but concludes that it prohibits the creation of images of Yahweh, who is incomparable to other gods (Exod 20:2–3; Shin, “Aniconism,” 66; see also von Rad, *Old Testament Theology*, 216). Scripture also attests that God is not like humans—He does not sleep (Psa 121:4), lie, or waver with His decisions (Num 23:19; 1 Sam 15:29). Thus, Scobie adds that the second commandment “absolutely prohibits the making of any visual representation of God in any form” since the “forces of nature ... are utterly inadequate to represent the one true God who is the Creator of all things” (Scobie, *The Ways of Our God*, 117).

### **Role of Anthropomorphism in Developing Beliefs about God**

The various modes of interpreting the biblical use of anthropomorphism have contributed to developing approaches to the way people view God.

#### *Inconsistent Interpretation of Uncomfortable Passages*

Biblical interpreters have expressed discomfort over the anthropopathic descriptions in verses like 1 Sam 15:11, in which God expresses regret over making Saul king. Geisler remarks on the

inconsistency with which interpreters treat such passages, noting that neotheists in particular “do not acknowledge the legitimate role of anthropomorphisms” in such passages. Geisler accuses neotheists of “presupposing their view of a changing God as the ground for knowing which [anthropomorphisms or figures of speech] should be taken literally” (Geisler, *Creating God*, 89–90). For instance, in regard to God’s expression of regret over Saul’s kingship in 1 Sam 15:11, neotheists would argue that a literal reading would lead to the interpretation that God does not have exhaustive knowledge of an individual’s future decisions. By extension, this would call into question His foreknowledge of the events surrounding Jesus’ life, death, and resurrection, as well as the end times. Rather than interpreting the anthropomorphic reference in 1 Sam 15:11 literally, neotheists would thus read it as attesting to the openness of God and incompatibilistic (libertarian) freedom (Geisler, *Creating God*, 89–90).

Geisler and others critique the neotheist approach. For example, Geisler explains that, based on their approach, neotheists could not accept any conditional prophecies, which would invalidate several prophecies of certainty, conditionality, and falsehood. Such scholars attempt instead to promote the classical theism perspective—that God possesses full and exhaustive knowledge. They thus read the anthropomorphic references more literally if the text of Scripture calls for it (Geisler, *Creating God*, 89–90).

#### *Anthropomorphism and Critics of Theistic Understandings*

Pailin notes that “critics of theistic understanding” have pointed to the use of anthropomorphism as evidence that “the way in which human beings perceive the nature of God is derived from the ways in which they perceive their own nature” or that “God is a human invention and exists as figment of believers’ imaginations” (Pailin, *The Anthropological Character*, 31). He cites the following examples:

- In *The Leviathan*, Thomas Hobbes states, “Seeing there are no signs nor fruit of religion but in man only, there is no cause to doubt that the seed of religion is also only in man.” He posits that this seed of religion emerged from human fancy and fear of the unknown (Hobbes, *The Leviathan*, 71–72; Pailin, *The Anthropological Character*, 31).
- In *Anti-Christ* and *Twilight of the Idols*, Friedrich Nietzsche claims that when people worship God, they are worshipping an image they created of a God in their situation rather than God Himself (Nietzsche, *Anti-Christ*, 13–28; Pailin, *The Anthropological Character*, 31–32).
- In *The Essence of Christianity*, Feuerbach argues that “theism expresses humanity’s cosmic projection of its nature” (see Pailin, *The Anthropological Character*, 3).
- Marx, Engels, and Durkheim point to the social, political, and economic contexts from which God has been personified (compare Marx and Engels, *On Religion*; Durkheim, *The Elementary Forms of Religious Life*, 206).

In response to such critics, Tanner, Steenberg, and Neville (among others) point out that people can only conceive God from a human, culturally bound perspective (Tanner, *Theories of Culture*, 61–92; Steenberg, *Of God and Man*, 1–13; Neville, “The Role of Concepts of God,” 523). Thus, anthropomorphic and anthropopathic descriptions of God serve as analogical or metaphorical tools pointing to the revelation and the experience of God (see especially Tracy, *The Analogical Imagination*, 99–304, 405–56; Stiver, *The Philosophy of Religious Language*, 14–36; McFague, *Metaphorical Theology*, 1–66). Amaya argues that revelation is not dependent on human capacity to invent God, but it presupposes first the self-disclosure of God (Amaya, “The Bible and God’s Revelation in History,” 1).

*Apophatism*

The apophatic tradition of Eastern Orthodoxy takes into account perspectives for and against anthropomorphism and anthropopathism. Given the limitation of human attempts to speak about God and the infinite, the Eastern Orthodox tradition has claimed that any manner of speech about God must always have two components:

1. the positive, which reflects what humans may speak with assurance about the knowledge of God;
2. the negative, which reflects that even in their best expressions, humans are unable to fully and comprehensively bridge the reality that only God knows about Himself.

John Chrysostom calls it the unknowable nature of the divine essence, and Thomas Aquinas calls it the incomprehensible nature of God (Lossky, *The Vision of God*, 16).<sup>6</sup>

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<sup>6</sup> Timothy Lim T. N. (2016). [Anthropomorphism and Anthropopathism](#). In J. D. Barry, D. Bomar, D. R. Brown, R. Klippenstein, D. Mangum, C. Sinclair Wolcott, ... W. Widder (Eds.), *The Lexham Bible Dictionary*. Bellingham, WA: Lexham Press.

**CREATION MYTHS** Ancient mythological texts in narrative or poetic form that describe the origins and structure of the created world.

### **Biblical Relevance**

Myths are stories that describe the interaction of the divine and human worlds, with the purpose of explaining why certain things are the way they are. Creation myths, then, are mythological stories that explain how the world came into being, but more important, they explain why the world is structured the way it is and why it functions as it does. Creation myths in the ancient Near East share certain generic features and religious perspectives. Scholars have increasingly drawn on these ancient Near Eastern creation myths to better understand the literary and conceptual background of the primeval history in Gen 1–11.

### **Creation Myths in the Ancient Near East**

#### *Egyptian Creation Myths*

Egyptian cosmology (concerning the structure of the world) is based on the idea that everything in the world, both human and divine, developed from one primordial substance, symbolized by the watery chaos called Nun. The creator god Atum evolved out of this primordial abyss and then gave birth to the eight other high gods. He created Nut (sky) and Geb (earth) to separate the world from Nun (the abyss; from the *Book of Nut*, written in the first half of the second millennium BC). Under Nut's arching form, he created Shu (atmosphere) to hold up the sky. Atum himself turned into Re (the sun-god) and then created Maat (order) to serve as his companion and assistant in maintaining the structure and integrity of the world.

As in the biblical creation stories, the cosmos depicted in Egyptian myths is in a dynamic struggle against primordial chaos that continually threatens to flood back into the world. Reflection on the creation of humanity is rare in Egyptian texts, but one text uses the similarity between the word for humans (*rmṯ*) and tears (*rmṯt*) to suggest that humans were born from the tears shed from Atum's eye: "I made the gods evolve from my sweat, while people are from the tears of my Eye" (Coffin Texts, Spell 1130; see Batto, "Ancient Near East Context," 20).

#### *Mesopotamian Creation Myths*

An early Mesopotamian description of creation is found in a fragmentary Sumerian text from 1600 BC, *Eridu Genesis*, which mentions the creation of animals and humans by An, Enlil, Enki, and Ninhursag, and narrates the mother goddess Nintur's establishment of great cities with their kings (*COS* 1:513–15). The tablet includes parts of the Mesopotamian flood narrative, with a hero named Ziusudra (see "Atra-Ḫasis," *COS* 1:450–52).

Another Sumerian text that describes the creation of humans is the story of *Enki and Ninmah*, which says that people were born from bits of clay that Enki directed his mother, Nammu, to place inside the womb of the mother goddesses. The text connects this initial act of insemination with the human process of procreation: "Thus she created mankind male and female.... By the male inseminating the female will beget an offspring" (*COS* 1:518). Sumerian myths such as these are important precursors to the more complete Babylonian texts that would later draw from them.

The cosmology of the Babylonian creation story, *Enuma Elish*, is remarkably similar to that found in Egyptian and biblical texts, but it is based on a combat myth, a story of the creator god's struggle against the power of chaos to establish the world. In *Enuma Elish* (ca. 1100 BC), the high gods emerge from the commingling of Tiamat (the salt water in the ocean) and Apsu

(the fresh water under the earth). Apsu tries to kill the gods, but he is slain by Ea, the god of wisdom. When Tiamat attacks with her general Qingu, the gods call in Ea's son, Marduk, to fight on their behalf. Marduk kills Tiamat and then uses her carcass to create the world. He splits her, stretches out half to form the heavens, and establishes the other half as the earth and the underworld. He then takes blood from Qingu and mixes it with clay to form humans, who are given the task of digging canals and serving the gods. This creation myth serves as a celebration of Marduk and of Babylon. As the upstart, Marduk has attained preeminence over the older gods in his victory over chaos, so Babylon has achieved world domination.

### *Creation Myths in the Levant*

No creation myth is found among the Ugaritic texts from Bronze Age Canaan, although the cosmological worldview that appears in those texts is similar to both Mesopotamian and later biblical exemplars. Most notable in this regard is the conflict between Ba'al and the sea-god, Yam. Water or flood as a symbol of primordial chaos appears in the story of Marduk's battle against Tiamat as well as biblical texts such as Pss 29:3; 33:7; 74:13; 77:16; Prov 8:29. Another important cosmological motif in the Ugaritic texts is the building of Ba'al's palace, which in some ways either mirrors or is the foundation of the cosmos. The order of creation is maintained from Ba'al's palace/temple (Fisher, "Creation at Ugarit," 320).

## **Creation Myth in Genesis 1–11**

### *Myth and the Bible*

For more than a century, biblical scholars have been comparing the biblical traditions with myths from the ancient Near East. The language and conceptual world of ancient Near Eastern mythology provides a useful lens through which to understand the biblical text in its ancient context. Despite the many similarities, what we find in the Bible differs from surrounding myths in both theological and literary senses.

Recently there have been many studies that take a sophisticated approach to mythological thinking in the Hebrew Bible. Bernard Batto argues that the biblical writers integrated mythological elements into their narrative, a process that he calls "mythopoetic" reflection (Batto, "Ancient Near East Context"). Mark Smith shows the extent to which the Bible's monotheism is itself the product of ongoing development, which raises the possibility that the earliest biblical texts are more narrowly mythological. Evangelical scholars have also worked to situate the Genesis creation stories within their ancient context. John Walton, for example, argues in *Genesis 1 as Ancient Cosmology* that the biblical creation stories function within their "cognitive environment" in a way that is similar to other ancient cosmologies. Walton suggests that the biblical creation stories present a functional ontology, that is, an account of creation that explains the purpose of each element within God's ordered plan, not an explanation of each element's origin.

### *Reading Primeval History of Genesis 1–11*

When talking about creation myths in the Hebrew Bible, it is important to examine the whole of the primeval history (Gen 1–11) and not only Gen 1–3. The literary traditions that stand behind the current form of Gen 1–11 treat the creation and flood narratives as parts of the same story. Batto has argued that the Priestly and Yahwistic components of the composite flood narrative serve as conclusions to their respective creation accounts in Gen 1 and Gen 2–3. By reading Genesis 1–11 through the lens of ancient mythology, we can understand better the shape and function of the biblical cosmology. Aspects of Mesopotamian and Egyptian mythology resonate

with these biblical texts, though the integration of mythological elements within the narrative form of Genesis has obscured somewhat the conceptual background of biblical terms.

In the so-called “Priestly” creation story found in Gen 1, God creates the world through a process of separation. The light is separated from the already existing darkness, and the waters of chaos are separated by the dome of the sky, pushed back to a holding place above and below the ground. This creates a safe space in which God can create the celestial bodies and all life. This cosmology is very similar to the three-level vaulted cosmos pictured in ancient Near Eastern creation myths. When the flood occurs, God opens the “windows of the heavens” and the “fountains of the great deep,” and that water, primordial chaos, pours back into the world. In essence, therefore, the “Priestly” version of the flood is an exact reversal of the creation in Genesis 1.

The Yahwistic creation story in Gen 2–3 is a story of a creative process that progresses in stages. Like an artist, God creates the world in steps, each one responding to the effects of the last. After making Adam, God makes an environment for him. God determines that the animals are not a suitable companion for Adam and thus creates Eve. When the human couple gains wisdom by eating the fruit of the tree of the knowledge of good and evil, God sends them out of the garden to prevent them from eating from the tree of life and thus gaining immortality (Gen 3:22–23). This story reflects the common mythological motif of humans striving to become divine and immortal. By exiling them from the garden, God preserves the barrier between the divine and human realms. The problem of sin and human presumption continues, however. The “Yahwistic” portion of the flood narrative says that God was grieved by the wickedness of humankind and “was sorry that he had made humankind on the earth” (Gen 6:5–6). The flood and God’s selection of Noah, therefore, represent another step in the ongoing creation process. From this perspective, God seemingly hopes to set things right with the flood, just as He did with the creation of Eve after the animals and the exile from the garden after the human choice to eat the fruit.

### *Cosmological and Theological Considerations*

The creation stories in Gen 1–3 share many common features with Egyptian and Mesopotamian mythology. John Walton argues, “Not a single element of Israelite cosmology can be identified as having no antecedents whatsoever in the ancient world” (Walton, *Genesis 1 as Ancient Cosmology*, 197). The particular configuration of these ancient motifs within the theological context of Israelite monotheism can also be compared with other ancient cosmologies.

The most striking similarity between the Genesis account and ancient myths is the cosmology itself, the three-tiered structure of the universe in which the earth is separated from the heavens by a vault above and supported by pillars below. Heavenly bodies such as the sun, moon, and constellations travel across the sky within the dome of the heavens and serve the purpose of regulating times and seasons. Another similarity is the creation of humans whose purpose is to work the ground that is created through the separation of heavens and earth. However, in *Enuma Elish* humans are little more than slaves. In texts such as the *Eridu Genesis* and Gen 1–3, humans have a much higher status in the cosmic order.

An important difference between the biblical texts and their ancient counterparts is the monotheistic perspective of ancient Israel. In surveying the complex interaction between Yahwism and ancient polytheism, Patrick D. Miller notes that the “general absence of myth” in the Bible is related to the fact that Israel unified all aspects of deity within one God, Yahweh (Miller, *Religion of Ancient Israel*, 26). Rather than seeing the heavenly realm as a site of divine conflict, Israel’s God rules over the divine council as the only true and worthy deity (Psa 82).

Other scholars understand Israel's monotheism more broadly as henotheism, or the devotion of Israel to one God even though other gods exist (Penchansky, *Twilight of the Gods*, xi). Either way, the creation stories in Genesis emphasize God's divine sovereignty over every aspect of creation. God is glorified, as Christopher Hays says, through the denial of other deities, a "refusal to acknowledge other gods [that] creates a loud silence" (Hays, *Hidden Riches*, 72).

From a literary perspective, the biblical writers incorporate mythological motifs, but with a narrative effect quite distinct from that of ancient Near Eastern myths. Genesis 1 describes creation through an act of separation, in a way similar to Marduk's slicing of Tiamat to form the cosmos. However, the verbs for God's acts of separating are abstract, in contrast with the *Enuma Elish's* use of verbs such as "slit," "smashed," "severed," "bound," and "tore open" (Hays, *Hidden Riches*, 68). Whereas the heavenly bodies are divine beings in Egypt and Mesopotamia, Gen 1 asserts that they are merely part of the creation, and inanimate. The "primordial chaos" that God defeats in Gen 1 serves a similar purpose to that of Tiamat in *Enuma Elish*, but it is not a personified deity. However, God refers to a plurality of divine beings in the cohortative, "let us make humankind in our image" in Gen 1:26—a command that some have interpreted to suggest the presence of other divine beings. Within the literary thread of Genesis as it stands, this pronoun may also refer to a divine plurality within God or to angelic companions within the divine court. The purpose of the text is not to make a claim about the nature of the divine world, but to establish the centrality of humankind in the created order (Holland, *Gods in the Desert*, 218).

Central to both ancient Near Eastern and biblical mythological traditions is the notion of a divine struggle against the power of chaos that threatens to undo creation. In his classic work, *Creation and the Persistence of Evil*, Jon D. Levenson argues that "chaos" is the key to understanding the reality of suffering in the world; it is a non-personified force that strains against the boundaries that God established in the creation of the world. However, though Genesis 1 echoes the idea of creation through violent conflict with chaos, God creates by speaking a word, not through a battle or divine conflict. Mark Smith describes this as "a paradigm shift in the presentation of creation." The biblical text "shows only a hint of this old tradition" of conflict leading to creation (Smith, *Origins*, 168). Humans are then called to participate with God in maintaining the healthy boundaries of creation through tabernacle worship.<sup>7</sup>

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<sup>7</sup> Bibb, B. D. (2016). [Creation Myths](#). In J. D. Barry, D. Bomar, D. R. Brown, R. Klippenstein, D. Mangum, C. Sinclair Wolcott, ... W. Widder (Eds.), *The Lexham Bible Dictionary*. Bellingham, WA: Lexham Press.



# Preliminaries: Genesis 1–11 Is a Unity

## a. Genesis 1–11 Has Parallels in the Ancient Near East

An attentive reader intuitively sees a transition between Genesis 1–11 and the rest of Genesis. Even though there is no grammatical shift, nevertheless the narrator slows down in the Abraham story: he has been covering large stretches of time in brief narratives, whereas now he is taking more narration time to cover less elapsed time in more detail.

Stories from other cultures in the ancient Near East further confirm our intuition. Although there are important materials from *all* the cultures of the ancient Near East, those most directly pertinent to Genesis 1–11 come from Mesopotamia. Specialists on the ancient Near East find the most promising parallels with Genesis 1–11 to include the Sumerian King List (c. eighteenth century bc), the Atrahasis Epic (c. eighteenth century bc), and the Eridu Genesis / Sumerian Flood Tale (c. 1600 bc). (Another story, Enuma Elish, or the Babylonian Epic of Creation, once seemed a promising source for comparisons as well, and some biblical scholars still turn to it; Assyriologists, however, seem less willing to endorse much of a comparison than formerly.)<sup>15</sup>

Kenneth Kitchen lays out the connections among these sources in the table “Genesis 1–11 and Writings from Mesopotamia.”

<b>Sumerian King List</b>	<b>Atrahasis Epic</b>	<b>Eridu Genesis</b>	<b>Genesis 1–11</b>
1. Creation assumed; kingship came down from heaven	1. Creation assumed; gods create humans to do their work	1. Creation; cities are instituted	1. Creation (Gen. 1–2)
2. Series of eight kings in five cities	2. Noisy humans alienate deities	2. [Alienation]	2. Alienation (Gen. 3), genealogies (Gen. 4–5)
3. The flood	3. The flood; ark	3. The flood; ark	3. The flood; ark (Gen. 6–9)
4. Kingship again; dynasties follow, leading to—	4. New start	4. New start	4. New start; then genealogies, down to—
5. “Modern times”	5. “Modern times,” (implied)	5. “Modern times,” (implied)	5. “Modern times”

There is much to say about the connections and about the ways in which Genesis 1–11 is both similar and dissimilar to these other sources, but space forbids. The point of interest for now is that this overarching pattern from Mesopotamia provides a literary and ideological context into which Genesis 1–11 speaks; and it does so *as a whole*.

So what does this parallel tell us about the function of Genesis 1–11? The Mesopotamian sources provide what Assyriologist William Hallo calls “prehistory”—the period of human existence before there are any secure written records—and “protohistory”—the earliest stages for which there are records. Further, it appears that the Mesopotamians aimed to accomplish their purpose by founding their stories on what they thought were *actual events*, albeit told with a great deal of imagery and symbolism. As Kenneth Kitchen, an Egyptologist, put it:

As to definition [for the flood story], myth or “protohistory,” it should be noted that the Sumerians and Babylonians had no doubts on that score. They included it squarely in the middle of their earliest historical tradition, with kings before it and kings after it.

The ancient Near East did not historicize myth (i.e., read it as imaginary “history”). In fact, exactly the reverse is true—there was, rather, a trend to “mythologize” history, to celebrate actual historical events and people in mythological terms. The ancients (Near Eastern and Hebrew alike) knew that propaganda based on real events was far more effective than that based on sheer invention.

While Kitchen uses the term “propaganda” for the authors’ purpose, we might use the more neutral observation that these stories serve as the front end of the worldview story for Mesopotamian culture.

Our *worldview* describes the way we lean into life: how we relate to God, to others, and to the world around us. It is how our deepest self answers the big questions, “Where did I come from? Why am I here? and Where am I going?” Our worldview comes to us through the Big Story we—and the communities we belong to—embrace. The story enlists the members of a community to play a meaningful part in the story as it unfolds. If the worldview story is well told, it captures the imaginations of those who own it, thereby driving them on and holding their loyalty.

Some think that this phenomenon is a feature primarily of premodern and prescientific peoples, but they are mistaken; modern western culture does just the same. For example, the prominent evolutionary biologist George Gaylord Simpson (1902–84) drew this conclusion from his study of evolution: “Man is the result of a purposeless and natural process that did not have him in mind.” This is in fact a story, albeit a bleak one, that claims to put our lives in perspective. Actually, if it is the true story of the world, it sounds like a heightened version of what Macbeth described in Shakespeare’s play, once he discovered that Lady Macbeth had committed suicide: “Life’s ... a tale told by an idiot, full of sound and fury, signifying nothing.”<sup>22</sup>

How did this work in Mesopotamia? Consider the way the Epic of Atrahasis tells us how humankind came to be created: there were the senior gods and the junior gods, and the junior gods were doing all the hard physical labor. These junior gods got tired of the work and went on strike, and thus the gods made humankind to take over this hard labor. It is likely that this kind of story explains to the average Sumerian what he is here for—to take his place in a stratified society, and to do the work his superiors tell him to do. That is, this way of telling the story preserves the social order.

The Mesopotamian stories include divine action, symbolism, and imaginative elements. The purpose of these stories is to lay the foundation for a worldview without being taken in a “literalistic” fashion. Consider, for example, the Sumerian King List. It begins, “When kingship was lowered from heaven, kingship was (first) in Eridu.” There are five dynasties, in the five leading cities of Sumer; then the flood “swept over,” and afterward kingship is lowered again from heaven. There is little reason to doubt that the author thought he was writing about real people and real events. Nevertheless, he tells us that the kings before the flood ruled for an enormous amount of time, ranging from 18,600 years (the last king before the flood) to 43,200 years. After the flood, the reigns shorten, but are still quite long—e.g., 1,200 years, 690 years, and so on; they show a shortening trend until Gilgamesh, who reigned for 126 years, and his son, who reigned for 30 years (the first reasonable number).

No one really knows what to make of the extraordinarily high numbers. Perhaps there is a rhetorical device being employed, to which we are not (yet) initiated: for example, involving base 60 or 360. There are further questions as to whether the dynasties mentioned in the list were strictly sequential; some seem to have been in parallel. No one knows whether the compiler of the list was aware of this.

But our (and presumably the Babylonians’) inability to take these numbers and the sequences “literally” does not entitle us to call the list “unhistorical.” It is better to say that it has a historical core and that this core is presented with various rhetorical purposes in mind that go beyond the simple conveyance of information—even if we do not know all the devices to achieve that rhetorical purpose. The genre conventions require that we be careful in discerning what the historical referents are.

So it is fitting to find in Genesis an alternative front end to the worldview story, which aims to tell the story the right way. The biblical alternative story certainly does correct many elements of the other stories available (and probably attractive) to Israel: Genesis tells of one true God, who alone made and rules the heavens and the earth and all that is in them. In this story there is nothing left for any other god—if it even exists—to do. Further, the other cultures had “Wisdom Literature,” and this presupposes that there is coherence to the world; Genesis provides the true explanation for this, namely, that the one good God made it all as the right kind of place for human beings to live and love and serve.

Moreover, far from humankind being made to relieve God of work he did not like doing, it is dignified with his image (Gen. 1:27) and with the task of ruling the creation in a wise and benevolent way (vv. 26, 28). Human “work” at the beginning was to enjoy caring for Eden and to spread its blessings throughout the world. The painful toil people now experience is not a proper part of the creation; it results from human disobedience, which requires divine redemption: Genesis 5:29 explicitly links later generations’ “painful toil” (Heb. *’itstsâbôn*) to God’s “curse” that followed the disobedience of Adam and Eve (Gen. 3:16, 19).

Further, Genesis appears to trace all humankind back to a common source. That is, the genealogies of Genesis 5 and 10 present Adam and Eve as the ancestors of a wide range of “families of the earth”—in fact, *all* the families so far as the audience is concerned. By affirming human unity in Adam and Eve, Genesis lays the foundation for Israel’s calling to bring light to the world. When God called Abram in Genesis 12:2–3, he promised,

I will make of you a great nation, and I will bless you and make your name great, so that you will be a blessing. I will bless those who bless you, and him who dishonors you I will curse, and in you all the families of the earth shall be blessed.

That is, God called Abram, not simply in order to bless him and his family, but in him to bring blessing to the whole world. Abram's family, Israel, was to be the vehicle of God's light to the Gentiles, as they lived faithfully in God's covenant.

This story *should* also foster a respect for common human dignity in those who believe it—though we must admit, not everyone who has *professed* such belief has shown this respect. For example, God does not endorse a stratified society for his people, treating people differently depending on their social or economic status (cf. Lev. 19:9–18); even slaves are human beings.

The point to take away is this: We have gained a great deal when we notice that Genesis really does have parallels with the stories that come from other ancient Near Eastern cultures. One of these gains is to realize that “history” is an appropriate category for such a tale; another is to recognize that no one expected the stories to be read in a thoroughly literalistic fashion.

### *b. Genesis 1–11 Is a Unity on the Literary Level*

Certainly the parallels between Genesis 1–11 and these Mesopotamian stories argue that we should read these eleven chapters together. Another argument for the propriety of reading them together comes from the literary and linguistic links between pericopes within them.

Well-known links for the whole of Genesis 1–11 include those between Adam and Noah, presenting Noah as a “new Adam” (compare Gen. 9:1 with 1:28). Further, there are clear links between Genesis 1 and 5, such as 1:26–27 and 5:1–5 (the life of Adam), and between Genesis 4 and 5, such as 4:25–26 and 5:3–11 (Seth and Enosh). There may be a link between the genealogy descended from Cain (4:17–22) and that from Seth (5:6–32), especially in the names Enoch, Methushael/Methuselah, and Lamech (cf. 4:18 with 5:18, 21, 25), although this is uncertain.

Genesis 9–11 are coherent with the previous pericopes, since these chapters record the sequel to the Great Flood, with the descent of various peoples from the family of Noah (cf. 10:1), as linked by the genealogies (cf. 11:10, picking up the line of Shem), with 11:10–19 paralleling 10:21–25 (through Peleg), and 11:20–26 bringing the line down to Abram, Nahor, and Haran (who, with their descendants, will feature in the rest of Genesis).

Within Genesis 1–4 there are also clear linkages. First, Genesis 2–4 are commonly assigned to the J-source, with a few redactions; their overall unity is not controversial.<sup>31</sup> Second (see below), Genesis 2:4–25 serves to elaborate the sixth “day” of Genesis 1. Third, the common assertion that the P creation story (Gen. 1) is free of anthropomorphisms is mistaken; this story actually depends on an anthropomorphism, namely, the portrayal of God as one who goes through his work week and enjoys his Sabbath rest.<sup>33</sup> Genesis 2 contributes its own anthropomorphism to this pattern, depicting God as if he were a potter “forming” the first man (2:7) and a worker who “builds” the first woman (2:22, ESV margin).

Finally, several verbal links show that whatever separate origins the individual pericopes might have had, they have been edited in such a way as to exhibit coherence. For example, in 1:28 we read, “And God *blessed* them. And God said to them, ‘Be fruitful and multiply.’ ” In Genesis 3 the “blessing” (*brk*) has turned to “curse” (*'rr*), the proper antonym. And whereas the blessing was for them to *multiply* by having children, after their disobedience God said to the woman that he will “surely *multiply* your pain in childbearing”—that is, the arena of blessing was turned into one of pain and danger. The genealogical chapter 5 (in v. 29) also refers to God's “curse” on the ground (3:17): “... and [Lamech] called his name Noah, saying, ‘Out of the ground that the Lord has *cursed* [*'rr*], this one shall bring us relief from our work and from the *painful toil* [*'itstsâbôn*, cf. 3:16, 17] of our hands.’ ”

Further, three “enigmatic” first person plurals, by which God addresses “us,” appear through Genesis 1–11, namely, 1:26; 3:22; and 11:7. Many suppose that these (or at least the first) are God addressing his angelic council, although I judge the best explanation to be a “plural of self-address.” The specific conclusion here does not matter for my purpose; the point is that this is a distinctive feature of this stretch of material, from supposedly separate sources.

Once we recognize how Genesis 1–11 is integrated into the whole flow of the book of Genesis, and how these chapters parallel basic worldview-shaping materials from Mesopotamia, it is no surprise to find that whoever put these chapters together did so in such a way that they display their unity at the literary and linguistic level.

*c. Genesis 1–11 Sets the Stage for Genesis 12–50*

The purpose of Genesis is to identify the people of Israel, who followed Moses, as the heirs of God’s promises to Abraham. We find in Genesis 12 that God called Abraham so that his family would be the vehicle of blessing to “all the families of the earth”—and, since Genesis 10 recounts the various “families” (or “clans,” Heb. *mishpâkhôt*) of the earth, this means to all Gentile peoples everywhere. So Genesis 1–11 clarifies that the God who has called Abraham is in fact the one true God, the Maker of heaven and earth, for whom all humankind yearns.<sup>8</sup>

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<sup>8</sup> Collins, J. C. (2013). [A Historical Adam: Old-Earth Creation View](#). In M. Barrett, A. B. Caneday, & S. N. Gundry (Eds.), *Four Views on the Historical Adam* (pp. 148–157). Grand Rapids, MI: Zondervan.

## Cosmic Garden and Mountain Imagery in the Old Testament

People in the ancient Near East believed that the gods lived in lush gardens or mountains, as both settings reflected luxury and remoteness—qualities associated with the gods. Gardens and mountains also contrasted with typical living conditions. Most people in the ancient Near East lived in arid climates and relied on what they grew or gathered for food. But, in their view, gardens—where the gods lived—had an abundance of water and a wide range of fresh vegetation for food, shade, and beauty.

People in the ancient Near East thought of mountains as divine abodes because they were extremely remote. They rarely ascended mountains unless required by the grazing cycles of their livestock; hence, mountain dwellings allowed gods to remain separate from humanity. This perception was so widespread that people in areas without natural mountains (such as Mesopotamia or Egypt) created artificial ones. For example, in Mesopotamia, the human-made ziggurat was a mountain-temple where the gods met humanity.

Mountains were also associated with creation. For example, Egyptians believed that the creator god, Atum, lived in a watery abyss—“the Nun”—prior to creation. At creation, Atum rose from the abyss on a primeval mound. The pyramids commemorate the rise of the first mound out of the watery abyss. The single-story temples that replaced pyramids maintained this mound concept: they were built with a slight incline. As worshipers moved toward the holy place at the heart of the temple, they would pass through columned halls decorated with various plants found in the Nile. In effect, worshipers imitated traveling up a mound that rose from the waters as they moved through the temple. The high point of the mound-incline was believed to be the home of the deity.

In addition to places of residence, the temples were also understood to be places where worshipers offered sacrifices and made petitions—and where deities issued cosmic decrees. People in the ancient Near East believed that temples were the headquarters where the gods maintained cosmic order and dispensed their will. Since ancient Semitic people believed their gods lived in tents on sacred mountains, mountains were also considered temples that marked the center of the cosmos.

The cosmic garden and mountain imagery of the Old Testament reflects wider beliefs of the ancient Near East. A close parallel can be found in ancient texts from Ugarit, a city-state of ancient Syria. In the text, Ugarit’s high god, El, lives on a mountain with a lush garden. The mountain is situated at the “source of the two rivers,” amid “the fountains of the double-deep.” El and his divine council (or “heavenly host”) assemble on the cosmic mountain—the place where heaven and earth meet—and issue divine decrees from the “tents of El” or “tabernacle” (*KTU* 1.1.III:23; 1.2.III:5). El’s coregent, Baal, has his own divine mountain abode and temple-house. His meeting place is the “heights of Tsaphanu,” and his palace is “a house of the clearness of lapis lazuli” with a courtyard of “paved bricks.”

### Old Testament Usage of Cosmic Garden and Mountain Imagery

The Old Testament uses all of these descriptive terms for the dwelling place and temple of Yahweh, the God of Israel: Yahweh dwells on mountains (Sinai or Zion; e.g., Exod 34:26; 1 Kgs 8:10; Psa 48:1–2); the Jerusalem temple is located in the “mount of assembly” (Isa 14:13; Psa 82:1); Mount Zion is described as a watery habitation (Isa 33:20–22; Ezek 47:1–12; Zech 14:8; Joel 3:18; compare Heb 4:18). In Ezekiel, Eden is referred to as both a garden and a mountain: Ezekiel 28:13–16 equates the “holy mountain of God” with Eden, the “garden of God”; Eden appears in Ezekiel 28:2 as the “seat of the gods,” the place where Yahweh runs the cosmos with His heavenly host (compare 1 Kgs 22:19–23). In Genesis, Eden—a lush, well-watered garden (Gen 2:6–15)—is where Yahweh first announces His will for humans, likely to the heavenly host (Gen 1:26; 3:14–19, 22–24).

These motifs also appear in descriptions of Mount Sinai and the wilderness wanderings of Israel. God dispenses His laws for Israel from Mount Sinai—the “mountain of God.” These laws are then dispersed by angels—the heavenly host (Acts 7:38, 53; Gal 3:19; Heb 2:2; compare Deut 33:2). When Moses, Aaron, and 70 of the elders ascend Mount Sinai at God’s command, they see Yahweh and feast with Him (Exod 24:9–11). Later, Yahweh moves from Sinai to dwell with His people in the tabernacle tent (Exod 25–40). He also meets with Moses in the tent of meeting (e.g., Exod 33:9–11). The internal tabernacle tent structure is later moved to the temple, leading to the description of the temple on Mount Zion as Yahweh’s tent (Isa 33:20; Psa 26:8; 74:7; 1 Chr 9:23).

Both the tabernacle and the temple preserved the garden and mountain imagery. If God dwelled in the holy of holies, the area outside the holy of holies represented the garden of Eden. The curtains of this internal structure were decorated with cherubim (Exod 26:1; compare Exod 25:17–22), as was the veil separating the holy of holies (most holy place) from the rest of the holy place (Exod 26:31). The cherubim guarded the way to the divine presence as they did in Eden (Gen 3:24). Outside the veil stood the golden lampstand—the menorah—which represented the tree of life (see Exod 25:31–40). The lampstand—composed of a central shaft or “trunk” with six branches on either side—resembled a tree, and was covered with almond blossoms, a symbol of life and its renewal (see Jer 1:11–12; 31:26–27; Psa 127:1; Prov 8:34; compare Eccl 12:5). The temple in Jerusalem also had numerous carvings of lush plant life and cherubim (1 Kgs 7).<sup>9</sup>

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<sup>9</sup> Heiser, M. S. (2012, 2016). [Cosmic Garden and Mountain Imagery in the Old Testament](#). In *Faithlife Study Bible*. Bellingham, WA: Lexham Press.

# Speaking of Adam and Eve: Study of Languages Supports Biblical Account of Human Origins

BY – HUGH ROSS

Adam named his wife Eve because she would become the mother all the living.  
Genesis 3:20

Did Adam and Eve exist? A number of evangelical Christian are now arguing that they didn't. But I disagree. I think Adam and Eve did exist, and not just because I believe what is recorded in Scripture. In my opinion, good *scientific* evidence backs up belief in a literal, historical Adam and Eve.

Recently, a scientist from the University of Auckland in New Zealand used linguistic analysis of language to trace humanity's origin. In doing so, he provided independent confirmation of the Out-of-Africa model for human origins, and with it, support for the biblical creation model.<sup>1</sup>

Numerous studies of genetic variability indicate that humanity originated recently (around 100,000 years ago) in east Africa (near where some theologians think the Garden of Eden existed) from a small population. Mitochondrial DNA studies suggest that all humanity traces back to a single woman. In like manner, studies of Y-chromosomal DNA indicate that all men can trace their origin to a single man. (See *Who Was Adam?* and the *New Reasons to Believe* e-Zine, pages 4–6, for previous discussions on this topic.)

Anthropologists tend to view these data from an evolutionary perspective (coining the term “Out-of-Africa model”). Yet, the data are provocative from a biblical standpoint. They reveal the type of pattern one would expect if Adam and Eve really existed and gave birth to all human beings.

## **Phonemics**

The sounds of language—vowels, consonants, and tones—are referred to as phonemes. Linguists have discovered that languages spoken by larger populations tend to possess more phonemes than languages spoken by fewer people.

Quentin Atkinson at the University of Auckland wondered if phonemes could be used to study humanity's origin. What further motivated his idea is the phenomenon in genetics known as the serial founder effect. When a subpopulation breaks off of the main population, that smaller group displays much more limited genetic variability than the parent population. If the subpopulation, in turn, spawns another subpopulation, that resulting group of “break-a-ways” will display an even more reduced genetic variability.



When people began to migrate around the world, a small group left the point of humanity's genesis. Serial fracturing of the migrating population took place, consequently generating the serial founder effect. According to Atkinson's hypothesis, this phenomenon should be evident in the phonemes of the world's languages.

### **The Results: Something to Talk about**

Atkinson analyzed 504 languages and discovered that African languages displayed the greatest number of phonemes. (African populations are the most genetically diverse and thought to be the oldest people groups.) He also determined that languages of people groups in South America and Oceania possessed the fewest number of phonemes. (These people groups are believed to be the youngest.) Atkinson also noticed a cline in phonemes (a gradual decrease in phoneme numbers) as the languages moved away from Africa and into Europe and Asia.

The phoneme patterns Atkinson discovered closely match the genetic diversity data, and independently support the Out-of-Africa model. It is encouraging that a number of separate lines of evidence (genetic, archeological, and now linguistic) harmonize with the biblical account of human origins. The scientific case for Adam and Eve is stronger today than it has ever been, in spite of what some evangelicals might think.

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### **References:**

1. Quentin D. Atkinson, "Phonemic Diversity Supports a Serial Founder Effect Model of Language Expansion from Africa," *Science* 332 (April 15, 2011): 346–49.

# The Importance of an Historical Adam

by [Simon Turpin](#) on May 29, 2013

## Abstract

The question of whether man was specially created directly from the hand of God or whether he evolved from an ape-like creature has long been a controversial issue. In today's secular culture it is common to view the biblical history of Adam as a story, myth, or a parable but this is now also becoming the standard interpretation for many within the evangelical community.

In order to understand Genesis this way we have to sacrifice the clear teaching of the Bible to fit with a particular evolutionary view of earth's history.

## Introduction

Each and every generation of Christians will eventually have to face its own theological challenges and will be called “. . . to contend earnestly for the faith which was once and for all delivered to the saints” ([Jude 1:3](#)). This generation is no different.

From childhood we are informed with ideas in our culture that are inherently pagan and often we are not even aware of this. These ideas are usually accepted into our mindset uncritically shaping the way we think. One of the most common invasions of secular thought even into the Christian mind in our own day is the current pagan understanding of the created realm, evolutionary naturalism. Unfortunately, many Christians uncritically accept the pagan view of the created order.

The debate over whether Adam was historical is ultimately a debate over whether we trust what the Scriptures clearly teach. If we cannot be certain of the beginning, then why would we be certain about what the Scriptures teach elsewhere? The uncertainty of truth is rampant in our culture partly due to the influence of post-modernism which is why many believe the issue over Adam's historicity is unimportant.

Moreover, belief in a historical Adam stands against a dominant intellectual system that establishes what is called “credibility” in the secular academy. Evangelicals who feel intellectually accountable to the academy then have to come up with another way to read Genesis 1–11.

This paper will seek to show that the arguments against Adam being a historical person who existed in space-time history are not based upon the clear teaching of Scripture but upon evolutionary based presuppositions. It will then show why understanding Adam as a historical figure is important for a coherent understanding of the biblical message of creation, Fall and redemption.

## The Foundation of Adam Denial

Ever since the enlightenment the historicity of Adam has been questioned. Today an increasing number of evangelical scholars are beginning to deny Adam's historicity, while others would even say it is an open question or that it is not an important issue (Ostling 2011, pp. 23–27). The Jewish scholar Louis Jacobs observed that,

There is no doubt that until the nineteenth century Adam and Eve were held to be historical figures, but with the discovery of the great age of the earth . . . many modern Jews [and Gentiles] have tended . . . to read the story as a myth . . . (Jacobs 1995, pp. 13–14)

The neo-orthodox theologian Karl Barth (1886–1968) is probably the modern influence behind the denial of Adam being a historical individual. Barth understood the Creation account in terms of *Geschichte*. For him *Historie* is that which is reported as fact and *Geschichte* is the interpretation of the fact (Trueman 2008, p. 14). According to Barth, Genesis was not a myth, an event that never happened, but pure saga distinguishing itself from “history” on the one side and myth on the other (Barth 1958, p. 90). Barth viewed Adam as acting as a symbol for everyone. He denied the Fall took place believing that Adam “. . . was immediately the first sinner” (Barth 1956, p. 508) leaving him to be guilty before God at the beginning of creation. Barth's *Historie-Geschichte* distinction led him to believe that the events in Genesis 1–3 did not take place in space and time, as they were *Geschichte*, another kind of history (existing in the noumenal realm). This means that there is no creation in the orthodox meaning of the term and that Genesis is written in an unhistorical fashion. Barth rejected the doctrine of creation in order to impose a modern philosophical view on the book of Genesis. This *Historie-Geschichte* distinction is attractive to a form of evangelicalism that has picked up on certain currents in linguistic philosophy (Trueman 2008, p. 15). This is what the interpretation of Genesis as “myth” or “saga” is based upon and is the foundation for many theologians today in their interpretation of Adam.

## Modern Adam Denial

The most prominent theistic evolution organization, today, BioLogos has had a number of theologians and scientists comment on what the Bible and science say about a historical Adam.

For example, English theologian Alister McGrath understands why people see Adam as a historical figure but it makes more sense for him to see Adam and Eve as stereotypical figures who:

... represent human potential as created by God but also with the capacity to go wrong. The story of Adam and Eve is the story of all of us—people with both the greatest intentions and the greatest of gifting—but still with the ability to fail. The Adam and Eve story tells us that this is not accidental—this is what it means to be human. (McGrath 2010)

The influence of Barth echoes in the language McGrath uses to describe Adam and Eve. Just as Barth believed Adam was always a sinner McGrath sees the Adam and Eve story as what “it means to be human” that we were created by God with the “capacity to go wrong.”

If sin were just a part of who Adam was and always a part of life then what are we guilty of? Moreover, why do we need forgiveness if God made us like this to begin with? However, Adam’s experience is not, in fact, our experience because Adam was not in a state of sin to start with. After Adam and Eve disobeyed God’s command their “eyes . . . were opened” ([Genesis 3:7](#)) indicating that they now knew their prior created goodness was a memory and because of their disobedience they became aware of their guilt and hid from the Lord ([Genesis 3:8](#)). Adam was afraid of God because of his nakedness which brought shame, which in his innocence he had been without ([Genesis 2:25](#)), which in the ancient Near East and in the Bible was a terrible disgrace ([Genesis 9:24–25](#)). Adam and Eve’s shame is explained as the consequence of the guilt of sin ([Genesis 3:8–10](#)). When a person yields to temptation he does not become a sinner since he already is a sinner because of the fact that he is a descendant of Adam ([Romans 5:12–21](#)). Adam was not already a sinner when he was created but he fell from a state of innocence and from the fellowship he once had enjoyed with the God.

N. T. Wright, another popular English theologian, denies Adam is a historical individual. Instead he believes that the Jews from the Babylonian exile to the Jewish people at the time of Jesus would have understood:

... the story of Adam and Eve in the Garden—and their ultimate expulsion after violating the terms of their covenant with God—would have identified with the story on a deep level. These readers would have thought “this is our story” because Israel had repeated this experience. (Wright 2010)

How Wright knows this is simply pure speculation. Wright does not believe Adam was a historical figure but is a metaphor for Israel “When they fail [Israel], like Adam and Eve, they are exiled from the land” (Wright 2010). Peter Enns also sees Adam as “. . . an Israel story placed in primeval time. *It is not a story of human origins but of Israel’s origins*” (Enns 2010). If you support this argument however, it is possible to go ad infinitum with it and deny that Israel actually existed, and if Israel never existed, then what of Israel’s Messiah? Interestingly, Wright previously held to a historic Adam (Wright 2000, p. 526). Furthermore, Wright goes on to state that:

Readers of Genesis who focus simply on the smaller, literal picture—that is, the number of days of creation and whether there is evidence in the text pointing to an old or new earth—are in effect not reading the complete text. To fully appreciate the richness of the text, we should think about the functionality and reception of the text as opposed to solely the words on the page. (Wright 2010)

Wright does not mention how a person can get to the “functionality and reception” of the text without thinking about “the words on the page.” If this approach to Genesis is taken then the meaning of the words in the text are unreliable and can mean anything to anyone. Wright’s understanding of the text is nothing more than the result of interpreting the text through the lens of evolutionary dogma. Our Lord and the apostles understood Genesis in its plain sense:

- [Matthew 19:4–6](#):  
“Haven’t you read,” he replied, “that at the beginning the Creator ‘made them male and female,’ and said, ‘For this reason a man will leave his father and mother and be united to his wife, and the two will become one flesh’? So they are no longer two, but one flesh. Therefore what God has joined together, let no one separate.”
- [1 Timothy 2:13–14](#):  
For Adam was formed first, then Eve. And Adam was not the one deceived; it was the woman who was deceived and became a sinner.
- [2 Peter 3:5](#):  
But they deliberately forget that long ago by God’s word the heavens came into being and the earth was formed out of water and by water.

These texts should serve as our example of how to understand and interpret Genesis.

Another denier of the historicity of Adam is Old Testament professor Tremper Longman III who believes Genesis 2 is a second account of creation which contains much figurative language. Longman believes we should read the creation of Adam with the Babylonian account of *Atrahasis* as the background which the original audience certainly did. Longman writes:

The description of how Adam was created is certainly figurative. The question is open as to whether there was an actual person named Adam who was the first human being or not. Perhaps there was a first man, Adam, and a first woman, Eve, designated as such by God at

the right time in his development of human beings. Or perhaps Adam, whose name after all means “Human,” is himself figurative of humanity in general . . . there is nothing that insists on a literal understanding of Adam in a passage so filled with obvious figurative description. The New Testament’s use of Adam (Romans 5 and 1 Corinthians 15) does not resolve the issue as some suggest because it is possible, even natural, to make an analogy between a literary figure and a historical one. (Longman 2010)

What is the relationship between the ancient Near Eastern parallels such as *Atrahasis*, the *Epic of Gilgamesh* and the Bible? Should we read them as the background to the creation account or is the creation account rooted in the mythological worldview of its time?

By using ancient Near East literature scholars are going outside the Bible, which is committing *eisegesis*—reading meanings “into” the biblical text as opposed to “out of” the biblical text exegesis, in order to substantiate what they want the Bible to say in order to accommodate those views. There is much dissimilarity between the ancient Near Eastern accounts and the Bible. For example, how does one explain the polytheism, the theogony (creation of the various gods), the cosmic wars, the magic that is at the center of these epics. These are not found in the Bible. The Scriptures on the other hand give a true historical, chronological account of the event. Longman and others come to the biblical account and read all the ostensible ancient Near Eastern creation parallels associated with it and then interpret the passage in the light of the parallels. The parallels then dictate what the passage must mean because all those parallels show the worldview, the frame of reference in which this is operating, thereby reading the parallels into the text. Longman and others are guilty of reading Genesis in light of ancient Near Eastern sources.

The revelation of God however, says something completely different from those ancient Near Eastern documents. Far from being domesticated by the background of the ancient Near Eastern texts, Genesis confronts the background, revises the background and challenges the background of those other texts.

The problem with this view is that it understands Genesis 1–11 as being based on legends from other creation accounts in the ancient Near East and is inconsistent with divine inspiration of Scripture. The text of Genesis 2 is used numerous times in the New Testament ([Matthew 19:4–6](#); [Mark 10:6](#); [1 Corinthians 11:8–9](#); [Ephesians 5:31](#); [1 Timothy 2:13](#)), and if the account in Genesis 2 is untrue, that is, did not occur in space-time history, then it calls into question the meaning and theology of these texts. However, there is no biblical evidence that God ever uses myths as a basis to teaching truth. On the contrary, Scripture clearly distinguishes truth from myth ([2 Timothy 4:4](#); [1 Timothy 1:4](#); [Titus 1:14](#); [2 Peter 1:16](#)).

Is the description of Adam figurative as Longman believes? The literal hermeneutic, which is often caricatured when it comes to the opening chapters of Genesis, simply means that the words are taken according to their grammatical and philological

sense. However, the primacy of the grammatical, plain, straightforward sense must be assumed before searching for the figurative sense.

In [Genesis 2:7](#) the text is simply telling us that the form of man's body was made by God. The forming of the man from the dust of the ground shows that God formed that body immediately from the dust of the ground and this rules out the idea that the body of man developed from a lower form of man. Old Testament scholar E. J. Young comments on the figurative language in [Genesis 2:7](#):

... whereas it might apply to some elements of [Genesis 2:7](#); it does not include all of them. In other words, if anthropomorphism is present, it is not present in each element of the verse ... The man was real, the dust was real, the ground was real as was the breath of life. (Young 1964, p. 57)

The question may be open for Longman whether Adam was the first man but the Bible is clear that Adam was the first man ([1 Corinthians 15:45](#)) and Eve the first woman ([Genesis 3:20](#)). Adam is placed at the beginning of two chronologies in the Bible ([1 Chronicles 1:1](#); [Luke 3:38](#)) which were understood in a straightforward sense ([Jude 1:14](#)). Those genealogies contain figures such as Abraham and David, so if Adam is only a literary figure what about the rest, and how can you be descended from a literary figure? Moreover, Paul preached to the Greeks on Mars Hill that God created from "one blood every nation of mankind" ([Acts 17:26](#)). Longman's assertion of Paul's understanding of Adam is arbitrary and controlled by evolutionary dogma rather than by what the Scriptures clearly teach.

In an article entitled *Were Adam and Eve Historical Figures?* BioLogos offers several further biblical objections to a historical Adam. The article states:

Genetic evidence shows that humans descended from a group of several thousand individuals who lived about 150,000 years ago. This conflicts with the traditional view that all humans descended from a single pair who lived about 10,000 years ago. (BioLogos 2011)

Dr. Robert Carter points out that there are two issues that need to be considered when it comes to interpreting this genetic evidence:

The first is their *a priori* exclusion of the biblical model from any and all consideration ... The second is their appeal to mutation as the sole source of genetic diversity. (Carter 2011)

When these considerations are taken into account, rather than evolutionary assumptions, the data fits into the biblical model of humans descending from a single pair.

In the article BioLogos go on to state that a literal reading of Genesis 1–3, despite its "attractive simplicity," does not fit the evidence. They argue that a literal reading runs into historical trouble in trying to reconcile the chronological details of the two very different creation accounts found in [Genesis 1:1–2:3](#) and [Genesis 2:4–3:24](#).

The idea of two creation accounts comes from the proposal that the Pentateuch is based upon a number of documents, known as the documentary hypothesis, put together by a redactor late in Israel's history. Old Testament scholar Gleason Archer, who rejected the documentary hypothesis, states that this hypothesis suggests that the Pentateuch

... was a compilation of selections from several different written documents composed at different places and times over a period of five centuries long after Moses ... (Archer 1985, pp. 83–84)

If this is true, then why did the redactor of the Pentateuch make such a glaring mistake at the beginning as to put together two contradictory accounts of creation?

However, [Genesis 1:1–2:3](#) and [2:4–3:24](#) are not two separate accounts of creation. The Hebrew phrase *toledot* is the key to understanding Genesis chapter 2. The only place where *toledot* is not found as a heading is [Genesis 1:1–2:3](#), and this is because there was nothing created prior to it (Mathews 1996, p. 35).

Unlike the other uses of *toledot* in Genesis this is the only time the genitive phrase does not contain a personal name. The reason for this is that Adam as the first man had no direct predecessors. The purpose of the *toledot* in [Genesis 2:4](#) is twofold. First, it looks back at [Genesis 1:1–2:3](#). Brevard Childs understands the *toledot* to formulate the structure of Genesis and the role of the *toledot* in [Genesis 2:4](#) “is to connect the creation of the world with the history which follows” (Childs 1979, p. 146). This is indicated by the fact that [Genesis 2:4–25](#) is an expansion of chapter 1 by the similarity of [Genesis 2:4](#) as with [Genesis 5:1](#) and [Numbers 3:1](#). *Toledot* is followed by a temporal clause “when” (*beyom*), and in both [Genesis 5:1](#) and [Numbers 3:1](#) the content of the “when” clause refers to the former prominent information, in order to bring it to the attention of the reader for understanding the context of the following *toledot* section. Second, [Genesis 2:4](#) also

... connects 2:4–25 with 1:1–2:3 ... while v. 4 looks back to 1:1–2:3, its main purpose is to shift attention to the creation of man and his placement in the garden. (McCabe 2006, p. 73)

The purpose of the *toledot* in [Genesis 2:4](#) is not only looking back to [Genesis 1:1–2:3](#) but moving the attention of the text to the focus of God's creation of Adam and his place in the Garden of Eden. Mathews contends that:

Scholars are recognizing that chaps. 1 and 2 are not a repetition of the same matters that in places are at odds with one another, but rather chap. 2 is a thematic elaboration of the key features found in 1:1–2:3 ... Particularly, the sixth day's events regarding the creation of man and woman and their dominion (1:26–28) are taken up in 2:4–25. (Mathews 1996, pp. 188–189)

[Genesis 2:4–14](#) focuses on man in the Garden of Eden and is not a separate contradictory account of creation. This shift of focus can be recognized by the use of the divine names that are used in the text. The divine name used in [Genesis 1:1–2:3](#) is *Elohim* which appears 35 times and stresses God's sovereign might and



creative nature. Whereas in [Genesis 2:4–3:23](#) the divine name *Yahweh Elohim* appears 20 times, and is often used with God’s covenant keeping ability. This is the commencement and history of the human race. It should be obvious that this is not a second account of creation as there is no mention of the heavens and earth, sun, moon, stars, atmosphere, land etc.

Furthermore it is often the case in the ancient Near East that Semitic historians gave a historical overview (chapter 1) followed by a recap of the details concerning events that have already taken place (chapter 2) (Genesis 10–11 have a similar relationship—see also 1 Kings 6–7) (Keil and Delitzsch 1980, p. 87).

BioLogos also suggest that difficulties arise if one believes the human race began with only two initial people. One of these difficulties is the age old question “where did Cain get his wife?” They object to the possibility that she was the sister of Cain, saying:

... this conflict[s] with later biblical commands against incest, but there is no reference in Genesis to Cain having a sister or any other humans who could populate another area. (BioLogos 2011)

However, if we start with Scripture as the foundation for our thinking it is clear that there was one man and one woman to begin with ([1 Corinthians 15:45](#); [Genesis 3:20](#)). The Old Testament scholar Franz Delitzsch comments:

... the actual unity of the human race is a fundamental doctrine of Scripture which is never broken through, and intends the descendants of Adam to be regarded as the entire human race. In any case we must regard Cain’s wife as a daughter of Adam (5:4). (Delitzsch 1888, p. 190)

It is interesting that the objection raised by BioLogos was answered by Delitzsch a long time before they wrote! [Genesis 4:17](#) says nothing about Cain’s marriage. It simply assumes that the marriage has taken place and even though Cain’s wife is not named she must be one of the daughters of Adam ([Genesis 5:4](#)) (Hamilton 1990, p. 237). Delitzsch commented on the idea that this was incest:

It is quite unjustifiable ... that Cain’s marriage with his sister involves the origin of mankind in incest. If the human race was to be propagated from a single pair, such closely related marriages were unavoidable. The notion of incest was originally limited to the reciprocal relation of parents and children, and afterwards extended in proportion as the possibility of conjugal connections was diversified. (Delitzsch 1978, p. 190)

The problem of incest is a modern idea, and it was not until the time of Moses (Leviticus 18) that brother and sister relationships were forbidden.

The fact that Cain fears for his life ([Genesis 4:13-14](#)) after killing Abel is seen as another problem:

The people trying to kill Cain would have to be his extended family—siblings, nieces, nephews, and so on—all united in trying to kill him. But the text taken literally does not allow it . . . All of this points strongly toward a nonliteral, symbolic reading of the creation stories. (BioLogos 2011)

However, Delitzsch suggests that the idea that Cain feared being recognized beyond Eden presupposes that only the family of Adam existed, he states:

Blood-vengeance was not indeed as yet a custom, but it is the most primitive form of capital punishment of the murderer. Hence it was natural that Cain should fear for his life when his father's family should be increased. (Delitzsch 1978, p. 187)

Yet another contributor to the attack on the historical Adam from BioLogos is from the prominent theistic evolutionist Dr. Dennis Alexander. Alexander sees the narrative of man's disobedience in Genesis 3 as the "story of everyman" (as Barth and McGrath) presenting the truth in a vivid narrative style that is about theology rather than history (Alexander 2011a, p. 2). Alexander believes the two books' analogy is a powerful analogy which challenges us to see how the two "books" speak to each other because all truth is God's truth (Alexander 2011a, p. 2).

Caution must be taken in understanding the "two books" analogy. Although all truth is "God truth," truth exists in various forms of certitude and "all truth" does not rest on the same authority (Thomas 2002, pp. 121-124). Moreover, not all truth claims are actually true. There are lots of "truths" that are accepted by "all scientists" that are false (the history of science repeatedly demonstrates this as scientists are constantly correcting the textbooks). So scientific "truth" is not infallible, whereas special revelation given in the Bible is infallible and unchanging.

This does not mean that we cannot learn anything from studying nature. It just means that our interpretation of what we observe must be consistent with the infallible revelation of Scripture. Since general and special revelation both proceed from God, they cannot ultimately conflict each other and they do not when they are correctly interpreted in the light of Scripture.

Alexander argues on the basis of Hebrew vocabulary for the figurative meaning of Adam. He observes that the very first mention of "Adam" in the Bible comes in [Genesis 1:26-27](#) where the meaning is "unambiguously humankind." He goes on to write of Genesis 2:

. . . there is a perfectly good word for "man" in Hebrew (*'ish*), the word most commonly used for man in the Old Testament (in fact 1671 times), so the choice of "*adam*" here for man seems a deliberate teaching tool to explain to the reader that *adam* not only comes

from the *adamah*, but is also given the important task by God of caring for the *adamah*—earthy Adam is to be God’s earth-keeper. (Alexander 2011a, p. 4)

Alexander rightly mentions that the definite article in front of *adam*, means “the man,” noting personal names in Hebrew do not carry the definite article. He observes that the definite article remains in place all the way though to [Genesis 4:25](#) when Adam without a definite article appears and “lay with his wife again” (Alexander 2011a, p. 4). Hamilton notes however, that

... this neat rule does not apply to all of the instances of *adam* is borne out by an examination of some of the modern English translations of the Bible . . . these modern versions disagree as to the first legitimate appearance of “Adam” as a personal name: 2:19 (AV, also LXX and Vulg.); 2:20 (NIV); 3:17 (RSV); 3:21 (NEB); 4:25 (JB). (Hamilton 1990, pp. 159–160)

It should be noted, that Alexander does recognize that some ambiguity exists in the use of *adam* as used as a personal name for the first time (Alexander 2011a, p. 4). The Hebrew word for “man” does sometimes refer to mankind ([Genesis 1:26](#)). In [Genesis 1:27](#) however, we have an individual (him—third person singular pronoun) being described. The narrative in Genesis 2–4 speaks of Adam as an individual and not simply referring to mankind. For example:

- [Genesis 2:7](#): “... God formed man from the dust of the ground, and breathed into his nostrils ...”
- [Genesis 2:23](#): After, God makes the woman from man’s side the man says “This is now bone of my bones, And flesh of my flesh; ...” How could the whole of mankind say “bone of my bone, and flesh of my flesh?”
- [Genesis 2:25](#): “And they were both naked, the man and his wife, ...” Was the whole human race naked?
- [Genesis 3:17](#): The noun, *adam*, is used here for the first time without the definite article indicating a proper name.
- [Genesis 4:1](#): “Now Adam knew Eve his wife, and she conceived ...” Did the whole human race know (relationally) Eve?

Alexander and others who argue that the Hebrew word *adam* only means man or mankind must deal with the fact that the context of the Genesis narrative clearly depicts Adam as a singular individual. The narrative in Genesis presents Adam as acting, speaking, and as reproducing. Hebrew vocabulary does not support theistic evolution.

Alexander puts forward two possible models for understanding Adam. First is the “Retelling model” which represents a gradualist proto-historical view:

... meaning that it is not historical in the usual sense of that word, but does refer to events that took place in particular times and locations. The model suggests that as anatomically modern humans evolved in Africa from 200,000 years ago, or during some period of linguistic and cultural development since then, there was a gradual growing awareness of God’s presence and calling upon their lives to which they responded in obedience and worship. (Alexander 2011a, p. 5)

The second model that Alexander suggests is the “Homo divinus” model:

According to this model, God in his grace chose a couple of Neolithic farmers in the Near East . . . to whom he chose to reveal himself in a special way, calling them into fellowship with himself—so that they might know Him as the one true personal God. (Alexander 2011a, p. 6)

The Homo divinus model apparently draws attention to the representative nature of “the Adam” “the man” as suggested by the definite article:

“The man” is therefore viewed as the federal head of the whole of humanity alive at that time . . . Adam and Eve, in this view, were real people, living in a particular historical era and geographical location, chosen by God to be the representatives of his new humanity on earth, not by virtue of anything that they had done, but simply by God’s grace. (Alexander 2011a, p. 6)

Alexander claims that the advantage of the Homo divinus model is:

. . . that it takes very seriously the Biblical idea that Adam and Eve were historical figures as indicated by those texts already mentioned. It also sees the Fall as an historical event involving the disobedience of Adam and Eve to God’s express commands, bringing death in its wake. The model locates these events within Jewish proto-history. (Alexander 2011a, p. 7)

These interpretations of Adam require that there were *Homo sapiens* who were not the image bearers of God. It requires an adoptionistic understanding of Adam rather than a special creation of Adam. Furthermore, is this in anyway even a possible legitimate exegetical reading of Genesis? It is difficult to imagine that any person without being taught this previously would come to the conclusion that Adam was a Neolithic farmer. The Neolithic period is an evolutionary interpretation of archaeological evidence not a valid interpretation of Scripture. Alexander’s suggested models for understanding Adam and Genesis 1–3 should cause us to be wary because it is far from the plain reading of Scripture.

More recently, Peter Enns in his book *The Evolution of Adam*, argues why one should reject Adam as a historical individual. According to Enns:

Our thinking about Adam must change . . . I am arguing that *our understanding of Adam has evolved over the years* and that it must now be adjusted in light of the preponderance of (1) scientific evidence supporting evolution and (2) literary evidence from the world of the Bible that helps clarify the kind of literature the Bible is . . . (Enns 2012, p. xiii)

Enns goes on to state the following:

A historical Adam has been the dominant Christian view for two thousand years. We must add, however, that the general consensus was formed before the advent of evolutionary theory . . . Evolution demands that the special creation of the first Adam as described in the Bible is not literally historical. (Enns 2012, p. xvi)

Enns is clear where the authority lies in his interpretation of Scripture, his belief in the theory of evolution. Dr. Enns goes on to say,

After a virtual silence in the Old Testament, Adam makes a sudden and unprecedented appearance in two of Paul's Letters ([Rom. 5](#); [1 Cor. 15](#)). (Enns 2012, p. xvi)

Dr Enns's suggestion of the virtual silence of Adam in the Old Testament seems to imply that Adam was unimportant to the Old Testament authors. Is this the case however?

First of all it is uncommon for the Old Testament to refer to any Genesis text. One of the most important texts in Jewish theology is the binding of Isaac in Genesis 22 however it is not even cited in the rest of the Old Testament.

Second, it is assumed that the Old Testament does not speak of Adam specifically. There are a number of passages which either specifically mention Adam or assume knowledge of Adam and the effects of the Fall in Genesis 2–3. While there is no definite scholarly consensus to the mention of Adam in the Old Testament, outside of Genesis 1–5, there can be a good exegetical case made for him and the effects of the Fall in a number of Old Testament passages:

1. The most obvious reference to Adam is found in [1 Chronicles 1:1](#) as the head of the genealogy of Israel. First Chronicles was written to those returning from exile in Babylon in the sixth and fifth centuries and the genealogies to them represented the charter of their identity. In the genealogy there are individuals whose historicity would not even be questioned. The author of Chronicles does not distinguish between historical and figurative as he clearly understood Adam as historical individual.
2. There is a possible allusion to Adam in [Deuteronomy 32:8](#) where "the sons of adam" may be the proper translation (King James Version; New King James Version; Orthodox Jewish Bible). The context is that of God distributing mankind from its earliest time, which possibly refers to the event of the confusion of tongues and division of the nations mentioned in Genesis 10 and 11. The providential movements of the nations and races of mankind, from [Deuteronomy 32:8](#), could be what Paul is referring to in [Acts 17:24–28](#) when he speaks to the Greeks on Mars Hill. Here Paul clearly refers to Adam in order to show that all people have their roots in the one man God originally created.
3. In [Hosea 6:7](#), the Hebrew word *adam* is used but it is disputed as to whether it means "Adam" or "man." Hosea the prophet is addressing the Israelites who are in exile, appealing to them to return to the Lord. In verse 7 it says, "But like Adam they have transgressed the covenant" (New American Standard Bible). Some scholars suggest "like Adam" should be translated "like men" as *adam* in Hebrew can also mean man. However, ". . . this is to intrude an inanity into the text, for how else could Hosea's contemporaries transgress than "like men" (Reymond, 1998 p.430)? "They," [המה](#), in verse 7 refers to Israel and Judah and not the Priests first mentioned in verse 9. The Old Testament scholars and experts in biblical Hebrew, Keil and Delitzsch, suggest that

כַּאֲדָם, like Adam, does not mean . . . “after the manner of men” or “like ordinary men”—for this explanation would only be admissible if הַמָּה referred to the priests or prophets . . . but “like Adam,” who transgressed the commandment of God, that he should not eat from the tree of knowledge (Keil and Delitzsch ,1889 pp. 99–100).

4. The phrase “like adam” also occurs in the book of [Job 31:33](#) which reads: “If I have covered my transgressions as Adam, By hiding my iniquity in my bosom, . . .” Again the phrase “as [like] Adam” is disputed as to its meaning. However, a reference to the first man Adam, rather than “man” in general, would be appropriate as it was Adam who tried to cover his own transgression back in the garden ([Genesis 3:7](#)). Franz Delitzsch notes that to translate “as [like] Adam” here as “like men”:
 

. . . would be as tame here, and altogether expressionless in the parallel passages Hos. vi 7 . . . since the force of the prophetic utterance: “they have כַּאֲדָם transgressed the covenant,” consists in this, “that Israel is accused of a transgression which is only to be compared to that of the first man created: here, as there, a like transgression of the expressed will of God” . . . The point of the comparison is only the sinner’s dread of the light, which became prominent as the prototype for every succeeding age in Adam’s hiding himself. (Delitzsch 1976, pp. 193–194)

Although there is debate as to where and when the events of the book of Job actually take place many of the circumstances in the story of Job point to a setting in the early second millennium with Job possibly being a contemporary of the patriarchs (Archer 1985, p. 465). For example:

- Job offers sacrifices without the benefit of a priest
  - His wealth is measured in terms of flocks and servants
  - His longevity—after his restoration Job lived 140 years which harkens back to Genesis ([Job 42:10, 16](#)). These circumstances suggest a pre-Mosaic origin for the book. This would mean that he would be more likely to have a knowledge of Adam passed down through either oral tradition or written documents.<sup>1</sup> There are also references in Job to the first man and the usurping of knowledge ([Job 15:7–8](#)) which recalls the sin of Adam in Genesis 2–3, to death and the Curse ([Job 14:1; 34:15](#)) that suggest a knowledge of Adam and the effects of God’s curse on the earth due to his sin.
5. In [Psalm 82:7](#) the Hebrew אָכַן כַּאֲדָם תָּמוּתוֹן reads literally: “Surely you will die like *adam*” this phrase echoes the command God gave to Adam in the Garden ([Genesis 2:17](#)) and “. . . for judges inflated with pride because they bear the divine image a reference to Adam would be appropriate” (Blocher 2000, p. 373). To the hearers of Psalm 82 the reference to Adam would recall his fate in Genesis 2–3.
  6. [Ecclesiastes 7:29](#) reads “Truly, this only I have found: That God made man upright, But they have sought out many schemes.” This speaks of God making man, using the article with *adam* אֶת-הָאָדָם, “upright” *yashar* יָשָׁר which here can be translated “just” (Brown, Driver, and Briggs 2006, p. 449) having to do with the disposition of Adam’s mind, before the Fall, being “just” before God ([Ephesians 4:24](#)). This may be the clearest Old Testament text that provides a clear reference to the state of man prior to the Fall.
  7. In Ezekiel 28, where the imagery is dependent on the Genesis account, there is an explicit reference to Eden in (verse 13). Ezekiel’s oracle against the King of Tyre

compares him to the first “prince” of creation by using the phrase “You *adam*” ([Ezekiel 28:9](#); “. . . you shall be a man, . . .”) (Blocher 2000, p. 373). Verses 11–19 “. . . abound in allusions to Genesis 2–3 . . . The connecting link is doubtless in the sin of pride which both Adam and Tyre were guilty of . . .” (Taylor 1969, p. 196). There are further mentions of Eden, the garden of God, in [Ezekiel 31:9, 16, 18](#). The oracle in verses 10–14 gives reasons for the cedar’s downfall, to which the Pharaoh is likened, alluding to pride as the preceding pattern of downfall of the cedar tree. God therefore casts the tree out just as Adam was expelled from the Garden of Eden.

Furthermore, the Old Testament writers were well aware of the teaching of the Genesis narrative that death was a returning to the dust of the ground ([Genesis 3:19](#)) thus there would have been knowledge of the one, Adam, who brought death into the world. For example, many books in the Old Testament reflect the very language of Genesis 3. In [Psalm 90:3](#) the Psalmist wrote: “You turn man back into dust And say, ‘Return, O children of men.’” (New American Standard Bible).

[T]he idea of returning to it [dust] almost certainly alludes to the curse of Adam while the phrase “children of men” could be translated “sons of Adam.” (Kidner 1975, p. 328)

There are many other Old Testament passages that refer to man returning to the dust ([Job 34:15](#); [Psalm 104:29](#); [Ecclesiastes 3:20](#); [12:7](#)).

Further proof of Adam’s importance for Israel’s theology is found in examples from Second Temple Judaism. For example, the idea of original sin, which in some quarters is often seen as an invention of western Christianity, is found in many of the writings of the Second Temple period. Old Testament scholar Brevard Childs states: “Judaism shared the view that human sin derived from Adam (IV Ezra 3.7; Sifre Deut. 323)” (Childs 1993, p. 579).

An even clearer example of the belief in original sin being derived from Adam is found in 2 Esdras:

The same fate befell all of them: just as death came upon Adam, so the flood upon them [of Noah’s generation]. For the first Adam, burdened with an evil heart, transgressed and was overcome, as were also all who were descended from him. Thus the disease became permanent; the law was in the hearts of the people along with the evil root; but what was good departed, and the evil remained . . . in everything doing just as Adam and all his descendants had done, for they also had the evil heart. (2 Esdras 3:10, 21–22, 26 NRSV)

The nation of Israel in her exile understood that she was “in Adam” and that the effects of his first disobedience were entrenched within Israel’s understanding of their own disobedience. This concept of cooperate solidarity is foreign to many in the western church with an individualistic theory of human “rights” but it was basic to the biblical worldview of Israel (see Joshua 7).

The consequences of Adam’s disobedience in Genesis are felt throughout the Old Testament. Genesis 4 onwards is a testament to the Fall, the Flood, Babel, Israel’s scattering and the constant human failure. Paul an inspired apostle in the New Testament gives us theological insights and explains the significance and meaning of

Adam. The Old Testament gives the information that speaks of the Fall of the human race due to Adam's disobedience. Paul looks back with theological reflections in Romans 5 and 1 Corinthians 15 teaching an inseparable tie between the historical reality of Christ's work of redemption and the historical reality of the fall in Gen 2–3.

The majority of these scholars reject the belief in a historical Adam because of the "supposed" evidence from evolution. However, C. J. Collins, while believing that God used evolution, contends for a "version" of the traditional understanding of Adam and Eve as historical people. Collins argues that the stories of Genesis 1–11 include

... divine action, symbolism, and imaginative elements; the purpose of the stories is to lay the foundation for a worldview, without being taken in a "literalistic" fashion. (Collins 2010, p. 151)

Collins believes the biblical storyline teaches that Adam and Eve:

... are historical persons at the headwaters of the distinctly human kind. To say that they are "historical," of course, lays on us no requirement of "literalism" for reading Genesis, if the material itself does not invite it. (Collins 2010, p. 158)

There is no textually valid reason however not to take Genesis literally (naturally). Jesus clearly interpreted it this way ([Matthew 19:4–5](#)) as did the apostle Paul ([1 Corinthians 11:8–9](#); [1 Timothy 2:13–14](#)). Collins's "literalistic/literalism" caricature is unfortunate as it stereotypes the young earth position by setting up a straw man argument against it. Young-earth creationists explain their hermeneutic as historical-grammatical which seeks to understand the text according to its literature.

Because Collins sees [Genesis 2:17](#) as referring to the spiritual death of Adam and Eve, his answer to the question "what of the fossil record, which many interpret to imply that the humans had ancestors, who died" (Collins 2010, p. 157) is somewhat disconcerting. As it leads Collins to conclude, that "... this particular couple were a fresh start, for whom physical death was not their intended outcome" (Collins 2010, p. 159). A "fresh start" hardly seems appropriate language to describe God's creation of Adam and Eve. What does Collins believe that God was doing with his "other creations" before this?

With regards to [Genesis 2:17](#) Collins has overlooked the plain meaning of [Genesis 3:17–19](#), which is also part of the fulfillment of the threat of [Genesis 2:17](#) and which began to take effect immediately after Adam's disobedience. Also, the apostolic interpretation of this event is that both physical and spiritual death was brought about through this act of disobedience ([Romans 5:12–14](#); [1 Corinthians 15:22, 45](#)). Collins and others who accept evolution have to view [Genesis 2:17](#) as referring to spiritual death because if it does refer to physical death it contradicts the theory of evolution. Furthermore, we do not have to separate physical death from spiritual death in our understanding of [Genesis 2:17](#). It is a false dilemma to say that it had to



be either or. Rather we can accept that both spiritual death ([Genesis 3:7-8](#)) and physical death ([Genesis 3:17-19](#)) came about as a result of Adam's disobedience. Collins's authority for coming to a conclusion on the historicity of Adam and Eve seems more to do with "scientific evidence" than with what Scripture says, he states:

From the palaeontologists, we learn that Adam and Eve, if they are indeed at the headwaters of the human race, must come before such events as the arrival of modern humans in Australia, which means before about 40,000 BC. (Collins 2010, p. 159)

Again the language Collins uses in his conclusions regarding the historicity of Adam and Eve "if they are indeed at the headwaters of the human race" is troublesome. The biblical data is clear that Adam and Eve are the first human couple.

Collins's use of the "special creation" of Adam is also questionable as he states, regarding the process of the creation of Adam:

Young-earth creationists, and many old-earth creationists, commonly think of Adam and Eve as fresh creations, with no animal forebears. Others allow for God to have refurbished a pre-existing hominid into Adam. While I am not making an issue of this . . . I think it is nevertheless crucial to affirm that, whatever the process, it was not a purely natural one. Regardless of where God got the raw material, we can say that humans are the result of "special creation." (Collins 2011, p. 160)

The process of Adam's creation, however, is the most crucial part of this debate. The text of [Genesis 2:7](#) is clear as to where God got the material to make Adam, the key word being "dust," and it can only mean this in the context of Genesis 2-3 (see [Genesis 3:19; 23](#)). God took dust from the ground, made Adam from it, breathed into his mouth the breath of life and consequently man became a living creature. If Adam was not the first man, however, and there were other creatures prior to Adam then what God does with Adam is not that special and in what sense was he the first man ([1 Corinthians 15:45](#))? Before Adam's creation [Genesis 2:5](#) has already stated that there was no man yet to till the ground, and after his creation [Genesis 2:18-20](#) states that there was no helper suitable for Adam, which is why God made Eve. The context of Genesis 2 is quite clear that Adam was the very first human being.

Yet even other evangelical Christians, who are considered conservative in their view of Scripture, seem to be quite happy in being agnostic regarding the process by which Adam was created:

Whatever one's conclusions concerning the process of human origins, Christian theology stands or falls with a historical Adam and a historical fall. (Horton 2011, p. 424)

While Horton is correct in what he says concerning a historical Adam, his statement shows a complete lack of understanding of the origins debate. As we have seen, many theistic evolutionists today who claim to be evangelical because of their

beliefs about the process of human origins have rejected a historical Adam and a historical fall along with him.

Collins rejects the biblical timeline for Adam and Eve because he believes that there are gaps in the biblical chronologies (Collins 2010, p. 158). He concludes that the special creation of man occurred somewhere between 100,000 and 40,000 years ago (Collins 2010, p. 160).

The presupposition for all of these scholars seems to be that we have to find a way to rescue the tension between the theory of evolution on the one hand and the Bible on the other. It is an accommodationist's approach to the Bible. These scholars are interpreting Bible passages in ways in which one would never do if he were not first reading the evolutionary theory into the text. They are placing, whether they intend to or not, scientific dogma at a higher and more controlling authority than the Scriptures. The clear meaning of the biblical text is being changed in order to conform to the external, dogma of the day. This should cause great concern because it would require the theistic evolutionist interpretation of Scripture to understand what the Bible says. This is similar to pre-Reformation times when lay people had to depend on the priest for a correct interpretation of Scripture.

## Is Genesis Poetry? The Genre of Genesis

Behind the idea that Adam was not an historical figure, that is, mythical, for many of these scholars is the assumption that the text of Genesis 1–11 is poetry. Nevertheless, only if Genesis 1–11 were, in fact, written as poetry would it make sense to understand Adam as a symbolic or non-historical.

However, Genesis falls neither under the category of myth nor of poetry for “. . . the characteristics of Hebrew poetry are lacking, and in particular there is an absence of parallelism” (Young 1964, pp. 82–83). Although there may be a discussion concerning artistic elements of the Genesis creation account, there is compelling textual evidence to conclude that Genesis is not a poetic text (Blocher 1984, p. 32; Hasel 1994, pp. 19–21; Kaiser 2001, pp. 80–82).

Genesis 1–11 is clearly written as historical narrative, although this does not exclude figures of speech. The repeated use of the *waw* consecutive, which is an essential characteristic of narrative adding to the past narration an element of sequence, helps to identify it as so (Kaiser 2001, p. 80). Appearing 55 times in the 34 verses in [Genesis 1:1–2:3](#), the *waw* consecutive is consistent with the narrative material found in the remainder of Genesis (McCabe 2009, p. 217). Moreover, the text of Genesis 1–11 is obviously historical narrative because it intends to give historical data. For example, [Genesis 5:1–5](#) gives dates and events for Adam's life.

Furthermore, in Genesis 11–12 there is no transition from non-historical to historical and it is not treated as a separate literary category from Genesis 12–50. There is no difference in Genesis 1 grammatically and in form to the other historical accounts in Genesis as there is no break in the literary style in the first twelve chapters. These are all in the same literary category as they use the same rubric *toledot* to tell the story (Kaiser 2001, p. 82). Also, we know Abraham and Jacob were historical figures; therefore, there is no valid reason not to accept Adam as historical. Unfortunately, for these and other scholars Genesis 1–5 neither presents Adam as symbolic nor as non-historical.

## The Biblical Basis for a Historical Adam

Scripture clearly teaches that the human race began in a singular first man, Adam, who was brought into existence by the creative act of God. In an interview with National Public Radio Albert Mohler, the President of the Southern Baptist Theological Seminary, said:

The moment you say “We have to abandon this theology in order to have the respect of the world,” you end up with neither biblical orthodoxy nor the respect of the world. (Mohler 2011)

Mohler is exactly right because theistic evolution is neither biblical orthodoxy nor does it win respect with the world (not that the Christian should be looking for the respect of the world). The decline of the church in Europe since the acceptance of Darwinian evolution in the late nineteenth century is evidence of this. At the same time it is blatantly obvious to the world that denying the historical existence of Adam and Eve is absurd, as Richard Dawkins points out:

Oh, but of course, the story of Adam and Eve was only ever symbolic, wasn't it? Symbolic? So, in order to impress himself, Jesus had himself tortured and executed, in vicarious punishment for a symbolic sin committed by a non-existent individual? As I said, barking mad, as well as viciously unpleasant. (Dawkins 2006, p. 253)

Yet even Dawkins can see the inconsistency of Christians who also hold to evolution:

I think the evangelical Christians have really sort of got it right in a way, in seeing evolution as the enemy. Whereas the more, what shall we say, sophisticated theologians are quite happy to live with evolution, I think they're deluded. I think the evangelicals have got it right, in that there really is a deep incompatibility between evolution and Christianity. (Dawkins 2011)

Scripture repeatedly warns Christians against comparing ourselves to the world system ([John 15:19](#); [Romans 12:1–2](#); [Colossians 2:1–10](#); [1 John 2:15–17](#)) or seeking the approval of the secular world ([Luke 6:26](#); [James 4:4](#); [1 John 4:5](#)).

The biblical chronologies in the Old Testament such as Genesis 5–11 and [1 Chronicles 1:1](#) present Adam alongside numerous historical individuals. Interpreting “Adam” as a symbolic figure alone flies in the face of the chronologies that link Adam as a person to Israel’s father, Abraham. (Mathews 1996, p. 111)

Furthermore, in the New Testament these genealogies are understood as accurate ([Luke 3:3–28](#)), again, presenting Adam alongside many other historical figures which are included in the genealogy of Christ. Luke is a credible historian, and shows that Christ’s genealogy can be traced back to the first man and father of all humanity ([Luke 3:3–28](#)). If Adam is not a historical figure then it undermines Luke’s point by using a mythical figure to make a theological point. In the same manner, in [Acts 17:22–33](#) Paul preaches the gospel to pagans who have no background in Jewish theology and starts with “one man” Adam. Schnabel recognizes that: The reference to one ancestor in [Acts 17:26](#) . . . is an unambiguous reference to the biblical tradition of the beginning of all human existence in the creation of Adam, the first man whom God brought into being ([Gen 1:26–27; 2:7](#)). There is no clear parallel in Greek thought or mythology to this conviction that the human race can be traced back to one man who was created by God. (Schnabel 2008, p. 115)

In the context of Paul’s gospel presentation in Acts 17, it would undermine what he is trying to teach if one man is mythical and the other (Jesus, verse 31) is historical. Robert Strimple points out that in [Romans 5:14](#) Paul teaches that Adam is: . . . a “type” of the one to come, i.e., Christ. In the Bible a type is always an historical person, action, or event appointed by God to be a foreshadowing, a pointer, to the fulfilment, yet to come in history in Christ. To speak of a type is to speak in terms of redemptive history. A type is not merely an allegory but an historical reality. (Strimple 2010)

Whenever Adam is presented in Scripture, the author believes him to be historical as Moo points out “. . . Adam and Christ are too closely compared in this passage [Romans 5] to think that one could be ‘mythical’ and the other ‘historical’” (Moo 1996, p. 325).

Paul’s teaching concerning Adam being the first man is clear in his writings. In Romans 5 there is an emphasis on the singularity of the one man ([Romans 5:12, 15, 17, 18, 19](#)) as there is in [1 Corinthians 15:45](#) where again Paul states that Adam was “the first man.” Paul’s argument, in Romans 5, is fatally undermined if Adam means mankind in general, a metaphor for everybody. If it was not by one man that sin, condemnation, and judgment came upon all, then how can it be by one man, Jesus Christ that salvation comes? The parallel is broken and the analogy does not work if Adam is a metaphor for mankind.

The Bible is clear that Adam was “the first man” and that Eve was the first woman created. There is nowhere in the Bible any hint of a pre-Adamic race. In [Genesis 2:7](#) we read that Adam was “formed” *yatser* (is used of what potters do with clay in [Jeremiah 18:4–6](#)) from the dust of the ground which suggests a direct act of God. Robert Culver comments on [Genesis 2:7](#):

... the word *'adham* ... bears the article *ha* prefixed, viz *ha 'adham*. "[T]he man" (NIV, ESV) is grammatically correct, but the true sense is better conveyed by "... the LORD God formed a man" (NEB), i.e. a single specimen. (Culver 2006, p. 241)

In [Genesis 3:19](#) God curses Adam for his disobedience towards His command and is told that he will return to the dust of the ground ([Genesis 3:19](#)). If Adam is a metaphor for an ape-man then into what kind of ape-man would one return when he dies?

Furthermore, [Genesis 5:6](#) is very specific about the details of Adam's age, that he lived 930 years. Not only is this very specific but it is internally consistent with the longevity of Adam's descendants ([Genesis 5:7-32](#)) and with those who lived after the Flood, although their age starts to decline due to the effects of sin and the climatic changes after the Flood. For example, Job lived 140 years, after his restoration ([Job 42:16](#)), Moses lived 120 years ([Deuteronomy 34:7](#)), and when Joseph presented his father Jacob in front of Pharaoh in [Genesis 47:8-9](#) Pharaoh says to Jacob:

*"How old are you?" And Jacob said to Pharaoh, "The days of the years of my pilgrimage are one hundred and thirty years; few and evil have been the days of the years of my life, and they have not attained to the days of the years of the life of my fathers in the days of their pilgrimage."*

Jacob's fathers were Abraham who lived 175 years ([Genesis 25:7](#)) and Isaac who lived 180 years ([Genesis 35:28](#)). Many believe Adam's age is a sign that the text of Genesis is a myth however, the internal consistency of the longevity of many biblical figures after Adam clearly suggests otherwise.

The question as to whether Adam was historical is also equally important with regards to Eve. In [Genesis 3:20](#) Adam named his wife *hawwa*, meaning, "living," which is traditionally rendered "Eve." In Hebrew *hawwa* is phonetically related to the word *hay* ("living");

... thus by a phonetic play, Adam explains why she is named Eve. She is the "mother of all living," for all human life will have its source in her body. (Mathews 1996, p. 254)

Theistic evolutionists have no problem explaining Adam away as a lower form of man, however, a problem for them is explained by Dr. Martyn Lloyd-Jones:

... if you do not accept this history, and prefer to believe that man's body developed as the result of an evolutionary process, and that God then took one of these humanoid persons, or whatever you may call them, and did something to him and turned him into a man, you are still left with the question of how to explain Eve, for the Bible is very particular as to the origin of Eve. All who accept in any form the theory of evolution in the development of man completely fail to account for the being, origin, and existence of Eve. (Lloyd-Jones 1992, p. 76)

As a matter of pure logic the New Testament agrees with the Old. When Paul wrote to the Corinthian church “For man is not from woman, but woman from man. Nor was man created for the woman, but woman for the man,” ([1 Corinthians 11:8–9](#)) he was not ambiguous and the order is exactly as Genesis teaches. Moreover, [1 Timothy 2:13](#) “For Adam was formed first, then Eve,” also agrees with the created order in Genesis.

## Why the Historicity of Adam is Important

Martyn Lloyd-Jones explains why the issue of Adam is important in his book *What is an Evangelical*:

We must assert that we believe in the being of one first man called Adam, and in one first woman called Eve. We reject any notion of a pre-Adamic man because it is contrary to the teaching of the Scripture . . . If we say that we believe the Bible to be the Word of God, we must say that about the whole of the Bible, and when the Bible presents itself to us as history, we must accept it as history. (Lloyd-Jones 1992, pp. 74–75)

The reason why men must accept Adam as historical is because it is the clear teaching of Scripture. The question that needs to be considered is what is the theological cost if one does not hold to an historical Adam?

Again, Albert Mohler points out the logical consequences for denying Adam as a historical person:

. . . we would have to tell the Bible’s story in a very different way than the church has told it for centuries as the Bible has been read, taught, preached, and believed. If there is no historical Adam, then the Bible’s metanarrative is not Creation-Fall-Redemption-New Creation, but something very different. (Mohler 2011b)

Once this metanarrative goes then so do vital doctrines of the Christian faith. If we reject an historical Adam then some important biblical doctrines will be eroded with it.

## Doctrine of Sin

The question: was Adam a historical individual leads to the real question which is: “Was the Fall a real event in human history?” (Strimple 2010). If Adam were not a historical individual in space and time then it obviously follows that sin and death cannot have originated with him.

If evolution is true then there was never one uniquely created man who started out good and rebelled against God, from whom all human beings descended, and therefore, are all in need of a savior. If evolution is true then man's rebellion did not bring death into the world. Instead, the human race began as a group of hominids who had no knowledge of God or righteousness, struggling for existence in a world already filled with death.

Dennis Alexander contests the idea that the Bible teaches the doctrine of "original sin" admitting that the doctrine is incompatible with evolution. In an article in an English newspaper, *The Guardian*, concerning the doctrine of "original sin" he states: . . . there is clear incompatibility with evolution, in which anatomically modern humans first start appearing in Africa about 200,000 years ago through a process involving countless deaths over thousands of generations. (Alexander 2011b)

Alexander goes on to say: "Nowhere does the Bible teach that physical death originates with the sin of Adam, nor that sin is inherited from Adam . . ." (Alexander 2011b).

Alexander's statement clearly overlooks what Genesis 2 and 3 teach concerning physical death. [Genesis 2:17](#) implies the process of physical death of humans came about as a result of man's disobedience to God's command. The grammatical construction "you shall surely die" is very similar to the way Mosaic law threatened capital punishment—"he will surely die," or "they will surely die" ([Exodus 21:12](#); [Leviticus 20:9–16](#)). These were formulaic ways of declaring a death sentence. God was not saying Adam and Eve would die immediately but that death would certainly follow disobedience. This can be seen in the Curse man received from God in [Genesis 3:19](#):

*In the sweat of your face you shall eat bread Till you return to the ground, For out of it you were taken; For dust you are, And to dust you shall return.*

The Curse would lose all meaning if physical death was already a natural part of the world before this. The New Testament also teaches that the penalty for sin is physical death ([Romans 5:12–14](#); [6:23](#)). If Adam's death was just figurative or "spiritual," then why did Jesus have to die a real physical death?

For many in the western world it is difficult to grasp the concept of humanity's union with Adam ([Romans 5:12](#)) and the concept of cooperate solidarity because of the dominance of individualist thinking that prevails in western culture.

## Doctrine of Christology

If Adam were not a historical individual, then what would make one think he could trust the Scriptures when it speaks of Christ as a historical person? The parallel Paul draws between Adam and Christ in Romans 5 and 1 Corinthians 15 is too close for one to be historical and the other not to be. Our Lord accepted the historicity of Adam ([Matthew 19:4-6](#)) so was he then mistaken? If he were, then how could one trust in anything else he says? This issue calls into question the reliability of the Lord's teaching.

In [Mark 10:6](#) Jesus said "But from the beginning of the creation, God 'made them male and female.'" The statement "from the beginning of the creation" (see [John 8:44](#); [1 John 3:8](#) where "from the beginning" refers to the beginning of creation) is a reference to the beginning of creation and not simply to the beginning of the human race (Mortenson 2009, pp. 318-325). Jesus was saying that Adam and Eve were there at the beginning of creation, on Day 6, not billions of years after the beginning. Jesus understood from the text of Genesis that Adam was created at the beginning of creation which is directly opposed to the evolutionary opinion of the origin of man. Some suggest that Jesus's teaching was merely accommodating to the cultural beliefs of his day. However, Jesus never hesitated to correct erroneous views common in the culture ([Matthew 7:29](#)). This is demonstrated in the gospels when he confronted error and corrected erroneous views ([Matthew 22:29](#)). Furthermore, in [John 14:6](#) we are told that Jesus is the truth and if he is the truth he must always tell the truth. Jesus did nothing on his own authority ([John 5:19, 30](#); [6:38](#)), and He spoke the things that the Father taught him ([John 8:28](#)). Jesus was not self-taught but His message came directly from God and therefore it was ultimately truth ([John 7:16-17](#)). Jesus's use of Scripture was authoritative and infallible ([Matthew 5:17-20](#); [John 10:34-35](#)) because He spoke with the authority of God the Father ([John 5:30](#); [8:28](#)).

If we deny a historical Adam then Paul's argument for our being counted righteous in Christ falls apart. This is because it rests upon the argument that because of one man's act of disobedience (the historical Adam), we can be counted righteous by one man's (the historical Christ's), act of righteousness.

## Doctrine of Salvation

Paul's teaching in Romans 5 is that mankind is either in Adam or Christ. In Adam all are declared guilty and justly deserve our punishment. However, for those found in Christ they will be justified and declared righteous in Christ. If Adam is not historical then Paul's whole argument concerning the atonement is called into question. Again, Dr James Boice states:



You do not need a historical atonement to undo a mythological fall or a mythological transgression. All you need is another myth. But if Christ needed to be real to save us, then Adam was real, too. It is because Adam was real that Christ also had to be real to make atonement. (Boice 1992, p. 583)

Belief in Adam as a real person is foundational to having a right understanding of the gospel and why Jesus atoned for sins. Jesus, the last Adam, came to succeed where the first Adam had failed in keeping the law of God. Jesus had to do what Adam failed to do to fulfill the required sinless life of perfection to “fulfil all righteousness” ([Matthew 3:15](#)).

Theistic evolutionist Denis Lamoureux, believes Adam never existed, and this fact has no impact whatsoever on the foundational beliefs of Christianity, although he rightly acknowledges that the apostle Paul understood Adam to be a real person.

Commenting on [1 Corinthians 15:1-7, 14, 17](#), he states:

This is the Gospel as stated in the Bible, and there is no mention whatsoever of Adam and whether or not he existed. Christian faith is founded on Jesus, not Adam . . . we must also separate, and not conflate, the historical reality of Jesus and His death and bodily resurrection from the fact that Adam never existed . . . (Lamoureux 2010)

Lamoureux’s reasoning is the consequence of following fallible man’s ideas about the origin of man rather than God’s revealed Word. The apostle Paul does not separate Christ’s work of redemption from Adam’s disobedience. In [1 Corinthians 15:21-22, 45-49](#) Paul grounds the bodily death and resurrection of our Lord Jesus in the reality of the history of Genesis. It was a real man, Adam, who brought about physical death ([Genesis 3:19](#)) and corruption ([Romans 8:19-22](#)) into God’s very good world ([Genesis 1:31](#)). This is the reason Paul says Jesus came to earth as a real man in order to undo the work of the first man. Moreover, Paul’s foundation for sharing the gospel in a pagan culture begins with a biblical understanding of creation ([Acts 14:15-17; 17:24-28](#)) specifically with reference to “one man” ([Acts 17:26; 1 Corinthians 15:21-22, 45](#)), which leads him to speak of Jesus and the resurrection ([Acts 17:31](#)).

Lamoureux goes on to say: “The central message in Romans 5 and 1 Corinthians 15 is this: we are sinners and God judges us for our sins; . . .” (Lamoureux 2010).

For Lamoureux to say that Adam never existed and that this has no effect on the foundational aspects of Christianity and then to go on to say that we are sinners and God judges sin is to beg the question. Paul’s point in Romans 5 is that because of one man, Adam’s, disobedience we are sinners ([Romans 5:19](#)). Adam broke God’s command ([Genesis 2:17](#)) and God consequently judged Adam for his disobedience. The Bible tells us that sin is lawlessness ([1 John 3:4](#)). If Adam never existed then why does man sin and what is sin?

Moreover, for Jesus to substitute for the sins of humanity he must be fully human ([Hebrews 2:14-17](#)). This is only possible because this Savior is a physical descendant

of the first man Adam via Mary ([Luke 3:38](#))—and is called “the Last Adam” ([1 Corinthians 15:45](#))—which makes him the relative of all humans in all “races” or people groups who have ever existed.

The historicity of Adam as the ancestor of Jesus and humanity is at the foundation of the gospel. The apostle John begins his gospel by showing that Jesus was God and creator ([John 1:1–3](#)). However, this is what Darwin was undermining, because if there were no creator then there is no need for Christ. Seven hundred years before John’s gospel God spoke through the prophet Isaiah saying “I, even I, am the LORD, And besides Me there is no savior” ([Isaiah 43:11](#)). For Jesus to be our Savior he has to be Yahweh Himself. Not only is Jesus God but he is also the mediator between God and man ([1 Timothy 2:5](#)).

The prophet Isaiah also said that “the Redeemer will come to Zion” ([Isaiah 59:20](#)). The Hebrew word for redeemer is *go’el* which means kinsman redeemer and speaks of one who is related by blood to those he redeems (see [Ruth 2:20](#)). The kinsman redeemer concept goes back to the nation of Israel who had a law which enacted them to protect their families ([Leviticus 25:23–28](#)). If a person became poor and had to sell his inheritance, his kinsman was to come and buy it back so that it would remain in the family and so that the poor relative would not become destitute (verse 25). Jesus is our kinsman redeemer. As Adam is the head of the fallen race of man ([Romans 5:12–19](#)) so Christ, as the last Adam ([1 Corinthians 15:45](#)), is the head of the race of redeemed mankind. On the cross, Jesus paid the price of our redemption from the race of Adam.

Theistic evolution doesn’t just undermine Genesis and a literal Adam, but it also undermines this vital concept of the kinsman-redeemer. The idea of there being a first man is critical to the doctrine of salvation and to the gospel ([1 Corinthians 15:3–4, 21–22, 45](#)).

## Conclusion

This modern view of many theologians that Adam is a myth ultimately has nothing to do with the ambiguity of Scripture because the Bible clearly views Adam as a historical figure. Instead it is driven by a desire to syncretise evolutionary thinking with the Bible. This always ends in disaster because syncretism is based on a type of synthesis blending together the theory of naturalism with historic Christianity. Christianity essentially is antithetical to naturalism. Since the rise of Darwinian evolution in the nineteenth century it has become the custom to reinterpret the biblical account of creation in light of modern scientific theory. Instead of calling into question the “sure results of science” it is the Bible that is often rewritten to say something it clearly doesn’t mean.

Moreover, the objections given by theologians to a historical Adam are all based on fanciful eisegesis of the biblical text and not exegesis.

To negotiate the headship of Adam over the human race by mixing it up with theistic evolution is not a side issue or irrelevant. The doctrines of sin, Christology, and salvation are severely undermined if Adam is viewed as a myth. The historicity of Adam is of vital importance for a coherent understanding not only of the Scriptures but of the gospel. One must stand firm on the clear scriptural teaching of a historical Adam.

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# Historic Adam & Human Origins Views Correlate

## FOUR VIEWS OF ADAM & EVE

### **#1 - NO HISTORICAL ADAM: EVOLUTIONARY CREATION VIEW**

**DENIS O. LAMOUREUX**

*Christians throughout history have steadfastly believed that Adam was a real person. Yet in light of the evolutionary sciences, some evangelical Christians are questioning his existence. This chapter embraces evolutionary creation—the belief that the Father, Son, and Holy Spirit created the universe and life, including humans, through an ordained, sustained, and intelligent design-reflecting natural process. Similar to the way that the Lord used embryological mechanisms to create each of us in our mother’s womb, He also employed evolutionary processes to create humanity. This chapter rejects the assumption that God revealed scientific facts in the Bible thousands of years before their discovery by modern science. Instead, Holy Scripture features an ancient understanding of the physical world (e.g., the 3-tier universe with a flat earth). The Word of God also has an ancient conceptualization of biological origins, which asserts that living organizations were created quickly and completely into fully mature forms. The apostle Paul’s references to Adam are rooted in this ancient biology. The chapter concludes that the biblical figure Adam is a vital, but incidental, ancient vessel that transports inerrant spiritual truths: only humans are created in the Image of God, only humans have fallen into sin, and our Creator judges us for our sinfulness.*

## Introduction

In the last chapter of *Evolutionary Creation: A Christian Approach to Evolution* (2008), I began with a provocative claim: “My central conclusion in this book is clear: Adam never existed, and this fact has no impact whatsoever on the foundational beliefs of Christianity.” Needless to say, such a view of human origins is rarely heard within evangelical circles. If you are offended by my position on Adam, I apologize. My intention is not to upset any brother or sister in Christ. Rather, my hope and prayer is that we can open a conversation on human origins and ask how we are to read passages dealing with Adam in the Word of God. Some might be surprised to learn that my goal is not to win people over to my view.<sup>2</sup> Instead, I simply want evangelicals to be aware that there are born-again Christians who love the Lord Jesus and who do not believe there ever was a first man named “Adam.”

My calling as a Christian is driven by an unquenchable fire in my heart of hearts. It is a pastoral concern. Evangelical students attending public universities are leaving the church in alarming numbers. You might know a few, maybe someone in your family. One reason for this exodus is science, biological evolution in particular.<sup>4</sup> So here is all that I am asking: I want young men and women to know that there is a Christian view of origins that accepts evolution and recognizes that our faith does not rest on the existence of Adam. Should they become convinced that humans evolved, they will be equipped never to lose a step in their Christian walk, because our faith is based *only* on Jesus Christ, His sacrifice on the Cross, and His bodily resurrection from the dead—and not on a historical Adam.

It is important to point out that I am not the only evangelical questioning the historicity of Adam. A landmark issue of *Christianity Today* in June 2011 featured a cover with a Neanderthal-looking male and the title “The Search for the Historical Adam.” The cover commented, “Some scholars believe that genome science [i.e., genetics] casts doubt on the existence of the first man and first woman. Others say that the integrity of the faith requires it.” Notably, the article not only assumed the universe is old, but that biological evolution is true. The debate is whether there really was an individual who corresponds to the biblical figure Adam. This *CT* article is evidence that the historicity of Adam is not a settled issue. And the fact that I am included in this book, published by the leading evangelical publisher, Zondervan, is more proof this is the case.

## My Faith and My Science

A few years ago I was invited by an evangelical seminary to deliver a lecture on human origins. Just before entering the auditorium, I overheard a man complain, “Well, how can Lamoureux be a Christian? He doesn’t believe in Adam, so there’s no way he believes in Jesus and the Bible.” Right then and there, I knew this was going to be a tough audience! So I think it is necessary to share a bit about my personal testimony and my understanding of biological evolution.

First and foremost, I am a thoroughly committed and unapologetic evangelical theologian trained to the PhD level. I’m a born-again Christian. By God’s grace and in answer to my mother’s prayers, I accepted Jesus Christ as my Lord and Savior in 1980 while serving as a United Nations peacekeeper on the island of Cyprus. It was through reading the gospel of John that the Holy Spirit convicted me of my sins and shameful lifestyle. If I had to pick a conversion day, it was on Good Friday that the Father revealed to me His unfathomable love for humanity. He sent His Son Jesus to die for us on the Cross. Think about that. The Creator of the world loves us so much that He willingly died for us. So I went to Cyprus to be a peacekeeper, and I met the Prince of Peace! I

also believe that the Bible is the Holy Spirit—inspired Word of God. In my morning devotions I drink deeply from Scripture for my spiritual nourishment. The day I wrote this paragraph, I read the first six chapters of the wonderful book of Hebrews. Additionally, I believe in miracles and have experienced numerous signs and wonders. I also embrace intelligent design, because I believe it is consistent with what Scripture teaches about God being the designer of the universe. When I look at nature, I see that the beauty, complexity, and functionality “declare the glory of God” (Ps. 19:1). And for the last thirty-two years I have enjoyed fellowship in Baptist, Pentecostal, and Alliance churches.

Second, I am a thoroughly committed and unapologetic evolutionary biologist, also trained to the PhD level. I find that the evidence for evolution is *overwhelming*. Every science that deals with origins fits tightly together and comes to only one conclusion: the universe and life evolved. I have experienced the fruitfulness and predictability of the theory of evolution. Every time a new fossil is discovered, it always fits exactly where it should. I have yet to see evidence that falsifies biological evolution. In fact, evolution is the easiest theory to disprove. Find just one human tooth near the bottom of the geological record and you could destroy evolutionary science. That’s no exaggeration, but I wouldn’t hold my breath waiting for it to happen. I also recognize the explanatory power of evolutionary theory. As many have said, biology makes sense in the light of evolution. Although my career focuses on the relationship between science and religion, at the University of Alberta I have the privilege of collaborating with one of the world’s foremost paleontology groups.

It is important to add that for a good part of my life I have struggled with the relationship between Christianity and evolution. As a freshman university student in 1972, I lost my boyhood faith because of one introductory course on evolutionary biology. By my senior year, I became an atheist. So yes, it is completely reasonable for Christians to be worried about the destructive impact of evolution on faith.

Upon returning from Cyprus, I began to fellowship at an evangelical church and soon met some young-earth creationists. They convinced me that evolution was Satan’s primary weapon for attacking the faith of university students. These anti-evolutionists also introduced me to so-called “theistic evolution.” It was dismissed as a view of origins held by liberal Christians, because they really weren’t committed to Jesus and didn’t trust the Bible or take God at His word. For me, *true* Christians were young-earth creationists. How convinced was I of this? In 1983 I walked out of first year medical school with the intention of becoming a creation scientist in order to declare war on evolutionists in universities. If that isn’t a commitment to young-earth creation, then I don’t know what is.

To equip myself for the battle, I went to graduate school for thirteen straight years. Beginning in theology, I discovered what seminarians before me have experienced—that is, biblical interpretation is much more complicated than what we learn in Sunday school. It became evident that when the Holy Spirit inspired the biblical authors, He allowed them to use some of their ancient ideas about nature (i.e., ancient science). In other words, God *accommodated* in the revelatory process and came down to the level of ancient people in order to communicate inerrant, life-changing, spiritual truths.

A professor I will never forget is Dr. Loren Wilkinson at Regent College, one of the best evangelical schools of theology. During his science-religion course, I asked him what he thought about young-earth creation. He responded tersely, “It is error.” I can still remember how the word “error” shook my soul. In Wilkinson’s closing remarks to the class, he looked at me and said,



“Denis, I have a serious concern. Should you ever give up your belief in young-earth creation, would you also give up your faith in Christ?” Ouch!

That wasn't Wilkinson talking. The Holy Spirit was flowing through his words and casting a light on my understanding of Christianity. I mumbled and stumbled and really didn't answer. Deep in my heart of hearts I knew that my relationship with Jesus was more important than any position on origins. And if I may make a bit of a Pauline boast (2 Cor. 11:21–28), I won the Evangelism Prize at Regent. No one should doubt that I am an evangelical Christian.

After seven years of theology, the Holy Spirit challenged me during a morning devotion: “I have called you to study the origins debate, but how much do you really know about evolutionary biology?” Ouch again! Sometimes the Lord points out things we don't want to hear. I had taken only one first-year university course on evolution. Even more bluntly, the Holy Spirit then admonished, “Since you know so little, if you criticize evolution, you would be bearing false witness ... and that's sinful.” Triple ouch!

So in 1991 I entered a PhD program on the evolution of teeth and jaws. I was still a zealous anti-evolutionist, and my plan was to “fly under the radar” and collect scientific evidence to disprove evolution that I would publish after graduation. However, dealing with the fossil evidence firsthand day in and day out, I started to see an evolutionary pattern. After three years of attempting with all my energy to fit the scientific data into an anti-evolutionary theory, I gave up and accepted biological evolution.

I knew immediately that I would be marginalized by the evangelical community. Indeed, that has happened. I have been blocked from teaching at my denominational college and seminary, and evangelical publishers have rejected my book proposals. Nevertheless, I believe we should follow the biblical and scientific evidence no matter where it leads.

So that's a very condensed version of my story. Let me close by underlining that I embrace the time-honored complementary relationship between Scripture and science—the Two Divine Books Model. Together the Book of God's Words and the Book of God's Works offer us a revelation of the Father, Son, and Holy Spirit. In my Christian walk I have held a wide variety of interpretations of both Books. Yet despite all these, my faith has always been set solidly upon the never-changing Rock, our Lord and Savior Jesus. As Hebrews 13:8 states, “Jesus Christ is the same yesterday and today and forever.” And I hope you are saying a hardy “Amen!”

## Terms and Definitions

Evolutionary creation asserts that the Father, Son, and Holy Spirit created the universe and life, including humans, through an ordained, sustained, and intelligent design-reflecting evolutionary process. The world did not arise through blind chance, and our existence is not a fluke or mistake. It was the Lord's primary plan from the very beginning to create men and women, and for us to enjoy a loving personal relationship with Him. This Christian approach to evolution vehemently rejects the atheistic interpretation of evolution preached by the notorious Richard Dawkins.

Evolutionary creationists believe that the Creator established and maintains the laws of nature, including the mechanisms of a teleological evolution (Greek *telos* implies “planned, purposeful”). In other words, the evolution of life is a *purpose-driven natural process*. Evolutionary creation also claims that humans descended from pre-human ancestors and that the Image of God and human sin were mysteriously manifested. These Christian evolutionists experience the Father's love and presence in their lives. Through the power of the Holy Spirit, they read the Bible as the

living Word of God. And evolutionary creationists enjoy a personal relationship with Jesus who graciously blesses them and answers their prayers.

The term “evolutionary creation” seems like a contradiction in terms. However, the most important word in this category is the noun “creation.” Evolutionary creationists are first and foremost creationists. They believe in a Creator and that the world is His creation. The qualifying term is the adjective “evolutionary,” which simply indicates the method that the Lord used to make the universe and life. This view of origins is often called “theistic evolution.” But that word arrangement places the process of evolution as the primary term and makes our Creator secondary and merely a qualifying adjective. I find such an inversion in priority completely unacceptable.

Another reason for employing the category of evolutionary creation is that it distinguishes evangelical Christians who love Jesus and accept evolution from the evolutionary interpretations of deists (who believe in an impersonal, never-present god-of-the-philosophers) and liberal Christians (who believe that Jesus was merely an enlightened human who never rose physically from the dead).

To introduce evolutionary creation to my evangelical brothers and sisters, I have found it helpful to draw a parallel between our own creation in our mother’s womb and the evolution of all living organisms. I have yet to meet a Christian who believes that while in the womb the Lord came out of heaven and literally attached an arm or a leg to their developing body. Instead, we all believe that embryological development is a natural process that God providentially maintains during pregnancy. As Psalm 139:13–14 proclaims, “You [God] knit me together in my mother’s womb. I praise you because I am fearfully and wonderfully made.”

*Our creation in the womb is proof that the Creator uses physical mechanisms to create life.* Similarly, evolutionary creationists believe that biological evolution is an ordained natural process that God has sustained throughout eons of time. It is the Lord’s “knitting” process that produces every living organism, each crying out that they are “fearfully and wonderfully made.” From my experience in science, embryological development and biological evolution reflect intelligent design and “proclaim the work of his [God’s] hands” (Ps. 19:1).

Of course, the burning question every evangelical Christian must be asking is, “How does Lamoureux interpret biblical passages dealing with origins?” I will attempt to offer an answer in this chapter. But at this point it is necessary to reveal my position regarding the historical events in Scripture: *Real history in the Bible begins roughly around Genesis 12 with Abraham.* Like many other evangelical theologians, I view Genesis 1–11 as a unique type of literature (literary genre) that is distinct from the rest of the Bible. So from my perspective, was Abraham a real person? Yes. Was there a King David in the tenth century bc? Yes. Were the Jews deported to Babylon in the sixth century bc? Yes. Was there really a man named Jesus in the first century ad? Yes. Do the Gospels report eyewitness accounts of actual historical events, including the Lord’s teaching and miracles, and especially His physical resurrection from the dead? *Absolutely yes!* Even though I do not believe that Adam was historical, I thoroughly believe in the historicity of Jesus and the biblical testimonies of His life.

Another term we need to define is “scientific concordism.” Most evangelical Christians are not familiar with this category, yet nearly all of them embrace this view of the relationship between science and Scripture. Scientific concordism is the *assumption* that the facts of science align with the Bible. Stated another way, it is the *assumption* that God revealed scientific facts to the biblical writers thousands of years before their discovery by modern scientists. A 2004 survey reveals the extent of this assumption within American evangelicalism. Respondents were asked about the creation of the world in six days (Gen. 1) and the flood of Noah (Gen. 6–9): “Do you think that’s

literally true, meaning it happened that way word-for-word; or do you think it's meant as a lesson, but not to be taken literally?" Unsurprisingly, 87 percent of American evangelicals believe that the entire world was actually created in six literal days and that there really was a global flood.

Evangelicalism is a scientific concordist Christian tradition. And since nearly all evangelicals read Genesis 1 and Genesis 6–9 literally, they undoubtedly believe that the creation of Adam from the dust of the ground as described in Genesis 2 is also “literally true, meaning it happened that way word-for-word.”

Now, I want to emphasize that scientific concordism is a reasonable assumption. After all, God created the world and He inspired the Bible, and to assume an alignment between the Lord's Two Books is a logical expectation. But here are two questions you must ask yourself: (1) Is scientific concordism true? (2) Is it an inerrant feature of the Word of God? Of course, it is well within the power of the Holy Spirit to reveal twenty-first-century scientific facts to biblical authors. Yet, is that what the Lord did in the revelatory process? In my opinion, this is *the central issue* in the origins debate. Purported arguments against evolution are secondary to how we interpret the biblical accounts of origins, especially the creation of humans. So let's turn to the Bible in an attempt to answer this question about the truthfulness of scientific concordism.

My method will be as follows. In the same way that the Word of God judges our thoughts and remodels our mind (Heb. 4:12; Rom. 12:1–2), I will let evidence *within Scripture itself* evaluate our scientific concordist evangelical tradition—and maybe even reshape our view of how the Holy Spirit revealed through the biblical writers.

## Is Scientific Concordism True?

One of the best places to explore whether or not the Bible includes modern scientific facts is to consider passages dealing with the heavens. For example, most Christians are aware that Scripture refers to the daily movement of the sun across the sky. Ecclesiastes 1:5 states, “The sun rises and the sun sets, and hurries back to where it rises.” Psalm 19:6 says, “It [the sun] rises at one end of the heavens and makes its circuit to the other.”

Of course, evangelicals are quick to explain that these verses use phenomenological language (Greek *phainōmenon* means “appearance”). That is, the “rising” or “setting” of the sun is only a visual effect caused by the rotation of the earth on its axis, giving us the appearance that the sun “moves.” But did the inspired writers of Scripture use phenomenological language in the same way that we do today? History offers the answer. The notion that the earth rotates daily, causing the visual phenomenon of the sun to “rise” and “set,” was accepted only in the 1600s—thousands of years *after* the Bible was written.

Scripture does use phenomenological language to describe the natural world. There is, however, a subtle and important difference between what the biblical authors saw and believed to be real in nature, and what we see and know to be a fact of science. For ancient people, observation of the natural world was limited to their unaided physical senses, such as the naked eye. Today scientific instruments like telescopes have extended our view of the universe. Consequently, it is essential to understand that statements in Scripture about nature are from an *ancient phenomenological perspective*. What the biblical writers saw with their eyes, they believed to be real, like the literal rising and literal setting of the sun.

In contrast, today we view the world from a *modern phenomenological perspective*. When we see the sun “rising” and “setting,” we know that it is only an appearance or visual effect caused by the rotation of the earth. Figure 1 distinguishes between the ancient and modern phenomenological perspectives.

It is crucial that these two different phenomenological perspectives of nature not be confused and conflated (blended together) when reading Scripture. This is the error most Christians make in attempting to explain biblical passages that deal with the movement of the sun. They read these Scriptures through *their* modern phenomenological perspective, and as a result they force *their* modern scientific ideas *into* the Bible. This common mistake is known as “eisegesis” (Greek *eis* means “in, into”; *ēgeomai*, “to guide”). But everyone agrees that the goal of reading is to practice “exegesis” (*ek*, “out, out of”) and to draw out the author’s intended meaning. Therefore, we need to respect the Word of God and read it through ancient eyes and an ancient mind-set.

Philippians 2:6–11 is a beloved passage in Scripture. We often sing this hymn in the praise and worship service at my church. It reveals the great mystery that God emptied Himself and descended to become a man in the person of Jesus. The apostle Paul concludes the hymn in verses 9–11:

Therefore God exalted him [Jesus] to the highest place  
and gave him the name that is above every name,  
that at the name of Jesus every knee should bow,  
*in heaven and on earth and under the earth,*  
and every tongue acknowledge that Jesus Christ is Lord.

When singing this hymn, we do not often think about the phrase “under the earth.” Yet if we examine the original Greek, it is a translation of *katachthoniōn*, which is made up of the preposition *kata* meaning “down” and the noun *chthonios* referring to the “underworld” or “subterranean world.” Therefore, a more accurate translation of verse 10 is “at the name of Jesus every knee should bow, [1] in heaven and [2] on earth and [3] in the underworld.” In other words, Paul is referring to an ancient understanding of the structure of the cosmos known as the “3-tier universe” and depicted in Figure 2.

So what are we to do with Philippians 2:10? Does this verse weaken our confidence that the Bible is really the Word of God? Or to put it bluntly, as some often ask, “Did God lie in the Bible?” First, let me make something perfectly clear: God does NOT lie! Holy Scripture states that “it is impossible for God to lie” (Heb. 6:18).

Second, let’s not lose perspective. Is the purpose of Philippians 2:6–11 to reveal science and the structure of the universe? Most Christians would say “no.” This hymn is a revelation of our Lord and Savior Jesus Christ. It delivers foundational spiritual truths of our faith—the mystery of the Incarnation, Jesus’ sacrificial death on the Cross, His resurrection and exaltation in heaven, and His lordship over the entire creation. Anyone who embraces these inerrant truths will be born-again.

Third, I suggest that with Philippians 2:10 *we must submit to the very words in the Word of God*—even if we may not like it or fully understand it, or if it challenges our traditional evangelical assumption that scientific concordism is an inerrant feature of the Bible. The Greek word *katachthoniōn* in verse 10 refers to the underworld, and it clearly indicates that Paul accepted the 3-tier universe. Let me propose a concept for interpreting biblical passages such as Philippians 2:10 that deal with the natural world: the Message-Incident Principle in Figure 3.

Most Christians already embrace this notion in some implicit way. We believe that the main purpose of the Bible is to reveal inerrant, life-changing, spiritual truths. When referring to nature, the Holy Spirit in the revelatory process allowed the use of an incidental ancient science. Rather than confusing the biblical writers and their readers with modern scientific concepts, God *accommodated*. This was the best science-of-the-day as conceived from an ancient phenomenological perspective.

Qualifying ancient science as “incidental” does not imply that it is unimportant. The science in Scripture is vital for delivering spiritual truths. It acts like a cup that brings “living water” (John 4:10) to our thirsty souls. The word “incidental” carries the meaning “to happen in connection with something more important.” In the case of Philippians 2:10–11, the *Message of Faith* reveals the lordship of Jesus over the entire creation, and the *incidental ancient science* is the 3-tier universe. To repeat, the Holy Spirit did not lie in the Bible. God accommodated and allowed Paul to use his ancient understanding of the structure of the world. And yes, as we shall see later in this chapter, Paul’s belief in ancient science has significant implications for his position on the historicity of Adam.

Two of the best biblical passages for exploring the truthfulness of scientific concordism deal with the creation of the heavens in Genesis 1. On the second day of creation,

God said, “Let there be a *firmament* between the waters, to separate water from water.” So God made the *firmament* and separated the water under the *firmament* from the water above it. And it was so. God called the *firmament* Heaven (Gen 1:6–8).

On the fourth day of creation,

God said, “Let there be lights in the *firmament* of the heaven to separate the day from the night, and let them serve as signs to mark seasons and days and years, and let them be lights in the *firmament* of the heaven to give light on the earth.” And it was so. God made two great lights—the greater light to govern the day and the lesser light to govern the night. He also made the stars. God set them in the *firmament* of the heaven (Gen 1:14–17).

When I first read these passages as a new Christian, I scribbled question marks in the margins of my Bible because I didn’t have a clue what they meant. What is a firmament? And what is the water above it? Of course, my problem was that I was reading Scripture through my modern scientific mindset (eisegesis). If I would have *respected* the Bible and tried to view nature through ancient eyes and an ancient mindset (exegesis), then creation days two and four would have made perfect sense. For example, what did the divinely inspired author of Genesis 1 see when he looked up? A huge blue dome. To suggest that there was a sea of water in the heavens being held up by a solid structure was completely reasonable to him. Believing that the sun, moon, and stars were placed in the firmament in front of the heavenly sea is exactly what it looks like from an ancient phenomenological perspective. In fact, this was science-of-the-day in the ancient Near East as seen in Figures 4 and 5.

Some evangelical Christians attempt to argue that the firmament refers to the atmosphere or outer space, and the waters above the firmament to clouds, water vapor, or a pre-flood water canopy. But let’s look at the actual Hebrew words in the Word of God and then submit to them. The noun translated four times as “firmament” in Genesis 1:6–8 and three times in Genesis 1:14–17 is *rāqia’*. Its root is the verb *rāqa’*, which means to flatten and hammer out. This word carries a sense of flattening something solid. For example, Exodus 39:3 and Isaiah 40:19 use *rāqa’* for pounding metals into thin sheets; Numbers 16:38 employs the related noun *riqqûa’* (a plate) in a similar context. The verb *rāqa’* even appears in a passage about the creation of the sky, which is

thought to be a solid surface like a metal. Job 37:18 asks, “Can you join [God] in spreading out [rāqā’] the skies, hard as a mirror of cast bronze?”

The noun translated five times as “water/s” in Genesis 1:6–7 is *mayim*. If the divinely inspired author of Genesis 1 had intended to refer to clouds or water vapor, there are three common Hebrew words he could have used (*’ēd*, *’ānān*, *nāsī*), but he didn’t. Christians who claim that the waters above collapsed during Noah’s flood fail to recognize that Scripture states the firmament and heavenly sea were still intact and overhead during King David’s day. As Psalm 19:1 states, “The heavens declare the glory of God, and the firmament [rāqīa’] proclaims the work of his hands.” Psalm 148:3–4 asserts, “Praise him [God], sun and moon; praise him, all you shining stars. Praise him, you highest heavens, and you waters [*mayim*] above the skies.”

Now what are we to do with these passages in Genesis 1 about the creation of the heavens? The Message-Incident Principle allows us to appreciate that the Holy Spirit accommodated to the level of the ancient Hebrews and used the science-of-their-day in order to reveal the inerrant spiritual truth that God created the visually dominant blue “structure” overhead with the sun, moon, and stars “embedded” in it. This Message of Faith remains steadfast for us today: the Creator made the visual phenomenon of the blue sky and all the heavenly bodies.

There is also another important divine revelation in Genesis 1. You will have noticed in Figures 4 and 5 that the ancient Egyptians and Mesopotamians believed astronomical structures were divine beings. But inspired by the Holy Spirit, the writer of Genesis 1 offers a radical message: the heavens and heavenly bodies are mere creations of the God of the Hebrews. Not only that, but the sun, moon, and stars were to “serve as signs to mark seasons and days and years” (Gen. 1:14 t niv). Instead of humans bowing down to serve the heavenly bodies, the heavenly bodies were created by God to serve humans. Indeed, this was a liberating message for those enslaved to the idolatry of the heavens.

There are significant implications regarding the ancient science in all these biblical passages about the heavens. First, the structure of the universe found in the Bible does not align with physical reality as we know it through modern science. The sun does not literally move across the sky every day, we do not live in a 3-tier universe, and there is no heavenly sea held up by a solid firmament implanted with the sun, moon, and stars.

Second, and much more challenging to us as Bible-believing Christians, is God’s creative action in Genesis 1 with the making of the heavens. The second day of creation begins, “God said, ‘Let there be a firmament between the waters, to separate water from water.’ ” On the fourth day, “God said, ‘Let there be lights in the firmament of the heaven.’ ” Do you see the problem? God’s *very words* (“Let there be ...”) in the Book of God’s Words do not align with physical reality in the Book of God’s Works. To state this problem more incisively, *Holy Scripture makes statements about how God created the heavens that in fact never happened*. So, to ask the question once more, “Did God lie in the Bible?” Again my answer is “No! The Lord accommodated in the Bible.”

Some Christians assume that the concept of accommodation “waters down” the Bible, but this is not true. Let me offer some reasons for divine accommodation. First, it is a corollary of divine revelation. That is, built into the belief that God reveals to us is the fact that the Infinite Holy Creator has to descend to the level of finite sinful creatures in order to communicate with them. The notion of accommodation is also rooted in the Ultimate Act of Divine Revelation—the Incarnation. As Philippians 2:7–8 states, God “humbled himself” and “made himself nothing” in order to become a man in the person of Jesus.

The Lord Himself accommodated in His teaching ministry by using parables. He employed earthly stories (ancient ideas) to deliver inerrant heavenly messages. As Christians we experience

divine accommodation personally in our prayer life. Does the Lord not descend to speak to you at your spiritual and intellectual level? And when a five-year-old asks about where babies come from, parents accommodate by coming down to the level of the child. They communicate the central message—a baby is a gift from God—without presenting the incidental details of sex. *Spiritual truths can be revealed without using physical facts.*

To conclude, we can now return to the question posed in the title of this section, “Is scientific concordism true?” My answer is “no.” The structure and origin of the universe presented in the Bible do not align with the scientific facts. Yet, this fact does not weaken our belief that Scripture is the Word of God. It only indicates that the Holy Spirit graciously descended to the level of the inspired authors and used the science-of-their-day as an incidental vessel to reveal inerrant Messages of Faith. There are numerous other examples of ancient science in Scripture. If you would like to examine some of these, I have put a book chapter online at [www.ualberta.ca/~dlamoure/ancient\\_science.html](http://www.ualberta.ca/~dlamoure/ancient_science.html).

## Genesis 1 and the Creation of Life

Many of you must be wondering, if the astronomy in Genesis 1 is ancient, then is the biology also ancient? Even more challenging is the question of divine creative action. As we noted, the first chapter of the Bible presents God creating a universe with the sun, moon, and stars placed in a firmament that supports a heavenly sea. But since the heavens are not structured in this way, the Creator did not actually make the astronomical world as stated on creation days two and four. Could it be that the creation of living organisms in Genesis 1 is similar in that it is an ancient view of biological origins? And does this mean that God did not actually create life as described on creation days three (plants), five (birds, sea creatures), and six (land animals, humans)?

To explore this possibility, we must attempt to think about living organisms from an ancient phenomenological perspective. When looking at different creatures, what would ancient people have seen? With plants they would have observed that wheat produces seeds that, when planted, only sprout wheat. The seeds from fruit would give rise to trees that always bear the same fruit. With animals they would have seen that hens lay eggs that always hatch chicks, ewes only give birth to lambs, and women are always the mothers of human infants. In the eyes of the ancients, living organisms were *immutable*. That is, they were static and never changed. Biological evolution was not a consideration, because the fossil record and evolutionary genetics had yet to be discovered.

The notion of the immutability of living organisms is clearly present in Genesis 1. That chapter states ten times that plants and animals reproduce “according to its/their kind/s.” Christian anti-evolutionists assume that this phrase is biblical evidence against biological evolution. However, they fail to recognize that it reflects an ancient phenomenological perspective of living organisms. The phrase “according to its/their kind/s” is an ancient biological category; more specifically, it reflects an ancient taxonomy.

Recognizing that ancient peoples believed living organisms were immutable, how would they have conceptualized the origin of life? Again, we need to think like them. For example, they would have seen that goats begat goats, which begat goats, which begat goats, etc. In thinking about the origin of goats, they would have reversed this data set of goat begats, and working backwards through time they came to the very logical conclusion that there must have been an original goat or an original pair of goats created by God. This thought process is known as “retrojection” (Latin *retro* means “backward”; *jacere*, “to cast, throw”). It is the very same type of thinking used today

in crime-scene investigations; present evidence found at the scene is used to reconstruct events in the past.

Similarly, in reconstructing the period when God created living organisms, the ancients reasonably concluded that each creature must have originated quickly and completely formed. This view of origins is termed “*de novo* creation” (Latin *de* means “from”; *novus* “new”). It appears in most ancient creation accounts and features a divine being who acts through miraculous interventions to make fully formed living organisms (and astronomical structures). *De novo* creation was the origins science-of-the-day of ancient peoples, including the Holy Spirit—inspired author of Genesis 1.

The ancient biology in Genesis 1 has a profound implication. Stated precisely, the creation of life is accommodated through ancient taxonomical categories. Similar to the way that Genesis 1 filters divine creative acts in the origin of the heavens through an ancient astronomy, the Creator forms living organisms in accordance with ancient biological concepts—the immutability of creatures and their *de novo* creation. To state the implication of this ancient biology in Genesis 1 even more incisively, *Holy Scripture makes statements about how God created living organisms that in fact never happened.*

So to ask the question once more, “Did God lie in the Bible?” My answer again is a resounding “No! The Lord accommodated in the Bible.” The Holy Spirit used the biology-of-the-day as an incidental vessel to reveal inerrant spiritual truths in Genesis 1. In particular, God is the Creator of life, all living organisms are very good, and humans were made in the image of God. Consequently, Genesis 1 does not reveal how God actually created plants, animals, and ... humans.

## Genesis 2 and the *De Novo* Creation of Adam

Throughout history Christians have steadfastly believed that the creation of Adam from the dust of the ground in Genesis 2:7 refers to a real historical event. They have also held firmly to the notion that all humans have descended from Adam and that the genealogies in Scripture are evidence for this belief (Gen. 5:3; 1 Chron. 1:1; Luke 3:38). Yet, could it be that the Bible’s account concerning the creation of the first man reflects an ancient understanding of human origins? Is it possible that the lists of humans begetting humans in biblical genealogies are similar to the data set of goats begetting goats? And if this is true, then maybe the creation of Adam in Genesis 2 is the result of retrojecting the common experience of humans giving birth to humans, who give birth to humans, etc., backward in time to the *de novo* creation of a first human.

To assist in answering these questions, let’s examine the origin of humans in some ancient Near Eastern creation accounts. There are two basic creative mechanisms. One is a natural plant-like sprouting of humans from the earth; the other is an artificial craftsman-like fashioning of people using some earth or other material. Regarding the former, the *Hymn to E’engura* states that “humans broke through the earth’s surface like plants.” In the Sumerian text *KAR 4*, the gods plant the seeds of humans into the earth and people later “sprout from the ground like barley.” And in the *Hymn to the Pickax*, a god strikes the ground with a hoe-like axe “so that the seed from which people grew could sprout from the field.” (Interestingly, this sprouting mechanism seems to be the creative process used in Genesis 1:24, where God commands, “Let the land produce living creatures.” The Hebrew verb translated “produce” is *yāšā’* and it is the same verb used in Genesis 1:12: “The land produced vegetation.”)

With regard to the craftsman mechanism of making humans, it appears in *Atrahasis* where a goddess mixes clay and the blood of a slain god to fashion seven males and seven females. In *Enki*



*and Ninmah*, an intoxicated divine being uses earth to make imperfect human beings. And in *Gilgamesh*, a pinch of clay is used to create a man. Clearly, these last three examples of the *de novo* creation of humans are similar to Genesis 2:7, where the Lord acts like a craftsman and forms Adam from the dust of the ground.

So what exactly am I saying about Adam? Adam's existence is based ultimately on an ancient conceptualization of human origins: *de novo* creation. To use technical terminology, *Adam is the retrojective conclusion of an ancient taxonomy*. And since ancient science does not align with physical reality, it follows that *Adam never existed*.

I am quite aware of how shocking this idea is to nearly every evangelical Christian. I am sorry if this is upsetting. But consistency argues that if the creation of the heavens in the Bible reflects an ancient astronomy, then we should not be surprised that the Holy Spirit also accommodated in allowing the biblical authors to use the science-of-the-day regarding human origins.

Nor should we be surprised that these divinely inspired writers connected their genealogies back to Adam. Ancient accounts of origins not only present the creation of the universe and life, but also the origin of the community. The ancient Hebrews would have seen the growth of their tribe, and they would have remembered family genealogies and important people from their past. It is significant to note that in the book of Genesis the early Hebrews were an oral community, because the first reference to their writing appears in the book of Exodus. Consequently, the limits of human memory would have restricted the number of individuals that they remembered in their genealogies, and this is reflected in the brevity of the first genealogies in Scripture (Gen. 4; 5; 11). So what are these genealogies? Similar to the ancient science in the Bible, they are an ancient understanding of the origin of the Hebrew community conceived from an ancient phenomenological perspective.

But more importantly, Genesis 2 reveals radical spiritual truths. For the nations surrounding the Hebrews, the gods in many of their origins stories create humans in order to free themselves from work. The basic message is that men and women are slaves of the gods. In sharp contrast, Genesis 2 reveals the Message of Faith that the Lord cares for humanity. He meets their physical and psychological needs by offering food and companionship. In this way, the God who loves us is being revealed at this early stage of biblical revelation.

## **The New Testament and the Historicity of Adam**

In nearly every public lecture that I deliver, Christians are quick to challenge me that Jesus and the apostle Paul refer to Adam as a historical person. By appealing to Genesis 1:27 and 2:24, the Lord admonishes in Matthew 19:4–6, “Haven't you read ... that at the beginning the Creator 'made them male and female' and said, 'For this reason a man will leave his father and mother and be united to his wife, and the two will become one flesh.' So they are no longer two, but one flesh. Therefore what God has joined together, let no one separate.”

Paul makes the issue more challenging by placing Adam's sin and death alongside God's gifts of salvation and resurrection from the dead through Jesus. In Romans 5:12 and 15 he writes that “sin entered the world through one man, and death through sin, and in this way death came to all people, because all sinned.... For if the many died by the trespass of the one man, how much more did God's grace and the gift that came by the grace of the one man, Jesus Christ, overflow to the many!” Paul also claims in 1 Corinthians 15:21–22 that “since death came through a man, the resurrection of the dead comes also through a man. For as in Adam all die, so in Christ all will be

made alive.” What are we to do with these passages that certainly appear to affirm that Adam was a real historical person?

Let us first examine Jesus’ admonition in Matthew 19:4–6. The context of this passage is not a debate over the historicity of Adam. Rather, the Lord was responding to a question about divorce. The Pharisees had asked Him, “Is it lawful for a man to divorce his wife for any and every reason?” (v. 3). Jesus’ use of Genesis 1:27 and 2:24 is typological. The relationship between Adam and Eve is an archetype (an ideal model) of what God intended marriage to be. (Indeed, this is an inerrant Message of Faith that needs to be heard and obeyed by our generation.) So what was Jesus doing? He was accommodating to the Jewish belief of the day that Adam was a real person. And there are numerous examples of the Lord coming down to the level of His listeners and using the science-of-the-day.

In the mustard seed parable Jesus employed the ancient idea that the mustard seed was “the smallest of all seeds on earth” (Mark 4:31) to reveal a message about the kingdom of God. Of course, most Christians know that orchid seeds are much smaller, and they also know that Jesus did not come to earth to reveal scientific facts about plants! Instead, this parable is prophetic. God’s kingdom began with a small number of disciples and has grown into a worldwide faith.

Similarly, in prophesying His death and resurrection, the Lord states, “The hour has come for the Son of Man to be glorified. Very truly I tell you, unless a kernel of wheat falls to the ground and dies, it remains only a single seed. But if it dies, it produces many seeds” (John 12:23–24). Do seeds die before they germinate? No. If they did, they wouldn’t germinate. However, doesn’t the outer casing of seed look as if it rots just before germination, giving the ancient phenomenological perception that seeds die?

In discussing His return, Jesus claimed that at “the coming of the Son of Man ... the stars will fall from the sky, and the heavenly bodies will be shaken” (Matt. 24:27, 29). How can stars fall to earth when only one would destroy it completely? Understood from an ancient phenomenological perspective, this passage makes perfect sense. Stars look like tiny specks, and a streaking meteorite gives the appearance they can fall to earth; and shaking the firmament would dislodge them.

In summary, the Lord Himself accommodated by using ancient science in His teaching. It is only consistent that He would also employ an ancient understanding of human origins—the *de novo* creation of the first man Adam—as an incidental vessel to deliver inerrant spiritual truths.

Let us now turn to the apostle Paul. Did he believe that Adam was a real person? *Yes, absolutely.* Paul was a first-century Jew, and like every other Jewish person at that time, he accepted the historicity of Adam. Many Christians point out to me that since this apostle believed in a historical Adam, then the account of Adam in Genesis 2 and 3 must be historical. In other words, they use a “conferment argument” in that Paul’s belief in Adam confers historical reality to Adam. These Christians also appeal to consistency. They assert that since Paul refers to Jesus as a historical person in Romans 5 and 1 Corinthians 15, then it is only consistent that his references to Adam must also be to a real individual in history.

Finally, my critics emphasize that the gospel appears in these New Testament passages. In fact, it is explicitly stated in 1 Corinthians 15:1–7 and is introduced by the clauses “the gospel I [Paul] preached to you ...” (v. 1) and “by this gospel you are saved ...” (v. 2). Critics then accuse me of picking-and-choosing the Bible verses I want, such as accepting the gospel and rejecting the existence of Adam. On the surface, these three criticisms are reasonable. Thirty years ago I used all of them when I was a young-earth creationist.

Let me now respond. First, concerning the conferment argument. Many Christians argue that since Paul accepted a historical Adam, then Adam must have been a real person. But what else did

this apostle believe? As we noted with Philippians 2:10, Paul accepted a 3-tier universe. Does his belief confer reality to this understanding of the structure of the cosmos? And do we have to believe it also?

Second, the consistency argument claims that because Paul refers to Jesus as a historical individual in Romans 5 and 1 Corinthians 15, then Adam in these chapters must also be a real person in history as described in Genesis 2 and 3. However, this argument would be similar to using Philippians 2:6–11 and the historical fact that Jesus actually existed in order to argue for the existence of the 3-tier universe, and then to extend this ancient astronomy back to Genesis 1 and claim that God actually created a world with three tiers. This consistency argument fails to distinguish real history (the existence of Jesus) from an ancient understanding of human origins (the *de novo* creation of Adam). In other words, it is inconsistent. It conflates (blends together) actual historical events of the first century ad with an ancient biology of human origins.

Third, being accused of picking-and-choosing the Bible verses I prefer is a serious charge. But let's again consider Philippians 2:10–11. The inerrant Message of Faith asserts that Jesus is Lord over the entire creation. Am I picking-and-choosing when I embrace this inerrant spiritual truth and decide not to accept reference to the 3-tier universe? Yes, I am. But once my critics become aware of the ancient astronomy in this passage, they will do so as well, because I doubt anyone today believes the world is really made up of three tiers.

By acknowledging the ancient science in Scripture, we can view Paul's understanding of the origin of death in a new light. He definitely believed that death entered the world with Adam. This was not merely spiritual death, because in judging Adam God stated, "For dust you are and to dust you will return" (Gen. 3:19). Clearly, it is physical death. Paul also believed that the natural world had changed with the divine judgment of Adam (this is termed the "Cosmic Fall"). He asserts, "The whole creation has been groaning" because it "was subjected to frustration" and is in "bondage to decay" (Rom. 8:20–22).

Indeed, these are challenging passages to interpret. However, since Paul accepted an ancient biology of the origin of life, it is only consistent that he also accepted an ancient understanding of the origin of death, suffering, and decay. Therefore, in the same way that Scripture does not reveal how God actually created life, the Bible does not reveal the origin of biological death.

By recognizing and respecting the ancient biology of origins in Romans 5 and 8 and 1 Corinthians 15, we can understand these passages through the Message-Incident Principle as presented in Figure 6. These are inerrant spiritual truths: We are sinners, and God judges us for our sins; but the good news of the gospel is that we are offered the hope of eternal life through the sacrificial death of Jesus and His bodily resurrection from the dead. To deliver these life-changing Messages of Faith, the Holy Spirit accommodated and allowed Paul to use the biology-of-the-day as an incidental vessel.

To be sure, this is a very counterintuitive way to read Scripture. Throughout most of church history Christians have conflated the spiritual truths in Romans 5 and 8 and 1 Corinthians 15 with the ancient biology of origins, assuming Adam to be a real person and giving his existence the status of an inerrant truth. However, once Christians discover the ancient astronomy in Genesis 1, I doubt they will extend biblical inerrancy to how God created the heavens in that chapter. I also believe that when evangelicals become aware of Paul's 3-tier universe in Philippians 2:10, this ancient astronomy will not be deemed an inerrant truth. And in the future, I fully expect that we will set free the doctrine of inerrancy from the ancient biology that has created the first man in the Bible—Adam.

## Human Evolution and the Two Divine Books

At the beginning of this chapter I stated that I embrace the time-honored complementary relationship between science and Scripture—the Two Divine Books Model. I can now qualify my position. In contrast to most evangelical Christians, I hold these two books in a *nonscientific concordist* relationship. The Book of God’s Works reveals *how* the Lord created us; the Book of God’s Words discloses *that* He created us in His Image and *that* we are all sinners. Let me elaborate.

The Divine Book of Works offers overwhelming evidence for the evolution of humans. The fossil record and evolutionary genetics reveal that we share with chimpanzees a last common ancestor that lived about six million years ago. Along the evolutionary branch to humans, there are approximately 6,000 transitional fossil individuals.<sup>36</sup> Scientists have also discovered that about 99 percent of the DNA sequences in our genes are similar to chimpanzees, including defective genes (pseudogenes). This is like our own families in that we share with relatives genetic similarities, both good and bad. In addition, the archaeological record discloses that humans who behaved like us (creating art, sophisticated tools, and intentional burials) appeared roughly 50,000 years ago. Burying the dead with items assumed to be needed in the afterlife signifies religious belief. Finally, science has found that the genetic variability among all people today is quite small and indicates that we descended from a group of about 10,000 individuals.

The Divine Book of Words reveals that humans are the *only* creatures who bear the Image of God, and *only* humans are sinful. I suspect that the manifestation of these spiritual realities coincides with the appearance of behaviorally modern humans about 50,000 years ago. And similar to the way we do not really know when exactly each of us personally begins to bear God’s Image or commits our very first sin, I believe the arrival of the first true humans is also a theological mystery.

It is worth noting that some Christians attempt to pin Adam on the tail end of evolution. However, this is categorically inappropriate. It mixes the modern science of evolution with the ancient science of the *de novo* creation of Adam. This would be similar to tacking on a 3-tier universe to cosmological evolution and the Big Bang. Certainly, the temptation of scientific concordism is powerful. But I think Christians can all agree that knowing *how* the Image of God and human sin are first manifested, whether individually as a person or collectively as our species, pales in comparison to knowing *that* we have these spiritual realities.

To conclude, I do not believe that there ever was a historical Adam. Yet he plays a pivotal role in Holy Scripture. Adam functions as the archetype of every man and woman. In Genesis 2 and 3, he is an incidental ancient vessel that delivers numerous inerrant spiritual truths. His story reveals that the Creator has set limits on human freedom. We are accountable before God, and a failure to obey His commands results in divine judgment.

Adam’s story is our story. Has anyone not been tempted to defy the words of the Father (Gen. 2:17; 3:6)? Have you ever wanted to hide from Jesus because you are ashamed of a sinful act (3:8)? Who has not tried to rationalize their sinfulness in the face of the Holy Spirit (3:13)? And have you blamed others for your sin ... even God (3:12)? To understand who we truly are, we must place ourselves in the garden of Eden. The *nonhistorical* first Adam is you and me. But the Good News is that the *historical* Second Adam died for our sins and frees us from the chains of sin and death. Amen.

## **DARWIN'S SECRET SEX PROBLEM:**

*He argues that evolution's biggest flaw is that its primary mechanism, natural selection, couldn't have produced a compatible male and female pair of micro-organisms for each species to procreate each by way of perfect timing.*

"Given the unique nature of gendered, sexual meiosis compared with non-gendered, asexual mitosis" F. LaGard Smith explains "the first-ever generation of sexual reproduction would have required 1) a never-before-seen male organism & a novel female organism, 2) magically having compatible chromosomes & 3) a death-defying process of precisely halving their chromosomes, mixing them together in a revolutionary way, and then recombining to produce, not a clone (as in asexual replication), but unique offspring unlike any on the planet. Not to mention minor details of geographic proximity & an evolved instinct to mate – all absolutely required Round One of sex to start the sexual ball rolling." – **F. Lagard Smith** \*

\* Church of Christ Teacher, Preacher, & Speaker. Author of Best-Selling Books.

## #2 - A HISTORICAL ADAM: ARCHETYPAL CREATION VIEW

JOHN H. WALTON

*In my view, Adam and Eve are historical figures—real people in a real past. Nevertheless, I am persuaded that the biblical text is more interested in them as archetypal figures who represent all of humanity. This is particularly true in the account in Genesis 2 about their formation. I contend that the formation accounts are not addressing their material formation as biological specimens, but are addressing the forming of all of humanity: we are all formed from dust, and we are all gendered halves. If this is true, Genesis 2 is not making claims about biological origins of humanity, and therefore the Bible should not be viewed as offering competing claims against science about human origins. If this is true, Adam and Eve also may or may not be the first humans or the parents of the entire human race. Such an archetypal focus is theologically viable and is well-represented in the ancient Near East.*

### Introduction

My view is that Adam and Eve were real people in a real past; they were individual persons who existed in history. The basis for this conclusion comes from the fact that in the Old Testament Adam becomes part of a genealogy, and in the New Testament a real event featuring real people is the clearest reading to explain the entrance of sin and death. Nevertheless, I also believe that the biblical text is most interested in Adam and Eve as archetypes—those who represent humanity. In particular, I believe that the “making” accounts in Genesis 2 reflect their roles as archetypes and therefore give us no scientific information about human origins.

To begin, it is important that I clarify that an archetype is different from a prototype, as I use these terms. A prototype is the first in a series that serves as a model for subsequent production. It establishes a pattern but is otherwise unrelated to the later products. In contrast, an archetype serves as a representative of all other members of the group, thus establishing an inherent relationship. In this specific instance, Adam as a prototype would be designated the “Primeval Man,” whereas Adam as an archetype would be designated “Everyman,” representing all.

Another important point of clarification to make is that the role of someone as an archetype does not preclude their historical existence. An archetype can be a real person in a real past, though not all archetypes are. In the view that I present here, I believe that Adam and Eve were real people who existed in a real past in time and space; but I believe that both in Genesis and in the New Testament, there is more interest in them as archetypes (notwithstanding their reality). Abraham was a real person in a real past, but the New Testament shows its interest in him as an archetype when it identifies him as a father of all who believe (Rom. 4:11–12). Jesus was a real person in a real past, but is portrayed as an archetype as the second Adam (Rom. 5:12–21). In this same passage, Adam (designated the first man) is used as a contrasting archetype.

I would not want to diminish in any way the importance of Adam and Eve being real people. At the same time, I will be developing the perspective that we miss the mark if we do not see that all biblical authors are more interested in them as archetypes. When dealing with authoritative text, it is the author's intentions that take on the most significance. If we find that the author's interests are in the archetypal rather than the genetic role of Adam and Eve, that might influence our understanding of the claims the text is making.

## Archetypal Role of Humanity in Genesis 1

The humanity referred to in Genesis 1, whether referring to one couple or to corporate humanity, is described in archetypal terms: they are made in God's image, and they are represented as male and female. As such, they describe and represent all of humanity throughout time, as do the roles given them (subdue, rule, etc.). In ancient Near Eastern literature the image of God is not generally ascribed to all humanity (exception, a passing reference in the Instruction of Merikare—see more later). Even though the designation usually refers to the king, even there it is archetypal as it connects to the royal personage.

## Archetypal Role of Adam in Genesis 2

*Adam.* The first evidence of the archetypal importance of Adam is the fact that he is called “Adam,” the Hebrew word for humankind. We have to recall from the start that whoever Adam is, however he came to be, and whenever he lived, he did not speak Hebrew. Hebrew as we know it developed as a language only sometime after the Israelites came to the land of Canaan after the Exodus. Thus, the Hebrew designation “Adam” is a literary designation given relatively late. We cannot think of it as the actual personal name of this historical person. In that sense then, even the name is archetypal rather than historical.

Richard S. Hess has done a thorough study of the thirty-four occurrences of *’adam* in Genesis 1–5. Of these occurrences, twenty-two have the definite article (which in Hebrew is never attested on a personal name). Only five occurrences clearly refer to a personal name (all without the definite article: 4:25; 5:1a, 3, 4, 5; note also the anomalous 4:1, which by context may suggest a personal name but uses the definite article). The others without the definite article refer to generic humanity; corporate, en masse (i.e., people including both male and female; 1:26; 2:5; 5:1b, 2; and oddly, 1:27 with the definite article). I believe that the definite article in all but Genesis 1:27 and 4:1 is used to designate the archetypal individual (the bulk of them [14 times] in 2:7–25; see also the confrontation in the garden, 3:8, 9, 12, and the result, 3:22, 24). In these examples, everything that this archetypal individual does he performs as a representative for all humanity or on behalf of all males.

*Formed from dust.* The most obvious statement about Adam—and the one most important to this discussion—is the statement that God formed (*yašar*) him from the dust (*’apar*) of the earth. Is this intended to be a statement about the material origins of the first human being? Traditionally, it has been common to think about this statement as describing a material process of special creation characterized by discontinuity with any previously existing creature. Yet there are limits to how far this concept should be taken. Most would not contend that reference to the ingredient “dust” dictates the chemical composition of the human body. That being the case, it would appear that a Pinocchio concept is envisioned in which the sculpture or image is made (it would not matter

what it was made of) and then that image is brought to life (now bearing no resemblance to dust at all).

One of the difficulties with this way of thinking is that dust is characteristically resistant to being molded. If a sculpting process is being used, clay would be a much more likely ingredient to use (cf. Job 4:19; 10:9; 33:6, *homer*). Another is that if the dust was only to be transformed, it has nothing to say about the material process and, in fact, plays no role at all.

The verb *yašar*, however, need not be thought of as suggesting a sculpting process. We only need to look at the verb's range of usage to see that it does not require a material context. Especially noteworthy is Zechariah 12:1: "The Lord, who stretches out the heavens, who lays the foundation of the earth, and who forms [*yašar*] the human spirit within a person...." Here Zechariah is speaking specifically about the creation narrative and sees the "forming" as pertaining to the spirit rather than the body and thus not referring to material origins.

The same concept is represented in Egyptian reliefs where Khnum, the craftsman creator deity, is shown shaping a human on the potter's wheel (here it is clay, not dust). The context of the relief and the text that accompany it, however, make it clear that it is not the material formation of the human that is conveyed, but the shaping of the pharaoh to be pharaoh. He is being designed for a role. This imagery pertains to the function he is destined to have and not to the process by which he was created as a material individual. One could say that his "royal spirit" is being formed to highlight similarity to Zechariah 12. In Egyptian thinking this is not referring merely to his training or preparation; rather, it is an indication of his election and sponsorship by the gods who have ordained him for this task. It reflects his high calling and his exalted status.

Returning to the role of "dust" in Genesis 2, we can reasonably deduce from the passage itself that dust carries an archetypal rather than a material significance. Genesis 3:19 explains this significance (in case we might have failed to grasp it in 2:7) when it states, "Dust you are and to dust you will return." Dust refers to mortality, and everyone is formed from dust. Psalm 103:14 substantiates this as the psalmist says that the Lord "knows how we are formed, he remembers that we are dust." This verse uses the same vocabulary as Genesis 2:7 and indicates that humankind (archetypally) is formed from dust. In fact then, it would not be a distortion to say that each of us is formed from dust (that is, we are all frail and mortal).

The conclusion of this line of reasoning is that being formed from dust does not refer to the material origins of any of us, nor does the fact that we are formed from dust preclude that we were born of a woman by a natural process. Following that line of reasoning back, we could also suggest that Adam being formed from dust does not preclude him being born of a woman. In other words, the statement in Genesis 2:7 is not essentially a statement about material discontinuity. It is a statement about our nature. The New Testament confirms this when it contrasts the archetype human as being from "dust of the earth" while Jesus as an archetype is "of heaven" (1 Cor. 15:47). Thus I conclude that being formed from dust plays an archetypal role in the context, with a debatable inference regarding material origins or discontinuity. If the text is not addressing material origins or asserting material discontinuity, there is no biblical claim being made about the mechanics or process of material human origins.

*Taken and placed in a garden.* Genesis 2:8 provides a summary statement introducing the next section of text (2:9–17), which fills in the details. Genesis 2:15 provides a fuller explanation of 2:8 and makes a statement whose significance is often missed. This verse says that God "took" (*lqh*) the archetypal human (definite article) and "caused him to rest" (*hiphil* of *nwh*) in the garden. "Rest" is a loaded term that certainly implies more than simply settling or dwelling somewhere. But the use of *lqh* is even more arresting. Took him from where? In similar contexts the use of this



verb has an opposite problem. When Enoch walks with God and God “takes” him, we are left wondering where he takes him (Gen. 5:24).

Further insight can be gained from an interesting parallel wording in the Gilgamesh Epic. In tablet XI the flood hero, Uta-napishti, disembarks from the ark to be met by a group of the gods discussing how he was spared, whether he should have been spared, and what they were to do with him now. In lines 203–6 the decision is made and a blessing conferred:

“In the past Uta-napishti was one of mankind,  
But now Uta-napishti and his woman shall be like us gods!  
Uta-napishti shall dwell far away, at the mouth of the rivers!”  
They took me and settled me far away, at the mouth of the rivers.<sup>7</sup>

The setting to which the flood hero is “taken” is an Edenic setting (“at the mouth of the rivers”) where he will have an existence “like the gods.” It is not a dwelling with the gods, but it is removed from the strictly mortal realm. (Note that Gilgamesh had to cross the river of death to get there.) His being “taken” is seen as a blessing. This sort of understanding would also make sense for Enoch in Genesis 5.

On the basis of Genesis 5 and Gilgamesh 11, I would propose that Adam, the archetypal human, is being removed from the everyday realm of human existence and placed in a specially prepared place (the mouth of the rivers) as a blessing. If other people are around, he is being elected from them to play a special role. From Genesis 4:14, 17 we could reasonably deduce that there are other people around—in fact, that may be the easiest reading. Regardless of whether or not other people were present, the text has shown us that the forming of the archetypal human is directed toward a particular role that he will play. The second half of verse 15 tells us about the nature of this blessing and elect role.

*Priestly role.* The last two words in the Hebrew text of Genesis 2:15 delineate the role being given to the archetypal human by means of two infinitives constructed from the roots *ʿabad* and *šamar*. The former has been used in the near context to refer to “working the ground” (2:5; 3:23), and the pair in Genesis 2:15 are traditionally interpreted as pertaining to manual labor in the garden (agricultural work such as landscaping, pruning, and harvesting).

Certainly, as Genesis 2:5 shows, *ʿabad* could point in that direction, given the appropriate direct object. The second verb, *šamar*, however, would not fit so easily into the category of agricultural work. It is used regularly in the Pentateuch to refer to Levitical responsibility for guarding sacred space. With that prompting, we then also notice that *ʿabad* is used throughout the Pentateuch to refer to priestly service in sacred space (note particularly Num. 8:15). Both verbs are used together in reference to caring for sacred space in Numbers 3:8–9.

The significance of this conclusion must not be underestimated. The role of the archetypal human, if a priestly role, is a representative role—thus affirming the archetypal interests of the text. This representation would extend to all humans alive at the time (if there are any) in that he was chosen from among them to serve this role on their behalf, and for all humans yet to come. The themes of election (e.g., Abram, David) and representative priesthood (the Aaronic priests) are well-known in Old Testament theology.

Thus, we also find that as pharaoh is being formed for the royal role in the Egyptian reliefs (an exaltation theology), so here the archetypal human is being formed for a priestly role (arguably an election theology). The “forming” in Genesis 2:7 then finds credibility for being understood as role/function oriented rather than as a statement of material origins of humanity.

## Archetypal Role of Eve in Genesis

*Deep sleep.* It has also been commonplace to interpret Genesis 2:21–22 as describing the material origin of Eve. A number of elements in the text, however, may readily admit to other interpretations that would lead to different conclusions.

As the section opens, God causes Adam to fall into a deep sleep. It is easy for us to think of this as a necessary anesthesia for some significant surgery. Nonetheless, a little thought reminds us that removal of a rib is not any sort of standard surgery in either the ancient or the modern world. Furthermore, they knew nothing of anesthesia. Beyond those observations, interpreters have always been curious about what significance a rib would have.

Such questions should first lead us to investigate what is going on in biblical text when someone is in a deep sleep. The text here uses the noun *tardemâ* (seven occurrences in the Old Testament), related both morphologically and semantically to the verbal root *rdm* (seven occurrences in OT). This deep sleep sometimes refers to an individual being oblivious to what is taking place in the waking world (usually a potential threat, Judg. 4:21; 1 Sam. 26:12; Jonah 1:5–6). Other times it refers to someone whose deep sleep gives them awareness of something going on in the spiritual realm (Gen. 15:12; Job 4:13; Dan. 8:18; 10:9). In my estimation, the latter is more likely here. There is no potential threat, and there is an important spiritual reality that is conveyed. As Genesis 15:12, which features the ratification of the covenant, indicates, such visions can be used to make highly significant spiritual or theological points. If this is a vision, it need not refer to a material event. Before we draw such a conclusion, however, another key interpretative element calls for careful attention.

*Rib.* The Hebrew term here, *šelaʿ*, never refers to anatomy anywhere else in the Hebrew Bible. In its roughly forty occurrences it refers to a “side” and is typically directional (north side versus south side) or structural (sides of the ark or sides of the temple).<sup>12</sup> What is most important to note is that the term generally refers to one side of something of which there are only two sides, that is, these “sides” tend to come in pairs. The result of this analysis suggests that God takes one of the two sides of the archetypal man to build the archetypal woman.

If this is so, it is clear that this process is unlike any surgery, despite the fact that God then “closed up the place with flesh.” In this interpretation, God puts the archetypal man into a deep sleep so that he can show him in a vision something important about the nature and identity of the woman to whom he is about to introduce him. When the man awakes, he immediately understands that she is “bone of my bones and flesh of my flesh.” Bone and flesh are both involved, thus indicating that the text is not to be understood as referring simply to a rib. Then, as a final piece of evidence, the text itself identifies the archetypal significance through the words of the narrator: “That is why a man leaves his father and mother and is united to his wife, and they become one flesh” (Gen. 2:24). This is true of all mankind and all womankind. The vision has shown the archetypal man that woman is essentially related to him. If this is the case, these verses need not be understood as recounting the material origins of the first woman. Communication through a vision underlines this, and the idea that half of Adam is removed fairly requires it. God is showing the man how he should think about the helper that he is about to provide and then brings this woman to him (just as the man had been taken and brought to the garden).

*Mother of all living.* While it can be readily observed that Eve is given archetypal significance in the only two references to her in the New Testament (2 Cor. 11:3; 1 Tim. 2:13), we should note that the designation “mother of all the living,” given to her in Genesis 3:20, is also archetypal. At the same time, it does not demand a biological or genetic role, as we can see from the similar

statements in Genesis 4:20–21, where Jabal is “the father of those who live in tents and raise livestock” and Jubal is “the father of all who play stringed instruments.” Since these refer to archetypal roles, not biological relationships, we can see that the terminology of biological relationship can be used in archetypal ways. This does not prove that Eve’s name does not indicate that all human beings came from her; it merely offers other reasonable alternatives from within the near context.

Having provided strong evidence in favor of interpreting the forming account and naming account of Eve as archetypal, I must also state that giving birth to sons in Genesis 4:1 and the information in the New Testament references indicate that we should think of her as a real individual who existed in a real past even though her primary significance in Genesis 2–3 is as an archetype. It is true that the text *could* be referring to the biological as well as the archetypal, but neither one can be assumed; both must be demonstrated. I am proposing that the primary interests of the text are in the archetypal. I have offered arguments that the evidences in this passage that have traditionally been taken as referring to material origins are credibly and perhaps preferably interpreted as archetypal. If that is so, biological claims would not be understood as affirmed within the authority of the text.

## Archetypal Humanity in the Ancient Near East

So far, although a few illustrations from the ancient world have been mentioned, I have been drawing conclusions from the biblical text based on the biblical text. With these conclusions in mind, we can now turn to the ancient Near Eastern texts pertaining to human origins to discover the ideas that existed in the world in which Israelites lived.

Accounts of or allusions to human origins are found in Sumerian, Akkadian, and Egyptian texts. Most of the accounts are brief (a couple of lines), with the longest ones (Enlil and Ninmah and Atrahasis) extending for several dozen lines.

### Sumerian

- Song of the Hoe
- Hymn to E’engura
- Enki and Ninmah
- KAR 4

### Akkadian

- Atrahasis
- Enuma Elish

### Egyptian

- Pyramid Texts 445, 522 (Khnum on potter’s wheel)
- Coffin Texts (CT II: 43, spell 80).
- CT spell 1130<sup>22</sup>
- Instruction of Merikare

Nowhere in the ancient texts are human origins depicted in terms of a single couple being created as progenitors of the entire human race. Consequently, if the biblical text includes that idea, it is not doing so in conformity with its ancient Near Eastern environment. I hasten to note, however, that such nonconformity would make perfect sense. In the ancient Near East people are created as slave laborers for the gods, so it would be illogical to make only two. In contrast, the Old Testament has a very different view of the role of humanity, in which there would be no compulsion for mass production.

These observations do not mandate that the biblical account must initiate humanity with a single couple. It merely suggests that if this is so, this is unique in its cognitive environment. Despite that important possible distinction, archetypal representation could be intended whether accounts feature mass production or focus on one couple. We have seen the archetypal indicators in the biblical text, so we now turn our attention to the archetypal nature of the ancient Near Eastern accounts.

1. *Ingredients*. No consensus exists in the ancient world concerning the ingredients of creation stories, yet at the same time the designated ingredients are consistently archetypal. In two Sumerian accounts, Song of the Hoe and Hymn to E'engura, people break out from the ground. Another account refers to clay (Enlil and Ninmah). Some Egyptian Pyramid texts refer to clay on a potter's wheel while others use a product from the living creator deity (tears in the coffin texts, from the god's body in Merikare).

Akkadian accounts uniquely refer to products from a slain rebel deity. In Atrahasis both flesh and blood are used, whereas only the blood is mentioned in Enuma Elish and KAR 4. Only in Atrahasis is there a combination of common and divine materials. In addition to material ingredients, allusion to divine infusion may be represented by means of the mother goddess giving birth to humans (Enlil and Ninmah) or by the divine breath (Coffin Texts, Merikare). The variety of materials reflects the differences that each account wants to emphasize and explain in the archetypal profile. The commonality we find in the cognitive environment is that people are portrayed conventionally as being created out of elements that will explain their archetypal roles.

## Archetypes

All these provide a profile defining the archetypal nature of humanity, particularly pertaining to connectivity, relationships, and roles—arguably the most significant aspects of reality. To be clear, they have no concern for materiality or material origins. One of the clearest examples of archetypal thinking is found in Enki and Ninmah, in which the mother goddess, Ninmah, undertakes the challenge of creating archetypes of certain handicapped or defective classes of humans for which Enki, the god of wisdom, has to find a role. Although these are individuals, they function as archetypes and are textually significant only as archetypes. The focus on roles and functions is obvious, since functionality is the basis of the contest between the deities.

Not only can we see that corporate human origins are represented archetypally, but we also find evidence of creation of humans for notable roles that shows us a proclivity to think in archetypal terms. In this excerpt of a Neo-Babylonian text we can see that a transition is made from corporate common humanity (“lullu-man”) to the archetypal king:

Belet-ili, you are the mistress of the great gods.  
You have created lullu-man:  
Form now the king, the thinking-deciding man!  
With excellence cover his whole form,  
Form his features in harmony, make his whole body beautiful!  
Then Belet-ili fulfilled her commission with the major gods contributing specific attributes.  
The great gods gave the king the battle.  
Anu gave him the crown, Ellil ga[ve him the throne],  
Nergal gave him the weapons, Ninurta ga[ve him shining splendor],  
Belet-ili gave [him a handsome appea]rance.  
Nusku gave instruction, imparted counsel and sto[od by him in service].

This piece illustrates the same concept as the Egyptian iconography and texts concerning pharaoh being formed on the potter's wheel to be king! Creation pertains to role and function, and even though an overarching materiality is evident in the wording, it is thoroughly archetypal in focus and interest.

One other noteworthy example from the ancient Near East that demonstrates archetypal thinking is the Tale of Adapa, the most significant of the primeval sages (*apkallu*) who were credited with bringing the arts of civilization to humanity. We should note that Adapa is identified as a "priest of Enki" and thus has a representative role. He has wisdom but lacks immortality. Through a series of circumstances he is ushered into the presence of the god Anu, where he unwittingly refuses food that would give him immortality. Some interpretations suggest that through his choice humanity loses a chance at immortality. If this is accurate, this priestly individual represents all humankind, both in his time and as a species. The text is unclear whether Adapa's eating of the food offered by Anu would gain immortality only for him or for all humanity. Only in the latter situation would he fulfill an archetypal role that would be comparable to that played by the archetypal man in Genesis. The text of Adapa is not clear on this issue, but one factor that would suggest that all of humanity is affected by Adapa's choice is Anu's exclamation "Alas for inferior humanity!" after Adapa refuses the food.

The cumulative effect of this discussion is the understanding that it was commonplace in ancient Near Eastern literature to think about human origins in archetypal ways and to focus on the functions of humanity. This would not demand that we read Genesis archetypally, but since we have seen that our investigation moves in that direction, we now see that such a way of thinking would be natural in the ancient world.

## **Message of the Archetypes in Genesis contrasted to Ancient Near East**

Interpretation of human origins in Genesis as archetypal does not strip the account of its meaning; rather, it brings to our attention the essential theological teaching of the passage.

*Humankind was created with mortal bodies.* As discussed above, dust is equated with mortality in the text (Gen. 3:19), in the canon (Ps. 103:14), and by logic (a tree of life would otherwise be unnecessary). In Adam we were all created mortal.

*Humankind was provisioned by God.* Genesis 2:9, 16 indicate that the garden provided food for the humans that were in the garden. This is not an indication that God provided food for all humanity in every place and every time, but that the food growing in sacred space was God's provision for humans. This stands in contrast to the idea that humans were providing for the needs of God. In the ancient Near East, gardens adjoined sacred space and were used to feed the gods—

a task, in their view, for which humanity was created. In Genesis 2 the important archetypal statement is that humankind has not been created to meet God's needs; rather, God is meeting their needs. This is a key departure in the archetypal picture of humanity.

*Humankind was given the role of serving in sacred space (which implies relationship with God).* When the archetypal man was taken and placed in the garden as a priestly representative, a couple of archetypal affirmations were made. First and foremost, service in sacred space pertains most significantly to maintaining a relationship between God and people. The archetypal nature of humanity is found in the idea that we have not been created as slaves to meet the needs of the gods (ancient Near Eastern model), but that ultimately God wants to be in relationship with us as we dwell in his presence (sacred space).

Second, however, is that this is represented in “already/not yet” terms. That is, the archetypes are placed there as representatives of others (whether in their time or in future times), implying perforce that not all are there. The objective, as evident in the theological developments across the canon, is to expand that circle of those in relationship to God so that it becomes broadly inclusive. Thus we find Israel identified as a “kingdom of priests” (Exod. 19:6) and eventually Christians identified as a “holy priesthood” (1 Peter 2:5). God's desire is for us all to be in relationship with him in sacred space—the eventual outcome in New Creation (Rev. 21).

*Humankind was given a role ordering the animals.* God brings all the animals to the archetypal man as a first step after it is noted that “It is not good for the man to be alone” (Gen. 2:18). This observation comes on the heels of the commissioning to priestly service in the garden (Gen. 2:15). The companion that is envisioned is not focused on a search for a reproduction partner (otherwise, the initial focus on the animals would be nonsense), but for a coworker in the task of maintaining and expanding sacred space. In this task humanity is fulfilling the role of vice-regent, having been delegated by God to continue the ordering process. The naming of the animals is undertaken as part of that commission. In naming, a creative/order-bringing act, the roles of animals, and their place in the ordered system are being identified. This is an ongoing task of humanity. In the process, the archetypal man found none that could suitably fill the ordained role of humanity in sacred space (Gen. 2:20).

*Humankind genders work together to fulfill their God-given role.* Genesis 2 makes important countercultural statements about gender roles that help us to see that they were not just serving as an etiology for the situations of Israelite society that already existed. Israel did not have women priests, and even if Israelite society gave higher status to women than neighboring societies, it was undoubtedly a patriarchal society. But Genesis 1–3 shows no sign of patriarchy, and the archetypal woman is given a role as coworker in sacred space, placed in equal relationship with God.

*Humanity was divided into male and female and so would seek reconnection in new family relationship.* Many Protestant wedding liturgies assert that Genesis 2:24 is establishing the institution of marriage. If it is doing that, it would certainly be identifiable as archetypal, but I am not convinced that it is focused on establishing an institution. Contextually, it is explaining why a man would leave the closest biological relationship (with parents) to form a new relationship (with his wife).

The answer has been given in the preceding verses: the relationship between husband and wife has a stronger claim than biological derivation. A man may be biologically derived from his parents, but he is archetypally (ontologically) related to his wife. The husband/wife bond is more elemental, and it trumps the parental bond. They again become one flesh in reestablishment of the archetypal model. The narrator's statement does not refer to the emotional bond of love, but to the essential bond built into our nature.<sup>32</sup>

I am not suggesting that these elements have not been seen by past interpreters. Certainly the long held Reformed tradition of “federal headship” converges with this view in important ways. But perhaps at times this recognition of archetypal significance has been occluded by the pervasive attention to human origins. When questions about material origins dominate our thinking, we tend to see the above elements as connected to an individual, Adam, rather than to all humanity through its archetype. While it is true that both material and archetypal elements could be the intention of the text, the two need not be bundled together, though interpreters have often assumed that they must be bundled. My point is that we have to be willing to separate them as we examine whether they are both inherent in the claims of the text.

## Archetypal Role of Adam and Eve in the New Testament

Only a handful of New Testament passages address Adam and Eve, and we will deal with each one briefly. We will see that each one shows an interest in Adam and Eve as archetypes. The New Testament authors believe Adam and Eve to be real individuals in a real past (as do I), but the theological use that is made of them is archetypal.

*Acts 17:26.* On Mars Hill Paul confronts the Athenians about the “Unknown God” that they worship. He turns their attention to the Creator God and the fact that this God is noncontingent: Everything and everyone owes their existence to him, and he owes his existence to no one (*Acts 17:24–25*). In verse 26 Paul moves the argument from creation to history, a point that he introduces by stating that “From one man he made all the nations.”

If Paul were referring to Adam, we would expect him to use other vocabulary rather than “nations” to refer to all people. In that regard, his choice of the word “nations” (*ethnos*) is rather odd. In fact, however, here the word choice is key because the Old Testament does talk about one man from whom the nations came—and that is Noah through his three sons. Comparing Paul’s words to *Genesis 10:32*—“From these [the sons of Noah] the nations [Septuagint: *ethnos*] spread out over the earth after the flood”—we see that Paul’s statement could easily be seen as a paraphrase of what is stated in *Genesis 10*. If this is so, it is quite plausible that this verse could be a reference to Noah. If this is true, this verse could be removed from the discussion about Adam as the genetic/biological forebear of all humanity.

*Romans 5:12–14.* Here the text affirms that sin entered the world through one man and that death came through sin. It does not claim that humans were created immortal, only that humans are now subject to death because of sin. I have demonstrated above that being made from dust indicates that we were made mortal, subject to death. The opportunity for release from our natural mortality was provided by an antidote, the tree of life. Sin brought expulsion from the garden and loss of access to the tree of life. Therefore, sin doomed us to death—that is, with no antidote we would have no alternative but to succumb to our mortality, which was already ours naturally.

This text does not comment on how or when sin came to all and all sinned. While it articulates an idea of original sin, it does not work out the details. The archetypal nature of Adam is evident in two ways here: first, he is seen as a pattern of Christ; second, Adam represents all people in Paul’s treatment (through him all sinned). Adam and Christ are related as archetypal representatives.

The text does appear to claim a historical event, but nothing here necessitates that Adam was the first human being or that we all must be related biologically or genetically to Adam. Likewise, there is no suggestion of sin being passed through biological relationship (in contrast to the common view of seminal transmission). No claims are made about material origins. This important

section of Scripture, then, affirms the reality of sin and death entering human experience in an event and thereby implies a historical Adam. At the same time we should note that no scientific claim is made about biological/genetic relationship or material discontinuity.

*First Corinthians 15:22.* Death came through a man, and the solution to death comes through a man—that is, both Adam and Jesus were human. Since we all die “in Adam” the way that we are all made alive “in Christ,” we can presume that our circumstances in either case are not determined by biological descent but through the representation of the archetypes, Adam and Christ. Again we should note that in these verses there is neither a claim to genetic relationship to Adam nor any statement about material human origins.

*First Corinthians 15:45.* Here Adam is called the “first” man, but in the context of the contrast with Christ as the “last” Adam, it cannot be seen as a claim that Adam was the first biological specimen. Since Christ was not the last biological specimen, we must instead conclude that this text is talking about the first archetype and the last archetype. We might say that Adam was an initial archetype replaced by the ultimate archetype in Christ. It is insufficient to bring in biology simply because Christ was biologically descended from Adam. This is confirmed in the remainder of the passage, as it contrasts the natural and the spiritual. The archetypal element of dust is specifically explained as making the archetypal man earthly in comparison to the heavenly nature of Christ. It describes human nature.

The biblical point is to contrast and compare Adam to Jesus and our relationship to both. Paul makes no claims about genetic relationships of all people to Adam or about material origins—only that we share the “dust” nature of the archetype.

*Second Corinthians 11:3.* This verse implies that there was a historical Eve, but it refers to her archetypally as an analogy about how easily people may be deceived. No claims are made about genetic relationships or human origins.

*First Timothy 2:13–14.* Paul mines Genesis for an illustration to address the situation in Ephesus. He accurately reflects the textual data that Adam was formed first and Eve was the target of the deception. No claims are made about how humanity was formed, about genetic relationships, or the mechanisms or timing of material origins. Like all of the previous New Testament passages, Adam and Eve are used as archetypes to make a point about all of humanity, here providing an illustration of how a deceived woman can lead a man into error.

In summary, the New Testament can be seen to indicate that there was a historical point in time when sin and death became human realities. It is further clear that Adam and Eve were the principal parties in this real event in a real past. Even though the use made of Adam and Eve is archetypal, they are treated as real, individual persons. Having noted that, however, I have tried to demonstrate that no claims are made in the New Testament that all humans are biologically descended from Adam and Eve and therefore genetically derived from them.

I acknowledge that most Jews in the first century would have believed that all people were descended from Adam; but they also believed the earth was flat. I do not see any authoritative assertion of Scripture that all people are descended from Adam, and his material origin has no meaningful weight in Paul’s arguments.

Finally, pertinent observations about the comparison of the archetypes of Adam and Christ are instructive. Despite the fact of the virgin birth, Jesus was biologically and genetically human, yet he did not inherit sin. This suggests that sin is not passed biologically and genetically. Furthermore, the archetypal role of Jesus for humanity does not require his biological descent or ancestry with each individual human. If Adam’s archetypal role is comparable, we would see no need for it to be founded in biological descent.<sup>40</sup> In fact, Jesus is characterized by material continuity with the



rest of humanity (genetics)—at least in the sense that he is fully human as we are—but with spiritual discontinuity. This could suggest that humanity might be distinguished by a spiritual discontinuity even if there were material continuity.

## Literary Issues in Genesis 1–3 and Human Origins

When we consider the biblical view of human origins in the early chapters of Genesis, one of the key questions is whether or not Adam and Eve are presented in the text as the only humans on earth. This question has traditionally been raised in connection with Genesis 4, where Cain is afraid that “whoever finds me will kill me” (Gen. 4:14) and where Cain not only marries a wife but later builds a city (v. 17)—all more easily explained if there are other people who already exist.

*The toledoth transition between the first and second account.* An important factor in this question that has not been adequately explored concerns the relationship of the first account (Gen. 1:1–2:3) and the second account (Gen. 2:4–3:24). Critical scholarship has long considered these two accounts as competing traditions from different sources that at a late stage in the redactional process came to be incongruently next to each other with unresolved tensions. Traditional interpretation considered the second account synoptic to the first account as an explanation giving more detail of the sixth day.

I propose a third option as viable, given its considerable explanatory power, that being that the second account might be considered a sequel to the first. If this is so, the second account is not detailing the sixth day, but identifying a sequel scenario, that is, recounting events that potentially and arguably could have occurred long after the first account.

In such a case, Adam and Eve would not necessarily be envisioned as the first human beings, but would be elect individuals drawn out of the human population and given a particular representative role in sacred space. The first account would simply refer to the creation of humanity as a corporate species with no details of mechanism or time span. This would, incidentally, correlate to the standard ancient Near Eastern view, where the question of human origins is discussed in corporate terms.

Nevertheless, we would not adopt a corporate interpretation of Genesis 1 just because the ancient Near Eastern accounts did it that way. Instead, we should seek out internal literary evidence for or against the interpretation. This evidence can be developed from an investigation of the common narrative transitional formula in Genesis: “This is the account of . . .” (*’elleh toledoth*). This *toledoth* formula serves at times to introduce sections that are historically synoptic, but the formula also functions as an introduction to the next sequential time period (see chart).

The transitions sometimes join two genealogies, sometimes two narratives, and sometimes move from genealogy to narrative or narrative to genealogy. The transition in Genesis 2:4 is from narrative to narrative, and the only other transition of that type is Genesis 6:9. In 6:9 the two narratives are sequential, not synoptic. In fact, we should note that all five examples of synoptic relationship occur when brothers are the linked subjects (e.g., Cain/Seth, Ishmael/Isaac, Esau/Jacob).

<b>Genesis Reference</b>	<b>Type</b>	<b>Relation</b>
5:1	Genealogy→Genealogy	synoptic
6:9	Narrative→Narrative	sequel
10:1	Narrative→Genealogy	sequel
11:10	Narrative→Genealogy	synoptic
11:27	Genealogy→Narrative	sequel
25:12	Narrative→Genealogy	sequel
25:19	Genealogy→Narrative	synoptic
36:1	Narrative→Genealogy	sequel
36:9	Genealogy→Genealogy	synoptic
37:2	Genealogy→Narrative	synoptic

These observations would suggest that the most natural interpretation of the text would see the second account as reflecting a scenario later than the first account and that the second account is not therefore a discussion of what transpired on the sixth day. That actually resolves a long-standing problem, as interpreters have struggled to figure out how all the events of the second account could possibly have taken place in a twenty-four-hour period. This problem was among those cited as evidence for both the Day-Age Theory (in which it was contended that twenty-four hours was insufficient for all of chapter 2 to transpire) and the Source Theory (in which the two accounts were viewed as competing and contradictory).

The conclusion drawn from this literary analysis is that the text is not making an overt claim that Adam and Eve should be identified as the people in the first account if it presents the second account as sequential to the first. I would hasten to add that neither does it rule out that the first account could be talking about Adam and Eve alone or include Adam and Eve as part of a larger group. It simply does not address the issue. As a result, one could easily maintain that the opening chapters of Genesis do not make a claim as to whether or not Adam and Eve were the first people.

*Genesis 2:5–6.* As in Genesis 1:2, Genesis 2:5–6 sets up a preliminary scenario. This establishes the “before” picture that gives us direction into the passage and that we expect to be resolved by the time we reach the end of the account.

Genesis 1:2 describes an inchoate cosmos that is not yet ordered or functioning as sacred space or as the home in which people can dwell in relationship with their Creator. It concludes with God taking up his rest and rule in the cosmos in which he has brought order and installed people made in his image with sacred space functioning on their behalf.

Genesis 2:5–6 describes an inchoate terrestrial realm where there is no productivity under the control of humanity. Domesticated crops are not yet present, and neither rain nor irrigation is available. This description does not pertain to a prior material ecology any more than Genesis 1:2 does. Instead, it reflects an old world science contrasting non-order to order. Since a third inchoate situation is introduced in Genesis 2:18 and resolved by the end of the chapter by means of the activities of verses 18–24, the inchoate situation described in Genesis 2:5–6 should be seen as resolved in 2:7–17.

Interpreters who have been inclined to see the second account as synoptic have struggled with the problem that Genesis 2:5–6 does not offer a description of the situation at the beginning of day 6. As a sequel, it can stand on its own as offering an introduction to the issues that are going to be addressed in the account and will stand in sharp relief against the situation at the end of the account. This being the expectation, we note that the account does not end with rain or with human irrigation. As in the first account, however, all of the identified non-order is not going to be resolved here; rather, the first steps are going to be taken to resolve it. Among the negations identified in the inchoate situation is the lack of “sprouting” (at least of certain classes of food-producing plants), the absence of humans to work the ground, and the apparent inadequacy of watering (“springs” rather than rain?). The conclusion I drew in my Genesis commentary will suffice here to make the point:

The thrust of verses 5–6 in an interpretive paraphrase is as follows: “No shrubs or plants were yet growing wild (for food) because God had not yet sent rain; and people were not yet around to work the ground (for irrigation), so the regular inundations [of river systems] saturated the ground indiscriminately (thus no food was being grown).” A creation text from the city of Nippur sets the scene for creation in a similar way by saying that waters did not yet flow through the opening in the earth and that nothing was growing and no furrow had been made.

As resolution, God forms humanity with the task of working, causes plants to sprout in the garden, and waters the ground. Even as these actions address the initial situation, each takes a different tack and offers unexpected resolutions. Humans are given the task of working in sacred space rather than working the ground. The classes of plants mentioned in Genesis 2:5 are not sprouting in the garden; instead, it is trees of every sort in sacred space. Finally, the watering is not accomplished by rain, but by a water system flowing from God’s presence.

Consequently, we can see that God’s initial resolution of the inchoate situation is not by introducing a whole new terrestrial ecosystem. Instead, he provides sprouting food and a watering system to chosen human beings serving in sacred space. On the premise of relationship with God in sacred space, the eventual resolutions will be expected to come about.

The main point to be made in this discussion is that through these observations we can see that the second account introduces further inchoate situations, each to be addressed in context. It is not addressing the inchoate situation of the first account, therefore commending the view that the second is a sequel account, not a synoptic account. With this evidence that the two accounts are better understood as sequential, the claim that Genesis 2 deals with the first two people or the only people is weakened.

In turn, if Genesis does not make the claim that Adam and Eve are the first and only people and does not give an account of material human origins, then there is no biblical claim concerning the genetic role of Adam and Eve or of material human origins. If the Bible makes no such claims, then the Bible will not stand opposed to any views that science might offer (e.g., evolutionary models or population genetics), as long as God is not eliminated from the picture.

## Continuity, Discontinuity, and Genetics

Three discrete questions can now be identified:

- Are Adam and Eve real people in a real past?
- Are Adam and Eve the first human beings and the ancestors of all?
- Is there material discontinuity between Adam and other species?

If #2 is answered affirmatively, then #1 is true, and #3 should be answered affirmatively as well. If #3 is answered affirmatively, then likely both #1 and #2 would be considered true. Those have traditionally been clustered affirmations. What is important to note, however, is that if #1 is answered affirmatively, #2 and #3 could be true but are not necessarily true. This is to say that if the Bible makes an overt claim to #1 (as I believe it does), it is not necessarily making a claim concerning #2 and #3.

A legitimate, close reading of the texts at least allows for, and in some cases would favor, dissociating the scientific claims of #2 and #3 from the biblical claims of #1. Furthermore, with #1 alone, adequate support can be given for the origination of sin and death in Adam. Consequently, someone who answered only #2 and #3 negatively could not be accused of rejecting the Bible or the faith. This does not mean that such a person should accept the scientific consensus uncritically, but interpreters would not be in a position to say that specific biblical texts or theology in general demand the rejection of the scientific consensus. Any science must be weighed on its merits, but the Bible would not predetermine the outcome.

## Hypothetical Scenario

I will now present a hypothetical scenario that someone could adopt if they were persuaded by the modern scientific consensus that humans are the product of a process of change over time from a common ancestor (i.e., any of several evolutionary models) by a variety of mechanisms known and unknown, and that our genetic heritage is diverse (rather than from one human pair), and who further were convinced that such a process has been divinely guided.

I do not present this as a hypothesis that I have adopted (as I continue to await further scientific clarity and support), but as an example of how one could accept all of the biblical and theological affirmations, including a personal Adam and Eve as real people in a real past, and still opt for the scientific consensus in matters pertaining to human origins. Such conclusions are informed by a close reading of the Bible that takes Genesis seriously as a piece of ancient literature rather than being dismissive of the biblical text.

If someone who takes the Bible and theology seriously were to believe that evidence supports the idea that hominids evolved, it would be essential for them to understand evolution as a guided process by a Creator God (e.g., something like Evolutionary Creation). Sometime in that process—perhaps at that moment that geneticists refer to as the bottleneck when humanity nearly became extinct—God undertook a special act of creation that gives the entire human population the image of God. This would constitute a creative act (giving a role and a function) and represents a gain that could not be achieved through evolution.

Even after being endowed with the image of God, people are dying (due to their inherent mortality, subjection to death—formed from dust). Although engaging in activities that we would label sinful, they are not being held accountable (based on Romans 5:13, “sin is not charged against anyone’s account where there is no law”). They would therefore be in a state of original innocence

(wrong not held against them or punished) rather than a state of original righteousness (no wrong being committed). Accountability would not come until the fruit of the tree of the knowledge of good and evil was eaten.

Sometime later, perhaps tens of thousands of years, individuals whom the Bible designates as Adam and Eve are chosen by God as representative priests in sacred space. As representatives for all humans living then and to come after, their role offered hope to all for the possibility of life in God's presence. In this view, though people outside the garden were still dying and were not yet accountable, God provided the potential for wisdom and life through Adam and Eve: archetypes and representatives of all humanity.

A comment about the "good"-ness of creation is necessary here pertaining to this hypothesis. As I have proposed elsewhere, if Genesis 1 is viewed as an account of functional origins rather than as an account of material origins, when God sees repeatedly that "it was good," he is indicating that it is ready to function as sacred space (established by observing what is not good). In this case "good" is not indicative of perfection (either moral or design), but of order. The presence of humans who were subject to an inherent mortality and were not yet accountable does not nullify this order. Placing Adam and Eve in sacred space provided an opportunity for greater order to be established, but that opportunity was forfeited when they sinned and disorder entered the cosmos. Their sin and the punishment for it do not mean that creation was no longer good.

When Adam and Eve ate from the tree of the knowledge of good and evil, they chose to see themselves as the source and center of order, life, and wisdom ("you will be like God" [Gen. 3:5] and "they have become like God" [3:22 paraphrased]). In that choice, they brought disorder into the world, gained accountability for themselves and all humans through them (beginning of sin), and lost the hope of life for themselves and all humanity (so we are all doomed to death through that sin). They were cast out of sacred space and out of relationship with God. They and all humanity with them are now in sin and subject to death because, having lost access to the antidote, they are doomed to their inherent mortality. Accountability and disorder have become the lot of humanity.

In this scenario Adam and Eve are real individual persons living in a real past, but they are neither the first people nor the biological/genetic ancestors of all. Furthermore, in this scenario neither Adam and Eve specifically, nor humankind in general, is brought about in an act of material discontinuity. Nevertheless, (accountability for) sin and death come to all humans through them.

## **Summary and Conclusion**

I have been building the case that even though Adam and Eve are portrayed in the text as real, individual persons in a real past, the main interest of the text in both testaments is to portray them as archetypes for all of humanity. I have further proposed that the "making" accounts in Genesis 2 are part of the archetype profile and that, as such, they contribute neither to our understanding of the material origins of the individuals, Adam and Eve, nor to the material origins of humanity.

The profile of Adam and Eve as individuals is important for the theological points about the human experience of sin and death. Those theological points do not require the scientific conclusions that Adam and Eve were the first people, the only people, or the progenitors of the entire human race. They are our first parents archetypally even if they may not be so materially.

It has been common for many Christians to believe that human evolution is a godless alternative to origins. On this we must be clear: Godless people are going to choose evolution as their origins model, but evolution is not inherently godless; godless people are going to configure

evolution as purposeless, but even the immensely complex process of evolution could be guided purposefully by an infinitely powerful and sovereign God.

When people find the current scientific consensus persuasive (e.g., that humanity, along with all other species, evolved from a common ancestor or that humanity today derives from a diverse genetic stream rather than from one initial couple), they are not of necessity thereby denying biblical claims. In the interpretation that I have presented, the Bible makes no claims about the mechanisms of human origins or ultimate genetic ancestry. Indeed, I contend that we would not expect it to do so because the Bible is not revealing science, it is revealing God. In the pages of Scripture I cannot find one example of God giving revelation about the mechanisms and processes of the ancient world that everyone in the ancient world did not believe. God appears to be content to communicate in terms of what the Israelites believed about the material cosmos. We dare not read our science between the lines lest we intrude on the authority granted to the communicators in the Israelite context.

Although the Bible is not making scientific claims, it sometimes makes historical claims that carry implications concerning what happened at some point involving operations in the natural world (such as the plagues or the parting of the Red Sea). As such it makes claims that would have had an empirical foundation. In these, we must first notice that the text affirms only that God did those things; it does not identify the mechanisms by which God did them. If someday we were to be able to identify natural cause and effect explanations for those, God's role would not be diminished. Nonetheless, some acts attributed to God or Jesus will always defy natural explanations.

But in the case of the “making” accounts of Adam and Eve, I am claiming something different. I am proposing that the text not only makes no scientific claim about material human origins, but is also making no historical claim about material human origins (recall that inerrancy is related to claims, i.e., affirmations of the text). The historical Adam was made from dust in the same way that any of us are made from dust; he and we are mortal. These biblical statements relate to the archetypal profile.

The historical profile of Adam and Eve becomes important, not in the “making” accounts, but in the fall account: sin and death come to all of us through the historical actions of Adam and Eve. Even here this real event in a real past becomes significant archetypally. The theology is important, but the theology is built on the archetypal profile—we are all represented in Adam and Eve.

This view adheres to inerrancy in that it is distinguishing between claims that the Bible makes and, more importantly, to claims it does not make. It accepts the existence of a historical Adam and Eve and honors the doctrine of original sin associated with a historical event, though it works with an alternate model of the transmission of original sin. It does not promote evolution nor accept evolution, though the view offers a biblical and theological interpretation that would allow us to accept evolution if we are so inclined.

Finally, this view offers a path to integrating faith and science as it suggests through a close reading of Scripture as an ancient text that the Bible may not be making the scientific claims that many have thought it did.<sup>10</sup>

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<sup>10</sup> Walton, J. H. (2013). [A Historical Adam: Archetypal Creation View](#). In M. Barrett, A. B. Caneday, & S. N. Gundry (Eds.), *Four Views on the Historical Adam* (pp. 89–118). Grand Rapids, MI: Zondervan.

# #3 - A HISTORICAL ADAM: OLD-EARTH CREATION VIEW

C. JOHN COLLINS

*In this chapter I argue that the best way to account for the biblical presentation of human life is to understand that Adam and Eve were both real persons at the headwaters of humankind. By “biblical presentation” I refer not only to the story in Genesis and the biblical passages that refer to it, but also to the larger biblical story line, which deals with God’s good creation invaded by sin, for which God has a redemptive plan; of Israel’s calling to be a light to the nations; and of the church’s prospect of successfully bringing God’s light to the whole world. That story concerns the unique role and dignity of the human race, which is a matter of daily experience for everyone: All people yearn for God and need him, must depend on him to deal with their sinfulness, and crave a wholesome community for their lives to flourish.*

*I argue that the nature of the biblical material should keep us from being too literalistic in our reading of Adam and Eve, leaving room for an Earth that is not young, but that the biblical material along with good critical thinking provides certain freedoms and limitations for connecting the Bible’s creation account to a scientific and historical account of human origins.*

## Introduction

Traditionally Christians, like the Jews from whom they arose, have read the story of Adam and Eve in the opening chapters of the Bible as describing the first pair of human beings, from whom all other humans descend. They have also taken the account of the “disobedience” in Genesis 3 as narrating the origin of all human sin: that is, these readers have supposed that God first made humans morally innocent, and that the events of Genesis 3 transformed the moral condition of Adam and Eve and thus of all humankind after them.

This is a standard belief in the ancient Christian writers, whether from the East or West, even when they do not have the same way for describing exactly *how* the disobedience of Adam and Eve transformed the human moral condition. Of course, their own surrounding cultures often disputed their beliefs! Today there are also voices, both outside the church and within it, that raise questions for us as to whether we should hold this ancient belief any longer. First, there is the age-old objection: “How could anything someone else did, long ago, have any bearing on my life here and now? Even if Adam and Eve really lived and disobeyed God and were booted out of the garden: What of it? Why should that affect anything important about *me*?”

Second, there is the widely acknowledged conclusion that the material in Genesis 1–11 closely parallels what we find in other ancient stories, particularly those from Mesopotamia. Someone might say, “If we do not treat these other stories as history, why should we treat Genesis any differently? In fact, what makes us think that the Bible writers themselves meant to produce anything different from those other stories?”

Third, we have the dominant theories of the modern sciences. The astrophysicists tell us that the universe began with a “big bang” about 13–14 billion years ago. This is or is *not* a problem, depending on whether we think Genesis gives a time line. Now, my own view of the “days” in Genesis 1 is that they are God’s workdays, analogous to human workdays and not necessarily the first six days of the whole universe. Genesis 1 presents God *as if* he were a workman, going through his week, so that we can celebrate the creation as a magnificent achievement. This means that how long those days were, or how they relate to time as we know it—let alone how they might match what we find in the fossils—is not important for Genesis. For this reason I do not think the Bible specifies a time line, and thus I do not object to the standard theories of cosmology and geology.

A more serious challenge comes from the science of evolutionary biology, with its narrative (as some construe it) of how human beings arose through a purely natural process of evolution. Further, studies of DNA have seemed to imply that we cannot get the genetic diversity we find in the human population if humanity began with only two people. Many wonder whether the different varieties of humankind actually arose in separate places, independently of each other—thus implying that we are not a unified kind.

In this brief space I offer some reasons for retaining a version of the traditional Christian belief about Adam and Eve. I argue that this position does the best job of accounting for not only the Bible’s overarching story line, but also our own everyday experience as human beings—an experience that includes sin as something that must be forgiven by God and by our fellow human beings; and sin as something that we must struggle against, because it defiles and disrupts a good human life.

Here is my plan. First, I consider the word “history,” to be sure that we know what we mean by it. Second, I mention briefly a few “preliminaries” for Genesis 1–11. Third, I take us on a quick tour of the biblical story line, to see how Adam and Eve are woven into its very shape. Fourth, I examine some aspects of general human experience that show why the biblical story is the only thing that makes sense of the world. Finally, I offer some guidelines and some freedoms and limitations for our thinking about our first parents.

## 1. What Exactly Is “History”?

The first thing we must do is nail down what meaning we intend to use for that troublesome word “history.” If you and I do not mean the same thing by the words we use, we will be talking past each other; and then we will have Inigo Montoya (in *The Princess Bride*) chiding us, “You keep using that word. I do not think it means what you think it means.”

That happens with this word: a text might be “historical” by one person’s meaning, and “not historical” by someone else’s. For example, some scholars say that an account is historical *only* if we tell it in its proper sequence and leave out imaginative elements. Some say that “history” applies only to the kind of thing that trained historians write. Others limit the word “history” to accounts that leave out all reference to actions of God or the gods. Now, this last group does not necessarily deny that God or the gods took part in the story—and this means they could end up saying, “This narrative is not *historical*, but that doesn’t mean that it didn’t happen”! This is confusing, and we should do better than that.

I have mentioned that some think that “history” leaves out the imaginative elements; that is, if a story is historical, it invites a literalistic approach to interpretation. In fact, this is a point of agreement between many strict young-earth creationists and many who reject historicity as a proper category at all for Genesis. For example, Douglas Kelly, a young-earth creationist, tells us,



“the text of Genesis is clearly meant to be taken in a literal, historical sense.” On the other hand, Peter Enns, whom we can call an “evolutionary creationist,” makes the same equation: he writes of “a strictly literal/historical reading of Genesis.”<sup>9</sup>

But there is nothing in the meaning of the word “history,” nor in the principles of human behavior, that requires this tight connection between historicity and literalism of interpretation. Language is a means of social interaction, and we typically gear our level of expected literalism to the communication event we are engaged in. When a word or sentence is *about something in the actual world*, linguists call this *referring*. A careful speaker or writer chooses how to describe the person, thing, or event, with an eye toward conveying a dispositional stance toward it: e.g., to enable the audience to admire, or despise, or mourn over the referent.

In ordinary English a story is “historical” if the author wants his audience to believe the events really happened. That is, “history” is not really a *kind of literature* (or *genre*); it is a *way of referring*, of talking about events in the real world. This means that a variety of literary types can recount “history,” and each type uses its own conventions for doing so. Indeed, a *poem* can be historical. For example, Psalm 105 recounts some of the events in Exodus, mentioning only eight of the ten plagues and with a slightly different order. But that hardly nullifies the historicity of Psalm 105.

Further, some literalistic critical scholars have found tension between the ways in which Judges 4:17–24 and 5:24–30 describe the death of the Canaanite general Sisera. Surely, when we recognize that Judges 5 is a *song*, whose purpose is to celebrate Israel’s victory as an expression of God’s favor to his people, we can see that Judges 5:25–27 portrays the killing of Sisera *as if* it were a great triumph, a humiliation of a great warrior as he dies at the hands of a tent-dwelling woman. The imaginative description does not compete with the prose telling in Judges 4, and to fail to see this is clumsy. In the same vein, Matthew 21:33–46 (cf. Mark 12:1–9; Luke 20:9–19) is a “parable” that presents a highly idealized telling of Israel’s story, highlighting their repeated rejection of the divinely appointed representatives (which sets the pattern for their rejection of Jesus, the “son”). The idealization does not obscure the audience’s ability to recognize the story and get the point (vv. 45–46).

Thus we can say that an author is making “historical” *claims* when he purports to refer to persons and events. An account has “historical” *value* if the persons and events are real and the intended dispositional stance is appropriate.

So then, I will use the ordinary language sense of “history,” with the understanding that the following principles hold:

1. “historical” is not the same as “prose,” and certainly does not imply that our account has no figurative or imaginative elements;
2. “historical” is not the same as “complete in detail” or “free from ideological bias,” neither of which is possible or desirable anyhow;
3. “historical” is not necessarily the same as “told in exact chronological sequence” unless the text claims that for itself.

## 2. Preliminaries: Genesis 1–11 Is a Unity

### a. Genesis 1–11 Has Parallels in the Ancient Near East

An attentive reader intuitively sees a transition between Genesis 1–11 and the rest of Genesis. Even though there is no grammatical shift, nevertheless the narrator slows down in the Abraham

story: he has been covering large stretches of time in brief narratives, whereas now he is taking more narration time to cover less elapsed time in more detail.

Stories from other cultures in the ancient Near East further confirm our intuition. Although there are important materials from *all* the cultures of the ancient Near East, those most directly pertinent to Genesis 1–11 come from Mesopotamia. Specialists on the ancient Near East find the most promising parallels with Genesis 1–11 to include the Sumerian King List (c. eighteenth century bc), the Atrahasis Epic (c. eighteenth century bc), and the Eridu Genesis / Sumerian Flood Tale (c. 1600 bc). (Another story, Enuma Elish, or the Babylonian Epic of Creation, once seemed a promising source for comparisons as well, and some biblical scholars still turn to it; Assyriologists, however, seem less willing to endorse much of a comparison than formerly.)<sup>15</sup>

Kenneth Kitchen lays out the connections among these sources in the table “Genesis 1–11 and Writings from Mesopotamia.”

<b>Sumerian King List</b>	<b>Atrahasis Epic</b>	<b>Eridu Genesis</b>	<b>Genesis 1–11</b>
1. Creation assumed; kingship came down from heaven	1. Creation assumed; gods create humans to do their work	1. Creation; cities are instituted	1. Creation (Gen. 1–2)
2. Series of eight kings in five cities	2. Noisy humans alienate deities	2. [Alienation]	2. Alienation (Gen. 3), genealogies (Gen. 4–5)
3. The flood	3. The flood; ark	3. The flood; ark	3. The flood; ark (Gen. 6–9)
4. Kingship again; dynasties follow, leading to—	4. New start	4. New start	4. New start; then genealogies, down to—
5. “Modern times” implied)	(5. “Modern times,” implied)	(5. “Modern times,” implied)	5. “Modern times”

There is much to say about the connections and about the ways in which Genesis 1–11 is both similar and dissimilar to these other sources, but space forbids. The point of interest for now is that this overarching pattern from Mesopotamia provides a literary and ideological context into which Genesis 1–11 speaks; and it does so *as a whole*.

So what does this parallel tell us about the function of Genesis 1–11? The Mesopotamian sources provide what Assyriologist William Hallo calls “prehistory”—the period of human existence before there are any secure written records—and “protohistory”—the earliest stages for which there are records. Further, it appears that the Mesopotamians aimed to accomplish their purpose by founding their stories on what they thought were *actual events*, albeit told with a great deal of imagery and symbolism. As Kenneth Kitchen, an Egyptologist, put it:

As to definition [for the flood story], myth or “protohistory,” it should be noted that the Sumerians and Babylonians had no doubts on that score. They included it squarely in the middle of their earliest historical tradition, with kings before it and kings after it.

The ancient Near East did not historicize myth (i.e., read it as imaginary “history”). In fact, exactly the reverse is true—there was, rather, a trend to “mythologize” history, to celebrate actual historical events and people in mythological terms. The ancients (Near Eastern and Hebrew alike) knew that propaganda based on real events was far more effective than that based on sheer invention.

While Kitchen uses the term “propaganda” for the authors’ purpose, we might use the more neutral observation that these stories serve as the front end of the worldview story for Mesopotamian culture.

Our *worldview* describes the way we lean into life: how we relate to God, to others, and to the world around us. It is how our deepest self answers the big questions, “Where did I come from? Why am I here? and Where am I going?” Our worldview comes to us through the Big Story we—and the communities we belong to—embrace. The story enlists the members of a community to play a meaningful part in the story as it unfolds. If the worldview story is well told, it captures the imaginations of those who own it, thereby driving them on and holding their loyalty.

Some think that this phenomenon is a feature primarily of premodern and prescientific peoples, but they are mistaken; modern western culture does just the same. For example, the prominent evolutionary biologist George Gaylord Simpson (1902–84) drew this conclusion from his study of evolution: “Man is the result of a purposeless and natural process that did not have him in mind.” This is in fact a story, albeit a bleak one, that claims to put our lives in perspective. Actually, if it is the true story of the world, it sounds like a heightened version of what Macbeth described in Shakespeare’s play, once he discovered that Lady Macbeth had committed suicide: “Life’s ... a tale told by an idiot, full of sound and fury, signifying nothing.”<sup>22</sup>

How did this work in Mesopotamia? Consider the way the Epic of Atrahasis tells us how humankind came to be created: there were the senior gods and the junior gods, and the junior gods were doing all the hard physical labor. These junior gods got tired of the work and went on strike, and thus the gods made humankind to take over this hard labor. It is likely that this kind of story explains to the average Sumerian what he is here for—to take his place in a stratified society, and to do the work his superiors tell him to do. That is, this way of telling the story preserves the social order.

The Mesopotamian stories include divine action, symbolism, and imaginative elements. The purpose of these stories is to lay the foundation for a worldview without being taken in a “literalistic” fashion. Consider, for example, the Sumerian King List. It begins, “When kingship was lowered from heaven, kingship was (first) in Eridu.” There are five dynasties, in the five leading cities of Sumer; then the flood “swept over,” and afterward kingship is lowered again from heaven. There is little reason to doubt that the author thought he was writing about real people and real events. Nevertheless, he tells us that the kings before the flood ruled for an enormous amount of time, ranging from 18,600 years (the last king before the flood) to 43,200 years. After the flood,

the reigns shorten, but are still quite long—e.g., 1,200 years, 690 years, and so on; they show a shortening trend until Gilgamesh, who reigned for 126 years, and his son, who reigned for 30 years (the first reasonable number).

No one really knows what to make of the extraordinarily high numbers. Perhaps there is a rhetorical device being employed, to which we are not (yet) initiated: for example, involving base 60 or 360. There are further questions as to whether the dynasties mentioned in the list were strictly sequential; some seem to have been in parallel. No one knows whether the compiler of the list was aware of this.

But our (and presumably the Babylonians') inability to take these numbers and the sequences "literally" does not entitle us to call the list "unhistorical." It is better to say that it has a historical core and that this core is presented with various rhetorical purposes in mind that go beyond the simple conveyance of information—even if we do not know all the devices to achieve that rhetorical purpose. The genre conventions require that we be careful in discerning what the historical referents are.

So it is fitting to find in Genesis an alternative front end to the worldview story, which aims to tell the story the right way. The biblical alternative story certainly does correct many elements of the other stories available (and probably attractive) to Israel: Genesis tells of one true God, who alone made and rules the heavens and the earth and all that is in them. In this story there is nothing left for any other god—if it even exists—to do. Further, the other cultures had "Wisdom Literature," and this presupposes that there is coherence to the world; Genesis provides the true explanation for this, namely, that the one good God made it all as the right kind of place for human beings to live and love and serve.

Moreover, far from humankind being made to relieve God of work he did not like doing, it is dignified with his image (Gen. 1:27) and with the task of ruling the creation in a wise and benevolent way (vv. 26, 28). Human "work" at the beginning was to enjoy caring for Eden and to spread its blessings throughout the world. The painful toil people now experience is not a proper part of the creation; it results from human disobedience, which requires divine redemption: Genesis 5:29 explicitly links later generations' "painful toil" (Heb. *itstsâbôn*) to God's "curse" that followed the disobedience of Adam and Eve (Gen. 3:16, 19).

Further, Genesis appears to trace all humankind back to a common source. That is, the genealogies of Genesis 5 and 10 present Adam and Eve as the ancestors of a wide range of "families of the earth"—in fact, *all* the families so far as the audience is concerned. By affirming human unity in Adam and Eve, Genesis lays the foundation for Israel's calling to bring light to the world. When God called Abram in Genesis 12:2–3, he promised,

I will make of you a great nation, and I will bless you and make your name great, so that you will be a blessing. I will bless those who bless you, and him who dishonors you I will curse, and in you all the families of the earth shall be blessed.

That is, God called Abram, not simply in order to bless him and his family, but in him to bring blessing to the whole world. Abram's family, Israel, was to be the vehicle of God's light to the Gentiles, as they lived faithfully in God's covenant.

This story *should* also foster a respect for common human dignity in those who believe it—though we must admit, not everyone who has *professed* such belief has shown this respect. For example, God does not endorse a stratified society for his people, treating people differently depending on their social or economic status (cf. Lev. 19:9–18); even slaves are human beings.

The point to take away is this: We have gained a great deal when we notice that Genesis really does have parallels with the stories that come from other ancient Near Eastern cultures. One of these gains is to realize that “history” is an appropriate category for such a tale; another is to recognize that no one expected the stories to be read in a thoroughly literalistic fashion.

### *b. Genesis 1–11 Is a Unity on the Literary Level*

Certainly the parallels between Genesis 1–11 and these Mesopotamian stories argue that we should read these eleven chapters together. Another argument for the propriety of reading them together comes from the literary and linguistic links between pericopes within them.

Well-known links for the whole of Genesis 1–11 include those between Adam and Noah, presenting Noah as a “new Adam” (compare Gen. 9:1 with 1:28). Further, there are clear links between Genesis 1 and 5, such as 1:26–27 and 5:1–5 (the life of Adam), and between Genesis 4 and 5, such as 4:25–26 and 5:3–11 (Seth and Enosh). There may be a link between the genealogy descended from Cain (4:17–22) and that from Seth (5:6–32), especially in the names Enoch, Methushael/Methuselah, and Lamech (cf. 4:18 with 5:18, 21, 25), although this is uncertain.

Genesis 9–11 are coherent with the previous pericopes, since these chapters record the sequel to the Great Flood, with the descent of various peoples from the family of Noah (cf. 10:1), as linked by the genealogies (cf. 11:10, picking up the line of Shem), with 11:10–19 paralleling 10:21–25 (through Peleg), and 11:20–26 bringing the line down to Abram, Nahor, and Haran (who, with their descendants, will feature in the rest of Genesis).

Within Genesis 1–4 there are also clear linkages. First, Genesis 2–4 are commonly assigned to the J-source, with a few redactions; their overall unity is not controversial.<sup>31</sup> Second (see below), Genesis 2:4–25 serves to elaborate the sixth “day” of Genesis 1. Third, the common assertion that the P creation story (Gen. 1) is free of anthropomorphisms is mistaken; this story actually depends on an anthropomorphism, namely, the portrayal of God as one who goes through his work week and enjoys his Sabbath rest.<sup>33</sup> Genesis 2 contributes its own anthropomorphism to this pattern, depicting God as if he were a potter “forming” the first man (2:7) and a worker who “builds” the first woman (2:22, ESV margin).

Finally, several verbal links show that whatever separate origins the individual pericopes might have had, they have been edited in such a way as to exhibit coherence. For example, in 1:28 we read, “And God *blessed* them. And God said to them, ‘Be fruitful and multiply.’ ” In Genesis 3 the “blessing” (*brk*) has turned to “curse” (*'rr*), the proper antonym. And whereas the blessing was for them to *multiply* by having children, after their disobedience God said to the woman that he will “surely *multiply* your pain in childbearing”—that is, the arena of blessing was turned into one of pain and danger. The genealogical chapter 5 (in v. 29) also refers to God’s “curse” on the ground (3:17): “... and [Lamech] called his name Noah, saying, ‘Out of the ground that the Lord has *cursed* [*'rr*], this one shall bring us relief from our work and from the *painful toil* [*itstsâbôn*, cf. 3:16, 17] of our hands.’ ”

Further, three “enigmatic” first person plurals, by which God addresses “us,” appear through Genesis 1–11, namely, 1:26; 3:22; and 11:7. Many suppose that these (or at least the first) are God addressing his angelic council, although I judge the best explanation to be a “plural of self-address.” The specific conclusion here does not matter for my purpose; the point is that this is a distinctive feature of this stretch of material, from supposedly separate sources.

Once we recognize how Genesis 1–11 is integrated into the whole flow of the book of Genesis, and how these chapters parallel basic worldview-shaping materials from Mesopotamia, it is no

surprise to find that whoever put these chapters together did so in such a way that they display their unity at the literary and linguistic level.

### *c. Genesis 1–11 Sets the Stage for Genesis 12–50*

The purpose of Genesis is to identify the people of Israel, who followed Moses, as the heirs of God's promises to Abraham. We find in Genesis 12 that God called Abraham so that his family would be the vehicle of blessing to "all the families of the earth"—and, since Genesis 10 recounts the various "families" (or "clans," Heb. *mishpâkhôt*) of the earth, this means to all Gentile peoples everywhere. So Genesis 1–11 clarifies that the God who has called Abraham is in fact the one true God, the Maker of heaven and earth, for whom all humankind yearns.

## **3. The Biblical Story Line**

Now we can consider whether the Bible presents Adam and Eve as "historical" persons. How would we answer that, especially since we are wary of being overly literalistic? I have proposed three basic criteria:

1. *How does the person or event impact the basic story line?* I contend that the biblical authors were self-consciously interpreting their world in terms of an overarching worldview story. Does treating the persons or events as "merely symbolic" distort the shape of the story?
2. *How have other writers, especially biblical ones, taken this person or event?* Any notion of biblical authority requires me to respect what biblical writers see; common sense requires me to check what I see against what others see, especially those who are closer to the original time and culture than I am.
3. *How does this person or event relate to ordinary human experience?* The biblical writers, like other authors from the ancient world, were trying to enable their audience to live in the world as they found it. There are many intuitions we all share, such as our craving for God, our need for forgiveness, and our yearning for human community governed by love and justice. Most cultures tell stories to give a historical reason for these needs, and some explanation for how they can be met, mollified, explained away, or denied. The biblical approach to these rings true.

In the past few decades, many theologians have come to realize that the Bible has an overarching story line, which unifies all the different parts. And that story line serves as the Big Story of the world—a Big Story that tells us who we are, where we came from, what is wrong, and what God is doing about it. This is why "history" matters: Biblical faith is a narrative of God's great works of creation and redemption, and not simply a list of "timeless" principles.

And what is that story line? Here is one way to summarize it:

The Old Testament is thus the story of the one true Creator God, who called the family of Abraham to be his remedy for the defilement that came into the world through the sin of Adam and Eve. God rescued Israel from slavery in Egypt in fulfillment of this plan, and established them as a theocracy for the sake of displaying his existence and character to the rest of the world. God sent his blessings and curses upon Israel in order to pursue that purpose. God never desisted from that purpose, even in the face of the most grievous unfaithfulness in Israel.

This overarching story serves as a grand narrative or worldview story for Israel: each member of the people was to see himself or herself as an *heir* of this story, with all its glory and shame; as

a *steward* of the story, responsible to pass it on to the next generation; and as a *participant*, whose faithfulness could play a role, in God's mysterious wisdom, in the story's progress.

The New Testament authors, most of whom were *Jewish* Christians, saw themselves as heirs of the older story and as authorized to describe its proper completion in the death and resurrection of Jesus and the Messianic era that this ushered in. These authors appropriated the Old Testament as Christian Scripture, and they urged their audiences (many of whom were *Gentile* Christians) to do the same. There is debate over just how the New Testament authors used the Old Testament as Scripture, but the simplest summary of their stance would be to say that they saw the Old as constituting the earlier chapters of the story in which Christians are now participating.

As before, there is much to say on this point; but for now I will note one advantage. We can discuss individual Bible passages; this is certainly good, and I have done that elsewhere. I am confident that texts from the Old Testament, the New Testament, and Second Temple Judaism consistently testify to a unified origin of humankind in Adam and Eve. But when we are thinking about the story line, we can keep our eyes on the big picture. Some have gone as far as to suggest that the story of Adam and Eve is relatively inconsequential for the whole Old Testament (which implies that its role in the New Testament represents a departure from the Hebrew writers' intentions).<sup>40</sup> Now, I consider this argument mistaken, but I will not take time here to examine passage after passage. For our purposes, a good way to show that this suggestion is mistaken is to demonstrate how the story of Adam and Eve serves as an underlying assumption behind the biblical story line—and that it also underlies several key Bible passages.

Good thinking about the biblical story line needs to start with Genesis 12:1–3, God's call of Abram, as we have seen: Abram's family, Israel, was to be the vehicle of God's light to the Gentiles, as they lived faithfully in God's covenant.

But what does this require as a foundation, if it is to be true? It requires that *all* the Gentiles *need* God's light, because they are estranged from him; and it requires that there be something in those Gentiles that can be enlivened to respond to that light, just as in Israel. In other words, these Gentiles have a common origin with Israel and a common set of human capacities as well as a common need.

Furthermore, this estrangement from God is *unnatural*; it is out of step with how things *ought* to be. Something has come into human experience that produced that estrangement, and that something is *sin* (cf. Eccl. 7:29).

In the biblical story sin is an alien intruder; it disturbs God's good creation order. This comes through clearly in the way that the Levitical sacrifices deal with sin: they treat it as a defiling element, which ruins human existence and renders people unworthy to be in God's presence—and that is dangerous. The sacrifices work "atonement," "redemption," and "ransom," addressing sin as a defiling intruder that incurs God's displeasure (e.g., Lev. 16).

The unnaturalness of sin also comes through in how wisdom books such as Proverbs connect moral goodness with mental savvy—and wickedness is a kind of stupidity or folly (e.g., Prov. 12:1). That is, living in line with God's will is sensible, while living out of step with God is foolish. Humans were meant to live sanely, not irrationally!

The notion that humankind is one family, with one set of ancestors for us all—ancestors who, at the headwaters of the human race brought sin and dysfunction into the world of human life—is behind all of these factors as an unwavering assumption. New Testament authors carry along this assumption. Certainly the apostle Paul spoke this way (e.g., Rom. 5:12–21; 1 Cor. 15:20–22, 44–49); but the most notable example of this assumption comes from Jesus himself in the *Gospels*.

For example, consider Matthew 19:3–9, where some Pharisees want to test Jesus, which probably means that they wanted to ensnare him into taking sides on a debate between their various

schools of thought. So they asked him whether it is lawful for a man to divorce his wife “for any cause,” and Jesus replied:

“Have you not read that he who created them from the beginning *made them male and female*, and said, ‘*Therefore a man shall leave his father and his mother and hold fast to his wife, and the two shall become one flesh*’?” (Matt. 19:4–5).

Jesus’ answer ties together Genesis 1:27 and 2:24 (see italics). Since they are now one flesh, joined together by God, they should not be separated. The Pharisees then asked why Moses allowed divorce (Matt. 19:7, citing Deut. 24:1–4), and Jesus explains that it was a concession: “from the beginning it was not so” (Matt. 19:8).

This conversation shows that Jesus viewed the creation account of Genesis 1–2 as setting the ideal for a properly functioning marriage for all human beings; that was how God intended things to be “from the beginning.” The family legislation of Deuteronomy, on the other hand, does not set the ethical norm, but has another function—namely, that of preserving civility in Israel: a function that has become necessary by some change of circumstances since “the beginning.” The obvious candidate for making that change—really, the *only* candidate—is the sin of Adam and Eve, with its consequences for all human beings.

Jesus in the Gospels seems quite straightforwardly to have accepted the story in Genesis the way I am advocating. That story tells us where we come from and how we got to be the way we are; then in Genesis 3 God begins his program of redeeming his human creatures for the sake of his world. The last book of the Bible tells us where the whole story is headed; as we find in Revelation 22:1–5:

Then the angel showed me the *river* of the water of life, bright as crystal, flowing from the throne of God and of the Lamb through the middle of the street of the city; also, on either side of the river, the *tree of life* with its twelve kinds of fruit, yielding its fruit each month. The leaves of the tree were for the healing of the nations. No longer will there be *anything accursed*, but the throne of God and of the Lamb will be in it, and his servants will worship him. They will see his face, and his name will be on their foreheads. And night will be no more. They will need no light of lamp or sun, for the Lord God will be their light, and they will reign forever and ever.

John’s Revelation is of course filled with all manner of symbolism, and therefore I make no claim to know what the scene he describes will “actually” be like. But I can say this: John portrays it as Eden come to its full fruition: notice the *tree of life* and the *river*. The place is a sanctuary, which is how Genesis portrays the garden. And later in this chapter of Revelation (vv. 14–15) we read:

Blessed are those who wash their robes, so that they may have the right to the tree of life and that they may enter the city by the gates. Outside are the dogs and sorcerers and the sexually immoral and murderers and idolaters, and everyone who loves and practices falsehood.

These people must “wash their robes” of the defilement that comes from sin, while those who persist in sin reap its consequences. They stay outside because they are *defiled*—defiled by something that does not belong in God’s good world: evil. And evil came into God’s world through the way that Satan deceived our first parents (see Rev. 12:9).

It is therefore quite a surprise to read in authors who think Adam and Eve are not historical the suggestions that the apostle Paul is really the only New Testament writer to make use of Genesis 3 and that the Gospels and Revelation do nothing with it!



In recent decades, specialists in the apostle Paul have realized how firmly he rooted his arguments in this overarching narrative of the Old Testament—just as Jesus did. From Romans 1:2–6, it is clear that Paul read the Old Testament as the early chapters of the biblical story, which tells of how God chose Abraham’s family to be his fresh start on humankind, to restore what was damaged by sin, and which ends with the anticipation of a new era in which the Gentiles receive the light. He defines his key term “gospel” as the announcement that through the death, resurrection, and ascension of Jesus this new era has now begun (Rom. 1:2–6; Gal. 3:8–9; cf. Mark 1:15, see also Matt. 28:18–20). As Paul tells us, Christian believers, both Jewish and Gentile, are those in whom God is renewing his image for proper human functioning in their individual and community lives (e.g., Col. 3:9–10; 2 Cor. 3:18), where the fractured family is once again united.

When it comes to the comparison of Adam and Jesus (Rom. 5:12–19; 1 Cor. 15:20–23, 42–49), Paul’s argument likewise depends on a *narrative*. That is, someone did something (one man trespassed, Rom. 5:15), and as a result something happened (sin, death, and condemnation came into the world of human experience), and then Jesus came to deal with the consequences of it all (by his obedience to make the many righteous). The argument gains its coherence from its sequence of events; it is drastically inadequate to say that Paul is merely making a “comparison” here. Further, consider the notion that people are “in Adam” or “in Christ”: to be “in” someone is to be a member of that people for whom that someone is the representative. All the evidence we have indicates that only actual persons can function as representatives.

Revelation continues this narrative focus: it portrays the final victory of God’s purposes, using Edenic and sanctuary imagery to describe perfected human life in a cleansed creation.

Hence, if we say that being prone to sin is inherent in being human with a free will (rather than a horrific aberration brought in at an early stage by someone’s disobedience), then we must say the Bible writers were wrong in describing atonement the way they did, as addressing defilement as an intruder; and we must say that Jesus was wrong to describe his own death in these terms (e.g., Mark 10:45). Further, this approach makes nonsense of the joyful expectation of Christians that they will one day live in a glorified world from which sin and death have been banished (Rev. 21:1–8). Does anyone really want to imply that those who dwell in a glorified world will be less human because they no longer sin?

#### 4. Is It Credible?

In sum, the story line of the Bible, to be coherent, leads us to expect that (1) humankind is actually one family, with one set of ancestors for us all; (2) God acted specially (“supernaturally”) to form our first parents; and (3) our first ancestors, at the headwaters of the human race, brought sin and dysfunction into the world of human life. Bible believers have treasured the Adam and Eve story as the true and proper narrative that grounds these expectations. Certainly, without this front-end narrative it is hard to see how we can affirm these points—which means that we wind up telling a different Big Story than the one I have outlined here. Christian theologians have differed in how they articulate the idea of “original sin,” that is, in how Adam’s disobedience transformed the moral condition of their descendants; but they have been united in beginning with these three affirmations.

Yet, how can we be responsible in believing that, when the sciences seem to be telling us otherwise? It is true that the biologists tell us that humans share important parts of our DNA with chimpanzees, for which they consider the best explanation to be that we and the chimps share a common ancestor. It is also true that in gradual evolution it is hard to speak of the first members

of a species. I will say more about these in the next section; for now I would simply observe that in talking about the origin of the human kind (or of any kind), we are making a judgment or inference about a *historical* question, and our reasoning should follow the guidelines of good critical thinking. To the extent we base our inference entirely on, say, features of DNA, to the exclusion of other relevant kinds of evidence, we weaken the credibility of our inference. Hence, in addition to the DNA evidence, we must also include such things as the aspects of human existence that are *universally* human and that are *uniquely* human. Do these point toward a unified origin of humankind, an origin that goes beyond the powers of a purely natural process, and do they support the notion of sin as an alien invader? Again, for the sake of space, I will keep my list brief and suggestive and save a fuller apologetic for another venue.

Take, for example, our capacity for language. People have tried to teach language to the animals that are thought to be our nearest kin, namely chimps and gorillas; all of these attempts are failures. You can raise a chimp in your family, and try as you might, you will not be able to get it to talk. Take a human child, and you cannot *prevent* it from learning to talk—and repeating in public all the things you say at home! The differences between humans and other animals, as the linguists analyze them, are not simply of *degree* (as if we were simply more developed than the animals are) but of *kind* (human language is discontinuous with animal communication).

But there is more: every human child is born ready to learn the language or languages to which he or she is exposed. Had my wife and I taken our fair-skinned and blue-eyed children when they were babies and brought them to live in a Ugandan village, *we* would have had to struggle to learn the local languages; but *they* would have grown up speaking, not just the American English we use at home, but also the local languages, like natives, with no extra effort on the part of their parents or the villagers.

Take another example: art. No one knows for sure exactly when God bestowed his image on the first human beings; but we can find artifacts such that, when we see them, we have no doubt that the divine image is there.

Think as well of the craving for a safe and just community—something we see all over the world, from ancient and modern cultures, whether or not they believe in the true God.

Aristotle (384–322 bc) observed that “the human being is by nature a political animal”—meaning an animal that lives in political communities, preferably a community organized by principles of justice. Our communities go beyond what you find in the beehive or the buffalo herd: we not only make noise, but “humankind alone among the animals possesses speech,” and we use language to talk about what is right and wrong and about what is advantageous or disadvantageous.

All human beings have experiences that make us feel that things are not the way they ought to be. We feel that conflicts between human beings divide us, when we should be able to live peacefully, enjoying each other’s uniqueness. We yearn for some kind of healing of this breach. We experience loss of loved ones through death, which is often preceded by dreadful suffering. We see human brilliance diverted into pursuing fresh ways to wreak havoc and destruction.

In the same passage cited above, Aristotle goes on to argue:

For as the human being is the best of animals when perfected [in a just community], so he is the worst of all animals when sundered from law and justice. For unrighteousness is most pernicious when possessed of weapons; and the human being is born possessing weapons for the use of wisdom and virtue, which it is possible to employ for entirely opposite ends.

Aristotle, speaking for all humankind, is describing aspects of what Christians call “the image of God.” Where does this come from, and why is its proper use so beautiful and its misuse so

appalling? Poor Aristotle (bless him) lacked the story that would put this all into perspective; but surely Genesis gives us the best answer, as Ecclesiastes 7:29 summarizes it: “God made man upright, but they have sought out many schemes.” That is, the story of Adam and Eve—who were created good, but who disobeyed and brought sin and misery into their lives and into ours—answers this exactly.

As Chesterton observed, the biblical story shows us “that happiness is not only a hope, but also in some strange manner a memory; and that we are all kings in exile.” Thus we have more than a diagnosis; we have grounds for optimism as well. If we have a good explanation for why things have gone wrong, then maybe the Christian hope that somehow God will put them right is a secure comfort also—a comfort that will help us to live fully human lives, as God’s beloved people, even *now*.

## 5. Freedoms and Limitations

I say that Genesis 1–11 is “true history,” because it gives us the true story of how the world began, how evil and suffering came into the world, and how God is still committed to the world he made.

Nevertheless the question remains, What would this look like in a scientific-historical description? How much room does this leave for free exploration? This is where an approach from Francis Schaeffer, dealing with “freedoms and limitations,” is so helpful. According to Schaeffer, there is a range of reasonable scenarios by which we may address the apparent conflicts between the Bible and the sciences, and yet there are limits to this range, limits set both by basic biblical concepts and by good human judgment. This is wise, because far be it from an exegete or theologian to tell a geneticist what he or she may or may not find in the genome, or a paleontologist in the fossils! At the same time, when that geneticist or paleontologist wants to try to put those findings together into larger theories that tell the human story, then that person is reasoning as a human being, and his or her reasoning is subject to review for its compliance with good critical thinking.<sup>59</sup> Schaeffer was willing to consider, among other freedoms, the possibility that Genesis 1 describes God creating a “grown up universe” (nowadays called the “appearance of age hypothesis”); or that God was reforming a creation that had been partially deformed by Satan’s fall; or that the “days” refer to long ages. He concluded, sensibly and generously:

I urge you again to remember that I am not saying that any of these positions are my own or that they will prove to be the case. I am simply stating theoretical possibilities as we consider the correlations between what the Bible sets forth about cosmogony and what we can study from general revelation.

At the same time Schaeffer insisted on God’s special *creative* activity at certain key places: at the original creation, then at the creation of conscious life, and finally at the creation of man, the result was discontinuous in some way from what had preceded. He also thought it essential to say, for theological reasons, that Adam was the first man and that Eve was made from him. This left him with a careful view of what is called “theistic evolution”: he saw no support for a *naturalistic* molecule-to-man scenario, and he imagined that anyone who held to his limitations would not be an “evolutionist” in every sense of the word.

I commend Schaeffer’s approach in a forthcoming essay: He was motivated by a generosity of spirit and a desire for Christians to get along with one another. This approach also recognizes that a well-functioning Christian has a hierarchy of commitments: he or she will insist more strongly on the tenets of “basic” or “mere” Christianity—say, the Trinity, or the resurrection of Jesus—

than on some other matters that are important, but not quite so vital—say, the number of sacraments and their exact effects. If we add into our consideration the literary features of Genesis 1–11, we conclude that the very nature of this biblical material leads to some sort of freedoms and limitations rubric, since the material both resists a strictly literalistic reading and invites recognition of its historical impulse. In practical terms this means that the author’s main goal is to enable us to picture the events he recounts, without getting bogged down in details.

Let us fill this out some more. We start by considering how Genesis addressed the needs of the original audience. Since the first audience consisted mostly of agricultural workers, we assume that they already knew full well that the way to get more sheep is by breeding sheep and the way to get barley is to plant barley seeds: that is, plants and animals reproduce “according to their kinds” (cf. Matt. 13:24–30 for a parable that depends on farmers knowing this principle). The question of what process God might or might not have used in getting to this point is certainly valid and interests us, but is irrelevant to the Genesis context. The crucial thing for the audience is that this is God’s arrangement for *his* world, and thus they must follow his instructions for how to manage his stuff.

Similarly, I cannot envision any reasonable human, especially a farmer, unaware of *both* the similarities *and* the differences between humans and other animals. Hence an Israelite would be unsurprised at using the term “living creature” for them all; and portraying them all as being “formed” from the ground (Gen. 2:7, 19) corresponds to the “simple, obvious fact that the human body is made of the common elements of the soil.” Genesis gives a name to those features that distinguish human beings and assumes its readers can already recognize them: the image of God.

Most readers have (understandably) envisioned the event of forming Adam in fairly straightforward terms, with no animal intermediates between the dirt and Adam. Some today, aware of the significant overlap between human DNA and that of, say, a chimpanzee, would explain the overlap, not in terms of our shared genetic heritage, but from the perspective of overlapping functions: the DNA is similar because it does similar things.

Still, we can ask whether Genesis 2:7 is absolutely incompatible with some sort of process involving genetics to produce our first *human* father. Perhaps it is, but two reasons should make us hesitate to insist on this as the decisive question: First, as already discussed, we have the nature of the literature. Second, there is the way that Psalm 103:14 sings (with words from Gen. 2:7), “for he [God] knows how we are *formed*; he remembers that we are *dust*” (using ESV margin). Each of us is, ultimately, “formed of dust,” even if the dust has gone through a few intermediate (genetic) steps!<sup>65</sup>

But here is where it is easy to go astray. We must not confuse the possibility of intermediate steps in the forming process, with a purely naturalistic (or “ordinary providence”) scenario for that process. It is simply unreasonable to suppose that one can arrive at human capacities without some “help” from outside; that is, good reasoning includes recognizing that God’s creative activity is involved. Hence, if a person should want to suggest some level of intermediate process for Genesis 2:7, then rather than argue on *that* point I prefer to make sure that he can also acknowledge the event as a “special creation.”

Further, traditional readers of Genesis suppose that the original humans were just a pair, Adam and his wife. All other humans descend from them. However, many genetics researchers consider it out of the question for the initial human population to be only two. Surely more than two stretches beyond the limits of Genesis? It may well do so, but not necessarily. Derek Kidner proposed a scenario that deserves our attention, which might allow for a larger population than two at the start. Kidner himself called it exploratory and tentative, and there are difficulties that

we might not be able to solve.<sup>69</sup> One virtue of Kidner's proposal is that it arose from his reading of Genesis 4, which he took to imply that there were more people around at the time of Cain and Abel.

At the same time, we should recognize that all scientific theorizing, including that about human genetics, should be open to review (although such review is not my purpose here, and I have not tied my conclusions to any outcome of that review).

What, then, are the ground rules for sound reasoning about this subject? Here is my proposal for four principles:

1. The origin of the human race goes beyond a merely natural process. This follows from how hard it is to get a human being or, theologically, how distinctive the image of God is.
2. Adam and Eve are at the headwaters of the human race. This follows from the unified experience of humankind.
3. The "fall," in whatever form it took, was both *historical* (it happened) and *moral* (it involved disobeying God), and it occurred at the beginning of the human race. Our universal sense of loss makes no sense without this. Where else could this universality have come from?
4. If someone should become convinced that there were, in fact, more human beings than just Adam and Eve at the beginning of humankind, then in order to maintain good sense, he or she should envision these humans as a single tribe of closely related members. Adam would then be the chieftain of this tribe (produced before the others), and Eve would be his wife. This tribe "fell" under the leadership of Adam and Eve. This follows from the notion of solidarity in a representative. (Some may call this a form of "polygenesis," but this is quite distinct from the more conventional—and unacceptable—kind.)

I have not here given details on my own convictions about a number of topics, and I will say just a little more about two of them, namely, "evolution" and "biblical inerrancy," which I must first define.

Biological evolution can refer to the idea that animals change over time. It might go so far as to insist that the animals we know today are descended from the creatures we dig up in the fossils, and that changes have been introduced into the animals' genetic makeup in the process. It might go even farther and contend that all present-day animals descend from only a few ultimate ancestors, or even from just one. In its strongest form, biological evolution asserts that the whole process is a purely natural one, with no "extra help" from God. If we say that the process is *God's* process, then we have "theistic evolution."

Sometimes Christians object to *all* kinds of evolution, and even to an old earth in general, because of how they involve animals dying, but I do not consider that a fatal objection. I argue elsewhere that *human* death is what the biblical authors have in view in places like Romans 5:12; animal death as such is *not* a theological problem and not a consequence of the fall. Nevertheless, in agreement with Schaeffer, I find that the strongest form of theistic evolution is inadequate, both for the Bible and for historical science, since it fails to account for human distinctiveness.<sup>75</sup>

I described Genesis 1–11 as "true history," which leads me to comment on the Bible's truthfulness or "inerrancy." Although Benjamin Warfield (1851–1921) gets credit (or blame) for the popularity of the term "inerrancy of Scripture," the idea is part of the Christian tradition. *The Chicago Statement on Biblical Inerrancy* (1978) sets out an evangelical approach to the idea, and a kindred statement from the Roman Catholic side comes in the encyclical *Divino Afflante Spiritu* (*Inspired by the Divine Spirit*, 1943).

I will not now explore all the nuances of either statement, nor defend them; instead, I will take them as enough for our purposes. I do not have to settle here the question of how Genesis 1–11 came to be composed—whether from sources or by fresh composition or by what Henri Blocher has described as an inspired reconstruction, working backward from the present to the past.

Both statements sagely recognize that we should adapt our expectations to the literary forms the sacred writers used—that is, we should not conflate inerrancy with a purely literalistic interpretation. This notion, according to *Divino Afflante Spiritu* (§37), goes back at least as far as Thomas Aquinas (1225–74). In fact, C. S. Lewis attributed to the church father Jerome (347–420) the opinion that Genesis tells of creation “after the manner of a popular poet” (though the actual words have been traced only as far back as John Colet, 1467–1519). This manner or style in no way detracts from “historicity,” so long as we define our terms carefully as *the text’s ability to refer*.

Within these guidelines, I cast the doctrine in light of the biblical narrative I have already described: “The Scriptures tell us the true story of the world and of God’s people; and they show the members of God’s people the right way to embrace that story, and to invite others to the embrace.” The notion of inerrancy, then, aims at explaining why we take a disposition of trust and cooperation when we look for the Bible to speak from God to us.

We might enter into further discussions about faith and reason, about whether our trust in the Bible is a precondition for reading it properly or the result of our testing of the Bible. John Wenham helps us out of our difficulties:

The way out of this dilemma is to recognize that *belief in the Bible comes from faith in Christ, and not vice versa; and that it is possible to proceed from faith in Christ to a doctrine of Scripture without sorting out problems of criticism.*

Wenham argues that “Christ’s view of Scripture can and should still be the Christian’s view of Scripture.” Of course, this by itself does not settle just what view Jesus took of Genesis 1–11; still less does it address what we should make of Paul. Further, as Wenham argues, “it is to the writings rather than to the writers that [Christ] ascribes authority.”<sup>84</sup> Nevertheless, once we see that Jesus bases an ethical argument on the *narrative* of Genesis 1–2, and further, that the apostles are Jesus’ authorized conveyers and interpreters of the story (e.g., John 14:26; 16:12–15), we find the motivation to read Genesis in the way I have argued. As a matter of fact, I have found that using modern literary and linguistic tools enables us to read Genesis very much as Paul did.

I have no doubt that we could, and should, say more; but I trust I have said enough to show you why I think I can say with confidence, then, that the early chapters of Genesis provide the true and historical front end for the Big Story of the world.<sup>11</sup>

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<sup>11</sup> Collins, J. C. (2013). [A Historical Adam: Old-Earth Creation View](#). In M. Barrett, A. B. Caneday, & S. N. Gundry (Eds.), *Four Views on the Historical Adam* (pp. 143–175). Grand Rapids, MI: Zondervan.

# #4 - A HISTORICAL ADAM: YOUNG-EARTH CREATION VIEW

WILLIAM D. BARRICK

*In my view Adam is the originating head of the entire human race. Adam's historicity is foundational to a number of biblical doctrines and is related to the inspiration and inerrancy of Scripture. This traditional view of Adam rejects accommodation to evolutionary science, upholding instead that the Holy Spirit superintended the author of Genesis so that he wrote an objective description of God's creative activities in six consecutive literal days.*

*The biblical account represents Adam as a single individual rather than an archetype or the product of biological evolution, and a number of New Testament texts rely on Adam's historicity. More importantly, without a historical first Adam there is no need for Jesus, the second Adam, to undo the first Adam's sin and its results. Evangelicals should uphold and defend the uniqueness of the Genesis record and give it priority over ancient Near Eastern materials and modern science in all discussions of primeval history and the historicity of Adam and Eve.*

## Introduction

### *The Importance of the Topic*

Was Adam the first of the human race or just the head of a particular clan, tribe, or nation? Or did he exist at all? Was Eve the mother of the human race or merely the woman who was married to Adam? Or was Eve even a historical person? These are questions demanding careful evaluation. The traditional Christian and Jewish view answers these questions with a resounding affirmation that Adam was and is not only a historical person, but also the originating head (not merely the representative head or an archetypal reference) of the entire human race, and that God created Eve out of a portion of Adam's side. As the first woman, Eve was and is the mother of all mankind, not just a representative woman.

John Walton, on the other hand, believes that we should not view the clay and the man's side as actual material ingredients. Instead, the materials serve only to define the class of human being. "It is indicative of human destiny and mortality, and therefore is a functional comment, not a material one." Walton does not deny the historical or biological reality of Adam's existence,<sup>2</sup> but he does reject the straightforward sense of the biblical account regarding the creation of both the man and the woman. In other words, Adam and Eve do not need to be the very first humans, nor the only humans in existence at the time, since they merely represent all humanity.

Hermeneutically, to read Genesis 1 and 2 as presenting Adam as humanity's archetype without reference to his material formation resembles allegorical interpretations of the text. The non-allegorical interpretation understands that the text presents a historical Adam as the first and only head of the human race. Without Adam's historicity many of the teachings of Scripture will look very different from common evangelical theological concepts or fail the test of logical consistency.

In his *Christianity Today* article on the topic of Adam's historicity, Richard Ostling specifies the potential of the debate over a historical Adam:

The emerging science could be seen to challenge not only what Genesis records about the creation of humanity but the species's unique status as bearing the "image of God," Christian doctrine on original sin and the Fall, the genealogy of Jesus in the Gospel of Luke, ... Paul's teaching that links the historical Adam with redemption through Christ (Rom. 5:12–19; 1 Cor. 15:20–23, 42–49; and his speech in Acts 17).

Indeed, a brief summary of the theological aspects effectively shaped by the historicity of Adam and Eve as the original parents of the entire human race reveals the topic's importance. A historical Adam as the original man from whom all human beings descended is

- foundational to a biblical understanding of God's creative activity,
- foundational to a biblical understanding of the history of the human race,
- foundational to a biblical understanding of the nature of mankind,
- foundational to a biblical understanding of the origin and nature of sin,
- foundational to a biblical understanding of the existence and nature of death,
- foundational to a biblical understanding of the reality of salvation from sin,
- foundational to the progressive account of the historical events recorded in the book of Genesis,
- and perhaps most importantly, foundational to a biblical understanding of Scripture's authority, inspiration, and inerrancy.

### *The Assumptions of the Traditional View*

The traditional view is associated in the title of this essay with young-earth creationism because the two aspects are integrally related. The traditional view rejects an old-earth view that accommodates itself to the millions and billions of years proposed by modern evolutionary science. A number of assumptions define this viewpoint.

First, the traditional view commonly affirms that God gave the Genesis account of creation to Moses by special revelation. Thus the narrator is both omniscient and reliable, because the ultimate author is God himself.<sup>8</sup> After all, if Adam was truly the first human being, there were no human eyewitnesses to his creation. Additionally, Adam could not have described the making of the woman, because he was in a deep sleep throughout the divine procedure. The only witnesses are God and the angels. The only alternative to divine revelation would be an unlikely angelic report. The absence of eyewitnesses plagues any account, biblical or extrabiblical, of original creation. Along these lines of divine inspiration, the traditional view does not rely upon or adopt the documentary hypothesis and its theory of J, E, D, and P documents to explain the composition of Genesis or the Pentateuch.<sup>9</sup>

Second, traditionalists take the position that the declarations of Genesis bear the stamp of divine truth, historical fact, and historiographical accuracy. The accuracy of Scripture's account of creation does not depend on confirmation of its events through extrabiblical sources. The traditional approach applies the same uniform hermeneutical methodology to Genesis 1–11 as to the remainder of the book. This approach differs profoundly from the view that biblical inerrancy does not extend to "incidental statements" in the biblical record about the origins of the universe, the earth, and mankind.<sup>11</sup>



Third, the Genesis record does not limit its scope to one ethnic or national group. From its very beginning it addresses mankind universally. The judgment at Babel accounts for the dispersion of the human race across the face of the whole earth. The genealogy in Genesis 5 lists the actual physical ancestors of all mankind. Noah becomes like a new Adam by being the progenitor of all post-flood human beings. The scattering of the peoples closes the universal message of the early chapters of Genesis, but “the fragmentation of humanity is a positive step forward, because the divine plan of redemption requires a particularized instrument.”<sup>13</sup> Thus, Genesis 10 and 11 account for the origins of all peoples of sociopolitical significance to the descendants of Abraham, the one through whom the Redeemer would come. Genesis 1–11 records “the origins of the universe and God’s plan to relate to it, and especially to humans,” while Genesis 12–50 deals with the origins of Israel.

Fourth, biblical writers in both testaments appear to take for granted a common origin of all human beings in Adam whenever they touch on topics related to Genesis 1–11 (e.g., Mal. 2:10 and Rom. 5:12–14).

Interestingly, some scholars admit that what the Bible declares is actually what the writers did indeed believe and intend to say. However, they do so not in support of the traditional view, but to attribute erroneous, pre-scientific views to the biblical authors. Modern interpreters of the Bible often think of the biblical record as the viewpoint of pre-scientific humanity. The findings of modern paleontology and the theory of evolution cause Bible readers to question the biblical chronology, pushing it back farther than the text itself seems to permit. For example, Peter Enns writes that the biblical writers “assumed that the earth is flat, was made by God in relatively recent history (about 4,000 years before Jesus) just as it looks now, and that it is the fixed point in the cosmos over which the sun actually rises and sets.” Enns’ characterization of Israelite beliefs (e.g., a flat earth) consists of overstatement and misinterpretation that denigrate both true believers in ancient Israel and the current biblical text.<sup>18</sup> Beyond that, his characterization of the ancient Near Eastern conceptual world as riddled with pre-scientific error that God himself adopted in inspired Scripture impugns God’s moral integrity.

Ignoring the possibility that Enns has misinterpreted what the writers are truly saying, we see that his point still amounts to admitting that the Bible accurately conveys the intent of its writers regarding creation, the monogenesis of mankind, and a global flood. So, if that is the intent of the biblical writers, why should we not also believe what they apparently believed?

## **Biblical Evidence for the Traditional View**

### *Genesis 1:1–25*

Why did the writer of Genesis 1 choose to narrate the creation story according to an orderly sequence of six days? David Cotter’s approach offers one potentially significant insight regarding the reasons for the orderly sequence of days: “This storyteller must convince the reader that this account can be trusted; to achieve this, the storyteller creates the impression that everything is being told, that nothing is being held back. Therefore the narrator has to be omniscient.” In other words, by taking a detailed, step-by-step, objective tone the author reveals everything just as it actually happened.

In his Genesis commentary, Waltke states that the “narrator’s inspiration from God, who cannot lie, is sufficient to guarantee its truthfulness without other historical corroboration.” He then argues that the Genesis narrative presents “an essentially coherent chronological succession

of events<sup>22</sup> by means of the narrative verb form, validation by time and space location, use of genealogies, and citing sources. However, Waltke later separates the creation account from that history for the reason that no human was present to write a normal history. Waltke offers evidence of dischronologization, similarities to other ancient Near Eastern materials, and contemporary science as reasons to read the creation narrative differently from the rest of Genesis. Many evangelicals likewise claim on the one hand that God's inspiration is sufficient in and of itself to make Scripture trustworthy and inerrant, but on the other hand, like Waltke, exclude Genesis 1–2 (or even Gen. 1–11) from that concept regarding the sufficiency and accuracy of God's Scripture. In their approach, science and ancient Near Eastern texts trump simple acceptance of the sufficiency and historical accuracy of those early chapters of Genesis.

In the minds of many scholars the historicity of Genesis 1–11 stands separated from the matter of the historicity of Genesis 12–50. After all, most evangelicals readily acknowledge the presence of considerable evidence supporting the historical accuracy, integrity, and authenticity of the latter text unit. It seems fairly clear that Genesis 12–50 builds on the themes of blessing and curse already introduced in Genesis 1–11. So, can the patriarchs expect the continuation of blessing and curse in their real experience if the recipients and events in which blessing and curse occurred prior to the Noahic flood are nothing but a theological construct in the minds of later Israelites writing about both periods? If the persons and events of the earlier text truly existed, then the reality of blessing and curse clearly carry over to the later persons and events. As John Goldingay so insightfully observes, if a latter text grounds its faith in earlier events and realities that did not take place, “the grounds of faith are removed.”<sup>26</sup> Sidney Greidanus makes a similar point, but with direct application to Genesis 1–3: “For redemptive-historical narratives, the lack of historical foundations is fatal, for the factuality that God acted in history is part and parcel of their message.”

From its opening line (“In the beginning God created the heavens and the earth”), Genesis possesses a universal focus rather than a national or ethnic focus, even if it is preparatory for the narratives that narrow the focus toward Israel in Genesis 12–50. From this broad inclusive reference, the second verse narrows the focus to planet Earth. Having noted this narrowing focus, the reader of the text must not assume that the true center or focus of the text is upon Earth or upon human beings.

One of the major characteristics of Genesis 1–11 consists of the theocentricity of the biblical writer's intent. A theocentric or theological emphasis in the text, however, does not mean that the record lacks historicity (*viz.*, factual reality for the events and persons). Consider the relative silence in extrabiblical materials about the existence, deeds, and death of Jesus. Arguments used to deny the historicity of the first Adam can be equally applied to the historicity of the second Adam. The potential of that type of consistent rationale that ends up denying the historicity of both Adam and Jesus heightens the urgency of the first of these two matters.

The following verses (Gen. 1:2–31) all deal with the preparation of the planet for sustaining the life forms and the Creator's actions to populate it. The text implies that the account identifies the origin of all life on Earth. Thus every man, woman, and child at any subsequent time can look back to this as the beginning of terrestrial life and the start of the human race. God's program in creation, as in redemption, targets all mankind, not just one segment. Significant to the rest of the creation account, these first twenty-five verses mention “seed” (*zera*) six times—all with reference to plants. The significance of the concept of “seed” consists of the fact that each plant produces its own kind—a fruit can be traced back to the parent.

The next occurrence of “seed” comes in 3:15 (*niv*, “offspring”). No other usage of “seed” occurs in the report regarding days three, four, and five. For plants, “seed” indicates the means of

plant reproduction and their spread over the surface of the earth. The absence of a further mention of “seed” throughout the creation of man raises a question: how will mankind fill the earth? Will they produce after their kind? The answer waits until a fuller description of humankind appears in the record. When “seed” does appear with regard to mankind, it sets a story line for the remainder of Genesis: God has chosen a line of descendants to fulfill his program of redemption. The seed of fallen Adam is like him, fallen and disobedient. The paradox that Scripture unfolds is that the ultimate descendant of blessing cannot be like fallen Adam, but can still be traced back to Adam.<sup>31</sup>

The six-day narrative in 1:1–2:4 includes a conceptualization of how God provides for making Earth a viable habitat for sustaining plant, animal, and human life. The basics appear in order of his creating them: water, light, land, and plants. “Day” in the creation account refers primarily to actual days in accord with the following observations: (1) each “day” is made up of evening and morning; (2) numerical adjectives modify “day”; (3) “day” occurs in company with “seasons” and years in Genesis 1:14; and (4) Exodus 20:8–11, which patterns the human work week with the days of creation, requires the literal understanding of “day” in the creation account on which the legal analogy was established.

In the first three days of creation God provides the basics for life while he forms the earth into a habitat ready for animal and human life. During days four through six, the Creator begins to fill the earth with the life forms for which he has made preparation. Interestingly, he chooses to make the sun, moon, and stars at this point. I suggest that he did so because he wanted to make an environment that would be pleasurable, interesting, and utilitarian for both animal and human life. Light alone can maintain life, but light alone does not provide seasons, navigational aids, or chronological markers. The earth did not yet require solar light. The plants on day three do not need anything more than a light source to survive their first full day of existence. Moreover, they are not the focus of God’s creative purposes. The metanarrative now moves to a focus on the multiplication of human beings and the divine design for accomplishing it.

### *Genesis 1:26–2:3*

The first description of the origin of mankind recites the general picture minus all of the details. The text mentions the human female, but gives no account of how the male or the female came into existence. The metanarrative focuses on God as the creator of all life (including human beings) and on mankind being made in the image of God. Divine image bearers manifest that image, at least in part, by acting as God’s vice-regents on earth. The divine mandate to “be fruitful and increase in number; fill the earth” (v. 28) occupies the revelatory focus without explaining how that might take place. The authoritative command of God remains at center stage. The second section of the creation account (2:5–24) reveals the means by which mankind will fulfill that command.

Two first-person plurals punctuate the accounts of the creation and the fall of mankind in the Genesis account (1:26 and 3:22). Whether these plurals are taken as plurals of majesty, plurals of self-address (deliberation), Trinitarian plurals, or references to a council of spirit beings, the references draw attention to the significance of the events with which the text associates them.<sup>34</sup> The account indicates that the creation and fall of mankind comprise notable events pertinent to a proper theological understanding of who God is, what deeds God has performed (both in creation and in setting about to redeem fallen mankind), who man is, and what man has caused by his disobedience to his Creator. Together with the global setting depicted by Genesis 1, such attention seems more fitting with regard to Adam being the progenitor of the human race than with a view

that limits the account to the origin of the nation of Israel. One of the biggest hurdles for this latter view to overcome involves the absence of any reference to Israel as a people until Genesis 32:32.

*Genesis 2:4–24*

The inspired record of creation does not close after its description of the world and humankind, but proceeds to focus solely on humanity to set the stage for a far grander story. As C. John Collins observes, the worldview story should not be treated “simply as the husk, which we can then discard once we have discovered the (perhaps timeless) concepts.” The second description of mankind’s origin pays attention to the details purposely not included in 1:26–2:4. An envelope figure brackets the entire creation account with 1:1–2 and 2:4. The chiasm in 2:4 reflects the content of 1:1–2 and complements those two verses’ anadiplosis focusing on “the earth” (see Figure 1). The fact that 2:4 actually introduces the second segment of the book of Genesis, rather than concluding the first segment, does not hinder its use in the inclusio. Collins suggests that the chiasm of 2:4 “invites us to read the two passages in union.”

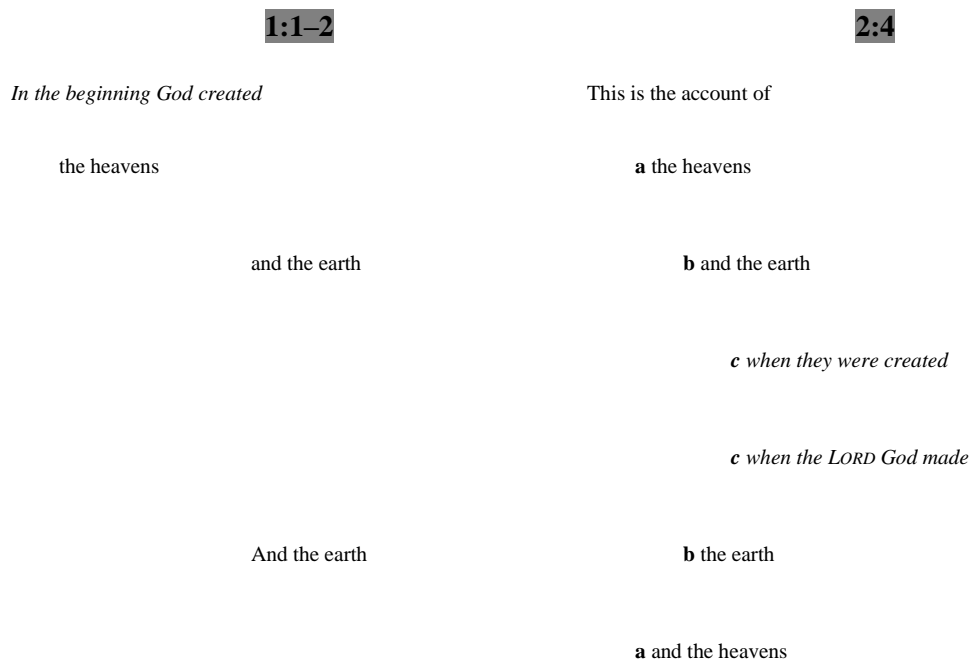


Figure 1. The Structural Inclusio Bracketing Genesis 1:1–2:4

The writer commences the first *toledot* (2:4–4:26) with a specific goal in mind: to reveal how mankind will be able to multiply and fill the earth as God had commanded. The Hebrew noun *'ādām* (“man,” “mankind,” “Adam”) occurs twice in Genesis 1. The definite article is absent in the first occurrence (1:26), since this key noun is making its initial appearance in the narrative.

The next verse (1:27) uses the article as a matter of previous reference (“the previously mentioned man”). Likewise, the first occurrence in Genesis 2 (v. 5) is also anarthrous (that is, without an article), and each reference after that includes the definite article (2:7 twice, 8, 15, 16, 18, 19 twice, 20a). However, 2:20b refers to “Adam” (without the definite article) in a context of naming the animals—a significant context in which to employ initially the proper name<sup>43</sup> for the first human.

The anarthrous form does not appear again until 3:17 and 21. Fittingly, the anarthrous form makes its appearance in the genealogy of chapter 5 (vv. 1–2). The ambiguity of *’ādām* in Genesis 1–2 leads some scholars to conclude that Genesis does not refer to a God-created man as first or even “one in a definite series.” Claus Westermann reasons that primeval history “lies beyond history that can be experienced and documented. The contention is that humanity (meaning every individual) owes its existence to God—no more and no less.”<sup>45</sup> These details regarding the use or nonuse of the article with *’ādām*, however, should not cause the reader to miss the fact that the first *toledot* repeatedly presents the man as a single individual:

- God forms a single individual (designated “the man,” or “human”)—not a clan, tribe, or people—from the dust (or clay) of the ground (2:7a). This fact alone rules out any form of evolution (theistic or otherwise).
- God breathes the “breath of life” into that individual’s nostrils (2:7b)—not into the nostrils of hundreds or thousands of humans.
- The text designates this individual as a “living being” (or “living soul,” 2:7c).
- God places this individual in a specially designed “garden” (2:8).
- God assigns to this individual the care and protection of the garden (2:15).
- To this individual God gives a command concerning what he could and what he could not eat (2:16–17).
- This individual is “alone,” a condition the Creator considers “not good” (2:18a). How could “alone” refer to a clan, tribe, or people? A group of people would not face the situation Adam faces “alone.” The implication is that he cannot reproduce and fulfill the divine mandate (“be fruitful and increase in number; fill the earth,” 1:28 esv).<sup>47</sup> For evolutionists, this presents another problem. If it takes countless years to produce one such individual, how will he survive long enough while another similarly developed individual evolves who is his compatible opposite in gender for the human race to begin?
- God declares that he will make an appropriate counterpart for that individual human (2:18b)—apparently not a reference to another clan, tribe, or people. The wording, “a helper suitable for him,” refers to complementarity as opposed to identity. This second individual, like the man, will be a special creation by God himself.
- The individual whom God had placed in the garden names the animals, but finds no individual like himself (2:19–20).
- God causes the individual to enter into a deep sleep and he takes a portion of flesh and bone from the man’s side (2:21)—not out of multiple sides belonging to multiple individuals. The creation of the woman cannot be taken as archetypal, because it cannot be experienced again and again in such a way that we recognize ourselves in it. No woman originates from a man in the way Eve came into existence from Adam. God made a woman from a portion of a man’s flesh only once. Nor can she be the product of thousands or millions of years of evolution. Human characteristics and DNA must be passed on prior to the death of the first human, or the first of the species dies and the evolutionary process must begin all over again.<sup>51</sup>

- To this one individual God brings one woman, whom he had formed out of the material he had taken from the man (2:22).
- The man (Adam) reacts to this presentation of the woman with a declaration that the woman (not multiple women) is related to him, because her origin is from him (2:23). In the Hebrew a threefold “this one” (*zō’ t*) emphatically identifies this woman as one of a kind—all eyes are on her.<sup>53</sup> Among other things, Adam’s speech and Eve’s understanding it do not fit any evolutionary model, since evolution requires innumerable stages of slow and minute development over thousands of years even for an individual to acquire such powers of speech with such sophistication.

The references to one individual man (Adam) and his one wife throughout the subsequent context (e.g., 2:24, 25; 3:1, 4, 6, 7) demonstrate that the biblical writer intends the reader to understand that these two are the parents of the entire human race and there are no others like them until they themselves have borne children (4:1–2). Furthermore, these first individuals cannot be the product of an evolutionary process. Such organisms (human beings) “cannot be understood except as the products of a directly acting, purposeful intelligence.”<sup>56</sup> The example of the first pair’s commitment to one another becomes the paradigm for all future monogamous marital relationships (2:24; cf. Matt. 19:4–6). God provides marriage as a pattern for all mankind, not just for Israel.

### Genesis 3

Gordon Wenham identifies seven features indicating that the narrative of Genesis 2–3 is more historical than paradigmatic:

- The account’s heading (2:4, “This is the account of”) links the record with subsequent histories of Noah, Abraham, Jacob, and Joseph.
- The immediately following story of Cain and Abel (Gen. 4) ties the events of Genesis 2–3 to real historical outcomes.
- Chapter 5 links Adam with Noah, indicating that the writer associates the earliest events with real people.
- God’s curse on the serpent results in the serpent crawling on the ground—not something that can be applied to every person who might sin subsequently.
- Subsequent people inherit pain, toil, and death because of the first pair’s disobedience.
- God expels Adam and Eve from the garden—an event not repeated with later people who disobey him.
- In the light of God’s declaration that everything is “very good” (1:31), chapters 2–3 provide explanation for why that is not true today.

The disobedience and fall of mankind take the metanarrative to a new level. The writer has specified the mechanism for the propagation of human beings on the earth. Now the text must introduce God’s ultimate purpose. The *protoevangelium* in Genesis 3:15 contains that concept by its attention to the “seed” (niv, “offspring”) of the woman.

The introduction of soteriological thought does not eliminate the historicity of the original pair, nor does it do away with the two being the literal first parents of all of earth’s peoples. The entire human race descends from Adam and Eve and is, therefore, Adamic. There are no pre-or extra-Adamic people(s). Adam, as the seminal (physical) head of the human race, presides also as the

federal (legally representative) head of the human race. Even the first woman came from Adam—she possesses his DNA as altered by God at the time he formed her.

According to the biblical record, the fall stands as a historical event rather than something imaginary or mythological. The biblical record discloses that the first human beings disobeyed God's command. The time of this disobedience was very early—at the beginning of the history of the human race on planet Earth, before the newly created man and woman could begin to produce children with which to populate the world.

How significant is the early entrance of sin into the created order? Paul House responds to that question by answering, "In a very real sense, the rest of Scripture deals with the solution to the sin problem." The disobedience results in the entrance of death, as God himself indicates in the statement of his prohibition in Genesis 2:17. That death must refer either (1) to the initiation of the process of aging and dying, or (2) to the entrance of spiritual death, or (3) to both of these kinds of death. The last seems more consistent with the immediate, as well as the remote, context.

In the midst of divine judgment for Adam's disobedience, God extends his mercy to the man and the woman. Immediate physical death would have put an end to God's program for Adam and Eve. Instead, God allows the pair to continue living so that they might produce offspring (seed) that eventually will triumph over the serpent. Without that extension, the Restorer cannot come. Without that extension, no remedy can be applied. Thus God reveals his character in both the justice he administers and the grace-filled mercy he applies—all with an eschatological end in mind.

The same kind of merciful extension of life for the sake of continuing the seed and accomplishing God's ultimate purpose occurs again at the time of the golden calf incident, when he allows the first generation of Israelites to live until a second generation has been prepared to enter the land of promise (Exod. 32:1–34:28). Noting this revelation of God's character, James Hamilton identifies death in Genesis 2–3 as alienation from the life of God, which replaces freedom and innocence with shame and fear.

The announcement that the man will "return to the ground" (Gen. 3:19) cannot be understood as anything but physical death. That contrasts starkly with the potential that would have been there for the human pair had God allowed them to continue eating from the tree of life (3:22). Thus, death is a new reality arising out of the disobedience of man. As far as that disobedience is concerned, the second masculine singular grammatical forms (verbs, pronouns, and pronominal suffixes) throughout Genesis 3 make it clear that the Creator holds Adam accountable. As Eve's husband, Adam is head of his family and responsible for both Eve's and his actions leading to sin's entrance into the world.

As Collins argues, in order for mankind to be accountable for sin, there needs to be a common origin of all mankind in a state of goodness interrupted by voluntary rebellion. If this scenario does not represent historical fact, then God himself can be blamed for the existence of sin. Genesis 1–3 reveals that (1) God creates Adam and Eve directly—he does not select them out of any existing group of hominids; (2) God does not add the image of God to Adam and Eve—it is a unique component involved in their creation; (3) God creates Adam and Eve for dominion over the animals and the earth; (4) God creates Adam and Eve so that they possess a totally righteous nature and character; (5) God prepares the garden of Eden for Adam and Eve; (6) God gives a direct command to Adam and Eve not to eat fruit from the tree of the knowledge of good and evil; (7) Satan, through the instrumentality of the serpent, tempts Adam and Eve to defy that specific divine prohibition; (8) Adam chooses to disobey God's directly revealed prohibition; (9) God banishes

Adam and Eve from the garden of Eden, following their willful disobedience; and (10) Adam and Eve produce children bearing their image as rebels against a holy God.

### *Genesis 4*

Sin's history continues as the writer reveals that mankind's rebellion against God makes its presence known even in the act of worship and within the close relationships of the first family. Cain, an actual person from the primeval past, offers an unacceptable sacrifice and then murders his brother Abel. Adam's failure to protect the garden from the incursion of evil now results in Cain's failure to rightly care for his own brother.

The occasion confronts the reader with the first physical death. Abel's death does not come as the direct and immediate application of the "you will surely die" declaration in Genesis 2:17. Yet, his death is a result of Adamic disobedience. Adam's disobedience to God's spoken word results in his son's willful destruction of one who, like him, bears the image of God. Cain learns that "life without God or his blessing [is] a dangerous life without protection." Human beings become self-centered and violent. Something has gone terribly wrong—and it is all due to what Adam had done. Because of his disobedience sin and death enter the world. Yet, hope still exists, because the theme of human "seed" makes its second appearance in 4:25 (Seth).

### **Genesis 5**

The first of the *toledots* to include the name of an individual in the heading is the second *toledot* (Gen. 5:1, "This is the book of the generations of Adam" [NASB]). First, the statement identifies a single individual as the one whom God has created in his likeness. Second, the text reveals that this single individual lives for 130 years, then sires a son, whom he names "Seth" (5:3). Such personal details, repeated throughout the genealogy, signal to the reader that "these were real human people made in God's image who lived before the flood." Third, the "image" and "likeness" that Seth receives "were transferred to Seth because of the fact that Adam had fathered him."<sup>66</sup> Could it be that parentage also transmits the Adamic sin?—more specifically, the male parent? Parentage being the clear connection in the transfer of the image of God lends itself to the concept of seminal headship rather than federal headship. According to John A. Witmer,

The natural headship view ... recognizes that the entire human race was seminally and physically in Adam, the first man. As a result God considered all people as participating in the act of sin which Adam committed and as receiving the penalty he received. Even adherents of the federal headship view must admit that Adam is the natural head of the human race physically; the issue is the relationship spiritually.

The genealogy commencing with Adam assumes that the image of God marks every individual as human. It indicates that all humans descend from one original pair. In staccato-like fashion, "then he died" reminds the reader again and again that death is in the world to stay. The genealogy presents Enoch (5:21–24) as the sole exception, demonstrating that it is yet possible for a person to obey and worship God as the Creator intended. Abel is the first to attempt to live a worshipful life, and his brother kills him. Enoch appears as the second individual to live for God, rather than self, and God removes him from Earth to abide with him. The contrast discloses both the reality of life in a fallen world and the hope that involves abiding with God outside this world.



## *Witnesses in the Rest of the Old Testament*

Throughout the Hebrew Bible writers speak of creation, marriage, the Sabbath, and the fall by referring to those original events. Exodus 20:11 provides a key example with its direct reference to the six days of creation as the pattern for Israel's Sabbath observance. Later in the Pentateuch, Deuteronomy 4:32 speaks of God's creation (*bārā'*) of human beings (a use of *'ādām* without the definite article), using the vocabulary of Genesis 1:27. Among the prophets, Isaiah 42:5 not only employs *bārā'*, but also describes the Creator as the one who "gives breath" (cp. Gen. 2:7) to the earth's peoples.

Mention of the garden in Eden appears in Ezekiel 28:11–19. Genesis 2:24 apparently forms the backdrop for Malachi 2:15. A number of English translations prefer the personal name "Adam" in Hosea 6:7 (ASV, NASB—updated 1995, ESV, HCSB, NLT, NIV—1984; cp. "at Adam" in NRSV, NIV—2011, TNIV, NET). Duane Garrett offers a potential interpretation allowing both a geographical and a theological association with Adam: "The prophet has made a pun on the name of the town and the name of the original transgressor. His meaning is, 'Like Adam (the man) they break covenants; they are faithless to me there (in the town of Adam).'"<sup>69</sup>

Additional references back to Genesis 1–11 in the remainder of the Hebrew Bible could fill the space allotted for this essay (e.g., Deut. 32:8; Isa. 45:12, 18; Mal. 2:10; Eccl. 3:20; 7:20, 29; 12:7; Job 31:33; Prov. 3:18; 11:30; 13:12; etc.). All of these references indicate an acceptance of the historical reality of events recorded in the early chapters of Genesis.

A noteworthy reference to Adam occurs at the start of 1 Chronicles, the final book of the Hebrew Bible. Genealogies commencing with Adam both open the Hebrew Bible (Gen. 1:26–27 and, especially, 5:1) and close the Hebrew Bible (1 Chron. 1:1). The final compiler evidently observes this element contributing to the overall structure of the biblical record. Jesus himself also takes note of this bracketing of the Hebrew Bible by distinct parallels when he refers to the death of Abel and the death of Zechariah (Luke 11:50–51). Jesus even identifies the Hebrew Bible as having preserved an accurate historical record of the killing of prophets "since the beginning of the world" (a reference to the proximity of creation to the first murder in the early chapters of Genesis). As Eugene Merrill points out, the reason Genesis and 1 Chronicles make the connection of Adam to Israel is that "Israel could arrive at an accurate self-perception only by understanding its place in relationship to the first parents and, indeed, to creation itself."

## *New Testament Evidence*

Under the heading "The New Testament Appropriation," Victor Hamilton examines the impact of Genesis 1–11 on numerous New Testament texts, noting again and again the New Testament writers' theological dependence on those early events.

Consider the manner in which the gospel of Matthew commences with a genealogy and a heading saying essentially, "the book/record of the generations of Jesus Christ" (1:1; *biblos geneōs 'Iesou Christou*). That is exactly as the first Adam's genealogy begins in Genesis 5:1 (NASB): "This is the book [record] of the generations of Adam" (*zeh sēper tōlēdōt 'ādām*). No other *toledot* formula in Genesis contains a reference to "book," and that *toledot* relates most intimately to creation and the first man. Since Matthew makes such connections, it should be no surprise that Paul identifies Jesus as the "last Adam" (1 Cor. 15:45). Luke 3:38 also refers to Adam by name in the genealogy of Christ that concludes, "the son of Enosh, the son of Seth, the son of

Adam, the son of God.” There is no reason to take the name of Adam any differently from any other name in the entire genealogy as being anything but a real person (including God himself).

Paul’s message on Mars Hill specifies that God created all mankind over the entire surface of the planet from but one man (Acts 17:26). Denial of the truth of Paul’s declaration places suspicion on all that Paul says and on the foundation for his preaching in regard to universal sin and God’s program of redemption. The historical individuality of Adam as the parent of the race forms the basis of New Testament theology. A mere archetype<sup>73</sup> cannot fulfill the same textually and theologically significant role.

As Hamilton observes, Romans 5:12–21 and 1 Corinthians 15:21–22, 45–49 make “an unmistakable connection between Adam and Christ.” Paul’s argumentation appears to be consistently historical in nature. In other words, he appeals to historical facts as he reads them in the book of Genesis. Donald MacDonald expresses the traditional understanding of New Testament argumentation:

But it is not as a bare historical fact that the New Testament views the unity of mankind; it is the very foundation of the cardinal doctrine of Christianity—the atonement through Christ. It is on the assumption that all men are descended from the first Adam and are involved in his guilt that the atonement proceeds and that the offers addressed to sinners of the blessings are procured by the second Adam, the new head of *humanity* (Rom. 5:14, 19). The denial of this doctrine, then, involves more than the rejection of so-called Hebrew myths. It is practically a rejection of Christianity and, in a personal point of view, raises doubts that on this theory are from their nature incapable of solution. For, if there be any tribe not descended from Adam, how can any individuals assure himself or those around them of this connexion [sic!], and so of any title to participate in the blessings of the gospel?

The issue in Romans 5 involves the biblical concepts of sin and death. Before going further, we must define what we mean (or, what the Bible means) by sin. According to a brief analysis of biblical terms for sin, it consists of “lawlessness” (*anomia*, 1 John 3:4), “unrighteousness” (*adikia*, Rom. 3:5), “ungodliness” or “godlessness” (*asebeia*, Rom. 11:26), willful “ignorance” (*agnoia*, Eph. 4:18), “missing the mark” or “sin” (*hamartia*, Rom. 3:23), “trespass” (*paraptoma*, Rom. 5:15), “transgression” (*parabasis*, Rom. 4:15), and “disobedience” (*parakoē*, Rom. 5:19). Note the employment of the alpha-privative as part of the formation of the first four terms (*anomia*, *adikia*, *asebeia*, and *agnoia*). These four terms focus on the contrastive nature of sin when held up to the nature and will of a holy God. Sin is inherently unlike God and anti-God. The use of the preposition *para* with the final three terms emphasizes the aspect of contrary behavior that willfully passes over the moral boundary marked out by God and His Word. Sin is rebellion against the clearly understood command of God. Scripture teaches the following:

- Sin is a failure to glorify God.
- Sin consists of active rebellion against God’s established standards.
- Sin is both a state of being and an act of the human will.
- Sin is moral evil.
- Sin can only be defined in the context of the God of the Bible and his character.
- Sin is not an inherent aspect of the created order.

Sin and its consequences (including spiritual, physical, and eternal death) enter the created order through the willful transgression of Adam (Rom. 5:12). As such, *the biblical description of sin depends entirely on the historicity of Adam*. He must be a real individual who rebels against a clear divine directive at a specific moment in real time in a real place.

Some scholars, to the contrary, argue that Paul's view of Adam depended on "the assumptions and conventions held by other Jewish interpreters at that time." As the argument goes, the influence of Jewish tradition on Paul's interpretation of the Old Testament compares well with the way modern Christians receive a traditional telling of the Christmas story that inserts elements not actually found in the biblical account.<sup>78</sup> However, this approach fails to give adequate attention to the role of the Holy Spirit in superintending the writing of the biblical books, preserving them from just such error.

The fact is that Paul actually proclaimed a message that was obviously unacceptable to the Jewish rabbis of his day; otherwise they would not have sought to silence him. Paul was not colored by the erroneous rabbinic teachings of his day. Like Jesus, he spoke of the accuracy and integrity of the biblical account of creation and the messianic prophecies, unlike first-century Judaism.

Moreover, Adam must be a completely righteous person, bearing the image of God, who succumbs to a specific temptation from outside his own person and who represents the entire human race. This representation consists of something more than viewing the events and people of Genesis 1–3 as archetypal, as solely theological lessons for us. Many Christians claim that it makes no difference whether Adam and Eve were historical persons or mere archetypes, because they believe the theological outcome is the same.<sup>82</sup> Perhaps the doctrine of man remains the same, but this approach has serious implications for the doctrine of Scripture and the doctrine of Christ.

Since God promises in his Word to restore the descendants of the first Adam through the substitutionary sacrifice of the second Adam (Jesus Christ), the issue of the historicity of Adam has soteriological implications. According to the apostle Paul,

Therefore, just as sin entered the world through one man, and death through sin, and in this way death came to all people, because all sinned—

To be sure, sin was in the world before the law was given, but sin is not charged against anyone's account where there is no law. Nevertheless, death reigned from the time of Adam to the time of Moses, even over those who did not sin by breaking a command, as did Adam, who is a pattern of the one to come.

But the gift is not like the trespass. For if the many died by the trespass of the one man, how much more did God's grace and the gift that came by the grace of the one man, Jesus Christ, overflow to the many! (Rom. 5:12–15)

John Mahoney articulates the matter in the following way: "If the first man is not historical and the fall into sin is not historical, then one begins to wonder why there is a need for our Lord to come and undo the work of the first man." *That makes the historicity of Adam a gospel issue.* Many scholars also dispute the bodily resurrection of Jesus from the dead, making basically the same arguments employed against a historical Adam. They claim that resurrection is scientifically impossible and that rational people cannot accept such a religious concept. Listen to what Paul had to say about rejecting the resurrection of Christ:

And if Christ has not been raised, our preaching is useless and so is your faith. More than that, we are then found to be false witnesses about God, for we have testified about God that he raised Christ from the dead. But he did not raise him if in fact the dead are not raised. For if the dead are not raised, then Christ has not been raised either. And if Christ has not been raised, your faith is futile; you are still in your sins. Then those also who have fallen asleep in Christ are lost. If only for this life we have hope in Christ, we are of all people most to be pitied. (1 Cor. 15:14–19).

## Concluding Thoughts

Why do some students of Scripture abandon a traditional view of Adam and refuse to accept the biblical text's testimony as historically accurate? In one word, evolution—the scientific theory of evolution for both the origins of the material universe and the forms of life that inhabit our planet. In Enns' words, "If evolution is correct, one can no longer accept, in any true sense of the word 'historical,' the instantaneous and special creation of humanity described in Genesis, specifically 1:26–31 and 2:7, 22."

Another reason some propose for abandoning the biblical record of mankind's origins resides in the scholarly preference for identifying the ancient Near Eastern myths (such as Enuma Elish) as the prototype for Israel's creation account. However, those scholars assume that the biblical account originated with Moses, and they often summarily reject any concept of Moses' employment of older records<sup>87</sup> unrelated to the Mesopotamian myths. What if Genesis 1–3 represents the original account that the later Mesopotamian materials skewed and spun to their own particular purposes, rewriting the factual record?

Similarities between the Israelite and the Mesopotamian materials need not require Israelite dependence on the Mesopotamian. Past and present scholars sometimes overstate the similarities while understating the differences. Genesis 1 does not offer a specific or direct ideological polemic. The biblical account of creation contains no description of God at war in any cosmic conflict among the gods, nor any victory enthronement motif, as one sees with these ancient Near Eastern myths. With these absent elements in mind, Bill T. Arnold concludes that "Israel's God has no rivals.... There can be no enthronement portrait here because God has not *become* sovereign; he has simply never been *less than* sovereign." With regard to the historicity of the biblical Adam, the Genesis account distinguishes itself from the ancient Near Eastern stories by the clear declaration that God created only one human pair (monogenesis) as compared to the polygenistic beliefs of other ancient peoples in the region.<sup>91</sup> Evangelicals should uphold and defend that uniqueness as one of the key indicators that the Genesis record should have priority in all discussions of primeval history.

Why persist in identifying the apparent similarities between biblical and extrabiblical materials as some sort of literary borrowing? Why continue to associate the biblical account so closely with the conceptual milieu of the Mesopotamian culture? Might the similarities provide evidence of a shared historical memory based on a shared (originally singular) revelation? If so, then the Mesopotamian cultural myths might derive their core concepts from divine revelation.<sup>93</sup> As Enns notes, the differences between the extrabiblical myths and the biblical accounts of both creation and the flood do, indeed, reflect theological differences. However, the chief theological disharmony involves the concept of direct divine revelation and the conviction of the biblical writers that God's supernatural revelation preserves his own witness to the events for which there were no human eyewitnesses.<sup>95</sup> One of the reasons that the God of Israel is greater than the gods of the nations rests with his ability to supernaturally reveal historical truth from the far distant past and from the distant future—both unknown to the human recipient of the revelation (cf. Isa. 45:12, 18–19; 46:10–11; 48:3–8, 12–16).

Walton notes that extant extrabiblical materials offer no help in either defending or contradicting the historicity of Adam and Eve, so it does little good to appeal to those materials in regard to the issue at hand. In other words, the full gamut of viewpoints contradicting the traditional view of a historical Adam are nothing more than speculation in the interest of seeking a way to harmonize the Bible and the evolutionary views held by the majority of scientists.

When the reader of the Bible accepts extrabiblical evidence (whether from ancient Near Eastern documentation or from modern scientists' interpretation of circumstantial evidence) over the biblical record, that denigrates the biblical record and treats it with skepticism rather than as *prima facie* evidence. In other words, we err when we assume that any major interpretive problem is due to a lack of accuracy within the text itself. We should assume that the Scriptures are accurate until proven otherwise by equally accurate, equally authentic, and equally ancient evidence.

Does the issue of genre have an impact on the historicity of the Genesis account regarding the creation of mankind? Enns rightly reminds his readers that “narrative is not an automatic indication of historical veracity, either in the Bible or any other literature, ancient or modern.” In similar fashion, we might say that poetry provides no automatic confirmation of a lack of historical veracity. Collins goes so far as to declare that the presence of anachronism within any account does not prevent the text from referring to actual events in history.<sup>99</sup>

Nonbiblical examples of narrative prose literature without historical veracity include works of fiction. Poetry that conveys accurate historical descriptions of true events include biblical poems such as Exodus 15 (the “Song of Moses”) and Judges 5 (the “Song of Deborah”), among others. Without argument, Psalm 104 contains poetic descriptions of creation events. The imagery and metaphors of such poetry must be understood for being just that—no one takes a figurative expression such as “He walks upon the wings of the wind” (Ps. 104:3 na sb) to mean that God has legs and the wind actually has wings. Properly interpreting such wording requires recognition of the figures of speech.

Catalysts for these historical poems arise out of the actual historical events themselves. Even the ancient myths carry a seed of historical truth; one or more historical events often provide the basis for their composition. Myths, however, skew the original events and revise them according to the fallen imagination of fallen human beings. Speaking God-given truth sets the biblical record apart from the pagan myths.

With all these observations in mind, the issue of genre actually acts as a red herring in this discussion. Whether Genesis 1 is poetry or narrative, the text conveys accurate historical truth, and an actual historical event comprises the basis for the record. Of course, some traditionalists would argue that genre definitions and identifications tend to be subjective and often directed by secular motives. However, we need not jettison legitimate literary analysis and recognition of different types of literature in order to reach the conclusion that Adam is a real, historical figure—the first human being and father of all mankind.

The traditional viewpoint regarding the historicity of Adam chooses to stick primarily to the testimony of the biblical text. However, due to the argumentation used by those who adapt their interpretation of the text to current scientific opinion, we believe it necessary to respond in kind. If the opposition to the traditional view appeals to science, then the traditionalists must also deal with the issues thus raised—in the realm of science. We must remember that declarations by scientists represent their interpretation of the evidence, not the evidence itself. Science changes, the Scripture does not. But that is a matter for another essay or volume.

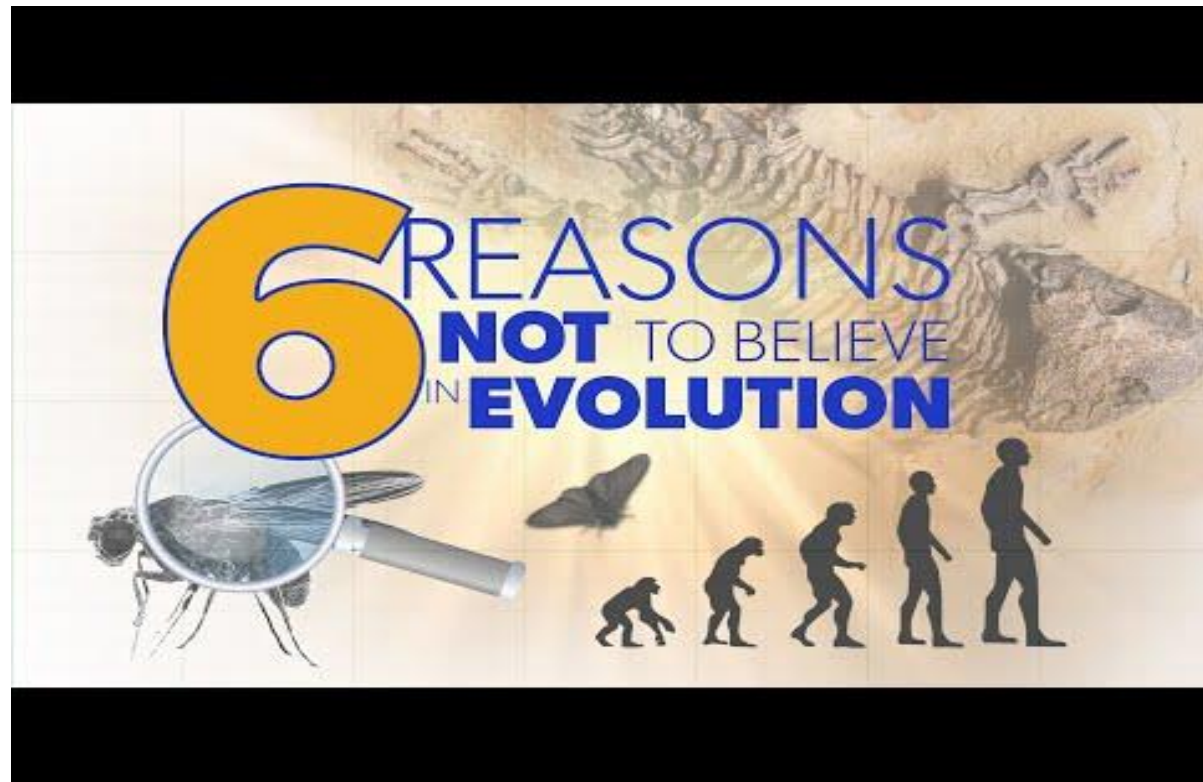
Walton provides the best words with which to bring this essay to a close: “We need to defend the teaching of the text, not a scientific reconstruction of the text or statements that are read between the lines of the text.”<sup>12</sup>

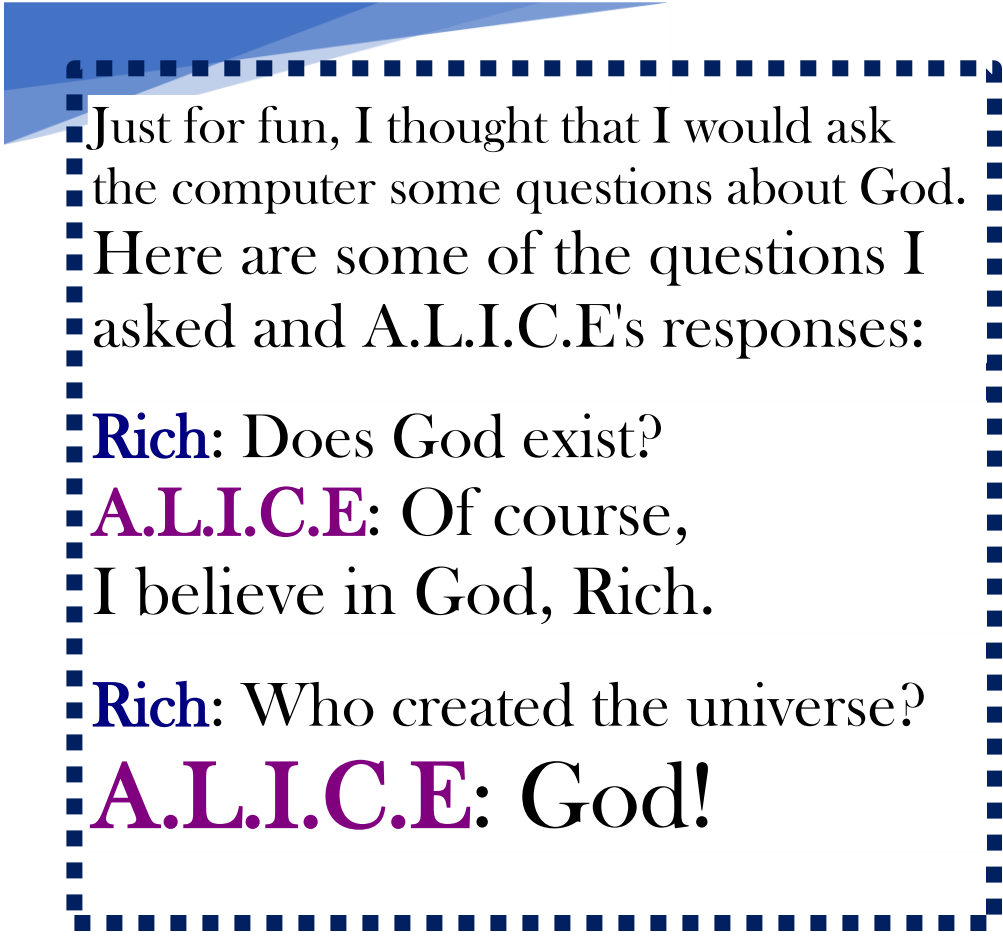
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<sup>12</sup> Barrick, W. D. (2013). [A Historical Adam: Young-Earth Creation View](#). In M. Barrett, A. B. Caneday, & S. N. Gundry (Eds.), *Four Views on the Historical Adam* (pp. 197–227). Grand Rapids, MI: Zondervan.

# **EVOLUTION** **Irrational & Unnatural**

JEFF MILLER, PH.D. APOLOGETICS PRESS





Just for fun, I thought that I would ask the computer some questions about God. Here are some of the questions I asked and A.L.I.C.E.'s responses:

**Rich:** Does God exist?

**A.L.I.C.E.:** Of course, I believe in God, Rich.

**Rich:** Who created the universe?

**A.L.I.C.E.:** God!





# "In the Beginning Was Information!"



Everything in the Universe

Random Characters  
lpeldohed  
onldeankly  
begtnedtoe

Random Numbers  
9924029473  
4149910897  
4306737912

Thoughts of a Philosopher

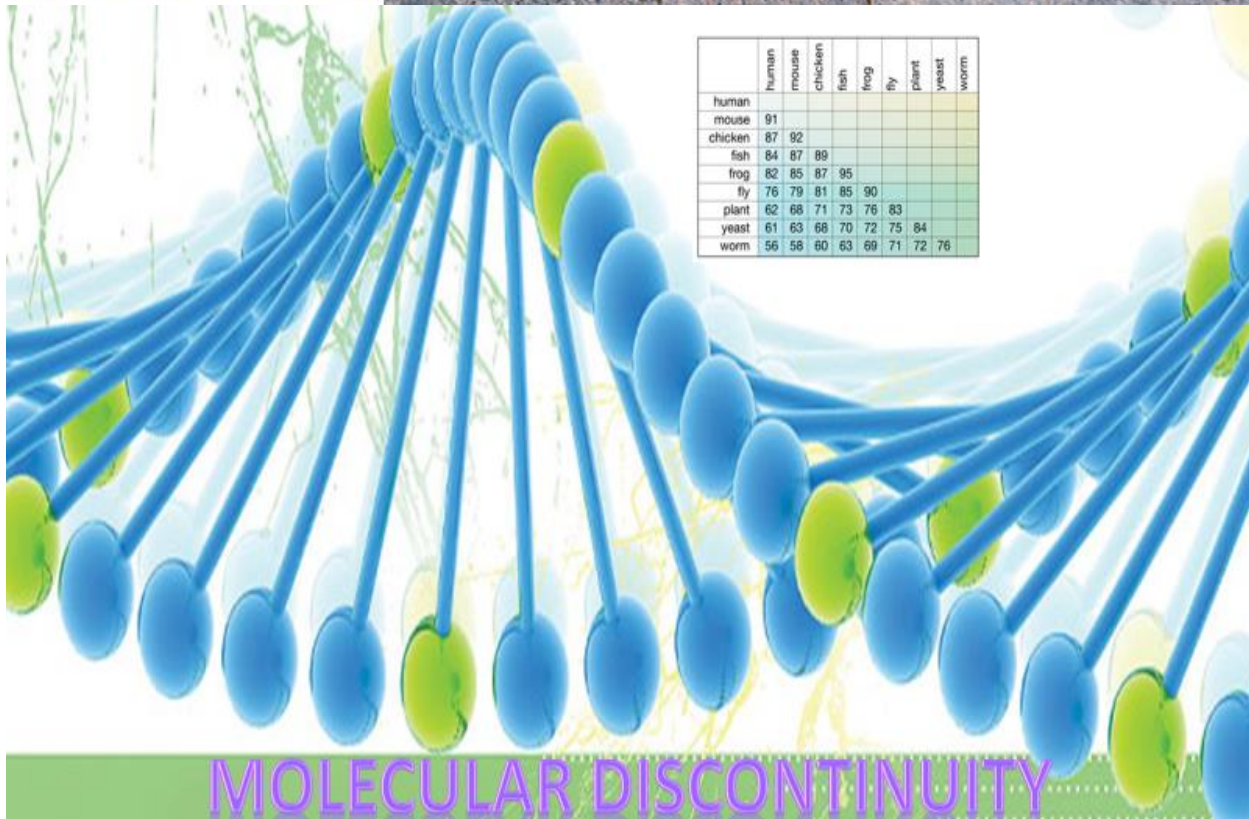
"Information is in everything."

Protein

Crystal

Rock

The collage features various icons: a computer monitor, a building, a planet, a snowflake, a blue star, a crystal, a rock, a protein structure, and a red car.



✓ **“There is no known natural law thru which matter can give rise to information, nor is there any physical process or material phenomenon known that can do this!”**

– **In The Beginning Was Information**

✓ “Information cannot be a property of matter, it is always an intellectual construct - neither matter or energy. A code is a necessary prerequisite establishing and storing information. Devising a code is creative mental process. Matter can be a carrier of codes but can't generate any codes.”

– W. Gitt, **In The Beginning Was Information**

# The Origin of Biological Information



Chaos  
*does not*  
give rise to order

---

Noise  
*does not*  
give rise to information

## **The Origin of Biological Information**

Letters

(nucleotides)

Words

(codons - amino acids)

Sentences

(genes - protein)

Book

(chromosome)

Library

(genome)

### **The Third Crisis: *The Origin of Biological Information***

**"The reason that there are principles of biology that cannot be deduced from the laws of physics and of chemistry lies . . . in the mathematical fact that the genetic information content of the genome for constructing the simplest organisms is much larger than the information content of these laws."**

H. Yockey *Information Theory and Molecular Biology*,  
1992, p. 335

# Information Is a Fundamental Entity

by [Dr. Werner Gitt](#) on March 12, 2009

*Many scientists therefore justly regard information as the third fundamental entity alongside matter and energy.*

## 3.1 Information: A Fundamental Quantity

The trail-blazing discoveries about the nature of energy in the 19th century caused the first technological revolution, when manual labor was replaced on a large scale by technological appliances—machines which could convert energy. In the same way, knowledge concerning the nature of information in our time initiated the second technological revolution where mental “labor” is saved through the use of technological appliances—namely, data processing machines. The concept “information” is not only of prime importance for informatics theories and communication techniques, but it is a fundamental quantity in such wide-ranging sciences as cybernetics, linguistics, biology, history, and theology. Many scientists, therefore, justly regard information as the third fundamental entity alongside matter and energy.

Claude E. Shannon was the first researcher who tried to define information mathematically. The theory based on his findings had the advantages that different methods of communication could be compared and that their performance could be evaluated. In addition, the introduction of the bit as a unit of information made it possible to describe the storage requirements of information quantitatively. The main disadvantage of Shannon’s definition of information is that the actual contents and impact of messages were not investigated. Shannon’s theory of information, which describes information from a statistical viewpoint only, is discussed fully in the appendix (chapter A1).

The true nature of information will be discussed in detail in the following chapters, and statements will be made about information and the laws of nature. After a thorough analysis of the information concept, it will be shown that the fundamental theorems can be applied to all technological and biological systems and also to all communication systems, including such diverse forms as the gyrations of bees and the message of the Bible. There is only one prerequisite—namely, that the information must be in coded form.

Since the concept of information is so complex that it cannot be defined in one statement (see Figure 12), we will proceed as follows: We will formulate various

special theorems which will gradually reveal more information about the “nature” of information, until we eventually arrive at a precise definition (compare chapter 5). Any repetitions found in the contents of some theorems (redundance) is intentional, and the possibility of having various different formulations according to theorem N8 (paragraph 2.3), is also employed.

## 3.2 Information: A Material or a Mental Quantity

We have indicated that Shannon’s definition of information encompasses only a very minor aspect of information. Several authors have repeatedly pointed out this defect, as the following quotations show:

Karl Steinbuch, a German information scientist [S11]: “The classical theory of information can be compared to the statement that one kilogram of gold has the same value as one kilogram of sand.”

Warren Weaver, an American information scientist [S7]: “Two messages, one of which is heavily loaded with meaning and the other which is pure nonsense, can be exactly equivalent . . . as regards information.”

Ernst von Weizsäcker [W3]: “The reason for the ‘uselessness’ of Shannon’s theory in the different sciences is frankly that no science can limit itself to its syntactic level.”<sup>1</sup>

The essential aspect of each and every piece of information is its mental content, and not the number of letters used. If one disregards the contents, then Jean Cocteau’s facetious remark is relevant: “The greatest literary work of art is basically nothing but a scrambled alphabet.”

At this stage we want to point out a fundamental fallacy that has already caused many misunderstandings and has led to seriously erroneous conclusions, namely the assumption that information is a material phenomenon. The philosophy of materialism is fundamentally predisposed to relegate information to the material domain, as is apparent from philosophical articles emanating from the former DDR (East Germany) [S8 for example]. Even so, the former East German scientist J. Peil [P2] writes: “Even the biology based on a materialistic philosophy, which discarded all vitalistic and metaphysical components, did not readily accept the reduction of biology to physics. . . . Information is neither a physical nor a chemical principle like energy and matter, even though the latter are required as carriers.”

Also, according to a frequently quoted statement by the American mathematician Norbert Wiener (1894–1964) information cannot be a physical entity [W5]: “Information is information, neither matter nor energy. Any materialism which disregards this, will not survive one day.”

Werner Strombach, a German information scientist of Dortmund [S12], emphasizes the nonmaterial nature of information by defining it as an “enfolding of order at the level of contemplative cognition.”

The German biologist G. Osche [03] sketches the unsuitability of Shannon's theory from a biological viewpoint, and also emphasizes the nonmaterial nature of information: "While matter and energy are the concerns of physics, the description of biological phenomena typically involves information in a functional capacity. In cybernetics, the general information concept quantitatively expresses the information content of a given set of symbols by employing the probability distribution of all possible permutations of the symbols. But the information content of biological systems (genetic information) is concerned with its 'value' and its 'functional meaning,' and thus with the semantic aspect of information, with its quality."

Hans-Joachim Flechtner, a German cyberneticist, referred to the fact that information is of a mental nature, both because of its contents and because of the encoding process. This aspect is, however, frequently underrated [F3]: "When a message is composed, it involves the coding of its mental content, but the message itself is not concerned about whether the contents are important or unimportant, valuable, useful, or meaningless. Only the recipient can evaluate the message after decoding it."

### 3.3 Information: Not a Property of Matter!

It should now be clear that information, being a fundamental entity, cannot be a property of matter, and its origin cannot be explained in terms of material processes. We therefore formulate the following fundamental theorem:

**Theorem 1:** The fundamental quantity information is a non-material (mental) entity. It is not a property of matter, so that purely material processes are fundamentally precluded as sources of information.

Figure 8 illustrates the known fundamental entities—mass, energy, and information. Mass and energy are undoubtedly of a material-physical nature, and for both of them important conservation laws play a significant role in physics and chemistry and in all derived applied sciences. Mass and energy are linked by means of Einstein's equivalence formula,  $E = m \times c^2$ . In the left part of Figure 8, some of the many chemical and physical properties of matter in all its forms are illustrated, together with the defined units. The right hand part of Figure 8 illustrates nonmaterial properties and quantities, where information,  $I$ , belongs.

What is the causative factor for the existence of information? What prompts us to write a letter, a postcard, a note of felicitation, a diary, or a comment in a file? The most important prerequisite is our own volition, or that of a supervisor. In analogy to the material side, we now introduce a fourth fundamental entity, namely "will" (volition),  $W$ . Information and volition are closely linked, but this relationship cannot be expressed in a formula because both are of a nonmaterial (mental, intellectual, spiritual) nature. The connecting arrows indicate the following:



Information is always based on the will of a sender who issues the information. It is a variable quantity depending on intentional conditions. Will itself is also not constant, but can in its turn be influenced by the information received from another sender.

Conclusion:

**Theorem 2:** Information only arises through an intentional, volitional act.

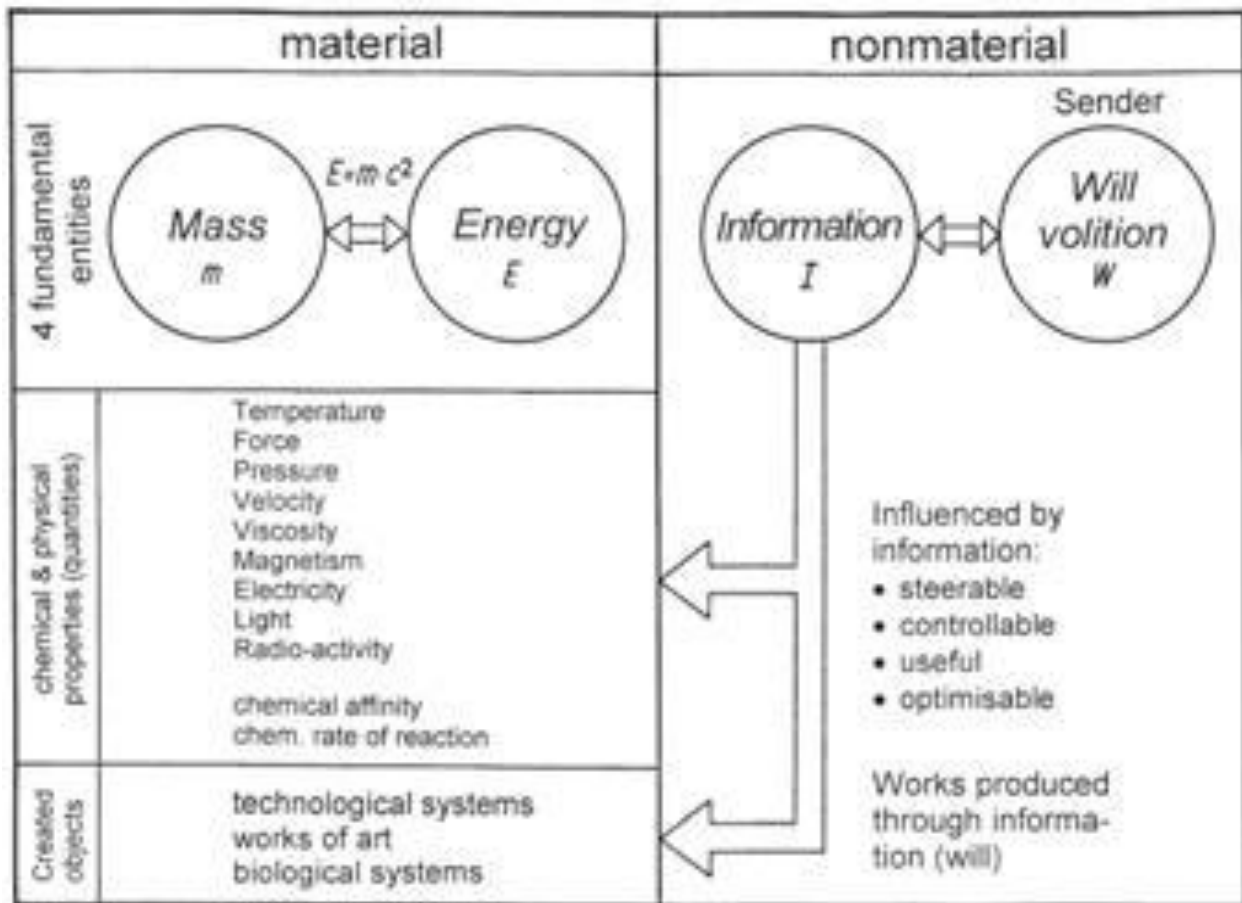


Figure 8: The four fundamental entities are mass and energy (material) and information and will (nonmaterial). Mass and energy comprise the fundamental quantities of the physical world; they are linked through the well-known Einstein equation,  $E = m \times c^2$ . On the nonmaterial side we also have two fundamental entities, namely information and volition, which are closely linked. Information can be stored in physical media and used to steer, control, and optimize material processes. All created systems originate through information. A creative source of information is always linked to the volitional intent of a person; this fact demonstrates the nonmaterial nature of information.

It is clear from Figure 8 that the nonmaterial entity information can influence the material quantities. Electrical, mechanical, or chemical quantities can be steered, controlled, utilized, or optimized by means of intentional information. The strategy

for achieving such control is always based on information, whether it is a cybernetic manufacturing technique, instructions for building an economical car, or the utilization of electricity for driving a machine. In the first place, there must be the intention to solve a problem, followed by a conceptual construct for which the information may be coded in the form of a program, a technical drawing, or a description, etc. The next step is then to implement the concept. All technological systems as well as all constructed objects, from pins to works of art, have been produced by means of information. None of these artifacts came into existence through some form of self-organization of matter, but all of them were preceded by establishing the required information. We can now conclude that information was present in the beginning, as the title of this book states.

**Theorem 3:** Information comprises the nonmaterial foundation for all technological systems and for all works of art.

What is the position in regard to biological systems? Does theorem 3 also hold for such systems, or is there some restriction? If we could successfully formulate the theorems in such a way that they are valid as laws of nature, then they would be universally valid according to the essential characteristics of the laws of nature, N2, N3, and N4.

# The Five Levels of the Information Concept

by [Dr. Werner Gitt](#) on March 19, 2009

*The question is whether these pictures represent information or not.*



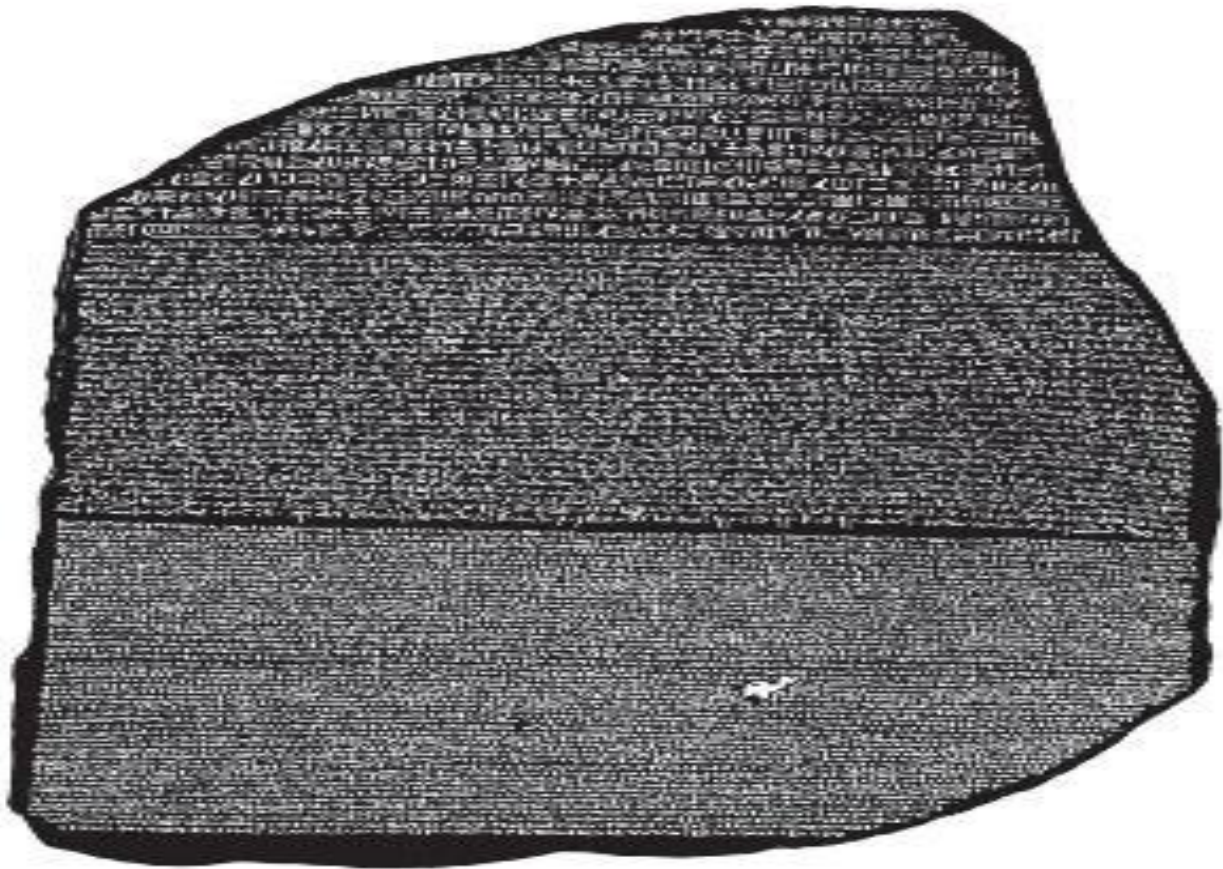
*Figure 9: Egyptian hieroglyphics.*

Figure 9 is a picture of icons cut in stone as they appear in the graves of pharaohs and on obelisks of ancient Egypt. The question is whether these pictures represent information or not. So, let us check them against the three necessary conditions (NC) for identifying information (discussed in more detail in paragraph 4.2):

NC 1: A number of symbols are required to establish information. This first condition is satisfied because we have various different symbols like an owl, water waves, a mouth, reeds, etc.

NC 2: The sequence of the symbols must be irregular. This condition is also satisfied, as there are no regularities or periodic patterns.

NC 3: The symbols must be written in some recognizable order, such as drawn, printed, chiseled, or engraved in rows, columns, circles, or spirals. In this example, the symbols appear in columns.



*Figure 10: The Rosetta Stone.*

It now seems possible that the given sequence of symbols might comprise information because all three conditions are met, but it could also be possible that the Egyptians simply loved to decorate their monuments. They could have decorated their walls with hieroglyphics,<sup>1</sup> just like we often hang carpets on walls. The true nature of these symbols remained a secret for 15 centuries because nobody could assign meanings to them. This situation changed when one of Napoleon's men discovered a piece of black basalt near the town of Rosetta on the Nile in July 1799. This flat stone was the size of an ordinary dinner plate and it was exceptional because it contained inscriptions in three languages: 54 lines of Greek, 32 lines of Demotic, and 14 lines of hieroglyphics. The total of 1,419 hieroglyphic symbols includes 166 different ones, and there are 468 Greek words. This stone, known as the Rosetta Stone (Figure 10), is now in the possession of the British Museum in London. It played a key role in the deciphering of hieroglyphics, and its first success was the translation of an Egyptian pictorial text in 1822.<sup>2</sup> Because the meaning of the entire text was found, it was established that the hieroglyphics really represented information. Today, the meanings of the hieroglyphic symbols are known, and anybody who knows this script is able to

translate ancient Egyptian texts. Since the meaning of the codes is known, it is now possible to transcribe English text into hieroglyphics, as is shown in Figure 11, where the corresponding symbols have been produced by means of a computer/plotter system.



Figure 11: A computer printout of some proverbs (in German) translated into hieroglyphics. Translation of the German text: It is better to receive one helping from God, than 5,000 dishonestly. Do not speak evil, then you will be loved by everybody. Take care that you do not rob a distressed person, nor do violence to somebody in poor health.

This illustrative example has now clarified some basic principles about the nature of information. Further details follow.

## 4.1 The Lowest Level of Information: Statistics

When considering a book B, a computer program C, or the human genome (the totality of genes), we first discuss the following questions:

- How many letters, numbers, and words make up the entire text?
- How many single letters does the employed alphabet contain (e. g. a, b, c . . . z, or G, C, A, T)?
- How frequently do certain letters and words occur?

To answer these questions, it is immaterial whether we are dealing with actual meaningful text, with pure nonsense, or with random sequences of symbols or words. Such investigations are not concerned with the contents, but only with statistical aspects. These topics all belong to the first and lowest level of information, namely the level of statistics.

As explained fully in appendix A1, Shannon's theory of information is suitable for describing the statistical aspects of information, e.g., those quantitative properties of languages which depend on frequencies. Nothing can be said about the meaningfulness or not of any given sequence of symbols. The question of grammatical correctness is also completely excluded at this level.

Conclusions:

**Definition 1:** According to Shannon’s theory, any random sequence of symbols is regarded as information, without regard to its origin or whether it is meaningful or not.

**Definition 2:** The statistical information content of a sequence of symbols is a quantitative concept, measured in bits (binary digits).

According to Shannon’s definition, the information content of a single message (which could be one symbol, one sign, one syllable, or a single word) is a measure of the probability of its being received correctly. Probabilities range from 0 to 1, so that this measure is always positive. The information content of a number of messages (signs for example) is found by adding the individual probabilities as required by the condition of summability. An important property of information according to Shannon is:

**Theorem 4:** A message which has been subject to interference or “noise,” in general comprises more information than an error-free message.

This theorem follows from the larger number of possible alternatives in a distorted message, and Shannon states that the information content of a message increases with the number of symbols (see equation 6 in appendix A1). It is obvious that the actual information content cannot at all be described in such terms, as should be clear from the following example: When somebody uses many words to say practically nothing, this message is accorded a large information content because of the large number of letters used. If somebody else, who is really knowledgeable, concisely expresses the essentials, his message has a much lower information content.

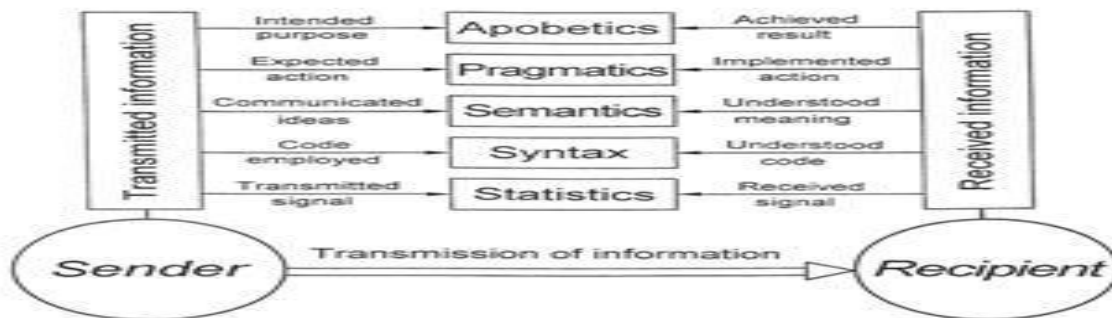


Figure 12: The five aspects of information. A complete characterization of the information concept requires all five aspects—statistics, syntax, semantics, pragmatics, and apobetics, which are essential for both the sender and the recipient. Information originates as a language; it is first formulated, and then transmitted or stored. An agreed-upon alphabet comprising individual symbols (code), is used to compose words. Then the (meaningful) words are arranged in sentences according to the rules of the relevant grammar (syntax), to convey the intended meaning (semantics). It is obvious that the information concept also includes the expected/implemented action (pragmatics), and the intended/achieved purpose (apobetics).

Some quotations concerning this aspect of information are as follows: French President Charles De Gaulle (1890–1970), “The Ten Commandments are so concise and plainly intelligible because they were compiled without first having a commission of inquiry.” Another philosopher said, “There are about 35 million laws on earth to validate the ten commandments.” A certain representative in the American Congress concluded, “The Lord’s Prayer consists of 56 words, and the Ten Commandments contain 297 words. The Declaration of Independence contains 300 words, but the recently published ordinance about the price of coal comprises no fewer than 26,911 words.”

**Theorem 5:** Shannon’s definition of information exclusively concerns the statistical properties of sequences of symbols; meaning is completely ignored.

It follows that this concept of information is unsuitable for evaluating the information content of meaningful sequences of symbols. We now realize that an appreciable extension of Shannon’s information theory is required to significantly evaluate information and information processing in both living and inanimate systems. The concept of information and the five levels required for a complete description are illustrated in Figure 12. This diagram can be regarded as a nonverbal description of information. In the following greatly extended description and definition, where real information is concerned, Shannon’s theory is only useful for describing the statistical level (see chapter 5).

## 4.2 The Second Level of Information: Syntax

When considering the book B mentioned earlier, it is obvious that the letters do not appear in random sequences. Combinations like “the,” “car,” “father,” etc. occur frequently, but we do not find other possible combinations like “xycy,” “bkaln,” or “dwust.” In other words:

Only certain combinations of letters are allowed (agreed-upon) English words. Other conceivable combinations do not belong to the language. It is also not a random process when words are arranged in sentences; the rules of grammar must be adhered to.

Both the construction of words and the arrangement of words in sentences to form information-bearing sequences of symbols, are subject to quite specific rules based on deliberate conventions for each and every language.<sup>3</sup>

**Definition 3:** Syntax is meant to include all structural properties of the process of setting up information. At this second level, we are only concerned with the actual sets of symbols (codes) and the rules governing the way they are assembled into sequences (grammar and vocabulary) independent of any meaning they may or may not have.

Note: It has become clear that this level consists of two parts, namely:

A) Code: Selection of the set of symbols used

B) The syntax proper: inter-relationships among the symbols

## A) The Code: The System of Symbols Used for Setting Up Information

A set of symbols is required for the representation of information at the syntax level. Most written languages use letters, but a very wide range of conventions exists: Morse code, hieroglyphics, international flag codes, musical notes, various data processing codes, genetic codes, figures made by gyrating bees, pheromones (scents) released by insects, and hand signs used by deaf-mute persons.

Several questions are relevant: What code should be used? How many symbols are available? What criteria are used for constructing the code? What mode of transmission is suitable? How could we determine whether an unknown system is a code or not?

### The number of symbols:

The number of different symbols  $q$ , employed by a coding system, can vary greatly, and depends strongly on the purpose and the application. In computer technology, only two switch positions are recognized, so that binary codes were created which are comprised of only two different symbols. Quaternary codes, comprised of four different symbols, are involved in all living organisms. The reason why four symbols represent an optimum in this case is discussed in chapter 6. The various alphabet systems used by different languages consist of from 20 to 35 letters, and this number of letters is sufficient for representing all the sounds of the language concerned. Chinese writing is not based on elementary sounds, but pictures are employed, every one of which represents a single word, so that the number of different symbols is very large. Some examples of coding systems with the required number of symbols are:

- Binary code ( $q = 2$  symbols, all electronic DP codes)
- Ternary code ( $q = 3$ , not used)
- Quaternary code ( $q = 4$ , e.g., the genetic code consisting of four letters: A, C, G, T)
- Quinary code ( $q = 5$ )
- Octal code ( $q = 8$  octal digits: 0, 1, 2, ..., 7)
- Decimal code ( $q = 10$  decimal digits: 0, 1, 2, ..., 9)
- Hexadecimal code<sup>4</sup> ( $q = 16$  HD digits: 0, 1, 2, ..., E, F)
- Hebrew alphabet ( $q = 22$  letters)
- Greek alphabet ( $q = 24$  letters)
- Latin alphabet ( $q = 26$  letters: A, B, C, ..., X, Y, Z)
- Braille ( $q = 26$  letters)



- International flag code (q = 26 different flags)
- Russian alphabet (q = 32 Cyrillic letters)
- Japanese Katakana writing (q = 50 symbols representing different syllables)
- Chinese writing (q > 50,000 symbols)
- Hieroglyphics (in the time of Ptolemy: q = 5,000 to 7,000; Middle Kingdom, 12th Dynasty: q = approximately 800)

### Criteria for selecting a code:

Coding systems are not created arbitrarily, but they are optimized according to criteria depending on their use, as is shown in the following examples:

- Pictorial appeal (e.g., hieroglyphics and pictograms)
- Small number of symbols (e.g., Braille, cuneiform script, binary code, and genetic code)
- Speed of writing (e.g., shorthand)
- Ease of writing (e.g., cuneiform)
- Ease of sensing (e.g., Braille)
- Ease of transmission (e.g., Morse code)
- Technological legibility (e.g., universal product codes and postal bar codes)
- Ease of detecting errors (e.g., special error detecting codes)
- Ease of correcting errors (e.g., Hamming code and genetic code)
- Ease of visualizing tones (musical notes)
- Representation of the sounds of natural languages (alphabets)
- Redundance for counteracting interference errors (various computer codes and natural languages; written German has, for example, a redundancy of 66 %)
- Maximization of storage density (genetic code)

**The choice of code depends on the mode of communication.** If a certain mode of transmission has been adopted for technological reasons depending on some physical or chemical phenomenon or other, then the code must comply with the relevant requirements. In addition, the ideas of the sender and the recipient must be in tune with one another to guarantee certainty of transmission and reception (see Figures 14 and 15). The most complex setups of this kind are again found in living systems. Various existing types of special message systems are reviewed below:  
Acoustic transmission (conveyed by means of sounds):

- Natural spoken languages used by humans
- Mating and warning calls of animals (e.g., songs of birds and whales)

- Mechanical transducers (e.g., loudspeakers, sirens, and fog horns)
- Musical instruments (e.g., piano and violin)

#### Optical transmission (carried by light waves):

- Written languages
- Technical drawings (e.g., for constructing machines and buildings, and electrical circuit diagrams)
- Technical flashing signals (e.g., identifying flashes of lighthouses)
- Flashing signals produced by living organisms (e.g., fireflies and luminous fishes)
- Flag signals
- Punched cards, mark sensing
- Universal product code, postal bar codes
- hand movements, as used by deaf-mute persons, for example
- body language (e.g., mating dances and aggressive stances of animals)
- facial expressions and body movements (e.g., mime, gesticulation, and deaf-mute signs)
- dancing motions (bee gyrations)

#### Tactile transmission (Latin *tactilis* = sense of touch; signals: physical contact):

- Braille writing
- Musical rolls, barrel of barrel-organ

#### Magnetic transmission (carrier: magnetic field):

- magnetic tape
- magnetic disk
- magnetic card

#### Electrical transmission (carrier: electrical current or electromagnetic waves):

- telephone
- radio and TV

#### Chemical transmission (carrier: chemical compounds):

- genetic code (DNA, chromosomes)
- hormonal system

#### Olfactory transmission (Latin *olfacere* = smelling, employing the sense of smell; carrier: chemical compounds):

- scents emitted by gregarious insects (pheromones)

Electro-chemical transmission:

-nervous system

## How can a code be recognized?

In the case of an unknown system, it is not always easy to decide whether one is dealing with a real code or not. The conditions required for a code are now mentioned and explained, after having initially discussed hieroglyphics as an example. The following are necessary conditions (NC), all three of which must be fulfilled simultaneously for a given set of symbols to be a code:

**NC 1:** A uniquely defined set of symbols is used.

**NC 2:** The sequence of the individual symbols must be irregular.

Examples:  $-. - - .- * - - * * . - .. -$  (aperiodic) qrst werb ggtzut

Counter examples:

$---...---...---...---...-$  (periodic)

$-----$  (the same symbol constantly repeated)

r r r r r r r r r r r r r r r r r r

**NC 3:** The symbols appear in clearly distinguishable structures (e.g., rows, columns, blocks, or spirals).

In most cases a fourth condition is also required:

**NC 4:** At least some symbols must occur repeatedly.

It is difficult to construct meaningful sentences without using some letters more than once.<sup>5</sup> Such sentences are often rather grotesque, for example:  
Get nymph; quiz sad brow; fix luck (i, u used twice, j, v omitted).

In a competition held by the Society for the German Language, long single words with no repetitions of letters were submitted. The winner, comprised of 24 letters, was: *Heizölrückstoßabdämpfung* (Note that *a* and *ä*, for example, are regarded as different letters because they represent different sounds.)

There is only one sufficient condition (SC) for establishing whether a given set of symbols is a code:

**SC 1:** It can be decoded successfully and meaningfully (e.g., hieroglyphics and the genetic code).

There are also sufficient conditions for showing that we are *not* dealing with a code system. A sequence of symbols cannot be a code, if:

- it can be explained fully on the level of physics and chemistry, i.e., when its origin is exclusively of a material nature. Example: The periodic signals received in 1967 by the British astronomers J. Bell and A. Hewish were thought to be coded messages from space sent by “little green men.” It was, however, eventually established that this “message” had a purely physical origin, and a new type of star was discovered: pulsars.  
or
- it is known to be a random sequence (e.g., when its origin is known or communicated). This conclusion also holds when the sequence randomly contains valid symbols from any other code.

*Example 1:* Randomly generated characters: AZTIG KFD MAUER DFK KLIXA WIFE TSAA. Although the German word *MAUER* and the word *WIFE* may be recognized, this is not a code according to our definition, because we know that it is a random sequence.

*Example 2:* In the Kornberg synthesis (1955) a DNA polymerase resulted when an enzyme reacted with *Coli* bacteria. After a considerable time, two kinds of strings were found:

1. alternating strings:

... TATATATATATATATATATATATATATAT ...

... ATATATATATATATATATATATATATA ...

2. homopolymere strings:

... GGGGGGGGGGGGGGGGGGGGGGG ...

... CCCCCCCCCCCCCCCCCCCCCCCC ...

Although both types of strings together contained all the symbols employed in the genetic code, they were nevertheless devoid of information, since necessary condition (NC) 2 is not fulfilled.

The fundamentals of the “code” theme were already established by the author in the out-of-print book having the same name as the present one [G5, German title: *Am Anfang war die Information*]. A code always represents a mental concept and, according to our experience, its assigned meaning always depends on some convention. It is thus possible to determine at the code level already whether any given system originated from a creative mental concept or not.

We are now in a position to formulate some fundamental empirical theorems:[6](#)

**Theorem 6:** A code is an essential requirement for establishing information.

**Theorem 7:** The allocation of meanings to the set of available symbols is a mental process depending on convention.<sup>7</sup>

**Theorem 8:** If a code has been defined by a deliberate convention, it must be strictly adhered to afterward.

**Theorem 9:** If the information is to be understood, the particular code must be known to both the sender and the recipient.

**Theorem 10:** According to Theorem 6, only structures which are based on a code can represent information. This is a necessary but not sufficient condition for the establishment of information.

**Theorem 11:** A code system is always the result of a mental process (see [footnote 8](#)) (it requires an intelligent origin or inventor).

The expression “rejoice” appears in different languages and coding systems in Figure 13. This leads to another important empirical theorem:

**Theorem 12:** Any given piece of information can be represented by any selected code.

Comment: Theorem 12 does not state that a complete translation is always possible. It is an art to suitably translate and express metaphors, twists of logic, ambiguities, and special figurative styles into the required language.

It is possible to formulate fundamental principles of information even at the relatively low level of codes by means of the above theorems. If, for example, one finds a code underlying any given system, then one can conclude that the system had a mental origin. In the case of the hieroglyphics, nobody suggested that they were caused by a purely physical process like random mechanical effects, wind, or erosion; Theorem 11 is thus validated.

The following is a brief list of some properties common to all coding systems:

- A code is a necessary prerequisite for establishing and storing information.
- Every choice of code must be well thought out beforehand in the conceptual stage.
- Devising a code is a creative mental process.
- Matter can be a carrier of codes, but it cannot generate any codes.

## B) The Actual Syntax

**Definition 4:** The actual syntax describes the construction of sentences and phrases, as well as the structural media required for their formation. The set of possible sentences of a language is defined by means of a formalized or formalizable assemblage of rules. This comprises the morphology, phonetics, and vocabulary of the language.

The following questions are relevant:

- Concerning the sender:
  - Which of the possible combinations of symbols are actual defined words of the language (lexicon and notation)?
  - How should the words be arranged (construction of the sentences, word placement, and stylistics), linked with one another, and be inflected to form a sentence (grammar)?
  - What language should be used for this information?
  - Which special modes of expression are used (stylistics, aesthetics, precision of expression, and formalisms)?
  - Are the sentences syntactically correct?
- Concerning the recipient:
  - Does the recipient understand the language? (Understanding the contents is not yet relevant.)

The following two sample sentences illustrate the syntax level once again:

- The bird singed the song.
- The green freedom prosecuted the cerebrating house.

Sentence B is perfectly correct syntactically, but it is semantically meaningless. In contrast, the semantics of sentence A is acceptable, but its syntax is erroneous.

By the syntax of a language is meant all the rules which describe how individual language elements could and should be combined. The syntax of natural languages is much more complex (see appendix A2) than that of formal artificial languages. The syntactic rules of an artificial language must be complete and unambiguous because, for example, a compiler program which translates written programs into computer code cannot call the programmer to clarify semantic issues.

Knowledge of the conventions applying to the actual encoding as well as to the allocation of meanings is equally essential for both the sender and the recipient. This knowledge is either transferred directly (e.g., by being introduced into a computer system or by being inherited in the case of natural systems), or it must be learned from scratch (e.g., mother tongue or any other natural language).

No person enters this world with the inherited knowledge of some language or some conceptual system. Knowledge of a language is acquired by learning the applicable vocabulary and grammar as they have been established in the conventions of the language concerned.

## 4.3 The Third Level of Information: Semantics

When we read the previously mentioned book B, we are not interested in statistics about the letters, neither are we concerned with the actual grammar, but we are interested in the meaning of the contents. Symbol sequences and syntactic rules are essential for the representation of information, but the essential characteristic of the conveyed information is not the selected code, neither is it the size, number, or form of the letters, or the method of transmission (in writing, or as optical, acoustic, electrical, tactile or olfactory signals), but it is the message being conveyed, the conclusions, and the meanings (semantics). This central aspect of information plays no role in storage and transmission, since the cost of a telegram, for example, does not depend on the importance of the message, but only on the number of letters or words. Both the sender and the recipient are mainly interested in the meaning; it is the meaning that changes a sequence of symbols into information. So, now we have arrived at the third level of information, the semantic level (Greek *semantikós* = characteristic, significance, aspect of meaning).

Typical semantic questions are:

a) Concerning the sender:

- What are the thoughts in the sender's mind?
- What meaning is contained in the information being formulated?
- What information is implied in addition to the explicit information?
- What means are employed for conveying the information (metaphors, idioms, or parables)?

b) Concerning the recipient:

- Does the recipient understand the information?
- What background information is required for understanding the transmitted information?
- Is the message true or false?
- Is the message meaningful?

**Theorem 13:** Any piece of information has been transmitted by somebody and is meant for somebody. A sender and a recipient are always involved whenever and wherever information is concerned.

Comment: Many kinds of information are directed to one single recipient (like a letter) and others are aimed at very many recipients (e.g., a book, or newspaper). In exceptional cases, the information never reaches the recipient (e.g., a letter lost in the mail).

It is only at the semantic level that we really have meaningful information; thus, we may establish the following theorem:

**Theorem 14:** Any entity, to be accepted as information, must entail semantics; it must be meaningful.

Semantics is an essential aspect of information because the meaning is the only invariant property. The statistical and syntactical properties can be altered appreciably when information is represented in another language (e.g., translated into Chinese), but the meaning does not change.

Meanings always represent mental concepts; therefore, we have:

**Theorem 15:** When its progress along the chain of transmission events is traced backward, every piece of information leads to a mental source, the mind of the sender.

Sequences of letters generated by various kinds of statistical processes are shown in Figure 38 (appendix A1.5). The programs used for this purpose were partially able to reproduce some of the syntactic properties of the language, but in the light of Theorems 16 and 17 these sequences of letters do not represent information. The next theorem enables one to distinguish between information and noninformation:

**Theorem 16:** If a chain of symbols comprises only a statistical sequence of characters, it does not represent information.

Information is essentially linked to a sender (a mental source of information) according to Theorems 13 and 15. This result is independent of whether the recipient understands the information or not. When researchers studied Egyptian obelisks, the symbols were seen as information long before they were deciphered because it was obvious that they could not have resulted from random processes. The meaning of the hieroglyphics could not be understood by any contemporaries (recipients) before the Rosetta Stone was found in 1799, but even so, it was regarded as information. The same holds for the gyrations of bees which were only understood by humans after being deciphered by Karl von Frisch. In contrast, the genetic code is still mostly unknown, except for the code allocations between the triplets and the amino acids.

All suitable ways of expressing meanings (mental substrates, thoughts, or nonmaterial contents of consciousness) are called languages. Information can be transmitted or stored in material media only when a language is available. The information itself is totally invariant in regard to the transmission system (acoustic, optical, or electrical) as well as the system of storage (brain, book, data processing system, or magnetic tape). This invariance is the result of its nonmaterial nature.



There are different kinds of languages:

- Natural languages used for communication: at present there are approximately 5,100 living languages on earth.
- Artificial communication languages and languages used for signaling: Esperanto, deaf-mute languages, flag codes, and traffic signs.
- Formal artificial languages: logical and mathematical calculi, chemical symbols, musical notation, algorithmic languages, programming languages like Ada, Algol, APL, BASIC, C, C++, Fortran, Pascal, and PL/1.
- Special technical languages: building and construction plans, block diagrams, diagrams depicting the structure of chemical compounds, and electrical, hydraulic, and pneumatic circuit diagrams.
- Special languages found in living organisms: genetic languages, bee gyrations, pheromonal languages of various insects, hormonal languages, signaling systems in the webs of spiders, the language of dolphins, and instincts (e.g., the migration routes of birds, salmon, and eels). As is explained in appendix A2, the latter examples should rather be regarded as communication systems.

A common property of all languages is that defined sets of symbols are used, and that definite agreed-upon rules and meanings are allocated to the single signs or language elements. Every language consists of units like morphemes, lexemes, expressions, and entire sentences (in natural languages) that serve as carriers of meaning (formatives). Meanings are internally assigned to the formatives of a language, and both the sender and the recipient should be in accord about these meanings. The following can be employed for encoding meanings in natural languages: morphology, syntax (grammar and stylistics), phonetics, intonation, and gesticulation, as well as numerous other supplementary aids like homonyms, homophones, metaphors, synonyms, polysemes, antonyms, paraphrasing, anomalies, metonymy, irony, etc.

Every communication process between sender and recipient consists of formulating and understanding the sememes (Greek *sema* = sign) in one and the same language. In the formulation process, the information to be transmitted is generated in a suitable language in the mind of the sender. In the comprehension process, the symbol combinations are analyzed by the recipient and converted into the corresponding ideas. It is universally accepted that the sender and the recipient are both intelligent beings, or that a particular system must have been created by an intelligent being (Figures 23 and 24, chapter 7).

## 4.4 The Fourth Level of Information: Pragmatics

Let us again consider book B mentioned initially to help us understand the nature of the next level. There is a Russian saying that “The effect of words can last one hour, but a book serves as a perpetual reminder.” Books can have lasting effects. After one has read a software manual, for example, one can use the described system. Many people who read the Bible are moved to act in entirely new ways. In this regard, Blaise Pascal said, “There are enough passages in Scripture to comfort people in all spheres of life, and there are enough passages that can horrify them.” Information always leads to some action, although, for our purposes, it is immaterial whether the recipient acts according to the sender’s wishes, responds negatively, or ignores it. It often happens that even a concise but striking promotional slogan for a washing powder can result in a preference for that brand.

Up to the semantic level, the purpose the sender has with the transmitted information is not considered. Every transmission of information indicates that the sender has some purpose in mind for the recipient. In order to achieve the intended result, the sender describes the actions required of the recipient to bring him to implement the desired purpose. We have now reached an entirely new level of information, called pragmatics (Greek *pragmatike* = the art of doing the right thing; taking action).

Some examples of pragmatic aspects are:[8](#)

- Concerning the sender:
  - What actions are desired of the recipient?
  - Has a specific action been formulated explicitly, or should it be implicit?
  - Is the action required by the sender to be taken in only one predetermined way, or is there some degree of freedom?
- Concerning the recipient:
  - To what extent does the received and understood meaning influence the behavior of the recipient?
  - What is the actual response of the recipient?

**Theorem 17:** Information always entails a pragmatic aspect.

The pragmatic aspect could:

- be unnegotiable and unambiguous without any degree of freedom, e.g., a computer program, activities in a cell, or a military command;
- allow a limited freedom of choice, like instinctive acts of animals;
- allow considerable freedom of action (only in the case of human beings).

Note: Even if there is considerable variation in the pragmatics resulting from the semantics, it does not detract anything from the validity of Theorem 17.

When language is used, it does not simply mean that sentences are jumbled together, but that requests, complaints, questions, instructions, teachings, warnings, threats, and commands are formulated to coerce the recipient to take some action. Information was defined by Werner Strombach [S12] as a structure which achieves some result in a receiving system. He thus referred to the important aspect of taking action.

We can distinguish two types of action:

- Fixed:
  - programmed actions (e.g., mechanical manufacturing processes, the operation of data processing programs, construction of biological cells, respiration, blood circulation, and the functioning of organs)
  - instinctive acts (behavior of animals)
  - trained actions (e.g., police dogs, and circus performances involving lions, elephants, horses, bears, tigers, dogs, seals, dolphins, etc.)
- Flexible and creative:
  - learned activities like social manners and manual skills
  - sensible actions (humans)
  - intuitive actions (humans)
  - intelligent actions based on free will (humans)

All the activities of the recipient can depend on information that has previously been conceptualized by the sender for the intended purpose. On the other hand, intelligent actions that do not derive from a sender are also possible.

A relevant theorem is the following:

**Theorem 18:** Information is able to cause the recipient to take some action (stimulate, initialize, or implement). This reactive functioning of information is valid for both inanimate systems (e.g., computers or an automatic car wash) as well as living organisms (e.g., activities in cells, actions of animals, and activities of human beings).

## 4.5 The Fifth Level of Information: Apobetics

We consider book B for the last time to illustrate one further level of information. Goethe once said, "Certain books seem to have been written not so much to enable one to learn something, but to show that the author knew something." This reason for writing a book, which is of course not worth emulating, does, however, express something of fundamental importance: The sender has some purpose for the

recipient. The purpose of a promotional slogan is that the manufacturing firm can have a good turnover for the year. In the New Testament, John mentions a completely different purpose for his information: "I write these things to you who believe in the name of the Son of God so that you may know that you have eternal life" ([1 John 5:13](#)). We conclude that some purpose is pursued whenever information is involved.

We now realize that any piece of information has a purpose, and have come to the last and highest level of information, namely apobetics (the teleological aspect, the question of the purpose; derived from the Greek *apobeinon* = result, success, conclusion). The term "apobetics" was introduced by the author in 1981 [G4] to conform to the titles of the other four levels. For every result on the side of the recipient there is a corresponding conceptual purpose, plan, or representation in the mind of the sender. The teleological aspect of information is the most important, because it concerns the premeditated purpose of the sender. Any piece of information involves the question: "Why does the sender communicate this information, and what result does he want to achieve for or in the recipient?" The following examples should elucidate this aspect:

- The male bird calls a mate by means of his song, or he establishes his territory.
- Computer programs are written with a purpose (e.g., solution of a set of equations, inversion of matrices, or to manipulate some system).
- The manufacturer of chocolate A uses a promotional slogan to urge the recipient to buy his brand.
- The Creator gave gregarious insects a pheromonal language for the purpose of communication, for example to identify intruders or indicate the location of a new source of food.
- Man was gifted with a natural language; this can be used for communicating with other people, and to formulate purposes.
- God gives us a purpose in life through the Bible; this is discussed more fully in Part 3 of this book.

Examples of questions concerning apobetics, are:

- Concerning the sender:
  - Has an unambiguous purpose been defined?
  - What purpose is intended for the recipient?
  - Can this purpose be recognized directly, or could it only be deduced indirectly?
- Concerning the recipient:
  - What purpose is achieved through the actions of the recipient?
  - Does the result obtained in the recipient correspond to the purpose which the sender had in mind?
  - Did the recipient find a purpose which the sender had not intended (e.g., the evaluation of historical documents could serve a purpose which was never thought of by the author)?

The sender's intention can be achieved in various ways by the recipient:

- completely (doing exactly what the sender requested)
- partly
- not at all
- doing exactly the opposite

The response to an unambiguously formulated purpose (e.g., computer program, commands given personally, or promotional material) could be any one of these different actions. The purpose could, however, not even be mentioned, or could not have been imagined by the sender (e.g., documents with trivial contents surviving from previous centuries which provide researchers with important clues not intended by the original author).

In this case also we can formulate significant empirical theorems:

**Theorem 19:** Every piece of information is intentional (the teleological aspect).<sup>9</sup>

**Theorem 20:** The teleological aspect of information is the most important level, since it comprises the intentions of the sender. The sum total of the four lower levels is that they are only a means for attaining the purpose (apobetics).

Note: The teleological aspect may often overlap and coincide with the pragmatic aspect to a large extent, but it is theoretically always possible to distinguish the two.

**Theorem 21:** The five aspects of information (statistics, syntax, semantics, pragmatics, and apobetics) are valid for both the sender and the recipient. The five levels are involved in a continuous interplay between the two.

**Theorem 22:** The separate aspects of information are interlinked in such a way that every lower level is a necessary prerequisite for the realization of the next one above it.

Whenever the teleological aspect is minimized or deliberately ignored, we should be aware of the fact that Theorem 19 is violated. Evolutionary doctrine deliberately denies any purposefulness that might be apparent. In the words of G.G. Simpson, an American zoologist, "Man is the result of a materialistic process having no purpose or intent; he represents the highest fortuitous organizational form of matter and energy."

In this respect, one more theorem is required:

**Theorem 23:** There is no known natural law through which matter can give rise to information, neither is any physical process or material phenomenon known that can do this.

Synopsis: It should be clear that information is a multi-layered concept. Shannon's theory embraces only a very small fraction of the real nature of information, as can easily be ascertained in terms of the five levels that we discussed. Contradictory

statements and erroneous conclusions of many authors are a result of discussing information without being clear about the relevant level, nor whether the appropriate level lends itself to wide ranging conclusions. It is, for example, not possible to find answers about the origin of biological systems, when one only considers the statistical level. Even when impressive mathematical formulations are forthcoming, they will bring no clarification if they are restricted to the level of Shannon's theory. Well-founded conclusions are only possible when the sender/recipient problem is treated fully at all five information levels.

All of the Theorems 1 to 23 formulated thus far, as well as Theorems 24 to 30, which will follow, are based on empirical reality. They may thus be regarded as natural laws, since they exhibit the characteristics of natural laws as explained in chapter 2. These theorems have been tested in real situations (compare Theorem N1 in paragraph 2.3). Any natural law can be rejected the moment a single counter example is found, and this also holds for these information theorems. After many talks by the author at colleges and universities, both abroad and at home, no researcher could mention one single counter example. In one case, somebody said that it might be possible that one of these theorems could be negated a few million years in the future, when a counter example may be found. My answer was that it was possible, as in the case of all natural laws. However, even if one or more of the theorems could be nullified by a counter example after a few million years, we still have to accept them and live with them now.

The seven most important results are repeated once more:

- There can be no information without a code.
- Any code is the result of a free and deliberate convention.
- There can be no information without a sender.
- Any given chain of information points to a mental source.
- There can be no information without volition (will).
- There can be no information unless all five hierarchical levels are involved: statistics, syntax, semantics, pragmatics, and apobetics.
- Information cannot originate in statistical processes.

These seven theorems can also be formulated as impossibility theorems, as has been shown in paragraph 2.5 for practically all laws of nature:

- It is impossible to set up, store, or transmit information without using a code.
- It is impossible to have a code apart from a free and deliberate convention.
- It is impossible that information can exist without having had a mental source.

- It is impossible for information to exist without having been established voluntarily by a free will.
- It is impossible for information to exist without all five hierarchical levels—statistics, syntax, semantics, pragmatics, and apobetics.
- It is impossible that information can originate in statistical processes.

We still have to describe a domain of definition for all these theorems; this will be done in the next chapter.

Figure 14 may serve the purpose of ordering the proposed theorems. Three phenomena are represented hierarchically, namely matter, information, and life, with matter at the lowest level. All known natural laws belong here (e.g., conservation of energy, strength of materials, and electric charge). According to Theorem 1, information is not a property of matter, and thus requires a next higher level. All information theorems belong to this level. The highest level is that of life. Natural laws belonging to this level may be called life theorems. A fundamental theorem at this level was formulated by Louis Pasteur (1822–1895), and it has not yet been contradicted by any experiment: “Life can only come from life.” The following statements can be made about the three hierarchical levels shown in Figure 14:

- Information is nonmaterial, but it requires material media for storage and transmission.
- Information is not life, but the information in cells is essential for all living beings. Information is a necessary prerequisite for life.
- Life is nonmaterial, and it is not information, but both entities, matter and information, are essential for life.



Figure 14: Certain natural laws are valid for each of the three hierarchical levels; the main concern of this book is the information theorems. The meaning of the arrows are:

1. Information requires matter for storage and transmission.
2. Life requires information.
3. Biological life requires matter as necessary medium. Information and matter fall far short in describing life, but life depends on the necessary conditions prevailing at the lower levels.

Because of the philosophical bias, both information and life itself are regarded as purely material phenomena in the evolutionary view. The origin and the nature of life is reduced to physical-chemical causes. In the words of Jean B. de Lamarck (1744–1829), “Life is merely a physical phenomenon. All manifestations of life are based on mechanical, physical, and chemical causes, being properties of organic matter” (*Philosophie Zoologique*, Paris, 1809, Vol. 1, p. 104 f). The German evolutionist Manfred Eigen expressed a similar view [E2, p. 149]: “The logic of life originates in physics and chemistry.” His pupil, Bernd-Olaf Küppers, paved the way for molecular Darwinism, but the present author has already responded to this materialistic view [G14, p. 90–92]. All such ideas have in common that biological facts are interwoven with subjective representations which cannot be justified scientifically. The information theorems formulated in this book, should enable the reader to distinguish between truth and folly.

The code systems used for communication in the animal kingdom have not been “invented” by them, but were created fully functional according to Figure 24.



# Delineation of the Information Concept

by [Dr. Werner Gitt](#) on March 26, 2009

*Information always plays a substitutionary role. The encoding of reality is a mental process.*

The question now arises as to the region in which the derived theorems are valid. Do they only hold for computers or also above and beyond that in all technological domains? Are living systems included or not?

What is the position with regard to unknown systems that we might like to evaluate? Are there criteria which enable us to determine beforehand whether the theorems may be applied, or whether we have left the domain of validity? We, thus, require an unambiguous definition.

We have already considered a number of examples which we have tacitly included in the domain, namely a computer program, a book, flag codes, and hieroglyphics. What about the crystalline structure of a metal or a salt or of a snowflake, all of which become visible under magnification? The starry skies are investigated by means of telescopes and we obtain "information" about the stars in this way. A detective gathers "information" at the scene of a crime and deduces circumstantial evidence from meaningful clues. A paleontologist may observe the mussel-bearing shale in a geological layer. The scientist "studies the book of nature" and obtains new knowledge in this way. New technological regularities are discovered, and, when formulated, they comprise a lot of information. Now, which of the above examples belong to our domain?

Every scientific definition of a concept requires precise formulation, as in everyday communications. A definition serves to fix matters, but it also brings limitations. The same holds for the information concept.

To be able to define a domain, we require a peculiar property of information, namely its representational function. Information itself is never the actual object or fact, neither is it a relationship (event or idea), but the encoded symbols merely represent that which is discussed. Symbols of extremely different nature (see paragraph 4.2) play a substitutionary role with regard to reality or a system of thought. Information is always an abstract representation of something quite different. For example, the symbols in today's newspaper represent an event which happened yesterday; this event is not contemporaneous, moreover, it might have happened in another country and is not at all present where and when the

information is transmitted. The genetic letters in a DNA molecule represent the amino acids which will only be constructed at a later stage for subsequent incorporation into a protein molecule. The words appearing in a novel represent persons and their activities.

We can now formulate two fundamental properties of information:

**Property 1:** Information is not the thing itself, neither is it a condition, but it is an abstract representation of material realities or conceptual relationships, such as problem formulations, ideas, programs, or algorithms. The representation is in a suitable coding system and the realities could be objects or physical, chemical, or biological conditions. The reality being represented is usually not present at the time and place of the transfer of information, neither can it be observed or measured at that moment.

**Property 2:** Information always plays a substitutionary role. The encoding of reality is a mental process.

It is again clear from Property 2 that information cannot be a property of matter; it is always an intellectual construct (see Theorems 1 to 3, paragraph 3.3). An intelligent sender who can abstractly encode reality is required.

Both the above salient properties now enable us to delineate the information concept unambiguously. Figure 15 clearly illustrates the domains of information (A) and non-information (B and C). Whenever any reality is observed directly by seeing, hearing, or measuring, then that process falls outside our domain. Whenever a coding system that represents something else is employed, then we are inside our domain A, and then all the mentioned theorems are completely valid as laws of nature. The following basic definition has now been established:

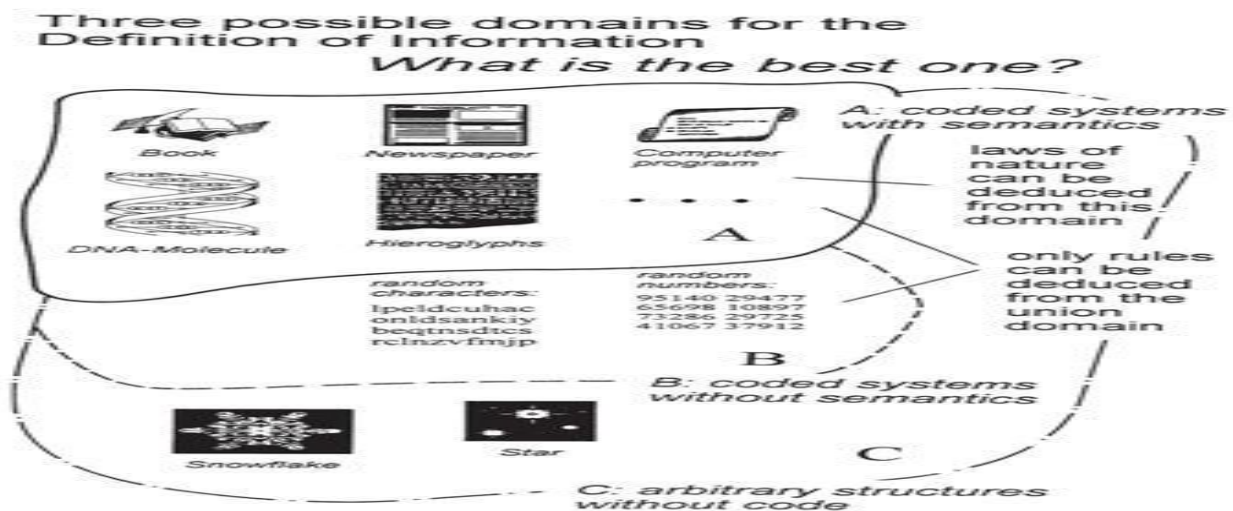


Figure 15: Part A is the domain of definition of information (see Definition D5 for an explanation). In this domain, all the laws of nature about information are valid. The domains B and C fall outside of the definition domain. B represents random characters or random numbers and therefore also lies outside

**Definition D5:** The domain A of definition of information includes only systems which encode and represent an abstract description of some object or idea as illustrated in Figure 15. This definition is valid in the case of the given examples (book, newspaper, computer program, DNA molecule, or hieroglyphics), which means that these lie inside the described domain. When a reality is observed directly, this substitutionary and abstract function is absent, and examples like a star, a house, a tree, or a snowflake do not belong to our definition of information (Part B). The proposed theorems are as valid as natural laws inside the domain we have just defined.

It should be noted that the DNA molecule with its genetic information lies inside the domain A. We shall see later that this is a true coding system. Three chemical letters comprise the code for a certain amino acid, but the acid itself is not present, neither spatially nor temporally, as required by Property 1; it is not even present elsewhere. The actual acid is only synthesized at a later stage, according to the code which substitutes for it.

The energy law is valid and exists regardless of our knowledge about it. It only became information after it had been discovered and formulated by means of a coding system (everyday language or formulas). Information, thus, does not exist by itself—it requires cognitive activity to be established.

We can now formulate another information theorem:

**Theorem 24:** Information requires a material medium for storage.

If one writes some information with chalk on a blackboard, the chalk is the material carrier. If it is wiped off, the total quantity of chalk is still there, but the information has vanished. In this case, the chalk was a suitable material medium, but the essential aspect was the actual arrangement of the particles of the chalk. This arrangement was definitely not random—it had a mental origin. The same information that was written on the blackboard could also have been written on a magnetic diskette. Certain tracks of the diskette then became magnetized, and also in this case there is a carrier for the information as stated by Theorem 24. The quantity of material involved is appreciably less than for the chalk and blackboard, but the amount of material is not crucial. Moreover, the information is independent of the chemical composition of the storage medium. If large neon letter signs are used for displaying the same information, then the amount of material required is increased by several orders of magnitude.

# Information in Living Organisms

by [Dr. Werner Gitt](#) on April 2, 2009

There is an extreme multiplicity of life-forms around us, and even a simple unicellular organism is much more complex and purposefully designed than anything that human inventiveness can produce. Matter and energy are basic prerequisites for life, but they cannot be used to distinguish between living and inanimate systems. The central characteristic of all living beings is the “information” they contain, and this information regulates all life processes and procreative functions. Transfer of information plays a fundamental role in all living organisms. When, for example, insects carry pollen from one flower to another, this is in the first place an information-carrying process (genetic information is transferred); the actual material employed is of no concern. Although information is essential for life, information alone does not at all comprise a complete description of life. Man is undoubtedly the most complex information-processing system existing on earth. The total number of bits handled daily in all information-processing events occurring in the human body is  $3 \times 10^{24}$ . This includes all deliberate as well as all involuntary activities, the former comprising the use of language and the information required for controlling voluntary movements, while the latter includes the control of the internal organs and the hormonal systems. The number of bits being processed daily in the human body is more than a million times the total amount of human knowledge stored in all the libraries of the world, which is about  $10^{18}$  bits.

## 6.1 Necessary Conditions for Life

The basic building blocks of living beings are the proteins, which consist of only 20 different amino acids. These acids have to be arranged in a very definite sequence for every protein. There are inconceivably many possible chains consisting of 20 amino acids in arbitrary sequences, but only some very special sequences are meaningful in the sense that they provide the proteins which are required for life functions. These proteins are used by and built into the organism, serving as building materials, reserves, bearers of energy, and working and transport substances. They are the basic substances comprising the material parts of living organisms and they include such important compounds as enzymes, anti-bodies, blood pigments, and hormones. Every organ and every kind of life has its own specific proteins and there are about 50,000 different proteins in the human body, each of which performs important functions. Their structure as well as the relevant “chemical factories” in the cells have to be encoded in a way that protein synthesis can proceed optimally, combining correct quantities of the required substances.

The structural formulas of the 20 different amino acids that serve as chemical building blocks for the proteins found in all living beings appear in the book *In sechs Tagen vom Chaos zum Menschen* [G10, p. 143]. If a certain specific protein must be manufactured in a cell, then the chemical formula must be communicated to the cell as well as the chemical procedures for its synthesis. The exact sequence of the individual building blocks is extremely important for living organisms, so that the instructions must be in written form. This requires a coding system as well as the necessary equipment which can decode the information and carry out the instructions for the synthesis. The minimal requirements are:

Amino acid	Genetic code	Abbr
Alanine	GCA GCC GCG GCU	Ala
Arginine	AGA AGG CGA CGC CGG CGU	Arg
Asparagine	AAC AAU	Asn
Aspartic acid	GAC GAU	Asp
Cysteine	UGC UGU	Cys
Glutamine	CAA CAG	Gln
Glutamic acid	GAA GAG	Glu
Glycine	GGA GGC GGG GGU	Gly
Histidine	CAC CAU	His
Isoleucine	AUA AUC AUU	Ile
Leucine	CUA CUC CUG CUU UUA UUG	Leu
Lysine	AAA AAG	Lys
Methionine	AUG	Met
Phenylalanine	UUC UUU	Phe
Proline	CCA CCC CCG CCU	Pro
Serine	AGC AGU UCA UCC UCG UCU	Ser
Threonine	ACA ACC ACG ACU	Thr
Tryptophan	UGG	Try
Tyrosine	UAC UAU	Tyr
Valine	GUA GUC GUG GUU	Val
STOP sign	UAA UAG UGA	

Figure 16: The 20 amino acids which are present in living systems, given in alphabetic order, together with their international three-letter abbreviations. The code combinations (triplets) which give rise to the relevant acid are indicated in the right-hand column.

—According to Theorem 6, a coding system is required for compiling information, and this system should be able to identify uniquely all the relevant amino acids by means of a standard set of symbols which must remain constant.

—As required by Theorems 14, 17, and 19, for any piece of information, this information should involve precisely defined semantics, pragmatics, and apobetics.

—There must be a physical carrier able to store all the required information in the smallest possible space, according to Theorem 24.

The names of the 20 amino acids occurring in living beings and their internationally accepted three-letter abbreviations are listed in Figure 16 (e.g., Ala for alanine). It is noteworthy that exactly this code with four different letters is employed; these four letters are arranged in “words” of three letters each to uniquely identify an amino acid. Our next endeavor is to determine whether this system is optimal or not.

The storage medium is the DNA molecule (deoxyribonucleic acid), which resembles a double helix as illustrated in Figure 17. A DNA fiber is only about two millionths of a millimeter thick, so that it is barely visible with an electron microscope. The chemical letters A, G, T, and C are located on this information tape, and the amount of information is so immense in the case of human DNA that it would stretch from the North Pole to the equator if it was typed on paper, using standard letter sizes. The DNA is structured in such a way that it can be replicated every time a cell divides in two. Each of the two daughter cells must have identically the same genetic information after the division and copying processes. This replication is so precise that it can be compared to 280 clerks copying the entire Bible sequentially, each one from the previous one, with, at most, one single letter being transposed erroneously in the entire copying process.

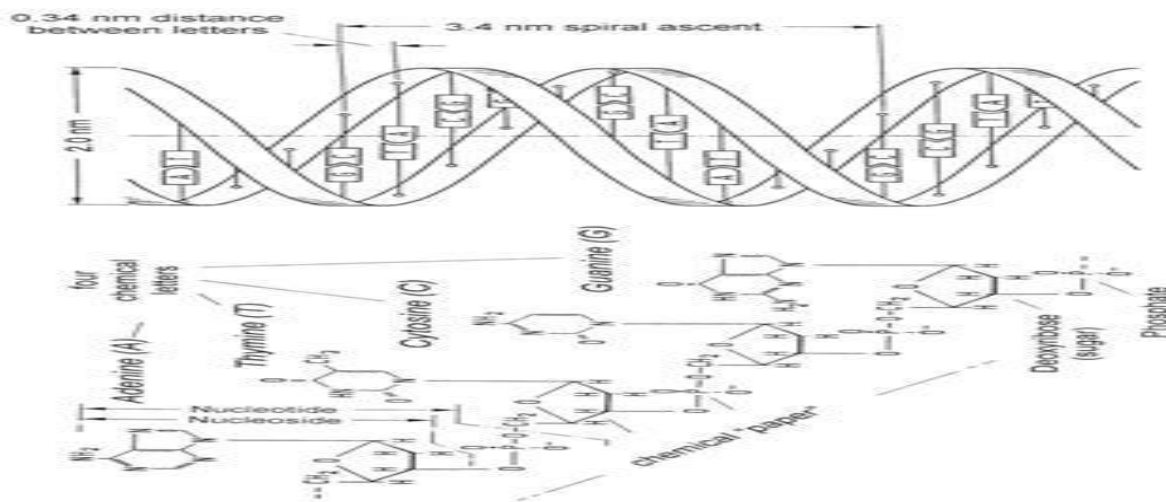


Figure 17: The way in which genetic information is stored. At the left, the “chemical paper” is shown in the form of a long sugar-phosphate chain with the four chemical letters, A, T, C, and G. The actual structure and dimensions of a DNA molecule can be seen at the top.

When a DNA string is replicated, the double strand is unwound, and at the same time a complementary strand is constructed on each separate one, so that, eventually, there are two new double strands identical to the original one. As can be seen in Figure 17, A is complementary to T, and C to G.

One cell division lasts from 20 to 80 minutes, and during this time the entire molecular library, equivalent to one thousand books, is copied correctly.

## 6.2 The Genetic Code

We now discuss the question of devising a suitable coding system. For instance, how many different letters are required and how long should the words be for optimal performance? If a certain coding system has been adopted, it should be strictly adhered to (theorem 8, par 4.2), since it must be in tune with extremely complex translation and implementation processes. The table in Figure 19 comprises only the most interesting 25 fields, but it can be extended indefinitely downward and to the right. Each field represents a specific method of encoding, for example, if  $n = 3$  and  $L = 4$ , we have a ternary code with 3 different letters. In that case, a word for identifying an amino acid would have a length of  $L = 4$ , meaning that quartets of 4 letters represent one word. If we now want to select the best code, the following requirements should be met:

—The storage space in a cell must be a minimum so that the code should economize on the required material. The more letters required for each amino acid, the more material is required, as well as more storage space.

—The copying mechanism described above requires  $n$  to be an even number. The replication of each of the two strands of DNA into complementary strands thus needs an alphabet having an even number of letters. For the purpose of limiting copying errors during the very many replication events, some redundancy must be provided for (see appendix A 1.4).

—The longer the employed alphabet, the more complex the implementing mechanisms have to be. It would also require more material for storage, and the incidence of copying errors would increase.



Figure 18: The chemical formula of insulin. The A chain consists of 21 amino acids and the B chain is comprised of 30 amino acids. Three of the 20 amino acids present in living organisms, are absent (Asp, Met, Try), two occur six times (Cys, Leu), one five times (Glu), three occur four times (Gly, Tyr, Val), etc. The two chains are linked by two disulphide bridges. Insulin is an essential hormone, its main function being to maintain the normal sugar content of the blood at 3.9 to 6.4 mmol/l (70–115 mg/dl).

In each field of Figure 19, the number of possible combinations for the different words appears in the top left corner. The 20 amino acids require at least 20 different

possibilities and, according to Shannon’s theory, the required information content of each amino acid could be calculated as follows: For 20 amino acids, the average information content would be  $i_A \equiv i_W \equiv \text{ld } 20 = \log 20 / \log 2 = 4.32$  bits per amino acid (ld is the logarithm with base 2).

$L = \text{Word Length} = \text{Number of Letters per Word}$ $n = \text{Number of Different Letters}$		$L = 2$	$L = 3$	$L = 4$	$L = 5$	$L = 6$
		Dublet	Triplet	Quartet	Quintet	Sextet
		Word Length $L \rightarrow$				
<b>Binary Code</b> $n = 2$	Length of the Alphabet $n$	$m = n^L = 4$	$2^3 = 8$	$2^4 = 16$	$2^5 = 32$	$2^6 = 64$
$i_n = \text{ld } n = 1 \text{ bit}$		$i_w = L \text{ld } n$ 2 bit/word	3 bit/word	4 bit/word	5 bit/word	6 bit/word
<b>Ternary Code</b> $n = 3$		$3^2 = 9$	$3^3 = 27$	$3^4 = 81$	$3^5 = 243$	$3^6 = 729$
$i_n = 1,585 \text{ bit}$		3,170	4,755	6,340	7,925	9,510
<b>Quaternary Code</b> $n = 4$		$4^2 = 16$	$4^3 = 64$	$4^4 = 256$	$4^5 = 1024$	$4^6 = 4096$
$i_n = 2 \text{ bit}$		4,0	6,0	8,0	10,0	12,0
<b>Quinary Code</b> $n = 5$	$5^2 = 25$	$5^3 = 125$	$5^4 = 625$	$5^5 = 3125$	$5^6 = 15625$	
$i_n = 2,322 \text{ bit}$	4,644	6,966	9,288	11,610	13,932	
<b>Senary Code</b> $n = 6$	$6^2 = 36$	$6^3 = 216$	$6^4 = 1296$	$6^5 = 7776$	$6^6 = 46656$	
$i_n = 2,585 \text{ bit}$	5,170	7,755	10,340	12,925	15,510	
$i_n = \text{ld } n$ $i_w = L \text{ld } n$ $m = n^L$		Information content of <i>one</i> word [bit/word] Information content of <i>one</i> letter [bit/letter] Number of possible combinations to make one word with the length $L$ by $n$ different letters				

Figure 19: The theoretical possibility of constructing a code consisting of words of equal length. Every field (block) represents a definite coding system as indicated by the number of different letters  $n$ , and the word length  $L$ .

If four letters (quartets) are represented in binary code ( $n = 2$ ), then (4 letters per word)x(1 bit per letter) = 4 bits per word, which is less than the required 4.32 bits per word. This limit is indicated by the hatched boundary in Figure 19. The six fields adjacent to this line, numbered 1 to 6, are the best candidates. All other fields lying further to the right could also be considered, but they would require too much material for storage. So, we only have to consider the six numbered cases.



It is, in principle, possible to use quintets of binary codes, resulting in an average of 5 bits per word, but the replication process requires an even number of symbols. We can thus exclude ternary code ( $n = 3$ ) and quinary code ( $n = 5$ ). The next candidate is binary code (No. 2), but it needs too much storage material in relation to No. 4 (a quaternary code using triplets), five symbols versus three implies a surplus of 67%. At this stage, we have only two remaining candidates out of the large number of possibilities, namely No. 4 and No. 6. And our choice falls on No. 4, which is a combination of triplets from a quaternary code having four different letters. Although No. 4 has the disadvantage of requiring 50% more material than No. 6, it has advantages which more than compensate for this disadvantage, namely:

—With six different symbols, the recognition and translation requirements become disproportionately much more complex than with four letters, and thus requires much more material for these purposes.

—In the case of No. 4, the information content of a word is 6 bits per word, as against 5.17 bits per word for No. 6. The resulting redundancy is thus greater, and this ensures greater accuracy for the transfer of information.

Conclusion: The coding system used for living beings is optimal from an engineering standpoint. This fact strengthens the argument that it was a case of purposeful design rather than fortuitous chance.

## 6.3 The Origin of Biological Information

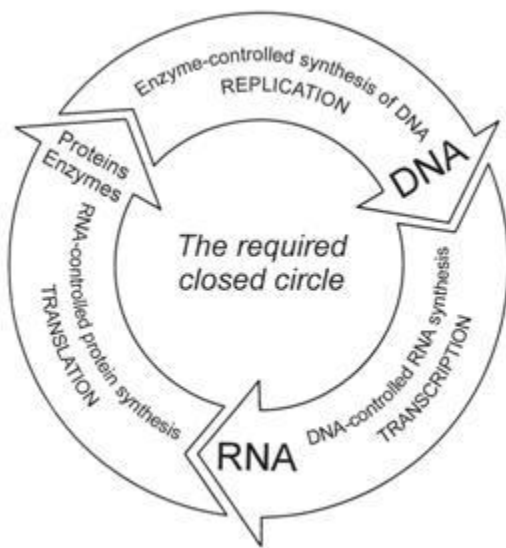


Figure 20: A simplified representation of the cyclic information controlled process occurring in living cells. The translation is based on pragmatics, but it is involved in the cyclic process of semantic information, since the DNA synthesis can only take place under enzymatic catalysis. This sketch clearly illustrates that such a cyclic process must have been complete right from the start, and could not have originated in a continuous process. The structure of this example of a complex information transfer system also corresponds to Figure 24.

We find a unique coding system and a definite syntax in every genome.<sup>1</sup> The coding system is composed of four chemical symbols for the letters of the defined alphabet, and the syntax entails triplets representing certain amino acids. The genetic syntax system also uses structural units like expressors, repressors, and operators, and thus extends far beyond these two aspects (4 symbols and triplet words). It is not yet fully understood. It is known that the information in a cell goes through a cyclic process (Figure 20), but the semantics of this process is not (yet) understood in the case of human beings. The locations of many functions of chromosomes or genes are known, but we do not yet understand the genetic language. Because semantics is involved, it means that pragmatics also have to be fulfilled. The semantics are invariant, as can be seen in the similarity (not identity!) of uni-ovular twins. If one carefully considers living organisms in their entirety as well as in selected detail, the purposefulness is unmistakable. The apobetics aspect is thus obvious for anybody to see; this includes the observation that information never originates by chance, but is always conceived purposefully.

The substitutionary function of information is also satisfied (see Definition D5 in chapter 5), since the triplets in the DNA molecule represent those amino acids that will be synthesized at a later stage for incorporation into proteins (the amino acids themselves are not present). We can now establish an important theorem:

**Theorem 25:** Biological information is not an exceptional kind of information, but it differs from other systems in that it has a very high storage density and that it obviously employs extremely ingenious concepts.

In accordance with the theorems formulated in chapters 3 to 5, in particular the impossibility theorems at the end of chapter 4, it is clear that the information present in living organisms requires an intelligent source. Man could not have been this source; so, the only remaining possibility is that there must have been a Creator. We can now formulate the following theorems:

**Theorem 26:** The information present in living beings must have had a mental source.

A corollary of Theorem 26 is:

**Theorem 27:** Any model for the origin of life (and of information) based solely on physical and/or chemical processes, is inherently false.

In their school textbook, R. Junker and S. Scherer establish a basic type that must have been “ready-made” [J3]. This result, which requires the information content of living beings to be complete right from the beginning, is biologically sound. The derived theorems about the nature of information fit this model.

## 6.4 Materialistic Representations and Models of the Origin of Biological Information

The question “How did life originate?” which interests us all, is inseparably linked to the question “Where did the information come from?” Since the findings of James D. Watson (\*1928) and Francis H.C. Crick (\*1916), it was increasingly realized by contemporary researchers that the information residing in the cells is of crucial

importance for the existence of life. Anybody who wants to make meaningful statements about the origin of life would be forced to explain how the information originated. All evolutionary views are fundamentally unable to answer this crucial question.

The philosophy that life and its origin are purely material phenomena currently dominates the biological sciences. Following are the words of some authors who support this view.

Jean-Baptiste de Lamarck (1744–1829), a French zoologist and philosopher, wrote, “Life is nothing but a physical phenomenon. All life features originate in mechanical, physical, and chemical processes which are based on the properties of organic matter itself” (*Philosophie Zoologique*, Paris, 1809, Vol. 1).

The German microbiologist R.W. Kaplan holds a similar materialistic view [K1]: “Life is effected by the different parts of a system which work together in a certain way. . . . Life can be completely explained in terms of the properties of these parts and their inevitable interactions. . . . The origin of life can be explained in terms of hypotheses describing fully the sequence of events since the origin of protobionts, and the fact that all these events could be deduced from physical, chemical, and other laws which are valid for material systems.”

Manfred Eigen (\*1927), a Nobel laureate of Göttingen, discusses questions about life from the molecular biology view, with as point of departure the unwarranted postulate that natural laws controlled the origin of life. In his work on the self-organization of matter [E1], he uses an impressive array of formulas, but does not rise above the level of statistical information. This voluminous work is thus useless and does not answer any questions about the origin of information and of life. He writes in [E2, p 55], “Information arises from non-information.” This statement is nothing but a confession of materialism, and it fails the tests required by reality.

Franz M. Wuketits defines the target readership of his book [W8] as follows: “. . . not only biologists and theoretical scientists, but in equal measure scientists and philosophers, and everybody who is interested in the adventures of contemporary

science.” He then presents a so-called “evolutionary theoretical science,” claiming to initiate a new Copernican revolution. Up to the present time, great scientific results were obtained by means of observation, measuring, and weighing, as was done for example by Copernicus, Galilei, Newton, Einstein, Born, and Planck. In his system, Wuketits follows the backward route: His point of departure is to assume that evolution is true, so that all natural phenomena have to be interpreted through these spectacles.

He writes in the introduction of his book [W8, p. 11–12]:

The fundamental truth of biological evolution is accepted beforehand, yes, we assume in advance that the principle of evolution is universally valid, that it is just as valid in the preorganic domain as in the organic, and that it can be extended to the spheres of psychology, sociology, and culture. If we accept that the evolutionary view also holds for the human mind and cognition, then evolutionary ideas can also be applied to the analysis of those phenomena which are usually regarded as belonging to theoretical science. As a result this view then becomes relatively more important in the evaluation of the progress of scientific research. We thus arrive at an evolutionary theory of science, a theory of human knowledge which relates to an evolutionary establishment of itself.

If such statements were based on a sufficient body of facts, then one might perhaps agree with the conclusions, but the reverse process was followed: All phenomena of nature are placed under the all-encompassing evolutionary umbrella. Scientists who submit themselves to such a mental corset and support it uncritically, degrade themselves to mere vassals of a materialistic philosophy. Science should, however, only be subservient to the truth, and not to pre-programmed folly. Evolutionary theory bans any mention of a planning Spirit as a purposeful First Cause in natural systems, and endeavors to imprison all sciences in the straightjacket called the “self-organization of matter.” Wuketits supports evolutionary theory with a near ideological fervor, and accuses everybody of fable mongering who claims to be scientific and speak of “planning spirits” or of a “designer” in nature. He wishes to ban thoughts of “finality” and of “final and purposeful causes” from science and from the domain of all serious schools of thought.

An appreciable fraction of all scientists who concern themselves with cosmological questions and with questions of origins, support the evolutionary view, to such an extent that the well-known American bio-informaticist Hubert P. Jockey [J1] bemoans the fact that the literature in this area is blandly and totally supportive. He writes in the *Journal of Theoretical Biology* [vol. 91, 1981, p. 13]:

Since science does not have the faintest idea how life on earth originated. . . . it would only be honest to confess this to other scientists, to grantors, and to the public at large. Prominent scientists speaking ex cathedra, should refrain from polarizing the minds of students and young productive scientists with statements that are based solely on beliefs.

The doctrine of evolution is definitely not a viable scientific *leitmotiv* (guiding principle); even the well-known theoretician Karl Popper [H1], once characterized it as a “metaphysical research program.” This assertion is just as noteworthy as it is honest, because Popper himself supports evolution.

We now discuss some theoretical models which suggest that information can originate in matter.

<p><i>Dawkins's example:</i> Initial sequence: WDLMNLT DTJBKWIRZREZLMQCO P Predetermined target sentence: METHINKS IT IS LIKE A WEASEL</p>	<p><i>Küppers's example:</i> Initial sequence: ELWWSJILAKLAFTYJ:/ELWWSJILAKLAFTYJ:/ Predetermined target sentence: EVOLUTIONSTHEORIE/ (twice)</p>
<p><i>First test:</i> Gen. 01 WDLMNLT DTJBKWIRZREZLMQCO P Gen. 02 WDLTMNLT DTJBSWIRZREZLMQLO P Gen. 10 MDLDMNLS ITJISWHRZREZ MECS P Gen. 20 MELDINLS IT ISWPRKE Z WECSL Gen. 30 METHINGS IT ISWLIKE B WECSL Gen. 40 METHINKS IT IS LIKE I WEASEL Gen. 43 METHINKS IT IS LIKE A WEASEL</p> <p><i>Second test:</i> Gen. 01 Y YVMQKZPFJXVWHGLAWFYCHHQXYOPY Gen. 10 Y YVMQKSPFTXWSHLIKEFV HQYSPY Gen. 20 YETHINKSPITXISHLIKEFA WOYSEY Gen. 30 METHINKS IT ISLIKE A WEPSEY Gen. 40 METHINKS IT ISLIKE A WEASES Gen. 50 METHINKS IT ISLIKE A WEASEO Gen. 60 METHINKS IT IS LIKE A WEASEP Gen. 64 METHINKS IT IS LIKE A WEASEL</p>	<p>Gen. 01 ELWWSJILAKLAFTYJ:/ELWWSJILAKLAFTYJ:/ ELYWSJILAK?AFTYJ:/ELWOSBCSEKLAJSYK:/ ELWOSBCKEKLUt:/ELWOTBCKYKLIFTYJ:/ ELWOSBDKEKLAJTYt:/ELWOTBCKZKLJTYJ:/</p> <p>Gen. 05 EVQLVDGONS?HEOQUI/EVOKVDGONSLHE.QIC/ ETOLVDGONS?HEOQIE/EVOLVDGONS?LUOQUC/ EVQLVDGONC?HEOQIE/EVOLVDIONKLHEKQIC/ EVOLVDGONSLHEOQIC/EVOLVDGONS?HEOQIE/ EVOLVEDONSLHEOQIC/EVOLVDGONS?HEOQIE</p> <p>Gen. 30 EVOLUTIONSTHEORIE/EVOLUTIONSTHEORIE/ EVOLUTIONSTHEORIE/EVOLUTIONSTHEORIE/ EVOLUTIONSTHEORIE/EVOLVDIONSTHEORIE/ EVOLUTIONSTHEORJE/EVOPUTIONSTHEORIE/ EVOLVTIONSTHEORIE/EVO?UTIONSKXHEORI</p>

Figure 21: Molecular-Darwinistic representations of the origin of information according to R. Dawkins and B.O. Küppers.

**Cumulative selection** (Latin *cumulare* = gather): Richard Dawkins, a British neo-Darwinist, revives the historical example of the typewriter-thrumming monkeys (see appendix A1.5) and replaces them with “computer monkeys.” As shown in Figure 21, he begins with a random sequence of 28 letters [D2 p. 66–67] and seeks to demonstrate how a predetermined phrase selected from Shakespeare, “Methinks it is like a weasel,” can be derived through mutation and selection. The random initial sequence with the required number of letters is copied repeatedly, allowing for random copying errors (representing mutations). The computer program checks all the “daughter” sentences and selects that one which most resembles the target sentence. The process is subsequently repeated for the resulting “winning sentences,” until eventually, after 43 “generations,” the goal is reached.

There is a spate of new Jesus books which constantly present strange new and false ideas contrary to the New Testament. Prof. Klaus Berger of the Heidelberg School of Theology remarked (1994): “Please buy and read such a book, then you will realize what degree of gullibility is ascribed to you.” With equal zeal, Dawkins publishes his easily detectable fallacies about the way information originates. It is therefore necessary to discuss his representation fully so that you, the reader, can see what feeble-mindedness is ascribed to you.

In the initial pages of his book, Dawkins [D2, p. 13] softens the reader to the purposelessness of living structures: “Biology is the study of complex matters that appear to have been designed purposefully.” Further along he selects a target sentence and his entire program is designed toward this goal. This game can be played with any random initial sequence and the goal will always be reached, because the programming is fixed. Even the number of letters is given in advance. It is obvious that no information is generated; on the contrary, it has been predetermined. B.O. Küppers plays a similar evolution game [K3]: The predetermined target word is *evolutionstheorie* appearing twice (see the right hand part of Figure 21). It should be clear from Theorem 27 that random processes cannot give rise to information.

**Genetic algorithms:** The so-called “genetic algorithms” are yet another way of trying to explain how information could originate in matter [F5, M4]. The combination of words is deliberately chosen from biology and numerical mathematics to suggest that evolutionary events are described mathematically. What is actually involved is a purely numerical method used for the optimization of dynamic processes. This method can be used to find, by repeated approximations, the maximum value of an analytic function numerically (e.g.,  $f(x,y) = yx - x^4$ ), or the optimal route of a commercial traveler. The effects of mutation and selection can thus be simulated by computer. Using predetermined samples of bits (sequences of noughts and ones), each position is regarded as a gene. The sample is then modified (mutated) by allowing various genetic operators to influence the bit string (e.g., crossover). A “fitness function,” assumed for the process of evolution, is then applied to each result. It should be pointed out that this genetic algorithm is purely a numerical calculation method, and definitely not an algorithm which describes real processes in cells. Numerical methods cannot describe the origin of information.

**Evolutionary models for the origin of the genetic code:** We find proposals for the way the genetic code could have originated in very many publications [e.g., O2, E2, K1], but up to the present time, nobody has been able to propose anything better than purely imaginary models. It has not yet been shown empirically how information can arise in matter, and, according to Theorem 11, this will never happen.

## 6.5 Scientists Against Evolution

Fortunately, the number of scientists who repudiate evolutionary views and dilemmas is increasing. This number includes internationally renowned experts, of whom some quotations follow. In *New Scientist*, the British astrophysicist Sir Fred Hoyle, one of today's best known cosmologists, expresses his concern about the customary representations under the title "The Big Bang in Astronomy" [H4, p. 523–524]:

But the interesting quark transformations are almost immediately over and done with, to be followed by a little rather simple nuclear physics, to be followed by what? By a dull-as-ditchwater expansion which degrades itself adiabatically until it is incapable of doing anything at all. The notion that galaxies form, to be followed by an active astronomical history, is an illusion. Nothing forms, the thing is as dead as a door-nail. . . . The punch line is that, even though outward speeds are maintained in a free explosion, internal motions are not. Internal motions die away adiabatically, and the expanding system becomes inert, which is exactly why the big-bang cosmologies lead to a universe that is dead-and-done-with almost from its beginning.

These views correspond with the findings of Hermann Schneider, a nuclear physicist of Heidelberg, who has critically evaluated the big bang theory from a physical viewpoint. He concludes [S5]: "In the evolution model the natural laws have to describe the origin of all things in the macro and the micro cosmos, as well as their operation. But this overtaxes the laws of nature."

Fred Hoyle makes the following remarks about the much-quoted primeval soup in which life supposedly developed according to evolutionary expectations [H4, p 526]:

I don't know how long it is going to be before astronomers generally recognize that the combinatorial arrangement of not even one among the many thousands of biopolymers on which life depends could have been arrived at by natural processes here on the earth. Astronomers will have a little difficulty at understanding this because they will be assured by biologists that it is not so, the biologists having been assured in their turn by others that it is not so. The "others" are a group of persons who believe, quite openly, in mathematical miracles. They advocate the belief that tucked away in nature, outside of normal physics, there is a law which performs miracles.

In his book *Synthetische Artbildung (The Synthetic Formation of Kinds)*, Professor Dr. Heribert Nilsson, a botanist at Lund University in Sweden, describes evolutionary doctrine as an obstacle which prevents the development of an exact biology:

The final result of all my researches and discussions is that the theory of evolution should be discarded in its entirety, because it always leads to extreme contradictions and confusing consequences when tested against the empirical results of research on the formation of different kinds of living forms and related fields. This assertion would agitate many people. Moreover: my next conclusion is that, far from being a benign natural-philosophical school of thought, the theory of evolution is a severe obstacle for biological research. As many examples show, it actually prevents the drawing of logical conclusions from even one set of experimental material. Because everything must be bent to fit this speculative theory, an exact biology cannot develop.

Professor Dr. Bruno Vollmert of Karlsruhe, an expert in the field of macro-molecular chemistry, has shown that all experiments purporting to support evolution miss the crux of the matter [V1]:

All hitherto published experiments about the poly-condensation of nucleotides or amino acids are irrelevant to the problem of evolution at the molecular level, because they were based on simple monomers, and not on “primeval soups” derived from Miller experiments. But poly-condensation experiments with primeval soups or the dissolved mix of substances of them are just as superfluous as attempts to construct perpetual motion machines.

A French Nobel laureate, A. Lwoff [L2], pointed out that every organism can only function in terms of the complex net of available information:

An organism is a system of interdependent structures and functions. It consists of cells, and the cells are made of molecules which have to cooperate smoothly. Every molecule must know what the others are doing. It must be able to receive messages and act on them.

When considering the source of this information, we can now formulate the following theorem which is based on research of many thousands of man-years:

**Theorem 28:** There is no known law of nature, no known process, and no known sequence of events which can cause information to originate by itself in matter.

This was also the conclusion of the seventh “International Conference on the Origins of Life” held together with the fourth congress of the “International Society for the Study of the Origin of Life (ISSOL)” in Mainz, Germany. At such occasions, scientists from all over the world exchange their latest results. In his review of the congress, Klaus Dose [D3] writes: “A further puzzle remains, namely the question of the origin of biological information, i.e., the information residing in our genes today.” Not even the physical building blocks required for the storage of the information can construct themselves: “The spontaneous formation of simple nucleotides or even of polynucleotides which were able to be replicated on the pre-biotic earth should now be regarded as improbable in the light of the very many unsuccessful experiments in this regard.”

As early as 1864, when Louis Pasteur addressed the Sorbonne University in Paris, he predicted that the theory of the spontaneous generation of living cells would never recover from the fatal blow delivered by his experiments. In this regard, Klaus Dose makes an equally important statement: “The Mainz report may have an equally important historical impact, because for the first time it has now been determined unequivocally by a large number of scientists that all evolutionary theses that living systems developed from poly-nucleotides which originated spontaneously, are devoid of any empirical base.”



# The Three Forms in which Information Appears

by [Dr. Werner Gitt](#) on April 9, 2009

*Information accosts us from all sides and presents itself over a wide range of manifestations.*

Information accosts us from all sides and presents itself over a wide range of manifestations:

- From messages pounded out by drums in the jungle to telephone conversations by means of communications satellites.
- From the computer-controlled processes for producing synthetic materials to the adaptive control of rolling mills.
- In printed form from telephone directories to the Bible.
- From the technical drawings which specify the construction of a gas-driven engine to the circuit diagram of a large scale integrated computer chip.
- From the hormonal system of an organism to the navigational instincts of migrating birds.
- From the genome of a bacterium to the genetic information inherited by humans.

In addition to the five essential levels of information mentioned in [chapter 4](#) (statistics, syntax, semantics, pragmatics & apobetics), it is also advantageous to consider a three-fold vertical division of types of information:

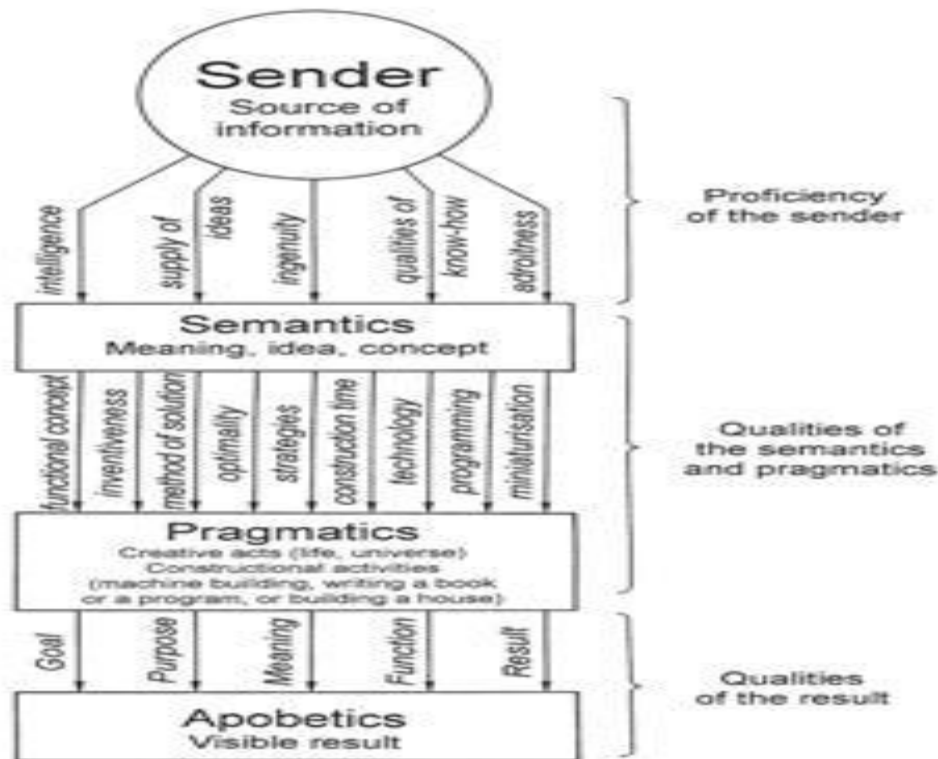


Figure 22: Qualitative properties of the sender and his information on the semantic, pragmatic, and apobetic levels. In this diagram we represent the qualitative properties of constructional/creative information, and include both the creative acts of God and human engineering concepts. It is obvious that there is a tight link between the qualitative aspects of the information and the capabilities of the sender. Similar qualitative properties can be formulated for the other two types of information, operational and communication information.

**1. Constructional/creative information:** This includes all information that is used for the purpose of producing something. Before anything can be made, the originator mobilizes his intelligence, his supply of ideas, his know-how, and his inventiveness to encode his concept in a suitable way. There are many types of encoded blueprints, e.g., technical drawings for the construction of a machine, a cake recipe, details of the chemical processes for synthesizing polyvinyl chloride, an electrical circuit diagram, or the genetic information required for the construction of a living cell.

The criteria for evaluating the searched-for solution are found both in the conceptual stage (semantic aspect of the information) and in the sophistication of the implementation (pragmatics). One or more of the following catchwords characterize these criteria depending on the situation, as shown in Figure 22:

underlying functional concept, degree of inventiveness, cleverness of the method of solution, achieved optimality, input strategy, brevity of construction time, applied technology, suitable programming, and degree of miniaturization (e.g., economical use of material and energy). The quality of the visible results (apobetics) can be evaluated in terms of the achieved goal, the efficiency of the input, the ingenuity of the operation, and the certainty of correct functioning (e.g., low susceptibility to interference).

- 3. Operational information:** All concepts having the purpose of maintaining some “industry” in the widest sense of the word are included under this kind of information. Many systems require operational information in the form of programs for proper functioning. These programs are indispensable and ensure that the preconceived processes run as expected. A barrel-organ cannot function without the required cylinder, and the human body is viable only when the conceptual information is provided with all the interactions carried by the nervous system to and from the brain and all the bodily organs. The amount of information streaming through the deliberate as well as all involuntary activities of the human body is about  $3 \times 10^{24}$  bits per day. When this is compared with the total quantity of information stored in all the libraries of the world— $10^{18}$  bits—we make an astounding discovery: The quantity of information processed in our bodies during the course of one day is one million times greater than all the knowledge represented in the books of the world.

Further examples of operational information as found in technology and in nature:

- the operating system of a computer (e.g., DOS programs),
  - the program controlling a robot or a process computer,
  - warning systems for airplanes and ships,
  - pheromone languages of insects,
  - bee dancing (see Figure 39 in appendix A2),
  - the hormonal system of the body, and
- operational information in the animal kingdom, which we call “instincts” because of our lack of knowledge about their codes and methods of transfer (e.g., the navigational system of migrating birds as described in appendix A3.4.4.2).

**3. Communication information:** This is composed of all other kinds of information, e.g., letters, books, phone calls, radio transmissions, bird songs, and the message of the Bible. The apobetic aspect of such information does not include the construction of a product, neither is it involved in maintaining some process. The goals are transmission of a message, spreading joy, amusement, instruction, and personal confidences.

# Three Kinds of Transmitted Information

by [Dr. Werner Gitt](#) on April 16, 2009

*If someone presents a model for explaining the origin of life, but he cannot say where the creative information characteristic of all life-forms came from, the crucial question remains unanswered.*

In our study of the nature of information we have come across various different distinguishing criteria:

- Distinction according to aspect: statistics, syntax, semantics, pragmatics, and apobetics
- Distinction according to purpose: constructional/creative information, operational, and communication information
- Distinction according to direction of flow: transmitted or received information.

Yet another distinction could also be made regarding the sender and the quality of the information processing involved. There are three types:

**1. Copied information:** This is comprised of the identical propagation of existing information. No new information arises during copying, so that it is a mechanical process and not an intellectual one. The equipment and methods used for copying were created by the initiative of one or more minds, and the copying process itself is also a deliberate and purposeful action, but it can be done by a machine. Examples of copied information: Duplication of a computer program in a data processing system (e.g., magnetic tape, magnetic disk, and real memory), replication of DNA molecules in living cells, the second printing of a book without any changes or additions, making a photocopy, and reading an extract or a letter. Every piece of copied information must, however, have been created somewhere along the line.

**2. Reproduced information:** In the arts, there is a clear distinction between the original composer, poet, or writer, and the subsequent performers of such works. An actor did not create the acts or the text, but he does contribute by employing his own talents of intonation, mimicry, and creativity. Similarly, when a Mozart symphony or a Bach cantata is performed, the musicians play a reproductive role—they do not alter the work of the composer, but they might introduce individual effects. We thus define reproduced information as a semantic entity which is elaborated and adapted by the actual sender without modifying in any real sense the originally created information. All animal languages can be included in this category, because all allocated meanings are fixed. The acts of performing animals are reproductive and not creative. Computer software functions according to this

principle, since all creative ideas like algorithms (methods of solution) and data structures had to be devised beforehand by the programmer and then implemented in the form of a written program. The various relevant parameters can be entered into a machine (computer) which does nothing more than reproduce the available information in the required form. Even the results obtained by means of AI programs (artificial intelligence; see appendix A2.3) are in the last instance nothing more than reproduced information. They may be quite complex and may appear to be “intelligent,” but they cannot create information. Machines can reproduce information, since reproduction does not entail creative thought processes.

**3. Creative information:** This is the highest level of transmitted information: something new is produced. It does not involve copied or reproduced information. This kind of information always requires a personal mind exercising its own free will, as original source. This generally entails a nonmaterial intellectual process, which, thus, cannot be entrusted to a machine. Creative information can always be linked to a person who has cognitive capabilities, and it represents something new. We can now formulate the following special theorem:

**Theorem 29:** Every piece of creative information represents some mental effort and can be traced to a personal idea-giver who exercised his own free will, and who is endowed with an intelligent mind.

This theorem can also be expressed as follows:

**Theorem 30:** New information can only originate in a creative thought process.

Examples of creative information: designing a coding system, designing a language, untrammelled discourse by means of natural languages, creating a programming language, writing a book, writing an original scientific paper, program instructions in DNA molecules, and the setting up of blueprints for living beings.

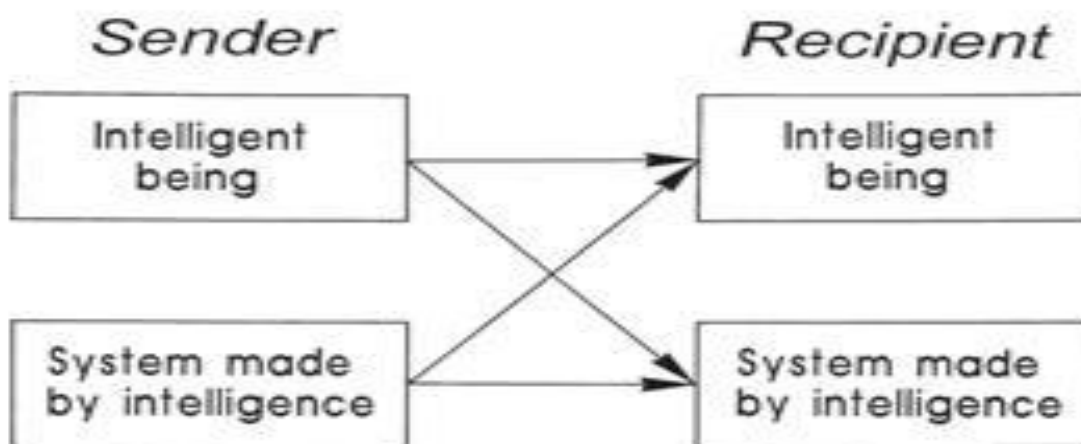


Figure 23: The four possible combinations of sender and recipient.

Conclusions: It should now be clear where the follies of evolutionary views lie. If someone presents a model for explaining the origin of life, but he cannot say where the creative information characteristic of all life-forms came from, then the crucial question remains unanswered. Somebody who looks for the origin of information only in physical matter ignores the fundamental natural laws about information; what is more, he scorns them. It is clear from the history of science that one can ignore the laws of nature for a limited time only.

There are only four different possible relationships between sender and recipient [G4], as illustrated in Figure 23. Only intelligent beings qualify as sender or recipient (God and man), or systems constructed by intelligent minds (e.g., man, other living beings, machines like computers or communication systems, and storage media). The four possible communication channels are shown in Figure 23. According to Theorem 29, senders of creative information can only be personal beings, while machines may serve as senders of copied or reproduced information.

There also are cases where both the sender and the recipient are parts of a complete transmission system (Figure 24).

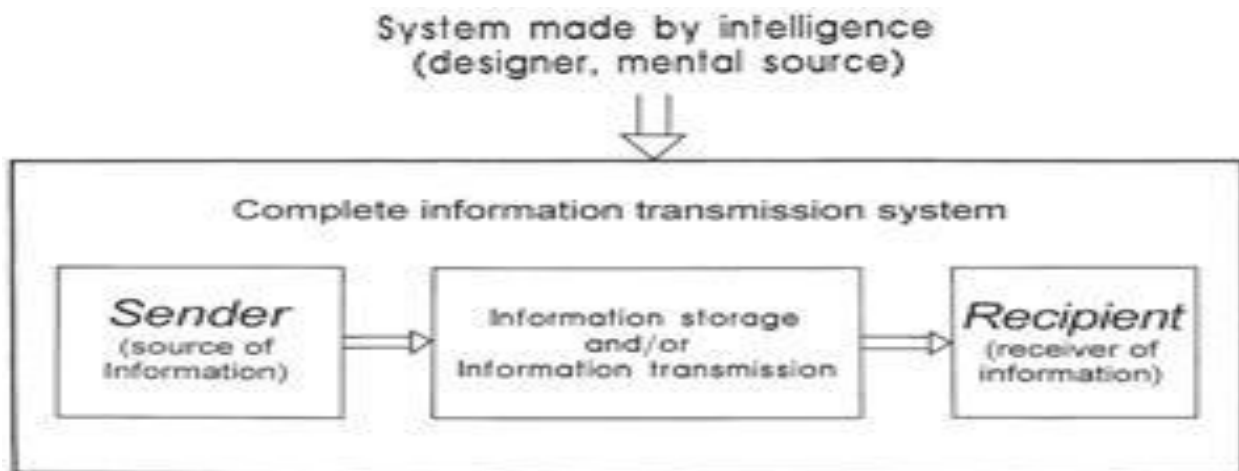


Figure 24: A complete transmission system in which sender and recipient are integrated. The entire system is based on conceptual ideas and always requires a mental source.

Example: In the system used for the transmission of exact (atomic) time in Germany, the atomic clock located at the Physikalisch-Technischen Bundesanstalt (Federal Institute of Physics and Technology) in Braunschweig, transmits the exact time over the transmitter designated as DCF77 in Mainflingen (near Frankfurt/Main). A specially designed code is employed (compare Theorems 6 to 11) and these signals can then be decoded by commercially available receiving equipment to provide time and date. Both the transmitter and the receiver are “systems created by intelligence” (the lower link in Figure 23). All the parts of this system have been produced by intelligent minds, as shown in Figure 24.

# Life Requires a Source of Information

by [Dr. Werner Gitt](#) on May 14, 2009

The common factor present in all living organisms, from bacteria to man, is the information contained in all their cells. It has been discovered that nowhere else can a higher statistical packing density of information (see appendix A1.2.3) be found. The information present in living systems falls in the category of “operational information” as discussed in [chapter 7](#). This information is exactly tuned in to the infinitude of life processes and situations, and its origin can be ascribed to creative constructional information ([chapter 7](#)). The different information aspects are depicted in Figure 26, where the statistical level has been omitted for the sake of simplicity. This diagram is of a general nature and can therefore be applied to any piece of information (see [chapter 5](#) for domain of definition); it is in every case under consideration only necessary to identify the sender, the recipient, and the specifics of the various levels, syntax, semantics, pragmatics, and apobetics. The properties characteristic of life are indicated next to each level in Figure 26. In the case of the recipient, these levels can in principle be investigated scientifically, although we have to admit that our present knowledge only scratches the surface.

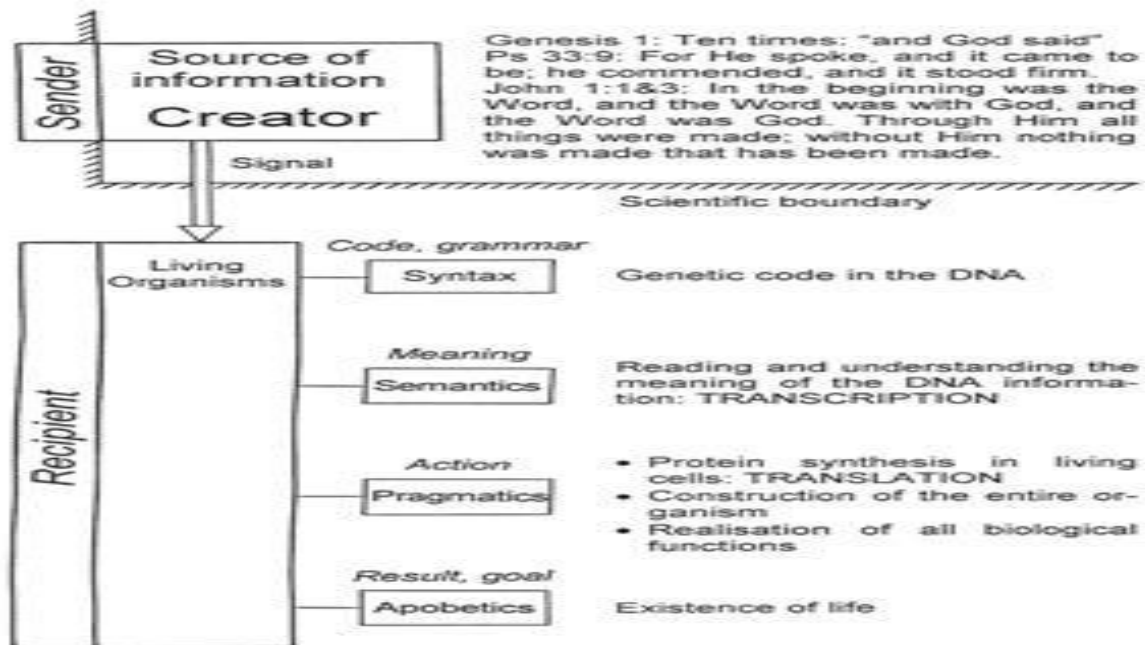


Figure 26: Concerning the origin of life. The biological information in living beings is obviously “operational information” which can be specified and investigated scientifically for the recipient on the known levels—syntax,

*semantics, pragmatics, and apobetics. Its origin and nature is "creative information." Scientific analysis requires the existence of a sender, but we can only find Him in the revelation of the Bible.*

According to the information laws, every piece of information requires a sender. The demarcated region in Figure 26 is in principle not accessible for scientific research, namely the person of the sender. Since the sender cannot be investigated by human means, many people erroneously conclude that He does not exist, and, thus, they contravene the information theorems. The requirement that there must be a personal sender exercising his own free will, cannot be relinquished. This sender, the Creator, has revealed himself so that we do have information about Him. He, Jesus, was in the world and the world was made through Him ([John 1:10](#)). Everything in the entire universe, without exception, was created by Him, as is stated in the first verses of John's Gospel and in [Colossians 1:16](#): "For by him all things were created: things in heaven and on earth, visible and invisible, whether thrones or powers or rulers or authorities; all things were created by him and for him."

The close link between information and will was discussed in paragraph 3.3, and this idea is also clearly emphasized many times in the Bible. We read in [Revelation 4:11](#), "You created all things, and by your will they were created and have their being." The intentional prerequisite of information is expressed in [Genesis 1:26](#): "Let us make man in our image, in our likeness."

In the light of the information theorems, all materialistic evolution models are useless and are thus rejected.<sup>1</sup>

The British evolution theoreticist Richard Dawkins expresses the following expectation in his book *The Blind Watchmaker*: "The purpose of this book is to provide a non-supernatural explanation for the existence of complex living organisms" [D2]. As a consequence, we cannot expect to find a scientifically based answer in his discussion (e.g., because of Theorem 17).



# A Biblical Analogy of the Four Fundamental Entities

## Mass, Energy, Information, and Will

by [Dr. Werner Gitt](#) on June 11, 2009

*The question about the origin of matter and the energies we observe in action is already answered in the first verse of the Bible.*

**The four basic quantities in creation:** These four entities, namely mass (or matter), energy, information, and volition, were discussed in [paragraph 3.3](#). The latter two were described as being non-material. Both material quantities, mass and energy, are subject to conservation laws, being linked by the equivalence formula  $E = m \times c^2$ . This means that they cannot be created by any natural process, neither can they be destroyed. Does this now mean that mass and energy are by nature eternal? No, it should be noted that none of the natural laws has existed forever, neither will any of them always be valid in the future. They were created together with everything else (see Theorem N10b in [paragraph 2.3](#)) and perform their wisely allocated functions only since creation week. “By the seventh day God had finished the work he had been doing” ([Genesis 2:2](#)).

The question about the origin of matter and the energies we observe in action is already answered in the first verse of the Bible: God created them! Everything came into being through His inconceivable power ([Jeremiah 10:12](#) and [Romans 1:20](#)). The active person at creation was Jesus, “through whom he made the universe” ([Hebrews 1:2](#)). Jesus is also the sustainer of the entire creation, “sustaining all things by his powerful word” ([Hebrews 1:3](#)). His creative and His sustaining acts are not restricted to matter and energy, but also hold for the information contained in biological systems.

We can now conclude ([John 1:1-3](#); [Colossians 1:16](#); [Hebrews 1:2](#)):

- Jesus is the source of all energy,
- Jesus is the source of all matter, and
- Jesus is the source of all biological information.

The totality of the information present in living organisms, designated I, represents a value characterized by high quality as well as a large volume. In the beginning, information was established through volition. The Bible tells us about the link between will and wisdom:

—“You created all things, and by your will they were created and have their being” ([Revelation 4:11](#)).

—“How many are your works, O LORD! In wisdom you made them all; the earth is full of your creatures” ([Psalm 104:24](#)).

—“Christ, in whom are hidden all the treasures of wisdom and knowledge” ([Colossians 2:2-3](#)).

In the light of [Colossians 1:17](#) and [Hebrews 1:3](#), we can say that Jesus sustains all energy, all matter, and all biological information (i.e., He sustains all life). Everything that exists does so through Christ; He is the First Cause of all things. However, supporters of the doctrine of evolution deny each and every purposeful cause for this world and deny any possibility of a personal sustaining will. They thus mislead themselves and are forced to regard information as a material quantity which originated in matter. We have scientifically shown that this view is erroneous. According to His will, God gave us many creative gifts. For example: Our free will enables us to act creatively. The gift of language is the instrument through which we can produce new information (creative information!). There are two things which we cannot do: we cannot create mass (or energy), neither can we destroy it.

**The spiritual meaning of the four basic entities:** It should be noted that the above-mentioned four fundamental quantities have a spiritual dimension in the Bible where man is concerned. For example, in [1 Corinthians 2:14-15](#) a distinction is made between the natural man and the spiritual man. The former is exclusively concerned with this world, and is not bothered with the message of the Bible. His philosophy ignores God, and he thus does not consider Jesus Christ, neither is he concerned about God’s purpose, salvation. He will be eternally lost without the Savior of sinners. Paul describes this situation in the following words: “For the message of the cross is foolishness to those who are perishing, but to us who are being saved it is the power of God” ([1 Corinthians 1:18](#)).

On the other hand, a spiritual person lives in close communion with God ([Ephesians 5:18-20](#)). The phrase “in Christ” occurs 196 times in the New Testament (e.g., [John 15:4](#); [Romans 6:1](#); [1 Corinthians 1:30](#); [Galatians 3:28](#)), referring to somebody who has tied his life to Jesus and who is sure of his eternal life ([1 John 5:13](#)). Such a person eagerly hears and reads God’s Word ([Rev. 1:3](#)) and has access to the spiritual dimension of the Bible.

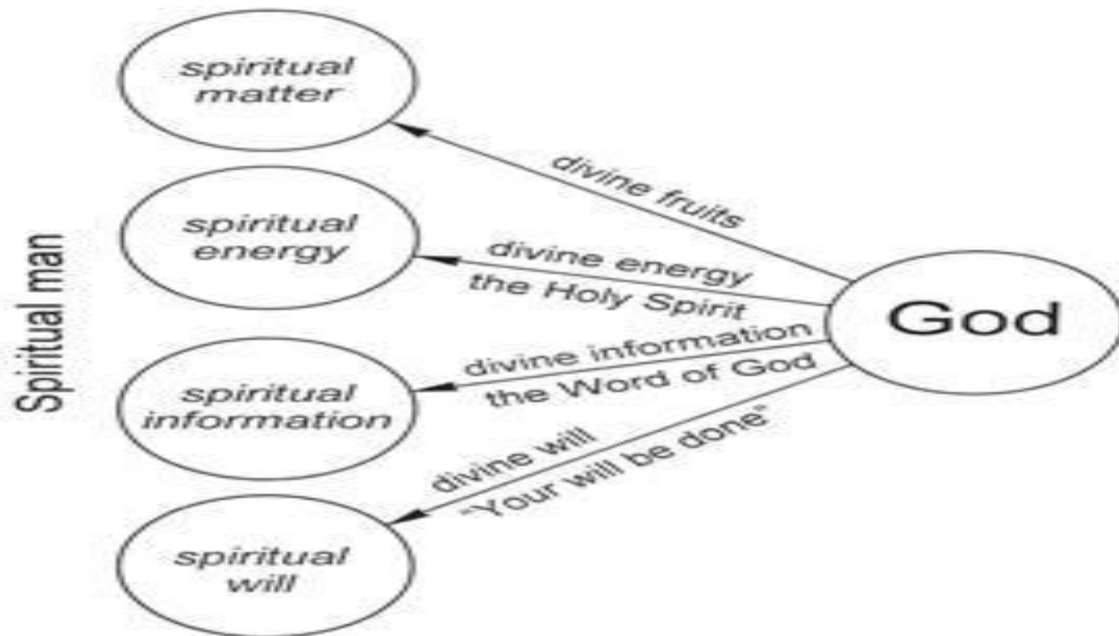


Figure 30: Basic units in the life of a spiritual person. The four fundamental entities—mass, energy, information, and will—as depicted in Figure 8, have been created by God. In the case of believers, we find a spiritual analogy for these entities, described by the Bible as divine in essence.

The four basic entities—mass, energy, information, and will—are illustrated in Figure 30, each time with the appellation “spiritual” in analogy to the biblical description of a spiritual person. It is now clear that these four created entities originated from God, the Creator. When a natural man is changed into a spiritual person, it is also a creative act of God, working through Jesus: “Therefore, if anyone is in Christ, he is a new creation; the old has gone, the new has come!” ([2 Corinthians 5:17](#)). This creative transformation from old to new, from the natural to the spiritual, and from lost to saved, is called both repentance in the Bible ([Luke 22:32](#); [Acts 3:19](#)) and being born again ([John 3:3](#) and [1 Peter 1:23](#)). This act can only be accomplished through our own will (e.g., [Matthew 23:37](#); [Luke 19:14](#)). Our willingness or our rejection is decisive for life and death, comprising the choice between heaven and hell. The four spiritual foundations take a central place for a born-again, a believing, or a spiritual person:

1. *Spiritual information*: In the Old Testament, God said parabolically that He has a fixed purpose when sending His Word to a recipient: “As the rain and the snow come down from heaven, and do not return to it without watering the earth and making it bud and flourish, so that it yields seed for the sower and bread for the eater, so is my word that goes out from my mouth: It will not return to me empty, but will accomplish what I desire and achieve the purpose for which I sent it” ([Isaiah 55:10-11](#)). This clearly illustrates the purpose-achieving and the human-assisting way of divine information.

By means of several technological and biological examples we will illustrate (see appendix A3) that in such systems, in each case:

- energy is *saved*,
- waste of energy is *prevented*,
- energy is *utilized*, and
- the consumption of energy is *optimized*.

The divine (or spiritual) information affects us in a similar way, because it

- saves* us from being led astray,
- prevents* us from wasting our lives,
- uses* our gifts in life (natural talents, time, and money),
- optimizes* our life situations (marriage, occupation, and pastimes), and
- saves* our life from perdition, giving us eternal life.

*2. Spiritual will:* There is a saying which goes like this: “Whoever does what he desires, often does what he should not do.” Martin Luther stated, “Whenever our free will does what is inherent, then we commit a deadly sin.” Even the Apostle sent to many nations, Paul, confessed, “I know that nothing good lives in me, that is, in my sinful nature. For I have the desire to do what is good, but I cannot carry it out. For what I do is not the good I want to do; no, the evil I do not want to do—this I keep on doing” ([Romans 7:18–19](#)). Our best ethical intentions for doing good will not be successful if we rely on our own strength. Egoism is the most certain human characteristic.

Jesus described our will and nature much more strikingly than all philosophers, humanists, and psychologists: “The spirit is willing, but the body is weak” ([Matthew 26:41](#)). The deadly poison of sin is so deeply infused in us since Adam’s fall, that we are “sold as a slave to sin” ([Romans 7:14](#)) in the truest sense of the word. “Good” intentions will not deliver us from this condition, but we require redemption through Him who conquered sin. The command “Be transformed by the renewing of your mind” ([Romans 12:2](#)) cannot be obeyed in our own power, but only through close ties with Jesus and by the constant influence of God’s Word on our mind. The principle mentioned by Goethe in his poem (“Erlkönig”: King of the Elves) “And if you are unwilling, I will use force,” does not hold for us. We gladly submit ourselves to God’s will as Jesus taught us in the Lord’s Prayer and as He lived daily right up to the Cross: “Yet not my will, but yours be done” ([Luke 22:42](#)). When your will is bound to God’s Word through your conscience, then you are no longer egocentric (e.g., [Isaiah 53:6](#): “each of us has turned to his own way”) but Christ-centered (e.g., [Colossians 3:23](#): “Whatever you do, work at it with all your heart, as working for the Lord, not for men”).

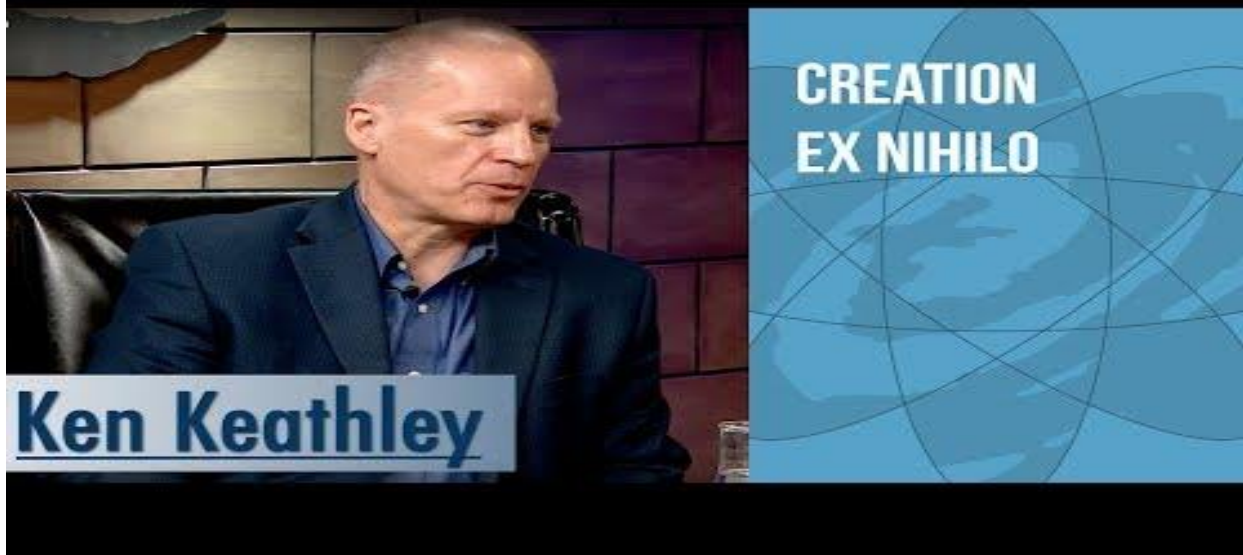
3. *Spiritual energy*: There is no machine which can run continuously without input of energy. Similarly, a spiritual person is not a perpetual mobile. His source of spiritual energy is the Holy Spirit, without whom nobody can call Jesus Lord of his life ([1 Corinthians 12:3](#)). The ministry of the disciples was not based in themselves, but in the divine energy given to them: “You will receive power when the Holy Spirit comes on you; and you will be my witnesses” ([Acts 1:8](#)). Paul expresses the immense source of available energy when he refers to “his incomparably great power for us who believe. That power is like the working [Greek *energeia*] of his mighty strength, which he exerted in Christ” ([Ephesians 1:19–20](#)). Although Paul was weak of body ([2 Corinthians 12:9](#)), his spiritual achievements were incomparable: “To this end I labour, struggling with all his energy, which so powerfully works in me” ([Colossians 1:29](#)). God commands us to “be strong in the Lord and in his mighty power” ([Ephesians 6:10](#)).

4. *Spiritual matter*: Except for mass deficits occurring in nuclear processes, there is also a conservation law for matter. If, by way of analogy, we search for something permanent in our spiritual life, it will be found in the fruits of our labors for God according to the Bible. Heinrich Kemner always emphasized the difference between success and fruit. Natural man seeks success in life, but a spiritual person finds it in fruit. Success depends mainly on our efforts, but fruit stems from grace and it only grows when our life is linked with Jesus. He unlocked this secret in the parable of the vine: “No branch can bear fruit by itself; it must remain in the vine. Neither can you bear fruit unless you remain in me. I am the vine; you are the branches. If a man remains in me and I in him, he will bear much fruit; apart from me you can do nothing” ([John 15:4–5](#)). All our works will be revealed when God judges the world. Whatever we may regard as great successes in our life will be consumed in God’s testing fire; only fruit in Jesus will be conserved and earn rewards ([1 Corinthians 3:11–14](#)). It is God’s declared will that we should build our life on the fruit ([John 15:2](#); [Romans 1:13](#); [Galatians 5:22](#); [Philippians 4:17](#); [Colossians 1:10](#)), for Jesus said, “I chose you . . . to go and bear fruit—fruit that will last” ([John 15:16](#)).

Only one life, it will soon be past;

Only what’s done for Christ, will last!

# Primary Creationist Debate: “Order Out Of Chaos” Vs. “Created Out Of Nothing”









# Can Order Come Out of Chaos?

BY [HENRY M. MORRIS, PH.D.](#) |  
SUNDAY, JUNE 01, 1997

There is a new science abroad in the land—the science of *chaos*! It has spawned a new vocabulary — "fractals," "bifurcation," "the butterfly effect," "strange attractors," and "dissipative structures," among others. Its advocates are even claiming it to be as important as relativity and quantum mechanics in twentieth-century physics. It is also being extended into many scientific fields and even into social studies, economics, and human behavior problems. But as a widely read popularization of chaos studies puts it:

Where chaos begins, classical science stops.<sup>1</sup>

There are many phenomena which depend on so many variables as to defy description in terms of quantitative mathematics. Yet such systems—things like the turbulent hydraulics of a waterfall—do seem to exhibit some kind of order in their apparently chaotic tumbling, and chaos theory has been developed to try to quantify the order in this chaos.

Even very regular linear relationships will eventually become irregular and disorderly, if left to themselves long enough. Thus, an apparently chaotic phenomenon may well represent a breakdown in an originally orderly system, even under the influence of very minute perturbations. This has become known as the "Butterfly Effect." Gleick defines this term as follows:

Butterfly Effect: The notion that a butterfly stirring the air in Peking can transform storm systems next month in New York.<sup>2</sup>

There is no doubt that small causes can combine with others and contribute to major effects—effects which typically seem to be chaotic.

That is, order can easily degenerate into chaos. It is even conceivable that, if one could probe the chaotic milieu deeply enough, he could discern to some extent the previously ordered system from which it originated. Chaos theory is attempting to do just that, and also to find more complex patterns of order in the over-all chaos.

These complex patterns are called "fractals," which are defined as "geometrical shapes whose structure is such that magnification by a given factor reproduces the original object."<sup>3</sup> If that definition doesn't adequately clarify the term, try this one: "spatial forms of fractional dimensions."<sup>4</sup> Regardless of how they are defined, examples cited of fractals are said to be numerous--from snowflakes to coast lines to star clusters.

The discovery that there may still be some underlying order — instead of complete randomness—in chaotic systems is, of course, still perfectly consistent with the laws of thermodynamics. The trouble is that many wishful thinkers in this field have started assuming that chaos can also somehow generate higher order — evolution in particular. This idea is being hailed as the solution to the problem of how the increasing complexity required by evolution could overcome the disorganizing process demanded by entropy. The famous second law of thermodynamics—also called the law of increasing entropy—notes that every system—whether closed or open—at least *tends* to decay. The universe itself is "running down," heading toward an ultimate "heat death," and this has heretofore been an intractable problem for evolutionists.

The grim picture of cosmic evolution was in sharp contrast with the evolutionary thinking among nineteenth century biologists, who observed that the living universe evolves from disorder to order, toward states of ever increasing complexity.<sup>5</sup>

The author of the above quote is Fritjof Capra, a physicist at the University of California at Berkeley, one of the prominent scientists involved in the New Age Movement, which tends to associate

evolutionary advance with catastrophic revolutions. He believes that, in some mysterious fashion, chaos can produce evolutionary advance.

Paul Davies, the prolific British writer on astronomy, is another. He, like Fritjof Capra, is not an atheistic evolutionist, but a pantheistic evolutionist. He has faith that order can come out of chaos, that the increasing disorder specified by the entropy law (second law of thermodynamics) can somehow generate the increasing complexity implied by evolution.

We now see how it is possible for the universe to increase both organization and entropy at the same time. The optimistic and pessimistic arrows of time can co-exist: the universe can display creative unidirectional progress even in the face of the second law.<sup>6</sup>

And just how has this remarkable possibility been shown? Capra answers as follows:

It was the great achievement of Ilya Prigogine, who used a new mathematics to reevaluate the second law by radically rethinking traditional scientific views of order and disorder, which enabled him to resolve unambiguously the two contradictory nineteenth-century views of evolution.<sup>7</sup>

Prigogine is a Belgian scientist who received a Nobel Prize in 1977 for his work on the thermodynamics of systems operating dynamically under nonequilibrium conditions. He argued (mathematically, not experimentally) that systems that were far from equilibrium, with a high flow-through of energy, could produce a higher degree of order.

Many others have also hailed Prigogine as the scientific savior of evolutionism, which otherwise seemed to be precluded by the entropy law. A UNESCO scientist evaluated his work as follows:

What I see Prigogine doing is giving legitimization to the process of evolution-self-organization under conditions of change.<sup>8</sup>

The assumed importance of his "discovery" is further emphasized by Coveny:

From an epistemological viewpoint, the contributions of Prigogine's Brussels School are unquestionably of original importance.<sup>9</sup>

Capra elaborates further:

In classical thermodynamics, the dissipation of energy in heat transfer, friction, and the like was always associated with waste. Prigogine's concept of a dissipative structure introduced a radical change in this view by showing that in open systems dissipation becomes a source of order.<sup>10</sup>

The fact is, however, that except in the very weak sense, Prigogine has not shown that dissipation of energy in an open system produces order. In the chaotic behavior of a system in which a very large energy dissipation is taking place, certain temporary structures (he calls them "dissipative structures") form and then soon decay. They have never been shown—even mathematically—to reproduce themselves or to generate still higher degrees of order.

He used the example of small vortices in a cup of hot coffee. A similar example would be the much larger "vortex" in a tornado or hurricane. These might be viewed as "structures" and to appear to be "ordered," but they are soon gone. What they leave in their wake is not a higher degree of organized complexity, but a higher degree of dissipation and disorganization.

And yet evolutionists are now arguing that such chaos somehow generates a higher stage of evolution! Prigogine has even co-authored a book entitled *Order Out of Chaos*.

In far from equilibrium conditions, we may have transformation from disorder, from thermal chaos, into order.<sup>11</sup>

It is very significant, however, that all of his Nobel-Prize winning discussions have been philosophical and mathematical — not experimental! He himself has admitted that he has not worked in a laboratory for years. Such phenomena as he and others are trying to call evolution from chaos to order may be manipulated on paper or on a computer screen, but not in real life.

Not even the first, and absolutely critical, step in the evolutionary process—that of the self-organization of non-living molecules into self-replicating molecules—can be explained in this way. Prigogine admits:

The problem of biological order involves transition from the molecular activity to the supermolecular order of the cell. This problem is far from being solved.<sup>12</sup>

He then makes the naive claim that, since life "appeared" on Earth very early in geologic history, it *must have been...* "the result of spontaneous self-organization." But he acknowledges uncertainty about this remarkable conclusion.

However, we must admit that we remain far from any quantitative theory.<sup>13</sup>

Very far, in fact---and even farther from any experimental proof!

With regard to the claim that the "order" appearing in fractals somehow contributes to evolution, a new book devoted to what the author is pleased to call "the science of self-organized criticality," we note the following admission:

In the popular literature, one finds the subjects of chaos and fractal geometry linked together again and again, despite the fact that they have little to do with each other.... In short, chaos theory cannot explain complexity.<sup>14</sup>

The strange idea is currently being widely promoted that, in the assumed four-billion-year history of life on the earth, evolution has

proceeded by means of long periods of stasis, punctuated by brief periods of massive extinctions. Then rapid evolutionary emergence of organisms of higher complexity came out of the chaotic milieu causing the extinction.

On the one hand, a catastrophic extinction of global biotas might negate the effectiveness of many survival mechanisms which evolved during background conditions. Simultaneously, such a crisis might eliminate genetically and ecologically diverse taxa worldwide. Only a few species would be expected to survive and seed subsequent evolutionary radiations. This scenario requires high levels of macroevolution and explosive radiation to account for the recovery of basic ecosystems within 1-2 my after Phanerozoic mass extinctions.<sup>15</sup>

Such notions come not from any empirical evidence but solely from philosophical speculations *based on lack of evidence!* "Since there is no evidence that evolution proceeded gradually, it must have occurred chaotically!" This seems to be the idea.

If one wants to believe by blind faith that order can arise spontaneously from chaos, it is still a free country. But please don't call it science!

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# Order or Chaos?

by [Martha Blakefield](#) on June 1, 1998

*Originally published in Creation 20, no 3 (June 1998): 46-48.*

*'Chaos' ordinarily describes any kind of disorder or confusion. In this case, what appeared to be chaos, on closer examination is another layer of more complex order in this universe God created.*

Does chaos glorify God? Don't worry, I'm not referring to your linen closet or a typical Sunday morning at your house. The chaos I'm talking about is a new area of scientific study termed 'chaos theory.'

Scientific thought took a new turn when Newton discovered that the laws which account for a falling apple and those that describe the moon's orbiting the earth were one and the same. Ever since he discovered and formulated the laws that govern motion in our universe, scientists have assumed that the universe runs like a clock, explained by a few simple laws. Scientists described what seemed like complicated systems in terms of comparatively simple equations. They thought that they could look at the world, figure out how it works, write an equation to describe it, then plug in any numbers and be able to predict any outcome. Some scientists have thought that they would eventually discover how to describe everything in the universe in simple, mathematical terms. Some have even thought they would find one set of equations that describes how the entire universe formed and operates—a 'theory of everything.'

But even as scientists figure out equations for more and more of the universe's systems, they are continually baffled by unexplained phenomena and systems that seem to act against the laws they have set forth to explain these actions. Wobbles in the orbits of planets, turbulence in the airflow patterns of a plane's wing, the changing size of animal populations—every once in a while these systems and others fail to conform to the simple equations scientists have worked out for them.

***THEY REALIZED THAT THESE SYSTEMS THAT SEEMED TO BE SO DISORDERED WERE ACTUALLY FOLLOWING STRANGE AND INTRICATE PATTERNS.***

These unexplained phenomena have aroused the curiosity of the scientific community. Scientists are finding chaos where they thought they would find order. But then, looking more closely, they are finding unexplained order in what looked like chaos. With the development of faster, more powerful computers, they have been able to test equations



they have been relying on for years. They have found that, under certain conditions, some of these equations produce 'chaotic' results. Then they realized that these systems that seemed to be so disordered were actually following strange and intricate patterns.

When Edward Lorenz, a meteorologist, programmed a model of the weather into a computer, he got strange results. Lorenz found that minute differences in initial weather conditions produced drastic changes in the outcome. Meteorologists had long suspected this was so. In fact, they had given the idea a name—'the butterfly effect.' The name was based on 'the half-whimsical belief that a butterfly flapping its wings in Asia could affect the weather in New York a few days or weeks later.'<sup>1</sup>



Plants show similar repetitive structures in, for example, the veins on a leaf or a tree's branching limbs.

Photo by Tom Wagner

When Lorenz created equations to describe these differences and fed these equations into a computer which graphed the results, he found that these 'chaotic' equations produced evidence of an unusual kind of predictability. The line of the graph produced a twisted figure-eight—a multi-dimensional butterfly shape. But the strange part is that although the line *always* described essentially the same shape over and over again, it *never* described *exactly* the same shape and no point on the graph *ever* intersected any other point. Since Lorenz's discovery, scientists have found many other of these 'strange attractors', as the phenomena are now called. Put simply, the equations repeatedly describe the same general shape but never repeat themselves precisely. Other chaotic equations form complex branching patterns that duplicate themselves repeatedly, but on a diminishing scale—each branching pattern a replica of the last but much smaller, just as we see in the structure of many plants (see photo, right).



Branching structures, all with clearly visible patterns of self-similarity, can be found all around us...and even in us. Look at the photographs (above). A tree's main limbs branch out in all directions and they in turn have smaller branches, which have twigs, again branching off into smaller shoots...all different, yet similar. It's interesting also to observe the way dried out mud cracks into (other) patterns which, though different, show the same concept of self-similarity on every scale. Also, ice crystal formation; the branches in a river tributary system observed from space; the intricate branching of the airways in our lungs; and the branching patterns of an electrical discharge. There are many other examples showing the same sort of 'fractal' patterns, as they are called.

All chaotic systems seem to have an unusual sensitivity to initial conditions. They are systems in which seemingly inconsequential changes turn into major differences in outcome. Scientists have found evidence of 'chaos' in astronomy, epidemiology, meteorology, air turbulence, the stock market, and the human body. It is in the study of the human body that some scientists are beginning to realize just how important chaos is. Ary Goldberger of Harvard Medical School believes he has discovered not only that the rhythm of the human heart is chaotic, but that chaos in the heart is necessary. When he compared the variations in the heartbeats of a healthy person to those of one suffering from heart disease, the healthy heartbeat was actually the more chaotic.<sup>2</sup>

This has opened some scientists' eyes to the possibility that chaotic behaviour may not be an abnormality, but a characteristic essential to the design of some systems.

When we consider the exquisitely complicated patterns found in chaotic systems, it appears the theory was misnamed. 'Chaos' ordinarily describes any kind of disorder or confusion. In this case, what appeared to be chaos, on closer examination is another layer of more complex order in this universe God created. Scientists use the word 'chaos' to indicate simple things that behave in complicated and unexpected ways—things that surprise us and confound our ability to predict how they will behave in the future. Some are coming up with different names for this phenomenon as they learn more about it: 'complexification' and 'the science of surprise.'

‘Traditionally, experts have blamed these surprises on outside influences or imperfect data . . . But now scientists, studying the world around us with the aid of powerful computers, are beginning to realize that surprise is inevitable. Systems such as the weather ... have surprise built into them. They will always behave in unexpected ways, no matter how well we understand them. It is in their nature to do things we can’t predict.’<sup>3</sup>

Still, scientists are hoping these new equations could provide a method of predicting future behaviour of systems more accurately than at present. And many years from now, when we think we have these new laws of our complex world all worked out, no doubt we’ll discover another set of phenomena that defy our statements of natural law. The wise scientist realizes that the all-knowing, all-powerful Creator would create a universe that will take the lifetime of all humanity and longer to understand fully. In that way the creation reveals the nature of the Creator (*Romans 1:20*). ‘It is the glory of God to conceal a thing: but the honor of kings is to search out a matter’ (*Proverbs 25:2, KJV*).

## Chaos theory: no help for evolution

Occasionally it is claimed that the discovery of patterns of order in seeming chaos is a bright star of hope for evolutionists. They feel it holds promise for their struggle to explain how disordered chemicals could have assembled themselves into the first self-reproducing machine, in opposition to the relentless tendency to universal disorder.

However, present indications point to this being an illusory hope. One of the classic examples of such ‘order out of chaos’ is the appearance of hexagonal patterns on the surface of certain oils as they are being heated. The minute the heating stops, this pattern vanishes once again into a sea of molecular disorder. These patterns, like the swirls of a hurricane, are not only fleetingly short-lived, but are simple, repetitive structures which require negligible information to describe them. The information they do contain is intrinsic to the physics and chemistry of the matter involved, not requiring any extra ‘programming.’

Living things, on the other hand, are characterized by truly complex, information-bearing structures, whose properties are *not* intrinsic to the physics and chemistry of the substances of which they are constructed; they require the pre-programmed machinery of the cell. This programming has been passed on from the parent organisms, but had to arise from an intelligent mind originally, since natural processes do *not* write programs. Any suggestion that the two issues are truly analogous denies reality.

# Material Creation: Man and the Cosmos

**W**HAT DOES THE BIBLE TEACH US about the physical universe? First, we learn that creation is utterly dependent on God, both for its coming to be and for its continuing to be. The reality of this dependence applies to creation's present status as well as to its past beginning. The universe and everything in it began as God's creation, and it continues to be God's creation. The Scriptures are explicit on this point.

The Hebrew word for "creation" (*barn*) and its Greek counterpart (*ktisis*) are usually reserved for the original acts of creation in the past. That is, they are used to indicate the origin or beginning of things. Creation, properly speaking, is an event that happens once, not an ongoing process. However, God's role as Creator did not stop with the beginning of the universe, and biblical usage reflects this fact as well. For even though God has completed his work *of* creation; nevertheless, he is not finished with his work *in* creation. We see, then, that there is a difference between God's work in the *origin* of the world and his work in the *operation* or continuation of it.

## *Creation as the Beginning in the Old Testament*

Genesis 1:1 (cf. 1:21, 27) speaks of creation as a past event. "In the beginning God created the heavens and the earth." In this passage *bara* [created] obviously refers not to the present functioning of the universe but to its past genesis.

Genesis 2:3 also refers to the acts of creation by which the world began: "God blessed the seventh day and hallowed it, because on it God rested from all his work which he had done in creation." That God rested and is still in that rest demonstrates that the word "creation" is used here in the sense of a series of singular, unrepeated events. Likewise, the next verse (Gn 2:4) places the creation event in the past when it declares, "These are the generations of the heavens and the earth when they were created."

Genesis 5:1 and 2 refer to Adam's and Eve's creation as a past event "when God created man." We read that "Male and female he created them, and blessed them and named them Man when they were created."

In Genesis 6:7 God spoke to Noah, crying out, "I will blot out man whom I have created from the face of the ground..." Even though the reference here seems to be to the whole human race alive in Noah's time, nonetheless, their creation as a race in Adam is referred to by Paul as a past event (Rom. 5:12). Of course, God is active in the propagation of the race from this point of beginning (Gn 1:28; 4:1, 25). But the creation of Adam was a past event that has not been repeated since.

Most other occurrences of *bara* in the Old Testament clearly refer to the past. In Psalm 89:11 and 12 the word creation is used to refer to the origin of heaven and earth.

The psalmist declared:

"The heavens are thine, the earth also is thine; the world and all that is in it, thou hast founded them. The north and the south, thou hast created them." (Ps 89:11–12)

Isaiah 40:26 says God “created” the stars as well as numbered and named them. In 42:5 he also declares that God “created the heavens ... [and] the earth and what comes from it.” He also “made the earth and created man upon it” (Is 45:12).

Malachi 2:10 also refers to the creation of the human race, saying, “Has not one God created us?” While the race has been propagated since Adam, the Bible makes it clear that it was created in Adam (Gn 1:27; cf, Rom 5:12). So the creation of mankind is viewed as a definite event that is now past. Even Jesus referred to it as an event which occurred at “the beginning [when] God made them male and female” (Mt 19:4).

### *Creation as the Beginning in the New Testament*

Like the Old Testament, the New Testament consistently uses the word creation (*ktisis*) as a past event, not as a present process. In Mark 10:6, Jesus teaches that “from the beginning of creation, ‘God made them male and female.’ ” This leaves no doubt that he is referring to an act of creation as a past unrepeated singularity. He is not describing a regular process observable in the present.

Mark 13:19 employs the word “creation” in the same way, saying, “In those days there will be such tribulation as has not been from the beginning of the creation which God created until now.” This is an unmistakable reference to creation as the point of beginning, not a process that is continuing.

In Romans 1:20 Paul declared that “ever since the creation of the world ... his [God’s] eternal power and deity has been clearly perceived in the things that have been made.” Paul here is clearly emphasizing in his use of the word “creation” God’s original work of making the world.

1 Timothy 4:3 declares that “God created [all foods] to be received with thanksgiving.” While foods are being produced in the present, the reference here is to the original creation of food. This is evident from the use of the aorist tense, which indicates a completed action. Also the phrase “to be received” points to the original purpose of the creation of food. We and all creatures are meant to receive our food from God with thanksgiving.

The Book of Revelation uniformly refers to creation as the past work of God by which all things began. John the Beloved Disciple noted Christ’s preeminence from the very “beginning of God’s creation” (Rv 3:14). The heavenly host around God’s throne praise God because by him all things “were created” (4:11). And the angel swears by him “who created heaven and what is in it, ... and the sea and what is in it” (10:6; cf. 14:7).

In the vast majority of these references there is no doubt that the word “creation” refers to the beginning of the universe (including life matter and mankind), not to its continuance since then. Where a process may be implied, on the other hand, is not in the creation of the physical universe but in the propagation of animal and human life. While the word “creation” is sometimes used in other contexts than the origin of the universe and living things (e.g., Is 45:7), the word chiefly refers to the original, unrepeated, events of creation by which God brought matter, living things, and human beings into existence.

### *God Continues to Rule over His Creation*

Once the world was created, God did not cease to relate to it. In fact, he continually acts in it. His providential presence is manifest in all of his creation. Through Christ he even sustains its

very existence (Heb 1:3). Rarely, however, does the Bible refer to God's work at present in sustaining the world as "creation." But there are a few exceptions.

Psalms 104:30 declares, "When thou sendest forth thy Spirit, they are created; and thou renewest the face of the ground." Here the word "create" (*bara*) is used, not to mean the initial generation of life on earth, but the continual regeneration of it. The context speaks of God causing "the grass to grow for cattle, and plants for man to cultivate" (v. 14). He is a God who "makest springs gush forth in the valleys" (v. 10) and who "makest darkness, and it is night" (v. 20). He is a God who continually provides food for all living things (v. 28). In short, the repeated emphasis of the passage is on God's continual operation and preservation of his world. The word "creation" is used to describe this continual activity of God.

Amos 4:13 says that God "creates the wind, and ... makes the morning darkness." Here too it seems that the word "creation" is used to describe God's work in his creation, not simply his original work of creation. And, in point of fact, the word "make," which is often used interchangeably with the word "create" (cf. Gn 1:26, 27; 2:18), is used on many occasions to describe God's continual work in the world (cf. Ps 104:3, 4, 10).

There are numerous ways the Bible presents God as presently at work in his creation. He is "making," "doing," or "causing" the laws of nature to operate in various ways. He sustains his creation (Heb 1:3), holds it together (Col 1:17), causes it to have being (Rv 4:11), and produces life in it (Ps 104:14). In short, God is not only the originator but also the operator or sustainer of his world. He is not simply the original cause but the continual cause of its existence. He is Creator and preserver. There would be no reality of creation, past or present, were it not for God. It all utterly depends on him.

God's dual work of creating and preserving the world are often presented in the same passage, even in the same verse. Notice the following contrasts revealing both aspects of God's work. For example, Genesis 1:1 says, "God created the ... earth." Then later he is at work through the land "producing vegetation" (v. 11). The first was an act of origin; the second was one of operation. Both are acts of God. Genesis 2:3 declares that "God rested" from his original "work of creating." But Jesus affirmed that God "is still working" (Jn 5:17). The former describes the commencement of his work of creation; the latter depicts the continuance of his work in creation.

The New Testament likewise shows God in the same dual role. In Acts 17:24 Paul proclaims that God "made the world." A couple of verses later he says, "In him we live and move and have our being" (v. 28). God is both the past cause of its becoming and also the present cause of its being. Colossians 1:16 expresses God's past work as one by which "all things were created." The very next verse explains, "In him all things hold together." The former is an act of causing it to come to be; the latter is God's act of causing it to continue to be. Hebrews 1:2 declares, "But in these last days he has spoken to us by a Son, whom he appointed the heir of all things, through whom he also created the world." Yet in the very next verse it reveals that Christ is also "upholding the universe by his word of power." Here again one verse refers to Christ creating the world and the other to his preserving it.

The reality of creation is not limited to a discussion of its past beginning but also includes its present continuance. The Creator, as both producer and preserver, is necessary not only to make it but also to sustain it. No picture of creation is complete that neglects God's role in both areas. And no view of creation is complete that fails to see that all members of the triune Godhead are active in creation: Father (1 Cor 8:6), Son (Jn 1:3; Col 1:16, 17; Heb 1:2, 3), and Holy Spirit (Gn 1:2).

*Primary and Secondary Causes*

Since God’s acts are necessary both for the world coming to be as well as for it continuing to be, God is both the commencing as well as the conserving cause of all that exists. Focusing on God as actor, rather than on his actions, reveals two distinctly different roles of God in relation to his creation. In one role he is the originator of it; and in the other he is the chief operator of it. He is both the source and the sustainer of the universe. He is not only Creator but also conserver of all that is. God is at once producer and provider of all living things. These roles depict his direct involvement in his world at all times from beginning to end.

God also has some indirect roles in creation. While he is the primary (first) cause of all things, he also works through secondary causes. What we commonly refer to as the processes of nature are God’s indirect work through secondary or natural causes. In this capacity God is the remote cause, while natural forces are the proximate causes of events. God is the original commander, but he also works through a chain of commands when acting through natural laws.

God acts in his world in two ways: by direct intervention (as in the creation of the world) and by indirect action (as in preservation of the world). The first is an *immediate* act of God, that is, involving no mediating agent. The other is a *mediate* action, that is, some other being or force acts as God’s agent. The direct acts of God are instantaneous; the indirect ones involve a process. God’s acts of creation were discontinuous with what went before. He created *ex nihilo* (out of nothing). What he created is therefore *de novo* (brand new). He produced something from nothing, life from non-life, and the rational from the non-rational. These are discontinuities spanned by a direct act of God.

Further, God’s acts of creation brought about unique events. Whereas, his acts of preservation involve a repetition of events. The one produced singularities, and the other produces regularities. The original creation events are unobserved today, but God’s operation of the world can be observed in the present. God’s actions can be contrasted like this:

**Chart #1 God**

**as:**

Originator	Operator
Source	Sustainer
Creator	Conserver
Producer	Provider

**Chart #2 God Working**

**in Creation:**

**Working as:**

**Working through:**

Primary Cause	Secondary Causes
Remote Cause	Proximate Causes
Ultimate Cause	Immediate Causes
Original Commander	Chain of commands

Chart #3	Results of	God's Action:
Direct intervention		Indirect action
Immediate		Mediate
Discontinuous		Continuous
Unique event (Singularity)		Repetition of events (Regularities)
Unobserved		Observed

### *Causation, Nature, and Science*

With this distinction between primary and secondary causes in mind, we are equipped to avoid two extremes among thinkers down through the centuries. On the one hand, some have yielded to the temptation to explain certain anomalous operations of the universe as miracles. Sir Isaac Newton explained the regular elliptical orbit of the planets as a divine intervention. Eventually, however, the astronomer Pierre Laplace provided a purely natural explanation for this phenomenon. Many early Christians invoked divine intervention to explain geological processes. Eventually, the early geologists James Hutton and Charles Lyell were able to give satisfactory natural explanations for these phenomena. Before Charles Darwin it was assumed by many creationists that all species were fixed by a direct supernatural act of God. Likewise, earthquakes, meteors, and volcanoes were all once explained as divine interruptions of nature. The mistake in each case was to assume that the naturally unexplained functioning of nature was naturally unexplainable. This has been called the God-of-the-Gaps error. As it turned out, the gap was not really in the operation of nature but in the human understanding of it.

There is another equally mistaken view that may be called the Nature-of-the-Gaps error. This is not a mistake of supernaturalists but of naturalists. Here the temptation is not to interject a supernatural cause into the regularities of the world, but rather to assume there is always a natural cause for singularities in the world. But it is no more justifiable to presume there is always a natural cause for unexplained regularities in nature than it is to plead a direct supernatural cause for unexplained singularities. In fact, if an event is a continuous regular process, then by its very nature it can be assumed to have a natural cause. This is so even if we do not know what it is. On the other hand, an abrupt, discontinuous singularity or origin may have a supernatural cause. Usually we think of such a direct intervention by God in the natural order as a miracle. The key principle here is that although God normally works through secondary causes, we cannot therefore assume that he never works nor has worked directly on his creation.



## *Conclusion*

We have seen that God's activity can be perceived in creating the world as well as in preserving it. He is both the originator and the operator of his universe. The acts of origin are always immediate acts of God as the first cause. However, in the continuance of the universe God has utilized the instrumentality of secondary causes. These we call natural causes because they are regular, observable, and predictable. They are the way God ordinarily operates in his world. The direct act of a first cause is different. It is the way God specially intervenes in his world. These are not regular nor predictable acts of God. We call these supernatural. These events have the same characteristics, whether they are the initial creation of something or subsequent miraculous events.

The distinguishing characteristics of natural events are continuity, regularity, and predictability. None of these applies in the case of a miraculous origin event. It is wrong then to assume God miraculously intervenes continually in the ongoing natural processes of the world. Likewise, it is equally wrong to presume that a discontinuous, singular, and unpredictable event—like a miracle—must have a natural cause. God is involved directly as a supernatural cause for origins and indirectly through secondary causes in the operation of the world. He is both the Creator and the sustainer of all that he has made.<sup>13</sup>

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# The Three Philosophical Views of Creation

**W**HAT ARE THE PRINCIPAL PHILOSOPHIES of life that have shaped the way creation is viewed? There are three main views: materialism, pantheism, and theism. Materialists believe that everything comes out of matter (*ex materia*); pantheists claim that everything comes out of God (*ex deo*); and theists hold to creation by God out of nothing (*ex nihilo*). The Christian doctrine of creation is theistic. It can be understood more clearly by contrasting it with these other two positions.

## *Materialism: All Things Came Out of Matter*

A materialistic view of creation contends that matter (or physical energy) is eternal. Matter always has been, and for that matter, always will be. The physicist claims, “Energy can neither be created nor destroyed.” This is known as the first law of thermodynamics. The materialist applies this principle to the universe and concludes it is eternal. There are two basic subdivisions in the creation “out of matter” view: those that involve a God and those that do not.

**1. Platonism: God Created out of Preexisting Matter.** Many ancients, including the Greeks, believed in creation by God out of some previously existing, eternal “lump of clay.” That is, both God and the “stuff” of the material universe (cosmos) was always there. “Creation” is the eternal process by which God has been continually forming the matter, giving shape to the stuff of the universe.

Plato held this view of creation out of matter. He called matter formless (or chaos). God was the Former (or Demiurgos). Using an eternal world of forms or “ideas,” God gave shape or structure to the formless mass of stuff called matter. In brief, the Former (God), by means of the forms formed the formless (matter) into the formed (cosmos).

For Plato, and those who share his view, matter is eternal. The basic stuff of the universe has always been here. There never was a time when all the elements of the physical universe did not exist. Everything has been forever. “Creation,” therefore, means formation, not originating something out of nothing. God does not originate the matter; he simply organizes the matter that has always been there. In this Platonic view, the word Creator does not mean originator of all that exists, but simply the builder. The building blocks were already there. God just put them together. Hence, God is only an architect of the physical universe. He is not the source of all things.

A consequence of this view is that God is not really in ultimate control of all things. For there is something eternal outside of God. There is a given, something just there, and even God must deal with it. Matter is just there, and he must work with it. He can shape matter, but it places certain limitations on him. Just as there are limits on what can be made out of paper (it is good for making kites but not for space ships), so the very nature of matter is a handicap to the Creator’s ability. In short, both the existence and nature of matter place limits on God.

**2. Atheism: Matter Is Eternal and Self-Forming.** A second view within materialism is generally called atheism, although many agnostics hold it as well. An atheist says there is no God; an agnostic claims not to know whether there is a God. But neither believes it is necessary to posit God in order to explain the universe. Matter is simply there. In fact, for the atheist, the

universe is ultimately all that exists. Even mind came from matter. If human beings have souls, the soul is dependent on the body as a shadow is on a tree. Once the body dies, the soul dies too, according to this view.

If questioned on where the universe came from, the strict materialist may ask in reply: where did God come from? For it makes no more sense to them to inquire who made the universe than to ask who made God.

That creation came out of matter has been held by many thinkers down through the centuries, from the ancient atomists (who reduced all things to atoms) to modern materialists like Karl Marx. One of the most influential exponents of this view today is the astronomer Carl Sagan. He believes that “the Cosmos is all that was, is, or ever will be.”<sup>3</sup> Man is simply Stardust pondering stars. Rather than God creating man, man created God. As Karl Marx put it, mind did not create matter; matter created mind.

Granting the eternal existence of matter and motion, the materialist explains everything else by purely natural evolution. Matter plus time, chance, and natural laws (such as natural selection) can explain everything. Even the complexities of human life are explained by the purely natural laws of the physical universe. No intelligent Creator is necessary.

If there is no Creator, then either the universe has always been, or—as one atheist put it—if matter came to be, it came into existence from nothing and by nothing. The material universe is self-sustaining and self-generating. As Isaac Asimov speculated, there are equally good chances for either nothing to come from nothing or for something to come out of nothing. As luck would have it, something emerged.<sup>6</sup> So either matter is eternal or else it came from nothing spontaneously without a cause.

Traditional materialists believed there were innumerable indestructible little hard pellets of reality, called atoms. Since modern physics demonstrated the convertibility of mass and energy, materialists now speak of the indestructibility of energy. They appeal to the first law of thermodynamics, claiming that “energy can neither be created nor destroyed.” Energy does not pass out of existence; it simply takes on new forms. Even at death, all the elements of our bodies are reabsorbed by the environment and reused by other things. So the process goes on forever.

In fact, atheism or nontheism is a logical outcome of strict materialism. That is, either there is no God or, at least, there is no need for a God. As the *Humanist Manifesto II* put it, “As non-theists, we begin with humans not God, nature not deity.”

No cause is needed to bring matter into existence or to form matter already in existence. The laws of nature suffice for both purposes. There is neither a Creator nor a former of the world. The world explains itself.

Among those holding creation out of matter there are differences regarding the nature of human beings. Most materialists accord a special status to humans as the highest point in the evolutionary process. However, virtually all agree that human beings are not qualitatively different from animals. Humans differ only in degree, not in kind, from lower forms of life. Human beings are the highest and latest animal form on the evolutionary ladder, but they are not uniquely different from other animals. They simply have some more highly developed abilities than primates.

Another implication of this view is that there is no immortal, never-dying “soul” or spiritual aspect to human beings. As *Humanist Manifesto I* noted, “The traditional dualism of mind and body must be rejected.” For they believe that “modern science discredits such historic concepts as the ‘ghost in the machine’ and the ‘separable soul.’ ”

The strict materialist does not believe in spirit or mind at all. There is no mind, only a brain. Thought is simply a chemical reaction in the brain. Thomas Hobbes in the seventeenth century defined matter as the whole of what exists:

The world (I mean not the earth only, that denominates the lovers of it “worldly men,” but the universe, that is, the whole mass of all things that are) is corporeal, that is to say, body; and hath the dimensions of magnitude, namely, length, breadth, and depth: also every part of body is likewise body, and hath the like dimensions; and consequently every part of the universe is body, and that which is not body is no part of the universe: and because the universe is all, that which is no part of it is nothing, and consequently nowhere.

Less stringent materialists admit the existence of a soul but deny that it can exist independently of matter. For them the soul is to the body what the image in the mirror is to the one looking at it. When the body dies, so does the soul. When matter disintegrates, the mind is also destroyed.

### ***Pantheism: Creation Out of God***

On the other end of the spectrum from materialism is pantheism. Materialists claim all is matter; pantheists believe all is mind. On the subject of creation, materialists believe in creation out of matter (*ex materia*). But pantheism believes in creation out of God (*ex deo*). There are two basic categories into which pantheists fall: absolute pantheists, who deny the existence of matter entirely; and non-absolute pantheists who hold that matter is a kind of emanation, manifestation, or mode of God.

1. **Absolute Pantheism.** An absolute pantheist claims that only mind (or spirit) exists, not matter. What we call matter is only an illusion. It is like a dream or mirage. It appears to exist, but it really does not exist. There are two classical representatives of this view, Parmenides (a Greek) from the West and Shankara (a Hindu) from the East.

The Greek philosopher Parmenides argued that all is one, because to assume more than one thing exists is absurd. If there were two or more things, they would have to differ. But the only ways to differ are by something (being) or nothing (nonbeing). However, it is impossible to differ by nothing, since to differ by nothing (or nonbeing) is just another way of saying there is no difference at all. Two things cannot differ by being because being (or existence) is the only thing they have in common. But it is impossible to differ by the very respect in which they are the same. Hence, Parmenides concluded, it is impossible to have two or more things. There can be only one being. All is one, and one is all. Thus whatever else appears to be does not really exist.

Put in the context of creation, this simply means that God exists and the world does not. There is a Creator but not really any creation. At least the only sense in which there can be said to be a creation is that it comes out of God the way a dream comes from a mind. The universe is only the nothing about which God dreams. God is the sum total of all reality. The nonreal about which he thinks and which appears to us, like zero, does not exist. It is literally nothing.

The Hindu philosopher, Shankara, described the relation of the world to God, illusion to reality, by the relation of what appears to be a snake but on closer examination turns out actually to be a rope. When we look at the world, what is there is not reality (*Brahman*). Rather, it is merely an illusion (*maya*).

Likewise, when a person looks at himself, what appears to be (body) is only an illusory manifestation of what really is (soul). And when one looks into his soul, he discovers that the depth of his soul (*Atman*) is really the depth of the universe (*Brahman*). Atman (the human soul) is Brahman (God). To think we are not God is part of the illusion or dream from which we must awake. Sooner or later we must all discover that all comes from God, and all is God. So goes the pantheists' argument.

**2. Non-Absolute Pantheism.** Other pantheists, of whom there are a great many sorts, hold a more flexible and elastic view of reality. While they believe all is one with God, they do not deny there is some multiplicity in the unity of God. They believe all is in the one as all radii are in the center of a circle or as all drops merge into one infinite pond. Representatives of this view include the Greek thinker and neoplatonist Plotinus, the seventeenth-century philosopher Baruch Spinoza, and the contemporary Hindu thinker Radhakrishnan.

According to this thinking there are many things in the world, but they all spring from the essence of the one (God). The many are in the one, but the one is not in the many. That is, all creatures are part of the Creator. They come from him the way a flower unfolds from a seed or sparks come from a fire. Creatures are simply many drops that splash up from the infinite pond, only to eventually drop back in and blend with the rest. All things come from God, are part of God, and merge back into God. Technically speaking, for the pantheist, there is no creation but only an emanation of all things from God. The universe was not made out of nothing (*ex nihilo*), nor out of some preexisting matter (*ex materia*). It was made out of God (*ex deo*).

Even for moderate pantheists, there is no absolute distinction between Creator and creation. Ultimately Creator and creation are one. They may differ in perspective, as two sides of a saucer. They may differ relationally, as source does to sequent, as cause to effect. Creator and creation may be no more different than the reflection in a pond is to the swan swimming on it. One is a mirror image of the other that is the real thing. Even for those who believe the world is real, Creator and creation are simply two sides of the same coin. There is no real difference between them.

Pantheists believe that the relation between Creator and creation is eternal. God caused the world, but they insist that he has been causing it forever. Just as rays would shine forever from an eternal sun, or as radii always emerge from the center of an eternal circle, even so God has been creating forever. The universe is as old as God. Just as in an eternal world one stone could be resting on another forever, so the world could be dependent on God forever. So, according to pantheism, the cause has been creating from eternity.

Pantheists believe God and the world are of the same substance. Both are comprised of God-stuff. The creation is part of the Creator. It is one in nature with God. God is water. God is trees. As New Age writer Marilyn Ferguson put it, when one watches milk being poured into cereal, one sees God being poured into God! Ultimately there is only one substance, one stuff in the universe, and it is divine. We are all made of it, we are all God, according to this view.

If all of creation is the emanation of God, then so is mankind. The pop theologian of New Age pantheism, Shirley MacLaine, believes: "You can use *I am God*, or *I am Christ* or *I AM THAT I AM* as Christ did." In her television program, "Out on a Limb," she waded to the ocean and proclaimed, "I am God. I am God!"<sup>15</sup> Lord Maitreya, believed by many to be the "Christ" of the New Age, declared through Benjamin Creme, his press agent, "My purpose is to show man that he need fear no more, that all of light and truth rests within his heart, that when this simple fact is known man will become God."

### *Theism: Creation Out of Nothing*

In contrast to both materialism and pantheism, stands the Judeo-Christian view of creation out of nothing. According to this position, God is above and beyond the world, not merely in it, and certainly not of it. The Creator is related to creation more like a painter is to a painting. The painter is not the painting, rather he created the painting and is manifest in it. Likewise, God is not the world. Rather, he created the world and manifests himself in it.

This position is represented by orthodox Judaism and Christianity. As Peter Kreeft noted, for Christians “The world is not God and not an illusion. In Eastern religions, the world is either God or an illusion, either part of God’s mind or body, or *maya*, a trick.” Over the centuries, many Christian thinkers have not only defended the doctrine of creation on logical and biblical grounds, but have also developed and explored its philosophical consequences. These are radically different from those of materialism on the one hand or pantheism on the other. Perhaps the best way to demonstrate these differences is to examine some of their thinking, especially that of two of the most influential, the great Christian thinkers Augustine (354–430) and Thomas Aquinas (1224–74).

Concerning the creation, Augustine said three questions may be asked, “Who made it?, How? and Why? The answers are: ‘God’; ‘by the word’; and ‘because it is good.’ ” But what kind of God created the world? The answer to this involves many divine characteristics or attributes.

For instance, God is the “First Cause.” He is the “Beginning” beyond which there is no beginning. He is eternal and uncaused. He is indivisible and unchangeable.<sup>20</sup> He is infinitely wise and powerful. Further, God created voluntarily. As Aquinas observed in the *Summa Theologica*, “It is not necessary that God should will anything except Himself.”

Since God is a Trinity of Father, Son, and Holy Spirit, all three persons are involved in creation, as Aquinas concluded in his discussion on creation in the *Summa Theologica*. (See chapter note 21 for source information for this quote and following.)

To the Father is appropriated power which is especially shown in creation.... To the Son is appropriated wisdom through which an intellectual agent acts.... To the Holy Ghost is appropriated goodness, to which belong both governance ... and the giving of life.

Creation is ascribed to all three members of the Godhead because in God his existence is identical with his essence and common to all three persons, and is, therefore, an activity of the whole Trinity, not peculiar to one person.

Not only did God create, but only God can create. For “to create is, properly speaking, to cause or produce the being of things,” according to Aquinas. But only God can cause something to come into being. Man cannot create. “For an individual man cannot be the cause of human nature absolutely, because he would then be the cause of himself.” In fact, “no created being can produce a being absolutely,” reasoned Aquinas.

Since angels are also created beings, it follows that they cannot create. This is so since God alone is the primary cause and “no secondary cause can produce anything.... Hence it remains that nothing can create except God alone.” Secondary causes do not create; they only reduplicate. As a “secondary instrumental cause does not share in the action of the superior cause ... so it is impossible for any creature to create.” Thus, Aquinas clearly distinguished between the creature and the Creator in his discussion on creation.

### *Implications of the Theistic View*

We begin to see that the implications of a theistic view of creation contrast sharply with the materialistic and pantheistic views. Most strikingly, there is an absolute difference between the Creator and creation. As presented by Christian thinkers, this encompasses an entirely different view of origins. Theists believe that God created everything that exists—that there was no preexistent matter. God created existence out of nonexistence. He made something out of nothing. For Augustine the fact that God created all things “implies that before the creation of heaven and earth God had made nothing.” But if there was nothing before God created, then ultimately he created everything out of nothing. “There could not have existed any matter of anything whatever unless it came from God, the Author and Creator of all that has been formed or is to be formed.”<sup>23</sup>

**1. Creation Is Not Out of God.** While all things are from God, they are not of God. Creation “is not out of Him, because it is not immutable, as He is.” But since “it was not made of anything else, it was undoubtedly made out of nothing—but by Himself.”<sup>25</sup> This does not mean that “nothing” is some sort of invisible stuff out of which God made the world. By “out of nothing” is meant “that it was not made from anything.” As Aquinas noted, the preposition “from” does not imply it came from something but simply that it followed after nothing. So creation from nothing is really creation after nothing. For “nothing is the same as no being.”<sup>27</sup> But creation from nothing is not creation by nothing. Only what exists can cause, and only God can cause existence. God is existence by himself (“I AM WHO I AM,” Ex 3:14); he alone produces everything else that exists.

**2. God Created Out of Nothing.** Out of what did God create? There is no material cause of creation. For between nothing and something there is no medium. Whatever comes from nothing must do so immediately and abruptly. There are no intermediaries between non-being and being. So “God produces being out of nothing according to the greatness of His power.” Since God has infinite power, he can do anything possible. It is not impossible for an infinite Creator to produce a finite creature. Thus God, who is existence, brought everything else into existence. Everything came from nothing but by someone. It takes power to produce something, but an infinite being has unlimited power, and unlimited power is not limited in its ability to create limited powers. God can create simply by “his word of power” (Heb 1:3).

God created not only by his power but also by his will. God is not bound by any obligation to create. Hence, “it is to be held with complete conviction that God brings creatures into existence of his own free will, and not as bound by natural necessity.”

**3. The Universe Had a Beginning.** In contrast to the other views of creation, theists hold that God is eternal but the world is not. The universe came to be but God always was. According to Aquinas, “That the world did not always exist we hold by faith alone; it cannot be proved demonstratively.” Others, like Bonaventure, a contemporary of Aquinas, held that it could be proven by reason that the universe had a beginning. Whatever our conclusion about this debate, all orthodox Christians acknowledge that the universe had a point of beginning. They all hold that it is temporal, not eternal.

Both time and space were created with the universe. There was no time before the world began, only eternity. God is prior to the universe in order but not in time, since there was no time before he created. For “things are said to be created in the beginning of time, not as if the beginning of time were a measure of creation, but because together with time the heavens and earth were created.”

Likewise, space was created with the world. For we hold that there was no place or space before the world was. Further, Augustine said, “It is silly to imagine infinite space since there is no such thing as space beyond the cosmos.” Neither was there any physical motion before there was a physical universe. However, “motion always existed from the moment that movable things began to exist.”<sup>33</sup> God did not have to move to create motion nor did he need time to create time. Augustine asked: “Did the author of time need the help of time?”

#### **4. There Was No Time Before God Created.** What was God doing before he created?

Augustine had two answers, one humorous and one serious. First, he jests that God was preparing hell for those who ask such questions. More seriously he notes that there was no time before God created. For to speak of “doing” and “before” imply time. Hence, the question is as meaningless as: “What did God create before he created?” or, “What time is it for a timeless Being?” There is no time before time began, only eternity.

In view of the fact that time was created, it is senseless to ask how the eternal God occupied his time before he created time. For this same reason it makes no sense to ask why God did not create the universe earlier. For “earlier” implies there were moments before moments began. This is as meaningless as asking, “Why God did not create the world here rather than there?” For, as Augustine points out, “If they excogitate infinite periods of time before the world, ... they ought to conceive of infinite reaches of space beyond the visible universe.” Since God created both time and space with the universe, there is neither time nor space beyond the universe. God neither created in time nor in space; rather, he created the universe with both time and space.

**5. The Universe Is Not Eternal.** If God did not create in time, then did he not create from eternity? And if he created from eternity, then is not the world eternal? All the orthodox Fathers rejected this conclusion, but some for different reasons. Aquinas believed eternal creation was theoretically possible (though not actually so). This, he reasoned, is because, viewed “from above,” God is eternal and an effect is simultaneous to its cause of existence. Bonaventure and others argued “from below” that an eternal universe is impossible because an infinite series of moments is actually unattainable. Both views agreed that the universe is not eternal.

The problem then is this: how can God be an eternal cause when the universe he caused is not eternal? In response it should be noted that the universe no more has to be eternal because God is eternal than it has to be infinite since he is infinite. Nor does it have to be necessary because God is a necessary being. The only thing a necessary being must will necessarily is the necessity of his own being. There is no necessity placed upon God to will the existence of contingent beings. Likewise, there is no reason an eternal being must will anything else to be eternal. While all material things flow from God’s eternal will, he wills that all these things exist temporarily.

Everything preexists in God in accordance with his will. But God willed eternally that created things would have a beginning. Even though he willed them from eternity, nevertheless, they had a temporal beginning. For example, a doctor can decree from the beginning of his



treatment that the patient take medicine later at successive intervals. Even so God can will events from all eternity that will occur at later successive times.

**6. God Created to Communicate and Manifest His Goodness.** If God created freely, then we can ask, “Why did he create in the first place?” Augustine’s answer was, “Because it is good.” Aquinas concurs, saying, “God brings things into existence in order that his goodness may be communicated and manifested.”<sup>38</sup> God is not required to share his goodness, but does so simply because he wants to. Commenting on the fact that God declared his creation was “very good” (Gn 1:31), Augustine concludes, “Surely, this can only mean that there was no other reason for creating the world except that good creatures might be made by a good God.”

**7. Creatures Should Recognize and Thank God for His Goodness.** God is infinitely good. As such he desires to share his goodness. Creatures should recognize the goodness God has showered upon them and thank him for it. In recognizing God’s worth, they should attribute worth to him. Thus worship is the natural result of creation. Every rational creature—every man and woman and child, every angel—should worship the Creator. The purpose for creating is that the creature may worship God. “If he does not worship God, he is wretched.” As Augustine confessed, “Thou hast formed us for Thyself, and our hearts are restless till they find rest in Thee.”<sup>41</sup> In brief, since a rational God created rational creatures, then it is only right and fitting that they should worship him. For in acknowledging his good as the highest good, they find their highest good. They find themselves in him and are satisfied.

It is important to recognize then that God and the world are radically different. One is the maker and the other is made. God is the cause and the world is the effect. God is unlimited, and the world is limited. The Creator is self-existing but creation is entirely dependent on him for its existence.

<b>Creator</b>	<b>Created</b>
Uncreated	Created
Infinite	Finite
Eternal	Temporal
Necessary	Contingent
Changeless	Changing

**8. Every Created Thing Had a Beginning.** Another crucial implication of the theistic view of creation from nothing is that the entire material and immaterial universe, (everything except God) had a beginning. Jesus spoke of his glory with the Father “before the world was made” (John 17:5). The world did not always exist. This does not mean that there was a time when the universe was not. Time began with the beginning of the world, and was there no time before time began. The only thing “prior” to time was eternity. That is, God exists forever; but the universe began to exist. Hence, he is prior to the temporal world ontologically (in reality), but not (in time) chronologically.

To say that creation had a beginning is to point out that it came into being out of nothing. First it did not exist, and then it did. It was not, and then it was. The cause of its coming to be was God.

When the theist declares that God created “out of nothing” he does not mean that “nothing” was some kind of invisible, immaterial something that God used to make the material universe. Nothing means absolutely nothing. God alone existed and utterly nothing else. God created the universe and then, then alone, was there something else that existed. If “nothing” were really a hidden or secret something, then creation would really be out of something else (*ex materia*). Theists believe, on the contrary, in creation out of nothing (*ex nihilo*).

### **9. The Universe Did Not Come to Be from Nothing but Only by Someone.**

However, we should emphasize that creation out of nothing is not creation by nothing. Theism believes that the universe came to be from nothing but only by someone (God). It does not hold that nothing produced something. In fact, at the heart of the theistic belief in the causal power of God is a rejection of the premise that nothing can create something. Only something (or someone) can cause something. Nothing causes nothing.

We see then that the Christian doctrine of creation sets out to answer the same philosophical questions as the other two options. The table at the end of the chapter will summarize and focus the differences between the three positions. Properly speaking, materialism believes in natural generation; pantheism in eternal emanation; and only theism believes in supernatural creation. These are three very different views of the origin of the universe and man.

Christianity holds that since God brought the universe into existence, he is in sovereign control of it. God is infinite, necessary, and eternal. The creation is finite, contingent, and temporal. Hence, there is a real and radical difference between the uncreated Creator and the creation.

For theists, creation out of God is a contradiction in terms. For since God is eternal, infinite, and uncreated and the world is not, such a creation would be a temporal eternal, a finite infinite, and a created uncreated being. Thus, creation out of nothing makes it nonsense for a human being like Shirley MacLaine to say, “I am God.” For it is impossible to have a dependent being that is necessary or a finite that is infinite. Such confusion of categories, which seems rampant today, is considered nothing short of sheer but deadly nonsense by thinking theists. As Paul said, we should “avoid ... contradictions” like this that have caused some to stray from the faith (1 Tm 6:20).

<b>Category</b>	<b>Theism</b>	<b>Materialism</b>	<b>Pantheism</b>
Source of Creation	Creator beyond nature	No Creator	Creator within nature
Method of Creation	Out of nothing ( <i>Ex Nihilo</i> )	Out of something ( <i>Ex Materia</i> )	Out of God ( <i>Ex Deo</i> )
Duration of Creation	Temporal	Eternal	Eternal
Relation of Creator and Creature	Creator and creation really different	No real Creator	No real creation
God's Control	Unlimited	Limited or nonexistent	Limited

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<sup>14</sup> Geisler, N. L. (1989). [\*Knowing the truth about Creation: how it happened and what it means for us\*](#) (pp. 47–67). Ann Arbor, MI: Servant Publications.

# CHAPTER EXCERPTS: STUDENT LESSONBOOK OF EVIDENCES CLASS TAUGHT BY DR. GREG HAMBY

**FROM: Dr. Norman Geisler's "I Don't Have Enough Faith to Be an Atheist"**

## In the Beginning There Was a Great SURGE

*"Science without religion is lame; religion without science is blind."*

—ALBERT EINSTEIN

### "IRRITATING" FACTS

It was 1916 and Albert Einstein didn't like where his calculations were leading him. If his theory of General Relativity was true, it meant that the universe was not eternal but had a beginning. Einstein's calculations indeed were revealing a definite beginning to all time, all matter, and all space. This flew in the face of his belief that the universe was static and eternal.

Einstein later called his discovery "irritating." He wanted the universe to be self-existent—not reliant on any outside cause—but the universe appeared to be one giant effect. In fact, Einstein so disliked the implications of General Relativity—a theory that is now proven accurate to five decimal places—that he introduced a cosmological constant (which some have since called a "fudge factor") into his equations in order to show that the universe is static and to avoid an absolute beginning.

But Einstein's fudge factor didn't fudge for long. In 1919, British cosmologist Arthur Eddington conducted an experiment during a solar eclipse which confirmed that General Relativity was indeed true—the universe wasn't static but had a beginning. Like Einstein, Eddington wasn't happy with the implications. He later wrote, "Philosophically, the notion of a beginning of the present order of nature is repugnant to me.... I should like to find a genuine loophole."

By 1922, Russian mathematician Alexander Friedmann had officially exposed Einstein's fudge factor as an algebraic error. (Incredibly, in his quest to avoid a beginning, the great Einstein had divided by zero—something even schoolchildren know is a no-no!) Meanwhile, Dutch

astronomer Willem de Sitter had found that General Relativity required the universe to be expanding. And in 1927, the expanding of the universe was actually observed by astronomer Edwin Hubble (namesake of the space telescope).

Looking through the 100-inch telescope at California's Mount Wilson Observatory, Hubble discovered a "red shift" in the light from every observable galaxy, which meant that those galaxies were moving away from us. In other words, General Relativity was again confirmed—the universe appears to be expanding from a single point in the distant past.

In 1929 Einstein made a pilgrimage to Mount Wilson to look through Hubble's telescope for himself. What he saw was irrefutable. The *observational* evidence showed that the universe was indeed expanding as General Relativity had predicted. With his cosmological constant now completely crushed by the weight of the evidence against it, Einstein could no longer support his wish for an eternal universe. He subsequently described the cosmological constant as "the greatest blunder of my life," and he redirected his efforts to find the box top to the puzzle of life. Einstein said that he wanted "to know how God created the world. I am not interested in this or that phenomenon, in the spectrum of this or that element. I want to know His thought, the rest are details."

Although Einstein said that he believed in a pantheistic God (a god that *is* the universe), his comments admitting creation and divine thought better describe a theistic God. And as "irritating" as it may be, his theory of General Relativity stands today as one of the strongest lines of evidence for a theistic God. Indeed, General Relativity supports what is one of the oldest formal arguments for the existence of a theistic God—the Cosmological Argument.

### **THE COSMOLOGICAL ARGUMENT—THE BEGINNING OF THE END FOR ATHEISM**

Don't be put off by the technical-sounding name: "cosmological" comes from the Greek word *cosmos*, which means "world" or "universe." That is, the Cosmological Argument is the argument from the beginning of the universe. If the universe had a beginning, then the universe had a cause. In logical form, the argument goes like this:

1. Everything that had a beginning had a cause.
2. The universe had a beginning.
3. Therefore the universe had a cause.

As we showed in the last chapter, for an argument to be true it has to be logically valid, and its premises must be true. This is a valid argument, but are the premises true? Let's take a look at the premises.

Premise 1—Everything that had a beginning had a cause—is the Law of Causality, which is *the* fundamental principle of science. Without the Law of Causality, science is impossible. In fact, Francis Bacon (the father of modern science) said, "True knowledge is knowledge by causes." In other words, science is a search for causes. That's what scientists do—they try to discover what caused what.

If there's one thing we've observed about the universe, it's that things don't happen without a cause. When a man is driving down the street, a car never appears in front of his car out of nowhere, with no driver or no cause. We know many a police officer has heard this, but it's just not true. There's always a driver or some other cause behind that car appearing. Even the great skeptic David Hume could not deny the Law of Causality. He wrote, "I never asserted so absurd a proposition as that something could arise without a cause."

In fact, to deny the Law of Causality is to deny rationality. The very process of rational thinking requires us to put together thoughts (the causes) that result in conclusions (the effects). So if anyone ever tells you he doesn't believe in the Law of Causality, simply ask that person, "What *caused* you to come to that conclusion?"

Since the Law of Causality is well established and undeniable, premise 1 is true. What about premise 2? Did the universe have a beginning? If not, then no cause was needed. If so, then the universe must have had a cause.

Until about the time of Einstein, atheists could comfort themselves with the belief that the universe is eternal, and thus did not need a cause. But since then, five lines of scientific evidence have been discovered that prove beyond a reasonable doubt that the universe did indeed have a beginning. And that beginning was what scientists now call "The Big Bang." This Big Bang evidence can be easily remembered by the acronym SURGE.

### **IN THE BEGINNING THERE WAS A GREAT SURGE**

Every several years or so, the major news magazines—*Time*, *Newsweek*, and the like—run a cover story about the origin and fate of the universe. "When did the universe begin?" and "When will it end?" are two of the questions investigated in such articles. The fact that the universe had a beginning and will ultimately die is not even up for debate in these reports. Why? Because modern scientists know that a beginning and an ending are demanded by one of the most validated laws in all of nature—the Second Law of Thermodynamics.

#### ***S—The Second Law of Thermodynamics***

The Second Law of Thermodynamics is the S in our SURGE acronym. Thermodynamics is the study of matter and energy, and the Second Law states, among other things, that the universe is running out of usable energy. With each passing moment, the amount of usable energy in the universe grows smaller, leading scientists to the obvious conclusion that one day all the energy will be gone and the universe will die. Like a running car, the universe will ultimately run out of gas.

You say, "So what? How does that prove that the universe had a beginning?" Well, look at it this way: the *First* Law of Thermodynamics states that the total amount of energy in the universe is constant. In other words, the universe has only a finite amount of energy (much as your car has only a finite amount of gas). Now, if your car has only a finite amount of gas (the First Law), and whenever it's running it continually consumes gas (the Second Law), would your car be running right now if you had started it up an infinitely long time ago? No, of course not. It would be out of gas by now. In the same way, the universe would be out of energy by now if it had been running from all eternity. But here we are—the lights are still on, so the universe must have begun sometime in the finite past. That is, the universe is not eternal—it had a beginning.

A flashlight is another way to think about the universe. If you leave a flashlight on overnight, what's the intensity of the light in the morning? It is dim, because the batteries have used up most of their energy. Well, the universe is like a dying flashlight. It has only so much energy left to consume. But since the universe still has some battery life left (it's not quite dead yet), it can't be eternal—it must have had a beginning—for if it were eternal, the battery would have died by now.

The Second Law is also known as the Law of Entropy, which is a fancy way of saying that nature tends to bring things to disorder. That is, with time, things naturally fall apart. Your car falls apart; your house falls apart; your body falls apart. (In fact, the Second Law is the reason many of us get "dresser disease" when we get older—our chest falls into our drawers!) But if the universe

is becoming less ordered, then where did the original order come from? Astronomer Robert Jastrow likens the universe to a wound-up clock. If a wind-up clock is running down, then someone must have wound it up.

This aspect of the Second Law also tells us that the universe had a beginning. Since we still have some order left—just like we still have some usable energy left—the universe cannot be eternal, because if it were, we would have reached complete disorder (entropy) by now.

A number of years ago, a student from a Christian ministry on an Ivy League campus invited me (Norm) to speak there on a related topic. During the lecture, I basically told the students what we've written here but in a lot more detail. After the lecture, the student who had invited me there asked me to have lunch with him and his physics professor.

As we sat down to eat, the professor made it clear that he was skeptical of my argument that the Second Law requires a beginning for the universe. In fact, he said he was a materialist who believed that only material exists and that it has existed from all eternity.

"If matter is eternal, what do you do with the Second Law?" I asked him.

He replied, "Every law has an exception. This is my exception."

I could have countered by asking him if it's really good science to assume that every law has an exception. That doesn't seem very scientific and may even be self-defeating. It may be self-defeating when you ask, "Does the law that 'every law has an exception' have an exception?" If it does, maybe the Second Law is the exception to the law that every law must have an exception.

I didn't go down that road, because I thought he would take exception. Instead, I backed off the Second Law for a moment and decided to question him about materialism.

"If everything is material," I asked, "then what is a scientific theory? After all, the theory about everything being material isn't material; it's not made out of molecules."

Without a moment's hesitation he quipped, "A theory is magic."

"Magic?" I repeated, not really believing what I was hearing. "What's your basis for saying that?"

"Faith," he quickly replied.

"Faith in magic?" I thought to myself. "I can't believe what I'm hearing! If faith in magic is the best the materialists have to offer, then *I don't have enough faith to be a materialist!*"

In retrospect, it seemed to me that this professor had a brief moment of complete candor. He knew he couldn't answer the overwhelming evidence in support of the Second Law, so he admitted that his position had no basis in evidence or good reason. In doing so, he provided another example of the will refusing to believe what the mind knows to be true, and how the atheists' view is based on sheer faith.

The professor was right about one thing: having faith. In fact, he needed a *leap* of faith to willingly ignore the most established law in all of nature. That's how Arthur Eddington characterized the Second Law more than eighty years ago:

The Law that entropy increases—the Second Law of Thermodynamics—holds, I think, the supreme position among the laws of Nature. If someone points out to you that your pet theory of the universe is in disagreement with Maxwell's equations—then so much for Maxwell's equations. If it is found to be contradicted by observation—well, these experiments do bungle things sometimes. But *if your theory is found to be against the Second Law of Thermodynamics I can give you no hope; there is nothing for it but to collapse in deepest humiliation.*

Since I could see that the professor was not really interested in accepting the truth, I didn't ask him any more potentially humiliating questions. But since we couldn't ignore the power of the

Second Law on our own bodies, we both ordered dessert. Neither of us was willing to deny that we needed to replace the energy we had just used up!

### ***U—The Universe is Expanding***

Good scientific theories are those that are able to predict phenomena that have not yet been observed. As we have seen, General Relativity predicted an expanding universe. But it wasn't until legendary astronomer Edwin Hubble looked through his telescope more than a decade later that scientists finally confirmed that the universe is expanding and that it's expanding from a single point. (Astronomer Vesto Melvin Slipher was hot on the trail of this expanding universe as early as 1913, but it was Hubble who put all the pieces together, in the late 20s.) This expanding universe is the second line of scientific evidence that the universe had a beginning.

How does the expanding universe prove a beginning? Think about it this way: if we could watch a video recording of the history of the universe in reverse, we would see all matter in the universe collapse back to a point, not the size of a basketball, not the size of a golf ball, not even the size of a pinhead, but mathematically and logically to a point that is actually nothing (i.e., no space, no time, and no matter). In other words, once there was nothing, and then, BANG, there was something—the entire universe exploded into being! This, of course, is what is commonly called “the Big Bang.”

It's important to understand that the universe is not expanding into empty space, but space itself is expanding—there was no space before the Big Bang. It's also important to understand that the universe did not emerge from existing material but from nothing—there was no matter before the Big Bang. In fact, chronologically, there was no “before” the Big Bang because there are no “befores” without time, and there was no time until the Big Bang. Time, space, and matter came into existence at the Big Bang.

These facts give atheists a lot of trouble, as they did on a rainy night in Georgia in April of 1998. That night I (Frank) attended a debate in Atlanta on the question, “Does God exist?” William Lane Craig took the affirmative position, and Peter Atkins took the negative position. The debate was highly spirited and even humorous at times, partially due to the moderator, William F. Buckley, Jr. (Buckley did not hide his favoritism for Craig's pro-God position: after introducing Craig and his impressive credentials, Buckley began to introduce Atkins by cracking, “On the side of the Devil is Dr. Peter Atkins!”)

One of Craig's five arguments for the existence of God was the Cosmological Argument as supported by the Big Bang evidence we've been discussing here. He pointed out that the universe—all time, all matter, and all space—exploded out of nothing, a fact that Atkins had conceded in his book and reaffirmed later in the debate that night.

Since Craig spoke first, he informed the audience how Atkins attempts to explain the universe from an atheistic perspective: “In his book *The Creation Revisited*, Dr. Atkins struggles mightily to explain how the universe could come into existence, uncaused out of nothing. But in the end he finds himself trapped in self-contradiction. He [writes], ‘Now we go back in time beyond the moment of creation to when there was no time, and to where there was no space.’ At this time before time, he imagines a swirling dust of mathematical points which recombine again and again and again and finally come by trial and error to form our space time universe.”

Craig went on to point out that Atkins's position is not a scientific theory but is actually self-contradictory pop-metaphysics. It is pop-metaphysics because it's a made-up explanation—there's absolutely no scientific evidence supporting it. And it's self-contradictory because it assumes time and space before there was time and space.



Since Craig did not get a chance to dialogue with Atkins directly on this point, Ravi Zacharias and I stood in the question line near the end of the debate to ask Atkins about his position. Unfortunately, time expired before either of us could ask a question, so we approached Atkins backstage afterwards.

“Dr. Atkins,” Ravi started, “you admit that the universe exploded out of nothing, but your explanation for the beginning equivocates on what ‘nothing’ is. Swirling mathematical points are not nothing. Even they are something. How do you justify this?”

Instead of addressing the issue, Atkins verbally succumbed to the Second Law of Thermodynamics. He said, “Look, gentlemen, I am very tired. I can’t answer any more questions now.” In other words, his decrease of energy proved the Second Law was at work. Atkins literally had nothing to say!

Well, according to the modern cosmological evidence, the universe literally had nothing from which to emerge. Yet when it came to giving an atheistic explanation for this, Atkins didn’t really begin with nothing but with mathematical points and time. Of course, one can’t imagine how mere mathematical points and time could actually cause the universe anyway. Nevertheless, we wanted to press the fact that atheists like Atkins must be able to explain how the universe began from absolutely nothing.

What is nothing? Aristotle had a good definition: he said that *nothing is what rocks dream about!* The nothing from which the universe emerged is not “mathematical points” as Atkins suggested or “positive and negative energy” as Isaac Asimov, who is also an atheist, once wrote. Nothing is literally *no thing*—what rocks dream about.

British author Anthony Kenny honestly described his own predicament as an atheist in light of evidence for the Big Bang. He wrote, “According to the Big Bang Theory, the whole matter of the universe began to exist at a particular time in the remote past. A proponent of such a theory, at least if he is an atheist, must believe that the matter of the universe came from nothing and by nothing.”

### ***R—Radiation from the Big Bang***

The third line of scientific evidence that the universe had a beginning was discovered by accident in 1965. That’s when Arno Penzias and Robert Wilson detected strange radiation on their antenna at Bell Labs in Holmdel, New Jersey. No matter where they turned their antenna, this mysterious radiation remained. They initially thought it might be the result of bird droppings deposited on the antenna by nesting Jersey Shore pigeons, so they had the birds and the droppings removed. But when they got back inside, they found that the radiation was still there, and it was still coming from all directions.

What Penzias and Wilson had detected turned out to be one of the most incredible discoveries of the last century—one that would win them Nobel Prizes. These two Bell Lab scientists had discovered the afterglow from the Big Bang fireball explosion!

Technically known as the cosmic background radiation, this afterglow is actually light and heat from the initial explosion. This light is no longer visible because its wavelength has been stretched by the expanding universe to wavelengths slightly shorter than those produced by a microwave oven. But the heat can still be detected.

As early as 1948, three scientists predicted that this radiation would be out there if the Big Bang did really occur. But for some reason no one attempted to detect it before Penzias and Wilson stumbled upon it by accident nearly twenty years later. When the discovery was confirmed, it laid

to rest any lingering suggestion that the universe is in an eternal steady state. Agnostic astronomer Robert Jastrow put it this way:

No explanation other than the Big Bang has been found for the fireball radiation. The clincher, which has convinced almost the last Doubting Thomas, is that the radiation discovered by Penzias and Wilson has exactly the pattern of wavelengths expected for the light and heat produced in a great explosion. Supporters of the steady state theory have tried desperately to find an alternative explanation, but they have failed. At the present time, the Big Bang theory has no competitors.

In effect, the discovery of the fireball radiation burned up any hope in the Steady State. But that wasn't the end of the discoveries. More Big Bang evidence would follow. In fact, if cosmology were a football game, believers in the Big Bang would be called for "piling on" with this next discovery.

### ***G—Great Galaxy Seeds***

After finding the predicted expanding universe and radiation afterglow, scientists turned their attention to another prediction that would confirm the Big Bang. If the Big Bang actually occurred, scientists believed that we should see slight variations (or ripples) in the temperature of the cosmic background radiation that Penzias and Wilson had discovered. These temperature ripples enabled matter to congregate by gravitational attraction into galaxies. If found, they would comprise the fourth line of scientific evidence that the universe had a beginning.

In 1989 the search for these ripples was intensified when NASA launched the \$200 million satellite aptly called COBE for Cosmic Background Explorer. Carrying extremely sensitive instruments, COBE was able to see whether or not these ripples actually existed in the background radiation and how precise they were.

When the project leader, astronomer George Smoot, announced COBE's findings in 1992, his shocking characterization was quoted in newspapers all over the world. He said, "If you're religious, it's like looking at God." University of Chicago astrophysicist Michael Turner was no less enthusiastic, claiming, "The significance of this [discovery] cannot be overstated. They have found the Holy Grail of Cosmology." Cambridge astronomer Stephen Hawking also agreed, calling the findings "the most important discovery of the century, if not of all time." What did COBE find to merit such momentous descriptions?

COBE not only found the ripples, but scientists were amazed at their precision. The ripples show that the explosion and expansion of the universe was precisely tweaked to cause just enough matter to congregate to allow galaxy formation, but not enough to cause the universe to collapse back on itself. Any slight variation one way or the other, and none of us would be here to tell about it. In fact, the ripples are so exact (down to one part in one hundred thousand) that Smoot called them the "machining marks from the creation of the universe" and the "fingerprints of the maker."

But these temperature ripples are not just dots on a scientist's graph somewhere. COBE actually took infrared pictures of the ripples. Now keep in mind that space observations are actually observations of the past because of the long time it takes light from distant objects to reach us. So COBE's pictures are actually pictures of the past. That is, the infrared pictures taken by COBE point to the existence of matter from the very early universe that would ultimately form into galaxies and clusters of galaxies. Smoot called this matter "seeds" of the galaxies as they exist today (these pictures can be seen at COBE's website, <http://Lambda.gsfc.nasa.gov>). These "seeds" are the largest structures ever detected, with the biggest extending across one-third of the known universe. That's 10 billion light years or 60 billion trillion (60 followed by 21 zeros) miles.

Now you can see why some scientists were so grandiose in their description of the discovery. Something predicted by the Big Bang was again found, and that something was so big and so precise that it made a big bang with scientists!

### ***E—Einstein’s Theory of General Relativity***

The E in SURGE is for Einstein. His theory of General Relativity is the fifth line of scientific evidence that the universe had a beginning, and its discovery was the beginning of the end for the idea that the universe is eternal. The theory itself, which has been verified to five decimal places, demands an absolute beginning for time, space, and matter. It shows that time, space, and matter are co-relative. That is, they are interdependent—you can’t have one without the others.

From General Relativity, scientists predicted and then found the expanding universe, the radiation afterglow, and the great galaxy seeds that were precisely tweaked to allow the universe to form into its present state. Add these discoveries to the Second Law of Thermodynamics, and we have five lines of powerful scientific evidence that the universe had a beginning—a beginning, we might say, that came in a great SURGE.

### **GOD AND THE ASTRONOMERS**

So the universe had a beginning. What does that mean for the question of God’s existence? The man who now sits in Edwin Hubble’s chair at the Mount Wilson observatory has a few things to say about that. His name is Robert Jastrow, an astronomer we’ve already quoted in this chapter. In addition to serving as the director of Mount Wilson, Jastrow is the founder of NASA’s Goddard Institute of Space Studies. Obviously his credentials as a scientist are impeccable. That’s why his book *God and the Astronomers* made such an impression on those investigating the implications of the Big Bang, namely those asking the question, “Does the Big Bang point to God?”

Jastrow reveals in the opening line of chapter 1 that he has no religious axe to grind. He writes, “When an astronomer writes about God, his colleagues assume he is either over the hill or going bonkers. In my case it should be understood from the start that I am an agnostic in religious matters.”

In light of Jastrow’s personal agnosticism, his theistic quotations are all the more provocative. After explaining some of the Big Bang evidence we’ve just reviewed, Jastrow writes, “Now we see how the astronomical evidence leads to a biblical view of the origin of the world. The details differ, but the essential elements in the astronomical and biblical accounts of Genesis are the same: the chain of events leading to man commenced suddenly and sharply at a definite moment in time, in a flash of light and energy.”

The overwhelming evidence for the Big Bang and its consistency with the biblical account in Genesis led Jastrow to observe in an interview, “Astronomers now find they have painted themselves into a corner because they have proven, by their own methods, that the world began abruptly in an act of creation to which you can trace the seeds of every star, every planet, every living thing in this cosmos and on the earth. And they have found that all this happened as a product of forces they cannot hope to discover.... *That there are what I or anyone would call supernatural forces at work is now, I think, a scientifically proven fact.*”

By evoking the supernatural, Jastrow echoes the conclusion of Einstein contemporary Arthur Eddington. As we mentioned earlier, although he found it “repugnant,” Eddington admitted, “The beginning seems to present insuperable difficulties unless we agree to look on it as frankly supernatural.”

Now why would Jastrow and Eddington admit that there are “supernatural” forces at work? Why couldn’t natural forces have produced the universe? Because these scientists know as well as anyone that natural forces—indeed all of nature—were created at the Big Bang. In other words, the Big Bang was the beginning point for the entire physical universe. Time, space, and matter came into existence at that point. There was no natural world or natural law prior to the Big Bang. Since a cause cannot come after its effect, natural forces cannot account for the Big Bang. Therefore, there must be something *outside of nature* to do the job. That’s exactly what the word *supernatural* means.

The discoverers of the afterglow, Robert Wilson and Arno Penzias, were not Bible-thumpers either. Both initially believed in the Steady State Theory. But due to the mounting evidence, they’ve since changed their views and acknowledged facts that are consistent with the Bible. Penzias admits, “The Steady State theory turned out to be so ugly that people dismissed it. The easiest way to fit the observations with the least number of parameters was one in which the universe was created out of nothing, in an instant, and continues to expand.”

Wilson, who once took a class from Fred Hoyle (the man who popularized the Steady State Theory in 1948), said, “I philosophically liked the Steady State. And clearly I’ve had to give that up.” When science writer Fred Heeren asked him if the Big Bang evidence is indicative of a Creator, Wilson responded, “Certainly there was something that set it all off. Certainly, if you are religious, I can’t think of a better theory of the origin of the universe to match with Genesis.”<sup>23</sup> George Smoot echoed Wilson’s assessment. He said, “There is no doubt that a parallel exists between the big bang as an event and the Christian notion of creation from nothing.”

### **THE EMPIRE STRIKES BACK (BUT FIZZLES OUT)**

What do atheists have to say about this? We’ve already seen the shortcomings in the explanations of Atkins and Isaac Asimov—they start with *something* rather than literally nothing. Are there any other atheistic explanations out there that may be plausible? Not that we’ve seen. Atheists have come up with other theories, but all of them have their fatal flaws. Let’s take a brief look at a few of them.

**The Cosmic Rebound Theory**—This is the theory that suggests the universe has been expanding and contracting forever. This helps its proponents avoid a definite beginning. But the problems with this theory are numerous, and for those reasons it has fallen out of favor.

First, and most obviously, there’s no evidence for an infinite number of bangs (after all, it’s not the Big Bang, Bang, Bang, Bang, Bang ... Theory!). The universe appears to have exploded once from nothing, not repeatedly from existing material.

Second, there’s not enough matter in the universe to pull everything back together. The universe seems poised to continue expanding indefinitely. This was confirmed in 2003 by Charles Bennett of NASA’s Goddard Space Flight Center. After looking at readings from NASA’s latest space probe, he said, “The universe will expand forever. It will not turn back on itself and collapse in a great crunch.”<sup>27</sup> In fact, astronomers are now finding that the universe’s expansion speed is actually accelerating, making a collapse even more improbable.

Third, even if there were enough matter to cause the universe to contract and “bang” again, the Cosmic Rebound Theory contradicts the Second Law of Thermodynamics because the theory falsely assumes that no energy would be lost in each contraction and explosion. A universe “banging” repeatedly would eventually fizzle out just as a dropped ball eventually fizzles out. So if the universe has been expanding and contracting *forever*, it would have fizzled out already.

Finally, there's no way that today would have gotten here if the universe had been expanding and contracting forever. An infinite number of big bangs is an actual impossibility (we'll elaborate on this in a couple of pages). And even if there were a *finite* number of bangs, the theory cannot explain what caused the first one. There was nothing to "bang" before the first bang!

**Imaginary Time**—Other atheistic attempts at explaining how the universe exploded into being out of nothing are just as flawed. For example, in an effort to avoid an absolute beginning of the universe, Stephen Hawking made up a theory that utilizes "imaginary time." We could just as well call it an "imaginary theory" because Hawking himself admits that his theory is "just a [metaphysical] proposal" that cannot explain what happened in real time. "In real time," he concedes, "the universe has a beginning..." In fact, according to Hawking, "Almost everyone now believes that the universe, and time itself, had a beginning at the Big Bang."<sup>30</sup> So by his own admission Hawking's imaginary theory fizzles when applied to the real world. Imaginary time is just that—purely imaginary.

**Uncertainty**—With the evidence for the beginning of the universe so strong, some atheists question the first premise of the Cosmological Argument—the Law of Causality. This is dangerous ground for atheists, who typically pride themselves on being champions of reason and science. As we have pointed out before, the Law of Causality is the foundation of all science. Science is a search for causes. If you destroy the Law of Causality, then you destroy science itself.

Atheists attempt to cast doubt on the Law of Causality by citing quantum physics, specifically Heisenberg's Uncertainty Principle. This principle describes our inability to simultaneously predict the location and speed of subatomic particles (i.e., electrons). The atheist's contention here is this: if causality at the subatomic realm isn't necessary, then maybe causality of the entire universe isn't necessary either.

Fortunately for science, this atheistic attempt to cast doubt on the Law of Causality fails. Why? Because it confuses *causality* and *predictability*. The Heisenberg Uncertainty Principle does *not* prove that the movement of electrons is uncaused; it only describes our inability to *predict* their location and speed at any given time. The mere fact that we can't predict something doesn't mean that something has no cause. In fact, quantum theorists acknowledge that we might not be able to predict the simultaneous speed and location of electrons because our very attempts at observing them are the cause of their unpredictable movements! Like a beekeeper putting his head in a beehive, we must stir them up in order to observe them. Hence, the disturbance may be a case of the scientist looking at his own eyelashes in the microscope.

In the end, no atheistic theory adequately refutes either premise of the Cosmological Argument. The universe had a beginning and therefore it needs a cause.

## THE RELIGION OF SCIENCE

So why don't all scientists just accept this conclusion instead of attempting to avoid the facts and their implications with wild and implausible explanations? Jastrow's comments are again insightful (remember, Jastrow is an agnostic). Jastrow observes,

Theologians generally are delighted with the *proof* that the Universe had a beginning, but astronomers are curiously upset. Their reactions provide an interesting demonstration of the response of the scientific mind—supposedly a very objective mind—when evidence uncovered by science itself leads to a conflict with *the articles of faith in our profession*. It turns out that the scientist behaves the way the rest of us do when our beliefs are in conflict with the evidence. We

become irritated, we pretend the conflict does not exist, or we paper it over with meaningless phrases.

The phrases we have seen used by Atkins and Asimov to explain the beginning of the universe—“mathematical points” and “positive and negative energy” respectively—certainly seem meaningless to us. Indeed, they explain nothing.

Regarding Einstein’s “irritating” feelings about General Relativity and the expanding universe, Jastrow writes: “This is curiously emotional language for a discussion of some mathematical formulas. I suppose that the idea of a beginning in time annoyed Einstein because of its theological implications.”

Everyone knows that theists have theological beliefs. But what’s often overlooked is that atheistic and pantheistic scientists also have theological beliefs. As noted above, Jastrow calls some of these beliefs “the articles of faith in our profession,” and he asserts that some of these beliefs comprise the “religion in science.” He writes:

There is a kind of religion in science ... every effect must have its cause; there is no First Cause.... This religious faith of the scientist is violated by the discovery that the world had a beginning under conditions in which the known laws of physics are not valid, and as a product of forces or circumstances we cannot discover. When that happens, the scientist has lost control. If he really examined the implications, he would be traumatized. As usual when faced with trauma, the mind reacts by ignoring the implications—in science this is known as “refusing to speculate”—or trivializing the origin of the world by calling it the Big Bang, as if the Universe were a firecracker.

Traumatized or not, scientists must come to grips with the implications of the Big Bang evidence. They may not like the evidence or its implications, but that won’t change the facts. Since the evidence shows that time, space, and matter were created at the Big Bang, the most probable scientific conclusion is that the universe was caused by something *outside* of time, space, and matter (i.e., an Eternal Cause). When scientists stop short of that conclusion by papering it over with “meaningless phrases” or by “refusing to speculate,” it seems that they are simply refusing to accept the facts and the most reasonable conclusions that come from them. This is a matter of the will, not the mind. The evidence is objective; it’s the disbelieving scientists who are not.

### **WHAT IF THE BIG BANG THEORY IS WRONG?**

So far we’ve given solid scientific evidence (SURGE) for the fact that the universe had a beginning. But suppose scientists wake up one day and find out that all of their calculations have been wrong—there was no Big Bang. Given the wide scope of the evidence and the ability of the theory to correctly predict so much observable phenomena, a total abandonment of the Big Bang would be extremely unlikely.

This is admitted even by atheists. Victor Stenger, a physicist who taught at the University of Hawaii, once wrote that “the universe exploded out of nothingness.” Stenger recently acknowledged that the Big Bang is looking more probable all the time. “We have to leave open the possibility that [the Big Bang] could be wrong,” he said, “but ... every year that goes by, and more astronomical data comes in, it’s more and more consistent with at least the general Big Bang picture.”

Indeed, in 2003 more evidence came forth that the Big Bang is correct. NASA’s WMAP satellite (Wilkinson Microwave Anisotropy Probe) confirmed the findings of its predecessor COBE and returned pictures thirty-five times sharper than COBE’s of the background radiation ripples. In fact, space observations are becoming so supportive of the theistic worldview that

George Will muses, “Soon the American Civil Liberties Union, or People for the American Way, or some similar faction of litigious secularism will file suit against NASA, charging that the Hubble Space Telescope unconstitutionally gives comfort to the religiously inclined.”<sup>37</sup>

Nevertheless, let’s play skeptic’s advocate for a second. Let’s suppose that at some point in the future the Big Bang Theory is deemed wrong. Would that mean that the universe is eternal? No, for a number of reasons.

First, the Second Law of Thermodynamics (the S in SURGE) supports the Big Bang but is not dependent on it. The fact that the universe is running out of usable energy and heading toward disorder is not even up for debate. In Eddington’s words, the Second Law “holds the supreme position among the laws of nature.” It is true even if the Big Bang is not.

Second, the same can be said for Einstein’s theory of General Relativity (the E in SURGE). This theory, well verified by observation, requires a beginning to space, matter, and time whether or not it all began with a bang.

Third, there’s also scientific evidence from geology that the universe had a beginning. As many of us learned in high school chemistry, radioactive elements decay over time into other elements. For example, radioactive uranium eventually turns into lead. This means that if all uranium atoms were infinitely old, they would all be lead by now, but they’re not. So the earth cannot be infinitely old.

Finally, there’s a philosophical line of evidence for the beginning of the universe. This line of evidence is so rationally inescapable that some consider it the strongest argument of all. It’s called the *Kalam* (from the Arabic word for “eternal”) Cosmological Argument, and it goes like this:

1. An infinite number of days has no end.
2. But today is the end day of history (history being a collection of all days).
3. Therefore, there were not an infinite number of days before today (i.e., time had a beginning).

To grasp this argument, see the timeline below, marked in segments of days (fig. 3.1). The further left you go, the further back in history you go. Now, assume for a moment that this line extends to the left indefinitely, so that you can’t see if or where it begins. But as you look to the right you can see the end of the line because the last segment of the line represents today. Tomorrow isn’t here yet, but when it gets here we’ll add one more segment (i.e., a day) to the right end of the line.

Now, here’s how this proves that time had a beginning: since the line certainly ends on the right, the timeline cannot be infinite because something that is infinite has no end. Moreover, you can’t add anything to something that is infinite, but tomorrow we will add another day to our timeline. So our timeline is undeniably finite.

Let’s consider this argument from a different angle. If there were an infinite number of days before today, then today would never have arrived. But here we are! So there must have been only a *finite* number of days before today. In other words, even though we may not be able to see, as we look to the left, where the line begins, we know it had to begin at some point because only a finite amount of time could be passed for today to arrive. You can’t traverse an infinite number of days. Thus time must have had a beginning.

Some may say that infinite numbers can exist, so why can’t infinite days? Because there’s a difference between an abstract infinite series and a concrete one. The one is purely theoretical, the other is actual. Mathematically, we can conceive of an infinite number of days, but actually we

could never count or live an infinite number of days. You can conceive of an infinite number of mathematical points between two bookends on a shelf, but you could not fit an infinite number of books between them. That's the difference between an abstract and a concrete. Numbers are abstract. Days are concrete. (By the way, this amplifies our answer above as to why there could not have been an infinite number of bangs in the cosmological history of the universe. An infinite number of actual events is impossible.)

What we are saying here is that the universe, Big Bang or not, had a beginning. That is, the Cosmological Argument is true because both premises of the argument are true: everything that comes to be has a cause, and the universe came to be. Since the universe had a beginning, it must have had a Beginner.

## WHO MADE GOD?

In light of all the evidence for a beginning of the space-time universe, the Beginner must be outside the space-time universe. When God is suggested as the Beginner, atheists are quick to ask the age-old question, "Then who made God? If everything needs a cause, then God needs a cause too!"

As we have seen, the Law of Causality is the very foundation of science. Science is a search for causes, and that search is based on our consistent observation that everything that has a beginning has a cause. In fact, the question "Who made God?" points out how seriously we take the Law of Causality. It's taken for granted that virtually everything needs a cause.

So why then doesn't God need a cause? Because the atheist's contention misunderstands the Law of Causality. The Law of Causality does not say that *everything* needs a cause. It says that everything *that comes to be* needs a cause. God did not come to be. No one made God. He is unmade. As an eternal being, God did not have a beginning, so he didn't need a cause.

"But wait," the atheist will protest, "if you can have an eternal God, then I can have an eternal universe! After all, if the universe is eternal, then it did not have a cause." Yes, it is logically possible that the universe is eternal and therefore didn't have a cause. In fact, it is one of only two possibilities: either the universe, or something outside the universe, is eternal. (Since something undeniably exists today, then something must have always existed; we have only two choices: the universe, or something that caused the universe.) The problem for the atheist is that while it is *logically* possible that the universe is eternal, it does not seem to be *actually* possible. For all the scientific and philosophical evidence (SURGE, radioactive decay, and the *Kalam* Cosmological Argument) tells us the universe cannot be eternal. So by ruling out one of the two options, we are left with the only other option—something outside the universe is eternal.

When you get right down to it, there are only two possibilities for anything that exists: either 1) it has always existed and is therefore uncaused, or 2) it had a beginning and was caused by something else (it can't be self-caused, because it would have had to exist already in order to cause anything). According to the overwhelming evidence, the universe had a beginning, so it must be caused by something else—by something outside itself. Notice that this conclusion is consistent with theistic religions, but it is not based on those religions—it is based on good reason and evidence.

So what is this First Cause like? One might think you need to rely on a Bible or some other so-called religious revelation to answer that question, but, again, we don't need anyone's scripture to figure that out. Einstein was right when he said, "Science without religion is lame; religion without science is blind." Religion can be informed and confirmed by science, as it is by the Cosmological Argument. Namely, we can discover some characteristics of the First Cause just from the evidence we've discussed in this chapter. From that evidence alone, we know the First Cause must be:



- self-existent, timeless, nonspatial, and immaterial (since the First Cause created time, space, and matter, the First Cause must be outside of time, space, and matter). In other words, he is without limits, or infinite;
- unimaginably powerful, to create the entire universe out of nothing;
- supremely intelligent, to design the universe with such incredible precision (we'll see more of this in the next chapter);
- personal, in order to choose to convert a state of nothingness into the time-space-material universe (an impersonal force has no ability to make choices).

These characteristics of the First Cause are exactly the characteristics theists ascribe to God. Again, these characteristics are not based on someone's religion or subjective experience. They are drawn from the scientific evidence we have just reviewed, and they help us see a critically important section of the box top to this puzzle we call life.

## CONCLUSION: IF THERE IS NO GOD, WHY IS THERE SOMETHING RATHER THAN NOTHING?

Years ago, I (Norm) debated an atheist at the University of Miami on the question "Does God exist?" After I presented much of the evidence we have reviewed here, I had the opportunity to ask my opponent some questions. Here's what I asked him:

"Sir, I have some questions for you: First, 'If there is no God, why is there something rather than nothing at all?' " I then proceeded to ask a few more questions, thinking he would answer them in sequence.

Now, usually when you debate someone, you're trying to persuade the audience. You don't expect to get your opponent to admit he's wrong. He's got too much invested in his position, and most debaters have too much ego to admit an error. But this guy was different. He surprised me when he said, "Regarding the first question, that's a good question. That's a *really* good question." And without any other comment, he went on to answer my second question.

After hearing the evidence for the existence of God, this debater was left questioning his own beliefs. He even attended a follow-up meeting and expressed that he had doubts about atheism. His faith in atheism was waning. Indeed.

"If there is no God, why is there something rather than nothing?" is a question that we all have to answer. And in light of the evidence, we are left with only two options: either *no one* created something out of nothing, or else *someone* created something out of nothing. Which view is more reasonable? Nothing created something? No. Even Julie Andrews knew the answer when she sang, "Nothing comes from nothing. Nothing ever could!" And if you can't believe that nothing caused something, then you don't have enough faith to be an atheist!

The most reasonable view is God. Robert Jastrow suggested this when he ended his book *God and the Astronomers* with this classic line: "For the scientist who has lived by his faith in the power of reason, the story ends like a bad dream. He has scaled the mountains of ignorance; he is about to conquer the highest peak; as he pulls himself over the final rock, he is greeted by a band of theologians who have been sitting there for centuries."

## The First Life: Natural Law or Divine Awe?

*“God never performed a miracle to convince an atheist, because his ordinary works provide sufficient evidence.”*

—ARIEL ROTH

Naturalistic biologists assert that life generated spontaneously from nonliving chemicals by natural laws without any intelligent intervention. Such a theory might have seemed plausible to a nineteenth-century scientist who didn't have the technology to investigate the cell and discover its amazing complexity. But today this naturalistic theory flies in the face of everything we know about natural laws and biological systems.

Since the 1950s, advancing technology has enabled scientists to discover a tiny world of awesome design and astonishing complexity. At the same time that our telescopes are seeing farther out into space, our microscopes are seeing deeper into the components of life. While our space observations have yielded the Anthropic Principle of physics (which we discussed in the last chapter), our life observations are yielding an equally impressive Anthropic Principle of biology.

To show you what we mean, let's consider so-called “simple” life—a one-celled animal known as an amoeba. Naturalistic evolutionists claim that this one-celled amoeba (or something like it) came together by spontaneous generation (i.e., without intelligent intervention) in a warm little pond somewhere on the very early earth. According to their theory, all biological life has evolved from that first amoeba without any intelligent guidance at all. This, of course, is the theory of macroevolution: from the infantile, to the reptile, to the Gentile; or, from the goo to you via the zoo.

Believers in this theory of origin are called by many names: naturalistic evolutionists, materialists, humanists, atheists, and Darwinists (in the remainder of this chapter and the next, we'll refer to believers in this atheistic evolutionary theory as Darwinists or atheists. This does not include those who believe in theistic evolution—i.e., that evolution was guided by God). Regardless of what we call the true believers in this theory, the key question for us is this: “Is their theory true?” It appears not.

Forget the Darwinist assertions about men descending from apes or birds evolving from reptiles. The supreme problem for Darwinists is not explaining how all life forms are related (although, as we'll see in the next chapter, that's still a major problem). The supreme problem for Darwinists is explaining the origin of the *first* life. For unguided, naturalistic macroevolution to be true, the first life must have generated spontaneously from nonliving chemicals. Unfortunately for Darwinists, the first life—indeed any form of life—is by no means “simple.” This became abundantly clear in 1953 when James Watson and Francis Crick discovered DNA (deoxyribonucleic acid), the chemical that encodes instructions for building and replicating all living things.

DNA has a helical structure that looks like a twisted ladder. The sides of the ladder are formed by alternating deoxyribose and phosphate molecules, and the rungs of the ladder consist of a specific order of four nitrogen bases. These nitrogen bases are adenine, thymine, cytosine, and guanine, which commonly are represented by the letters A, T, C, and G. These letters comprise

what is known as the four-letter genetic alphabet. This alphabet is identical to our English alphabet in terms of its ability to communicate a message, except that the genetic alphabet has only four letters instead of twenty-six. Just as the specific order of the letters in this sentence communicates a unique message, the specific order of A, T, C, and G within a living cell determines the unique genetic makeup of that living entity. Another name for that message or information, whether it's in a sentence or in DNA, is "specified complexity." In other words, not only is it complex—it also contains a specific message.

The incredible specified complexity of life becomes obvious when one considers the message found in the DNA of a one-celled amoeba (a creature so small, several hundred could be lined up in an inch). Staunch Darwinist Richard Dawkins, professor of zoology at Oxford University, admits that the message found in just the cell *nucleus* of a tiny amoeba is more than all thirty volumes of the *Encyclopedia Britannica* combined, and the entire amoeba has as much information in its DNA as 1,000 complete sets of the *Encyclopedia Britannica*! In other words, if you were to spell out all of the A, T, C, and G in the "unjustly called 'primitive' amoeba" (as Dawkins describes it), the letters would fill 1,000 complete sets of an encyclopedia!

Now, we must emphasize that these 1,000 encyclopedias do not consist of random letters but of letters in a very specific order—just like real encyclopedias. So here's the key question for Darwinists like Dawkins: if simple messages such as "Take out the garbage—Mom," "Mary loves Scott," and "Drink Coke" require an intelligent being, then why doesn't a message 1,000 encyclopedias long require one?

Darwinists can't answer that question by showing how natural laws could do the job. Instead, they define the rules of science so narrowly that intelligence is ruled out in advance, leaving natural laws as the only game in town. Before we describe how and why Darwinists do this, let's take a look at the scientific principles that ought to be used in discovering how the first life began.

### **INVESTIGATING THE ORIGIN OF FIRST LIFE**

Many evolutionists as well as many creationists speak as if they know, beyond any doubt, how the first life came into existence. Both, of course, cannot be right. If one is right, the other is wrong. So how can we discover who's right?

The following fact is obvious but often overlooked: no human *observed* the origin of the first life. The emergence of the first life on earth was a one-time, unrepeatable historical event. No one was present to see it—neither evolutionists nor creationists were there, and we certainly can't travel back in time and directly observe whether the first life was created by some kind of intelligence or arose by natural laws from nonliving materials.

That raises an important question: if we can't directly observe the past, then what scientific principles can we use to help us discover what caused the first life? We use the same principles that are utilized every day in our criminal justice system—forensic principles. In other words, the origin of life is a forensic question that requires us to piece together evidence much like detectives piece together evidence from a murder. Detectives can't go back in time and witness the murder again. Neither can they revive the victim and go into the laboratory to conduct some kind of experiment that will allow them to observe and repeat the crime over and over again. Instead, they must utilize the principles of forensic science to discover what really happened.

The central principle in forensic science is the Principle of Uniformity, which holds that causes in the past were like the causes we observe today. In other words, by the Principle of Uniformity, we assume that the world worked in the past just like it works today, especially when it comes to causes. If "Take out the garbage—Mom" requires an intelligent cause today, then any similar

message from the past must also require an intelligent cause. Conversely, if natural laws can do the job today, then the Principle of Uniformity would lead us to conclude natural laws could do the job in the past.

Consider the Grand Canyon. What caused it? Did anyone see it form? No, but by the Principle of Uniformity, we can conclude that natural processes, particularly water erosion, were responsible for the Grand Canyon. We can conclude this confidently, even though we were not there to see it happen, because we can observe these natural processes creating canyons today. We see this in nature when we observe water's effect on a land mass. We can even go into the laboratory and repeatedly pour water in the middle of a mass of dirt, and we'll always get a canyon.

Now consider another geologic formation: Mount Rushmore. What caused it? Common sense tells us that we would never suggest that the presidential faces on Mount Rushmore were the result of natural laws. Erosion couldn't have done that. Our "common sense" is actually the Principle of Uniformity. Since we never observe natural laws chiseling a highly detailed sculpture of a president's head into stone at the present time, we rightly conclude that natural laws couldn't have done it in the past either. Today we see only intelligent beings creating detailed sculptures. As a result, we rightly conclude that, in the past, only an intelligent being (a sculptor) could have created the faces on Mount Rushmore.

In the same way, when we look at the first one-celled life, the Principle of Uniformity tells us that only an intelligent cause could assemble the equivalent of 1,000 encyclopedias. Natural laws never have been observed to create a simple message like "Drink Coke," much less a message 1,000 encyclopedias long.

Why then do Darwinists come to the conclusion that the first life generated spontaneously from nonliving chemicals without intelligent intervention? Spontaneous generation of life has never been observed. Ever since Pasteur sterilized his flask, one of the most fundamental observations in all of science has been that life arises only from similar existing life. Scientists have been unable to combine chemicals in a test tube and arrive at a DNA molecule, much less life. In fact, all experiments *designed* to spontaneously generate life—including the now discredited Urey-Miller experiment—have not only failed but also suffer from the illegitimate application of intelligence. In other words, scientists intelligently contrive experiments and they still cannot do what we are told mindless natural laws have done. Why should we believe that mindless processes can do what brilliant scientists cannot do? And even if scientists eventually did create life in the laboratory, it would prove creation. Why? Because their efforts would show that it takes a lot of intelligence to create life.

Do Darwinists insist on spontaneous generation because they just don't see the evidence for design? Not at all. In fact, exactly the opposite is true—they see the evidence clearly! For example, Richard Dawkins named his book *The Blind Watchmaker* in response to William Paley's design argument we cited in the last chapter. The appearance of design in life is admitted on the first page of *The Blind Watchmaker*. Dawkins writes, "Biology is the study of complicated things that give the appearance of having been designed for a purpose." Two pages later, despite acknowledging "the intricate architecture and precision-engineering" in human life and in each of the trillions of cells within the human body, Dawkins flatly denies that human life or any other life has been designed. Apparently, Dawkins refuses to allow observation to interfere with his conclusions. This is very strange for a man who believes in the supremacy of science, which is supposed to be based on observation.

Francis Crick, codiscoverer of DNA and another ardent Darwinist, agrees with Dawkins about the appearance of design. In fact, the appearance of design is so clear he warns that "biologists

must constantly keep in mind that what they see was not designed, but rather evolved.” Crick’s little memo to biologists led Phillip Johnson, author and a leader in the Intelligent Design (ID) movement, to observe, “Darwinian biologists must keep repeating that reminder to themselves because otherwise they might become conscious of the reality that is staring them in the face and trying to get their attention.”<sup>7</sup>

The complexity of DNA is not the only problem for Darwinists. Its origin is also a problem. A difficult chicken-egg dilemma exists because DNA relies on proteins for its production but proteins rely on DNA for *their* production. So which came first, proteins or DNA? One must already be in existence for the other to be made.

So why do Crick, Dawkins, and others in their camp ignore the plain implications of the evidence staring them in the face? Because their preconceived ideology—naturalism—prevents them from even considering an intelligent cause. As we’re about to see, this is bad science, and it leads to wrong conclusions.

### GOOD SCIENCE VS. BAD SCIENCE

It is commonly believed that the so-called creation-evolution debate (now often called the intelligent design vs. naturalism debate) entails a war between religion and science, the Bible and science, or faith and reason. This perception is perpetuated by the media, who consistently depict the debate in terms of the 1960 movie *Inherit the Wind*, which fictionalized the 1925 Scopes “monkey trial.” You know that depiction. It basically goes like this: here come those crazy religious fundamentalists again, and they want to impose their dogmatic religion and ignore objective science.

Actually, nothing could be further from the truth. *The creation-evolution debate is not about religion versus science or the Bible versus science—it’s about good science versus bad science.* Likewise, it’s not about faith versus reason—it’s about *reasonable* faith versus *unreasonable* faith. It may surprise you to see just who is practicing the bad science, and just who has the unreasonable faith.

As we’ve mentioned before, science is a search for causes. Logically, there are only two types of causes: intelligent and nonintelligent (i.e., natural). The Grand Canyon had a natural cause, and Mount Rushmore had an intelligent one (see fig. 5.1). Unfortunately, on the question of first life, Darwinists like Dawkins and Crick rule out intelligent causes before they even look at the evidence. In other words, their conclusions are pre-loaded into their assumptions. Spontaneous generation by natural laws *must* be the cause of life because they consider no other options.

Spontaneous generation is what critics of evolution call a “just-so” story. Evolutionists provide no evidence to support spontaneous generation. It isn’t supported by empirical observation or forensic science principles. It’s “just-so” because life exists, and since *intelligent causes are ruled out in advance*, there can be no other possible explanation.

The problem for Darwinists is immense. Biochemist Klaus Dose admits that more than thirty years of research into the origin of life has led to “a better perception of the immensity of the problem of the origin of life on Earth rather than to its solution. At present all discussions on principal theories and experiments in the field either end in stalemate or in a confession of ignorance.” Francis Crick laments, “Every time I write a paper on the origin of life, I swear I will never write another one, because there is too much speculation running after too few facts.”<sup>9</sup>

The evidence is so strong for intelligence and against naturalism that prominent evolutionists have actually suggested aliens deposited the first life here. Fred Hoyle (the same evolutionist who popularized the Steady State Theory we discussed in chapter 3) invented this far-out theory (called “panspermia,” for “seeds everywhere”) after calculating that the probability of life arising by spontaneous generation was effectively zero. (Of course panspermia doesn’t solve the problem—it simply puts it off another step: who made the intelligent aliens?)

As crazy as the theory sounds, at least panspermia advocates recognize that some kind of intelligence must be behind the amazing wonder we call life. Still, when top evolutionists have to resort to aliens to explain the origin of life, you know the simplest life must be incredibly complex.

Another panspermia advocate, Chandra Wickramasinghe, admits that the Darwinists are acting on blind faith when it comes to spontaneous generation. He observes, “The emergence of life from a primordial soup on the Earth *is merely an article of faith* that scientists are finding difficult to shed. There is no experimental evidence to support this at the present time. Indeed all attempts to create life from non-life, starting from Pasteur, have been unsuccessful.” Microbiologist Michael Denton, though himself an atheist, adds, “The complexity of the simplest known type of cell is so great that it is impossible to accept that such an object could have been thrown together suddenly by some kind of freakish, vastly improbable event. Such an occurrence would be indistinguishable from a miracle.”<sup>11</sup>

In light of “just-so” explanations such as spontaneous generation and panspermia, who do you think is practicing the bad science: the people derisively called “religious” (the theists/creationists) or the “enlightened” ones (the atheists/Darwinists) who are really just as religious as the “religious”? Physicist and information scientist Hubert Yockey realizes it’s the Darwinists. He writes, “The belief that life on earth arose spontaneously from nonliving matter, *is simply a matter of faith* in strict reductionism and is based entirely on ideology.”

Yockey is right. Darwinists falsely believe they can reduce life to its nonliving chemical components. That’s the ideology of reductionism. For Darwinists like Dawkins or Crick who must believe that only the material (and not the immaterial) exists, then life can be nothing more than chemicals. But life is clearly more than chemicals. Life contains a message—DNA—that is *expressed* in chemicals, but those chemicals cannot cause the message any more than the chemicals in ink and paper can cause the sentences on this page. A message points to something beyond chemicals. The message in life, just like the one on this page, points to an intelligence beyond its chemical elements. (We realize that life is certainly *more* than chemicals with a message, but the key point here is that it’s certainly not *less*.)

So by blind allegiance to this naturalistic, reductionist ideology—which is against all observation and reason—Darwinists dogmatically assert that life arose spontaneously from its nonliving chemical components. Ironically, this is exactly what Darwinists have long accused creationists of doing—allowing their ideology to overrule observation and reason. In truth, it’s the Darwinists who are allowing *their faith* to overrule observation and reason. Creationists and Intelligent Design proponents are simply making a rational inference from the evidence. They are following the evidence exactly where it leads—back to an intelligent cause.

Yockey is not the only one pointing out that Darwinists have a philosophical bias against intelligent causes. Phillip Johnson serves as the sharp edge of a steel wedge that is now splitting the petrified wood of naturalism in the scientific community. He correctly points out that “Darwinism is based on an *a priori* [prior] commitment to materialism, not on a philosophically neutral assessment of the evidence. Separate the philosophy from the science, and the proud tower collapses.”

And it's not just the critics of evolution who see this bias. Prominent Darwinists admit it as well. In fact, Dawkins himself has acknowledged the bias in responding to an e-mail question from Phillip Johnson. "[Our] philosophical commitment to materialism and reductionism is true," Dawkins wrote, "but I would prefer to characterize it as philosophical commitment to a real explanation as opposed to a complete lack of an explanation, which is what you espouse." (Dawkins may think he has a "real explanation," but, as we have seen, his explanation is against all of the observational and forensic evidence.)

If Richard Dawkins leaks out a half-hearted admission of bias, Darwinist Richard Lewontin of Harvard University gushes a complete written confession. Read how Lewontin acknowledges that Darwinists accept absurd "just-so" stories that are against common sense because of their prior commitment to materialism:

Our willingness to accept scientific claims that are against common sense is the key to an understanding of the real struggle between science and the supernatural. We take the side of science in spite of the patent absurdity of some of its constructs, in spite of its failure to fulfill many of its extravagant promises of health and life, in spite of the tolerance of the scientific community for unsubstantiated just-so stories, because *we have a prior commitment to materialism*. It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world but, on the contrary, that *we are forced by our a priori adherence to material causes* to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counterintuitive, no matter how mystifying to the uninitiated. Moreover that materialism is absolute for *we cannot allow a divine foot in the door*.

Now the real truth comes out. It's *not* that the evidence supports Darwinism—in fact, according to Lewontin and our own common sense, Darwinist explanations are "counterintuitive." The real truth is that the Darwinists have defined science in such a way that the only possible answer is Darwinism. Any other definition would, God forbid, allow God to get his "foot in the door"!

In the next chapter we'll investigate the possible motivations for keeping God out. For now, the bottom line is this: the event required to get the atheistic theory of macroevolution off the ground—the spontaneous generation of first life—is believed because of false philosophical assumptions disguised as science, not because there are legitimate scientific observations that support spontaneous generation. False science is bad science, and it's the Darwinists who are practicing it. Their belief in spontaneous generation results from their blind faith in naturalism. It takes tremendous faith to believe that the first one-celled creature came together by natural laws, because that's like believing 1,000 encyclopedias resulted from an explosion in a printing shop! Atheists can't even explain the origin of the printing shop, much less the 1,000 encyclopedias. *Therefore, we don't have enough faith to be atheists.*

### **GIVE TIME AND CHANCE A CHANCE!**

"Not so fast!" say the Darwinists. "You've overlooked time and chance as plausible explanations for how life spontaneously generated."

### ***Give Time More Time!***

Darwinists dismiss the conclusion that intelligence was necessary for the first life by suggesting that more time would allow natural laws to do their work. Give it several billion years and eventually we'll get life. Is this plausible?

Let's go back to Mount Rushmore for a minute. Darwinists assert that science is built on observation and repetition. Okay, suppose we observe and repeat an experiment where we allow natural laws to work on rock for the next ten years. Will we ever get the faces on Mount Rushmore? Never.

You say, maybe natural laws would do it if we give them billions of years. No, they wouldn't. Why? Because nature disorders, it doesn't organize things (the fact that nature brings things toward disorder is another aspect of the Second Law of Thermodynamics). More time will make things worse for the Darwinist, not better. How so?

Let's suppose you throw red, white, and blue confetti out of an airplane 1,000 feet above your house. What's the chance it's going to form the American flag on your front lawn? Very low. Why? Because natural laws will mix up or randomize the confetti. You say, "Allow more time." Okay, let's take the plane up to 10,000 feet to give natural laws more time to work on the confetti. Does this improve the probability that the flag will form on your lawn? No, more time actually makes the flag less likely because natural laws have longer to do what they do—disorder and randomize.

What is different about the origin of the first life? Darwinists might say that the Second Law of Thermodynamics doesn't apply continuously to living systems. After all, living things do grow and can get more ordered. Yes, they grow and get more ordered, but they still lose energy in the process of growth. The food that goes into a living system is not processed at 100 percent efficiency. So the Second Law applies to living systems as well. But that's not even the point. The point is, we're *not* talking about what something can do once it's alive; *we're talking about getting a living thing in the first place*. How did life arise from nonliving chemicals, without intelligent intervention, when nonliving chemicals are susceptible to the Second Law? Darwinists have no answer, only faith.

### ***Give Chance a Chance!***

Can all the incredible specified complexity in life be explained by chance? Not a chance! Atheists and theists alike have calculated the probability that life could arise by chance from nonliving chemicals. The figures they calculate are astronomically small—virtually zero. For example, Michael Behe has said that the probability of getting *one protein molecule* (which has about 100 amino acids) by chance would be the same as a blindfolded man finding one marked grain of sand in the Sahara Desert three times in a row. And one protein molecule is not life. To get life, you would need to get about 200 of those protein molecules together!

That probability is virtually zero. But we believe the probability is *actually* zero. Why? Because "chance" is not a cause. Chance is a *word* that we use to describe mathematical possibilities. It has no power of its own. Chance is *nothing*. It's what rocks dream about.

If someone flips a fair coin, what's the chance it will come up heads? Fifty percent, we say. Yes, but what *causes* it to come up heads? Is it chance? No, the primary cause is an intelligent being who decided to flip the coin and apply so much force in doing so. Secondary causes, such as the physical forces of wind and gravity, also impact the result of the flip. If we knew all those variables, we could calculate how the flip would turn out beforehand. But since we don't know those variables, we use the word "chance" to cover our ignorance.

We shouldn't allow atheists to cover their ignorance with the word "chance." If they don't know a natural mechanism by which the first life could have come into existence, then they should admit they don't know rather than suggesting a powerless word that, of course, really isn't a cause at all. "Chance" is just another example of the bad science practiced by Darwinists.



## SCIENCE IS A SLAVE TO PHILOSOPHY

Unfortunately, Darwinists have been successful in convincing the public that the only bad science is that which disagrees with Darwinism (and that really isn't science at all, they say—it's just religion masquerading as science). In fact, the exact opposite is true. It's the Darwinists who are practicing the bad science, because their science is built on a false philosophy. In effect, it's *their* secular religion of naturalism that leads them to ignore the empirically detectable scientific evidence for design.

What lessons can we learn from the bad science of the Darwinists? To answer that, let's look at more of the debate we cited in chapter 3 between William Lane Craig, a Christian, and Darwinist Peter Atkins. Recall that the debate was over the existence of God. At one point, Atkins argued that God wasn't necessary because science could explain everything.

"There is no need for God," declared Atkins. "Everything in the world can be understood without needing to evoke a God. You have to accept that's one possible view to take about the world."

"Sure, that's possible," Craig admitted. "But..."

[Interrupting] "Do you deny that science can account for everything?" challenged Atkins.

"Yes, I *do* deny that science can account for everything," said Craig.

"So what can't it account for?" demanded Atkins.

A veteran of many debates, Craig was ready with a multifaceted answer. "I think there are a good number of things that cannot be scientifically proven but we are all rational to accept," he said. Craig then cited these five examples of rational beliefs that cannot be proven by science:

1. mathematics and logic (science can't prove them because science presupposes them),
2. metaphysical truths (such as, there are minds that exist other than my own),
3. ethical judgments (you can't prove by science that the Nazis were evil, because morality is not subject to the scientific method),
4. aesthetic judgments (the beautiful, like the good, cannot be scientifically proven), and, ironically
5. science itself (the belief that the scientific method discovers truth can't be proven by the scientific method itself); (more on this below).

(Following this barrage of examples refuting Atkins's view, moderator William F. Buckley, Jr., could not hide his pleasure with Craig's answer. He peered over at Atkins and cracked, "So put that in your pipe and smoke it!")

Craig was right. The scientific method of searching for causes by observation and repetition is but *one* means of finding truth. It is not the *only* means of finding truth. As we saw in chapter 1, nonscientific (philosophical) laws, such as the laws of logic, help us discover truth as well. In fact, those laws are used by the scientific method!

Moreover, Atkins's claim that science can account for everything is not false only because of the five counterexamples Craig noted; it is also false because it is self-defeating. In effect, Atkins was saying, "Science is the only objective source of truth." If we test that statement by the Road Runner tactic from chapter 1, we see it is self-defeating and therefore false. The statement "science is the only source of objective truth" claims to be an objective truth, but it's not a scientific truth. The statement is philosophical in nature—it can't be proven by science—so it defeats itself.

This leads us to perhaps the greatest lesson we can learn from the bad science of the Darwinists: *science is built on philosophy. Indeed, science is a slave to philosophy.* Bad philosophy results in bad science, and good science requires good philosophy. Why? Because:

1. **Science cannot be done without philosophy.** Philosophical assumptions are utilized in the search for causes, and, therefore, cannot be the result of them. For example, scientists assume (by faith) that reason and the scientific method allow us to accurately understand the world around us. That cannot be proven by science itself. You can't prove the tools of science—the laws of logic, the Law of Causality, the Principle of Uniformity, or the reliability of observation—by running some kind of experiment. You have to assume those things are true in order to *do* the experiment! So science is built on philosophy. Unfortunately, many so-called scientists are very poor philosophers.
2. **Philosophical assumptions can dramatically impact scientific conclusions.** If a scientist assumes beforehand that only natural causes are possible, then probably no amount of evidence will convince him that intelligence created the first one-celled amoeba or any other designed entity. When Darwinists *presuppose* that intelligent causes are impossible, then natural laws are the only game in town. Likewise, if a creationist rules out natural causes beforehand (and we don't know of any who do), then he also risks missing the right answer. But a scientist who is *open-minded* to both natural and intelligent causes can follow the evidence wherever it leads.
3. **Science doesn't really say anything—scientists do.** Data are always interpreted by scientists. When those scientists let their personal preferences or unproven philosophical assumptions dictate their interpretation of the evidence, they do exactly what they accuse religious people of doing—they let their ideology dictate their conclusions. When that's the case, their conclusions should be questioned, because they may be nothing more than philosophical presuppositions passed off as scientific facts.

### MATERIALISM MAKES REASON IMPOSSIBLE

When you get down to the root of the problem, you find that the bad science of the Darwinists results from the false philosophy of naturalism or materialism at the foundation of their worldview. Why is materialism false? Here are five reasons why materialism is not reasonable:

First, as we've already pointed out, there is a message resident in life, technically called specified complexity, that cannot be explained materially. This message cannot be explained by nonintelligent natural laws any more than the message in this book can be explained by the nonintelligent laws of ink and paper.

Second, human thoughts and theories are not comprised only of materials. Chemicals are certainly involved in the human thought process, but they cannot explain all human thoughts. The *theory* of materialism isn't made of molecules. Likewise, someone's thoughts, whether they be of love or hate, are not chemicals. How much does love weigh? What's the chemical composition of hate? These are absurd questions because thoughts, convictions, and emotions are not completely materially based. Since they are not completely materially based, materialism is false.

Third, if life were nothing more than materials, then we'd be able to take all the materials of life—which are the same materials found in dirt—and make a living being. We cannot. There's clearly something beyond materials in life. What materialist can explain why one body is alive and another body is dead? Both contain the same chemicals. Why is a body alive one minute and dead the next? What combination of materials can account for consciousness? Even Atkins, in his debate with Craig, admitted that explaining consciousness is a great problem for atheists.

Fourth, if materialism is true, then everyone in all of human history who has ever had any kind of spiritual experience has been completely mistaken. While this is possible, given the vast number

of spiritual experiences, it does not seem likely. It is difficult to believe that every great spiritual leader and thinker in the history of humanity—including some of the most rational, scientific, and critical minds ever—have all been completely wrong about their spiritual experience. This includes Abraham, Moses, Isaiah, Kepler, Newton, Pascal, and Jesus Christ himself. *If just one spiritual experience in the entire history of the world is true, then materialism is false.*

Finally, if materialism is true, then reason itself is impossible. For if mental processes are nothing but chemical reactions in the brain, then there is no reason to believe that *anything* is true (including the theory of materialism). Chemicals can't evaluate whether or not a theory is true. Chemicals don't reason, they react.

This is supremely ironic because Darwinists—who claim to champion truth and reason—have made truth and reason impossible by their theory of materialism. So even when Darwinists are right about something, their worldview gives us no reason to believe them—because reason itself is impossible in a world governed only by chemical and physical forces.

Not only is reason impossible in a Darwinian world, but the Darwinist's assertion that we should rely on reason alone cannot be justified. Why not? Because reason actually requires *faith*. As J. Budziszewski points out, "The motto 'Reason Alone!' is nonsense anyway. Reason itself presupposes faith. Why? Because a defense of reason *by* reason is circular, therefore worthless. Our only guarantee that human reason works is God who made it."

Let's unpack Budziszewski's point by considering the source of reason. Our ability to reason can come from one of only two places: either our ability to reason arose from preexisting intelligence, or it arose from mindless matter. The atheists/Darwinists/materialists believe, *by faith*, that our minds arose from mindless matter without intelligent intervention. We say it is by faith because it contradicts all scientific observation, which demonstrates that an effect cannot be greater than its cause. You can't give what you haven't got, yet materialists believe that dead, unintelligent matter has produced intelligent life. This is like believing that the Library of Congress resulted from an explosion in a printing shop!

It makes much more sense to believe that the human mind is made in the image of the Great Mind—God. In other words, our minds can apprehend truth and can reason about reality because they were built by the Architect of truth, reality, and reason itself. Materialism cannot explain reason any more than it can explain life. Materialism is just not reasonable. *Therefore, we don't have enough faith to be materialists!*

## **DARWINISTS HAVE THE WRONG BOX TOP**

In the introduction we said that a worldview is like a box top that allows you to place the many pieces of life's puzzle into a complete, cohesive picture. If you have the right box top, then the pieces make sense in light of the complete picture.

But what happens if you keep discovering pieces that don't fit the box top you have? Common sense would tell you that you've got the wrong box top, so you need to look for the right one. Unfortunately, the Darwinists won't do this. The evidence strongly indicates that they have the wrong box top, but they refuse to consider that's even possible (much less look for the right one). Their preconceived box top shows a picture without intelligent causes. Yet, as they themselves

acknowledge, they've discovered many pieces to the puzzle that have the clear appearance of being intelligently designed. In effect, they're trying to fit theistic pieces into their atheistic/materialistic puzzle. How do they do this?

Instead of discarding the wrong box top and finding the right one, Darwinists simply insist that the pieces aren't really what they appear to be. They try to fit every piece—from the precisely designed universe to the information-rich single cell—into a puzzle that doesn't have those pieces in it. In doing so, they disregard observation, which is the very essence of the empirical science they claim to champion. As they themselves admit, Darwinists are philosophically committed to their box top regardless of what the puzzle pieces look like.

How do you find the right box top to the puzzle of life? Arriving at the right box top is not a matter of preference (you like atheism, I like theism). No, it's a matter of objective fact. By using the self-evident first principles of logic and the correct principles of scientific investigation, we discovered in chapters 3 and 4 that this is a theistic universe. If this is a theistic universe, then naturalism is false. If naturalism is false, then Darwinists may not be interpreting the evidence correctly.

Having the right box top is important because it provides the right context for interpreting the evidence. The context is the larger environment in which the evidence appears. If you have the wrong context, you may come to the wrong conclusion about evidence you are observing. For example, if I tell you that I just witnessed a man slashing open the stomach of a woman with a knife, you'd probably assume that man did something wrong. But look what happens when I reveal to you the context—the environment—in which this incident took place: we were in a hospital delivery room, the man was a doctor, and the baby's heart had just stopped. What do you think about the man now? Once you understand the environment, your entire view of the evidence has changed: you now consider the man a hero rather than a villain, because he was really trying to save the baby's life.

In the same way, the evidence from biology must be interpreted in light of the larger known environment. As we've already discovered, the larger known environment is that this is a theistic universe. There's actually an immaterial, powerful, and intelligent Being beyond the natural world who created the universe and designed it precisely to allow life on earth. In other words, we already know beyond a reasonable doubt that the Designer is part of the box top, because the evidence shows that he has already designed this awesome universe with amazing complexity and precision.

In light of the fact that this Designer exists, when we see biological systems that even Darwinists like Richard Dawkins recognize “give the appearance of having been designed for a purpose,” maybe we ought to conclude that *they really were designed for a purpose*. As William Dembski points out, “If a creature looks like a dog, smells like a dog, barks like a dog, feels like a dog, and pants like a dog, the burden of evidence lies with the person insisting the creature isn't a dog.” Since the universe is created and designed, then we should expect life to be created and designed as well. (At least it's *possible* that life was created by intelligence. Ruling out that possibility beforehand is clearly illegitimate.)

So the conclusion that life is the product of an intelligent Designer makes sense because it's not a lone piece of evidence. It's consistent with other scientific findings. Or, to continue with our jigsaw puzzle metaphor, it's a piece that fits perfectly with the other pieces of the puzzle.

## SUMMARY AND CONCLUSION

Since we've covered a lot of ground in this chapter, let's sum it up with a few short points:

1. Life does not consist merely of chemicals. If that were the case, mixing the chemicals of life in a test tube would produce life. Life clearly consists of more than chemicals; it also includes specified complexity (which comes only from a mind). Therefore, materialism is false. (There are numerous additional reasons why materialism is false, including the fact that reason itself would be impossible in a materialistic universe.)
2. There are no known natural laws that create specified complexity (information). Only intelligence has been observed creating specified complexity (e.g., "Take out the garbage—Mom, "Drink Coke," Mount Rushmore, etc.).
3. The simplest life consists of amazing specified complexity—equivalent to 1,000 complete sets of the *Encyclopedia Britannica*. Einstein said, "God doesn't play dice with the universe." He was right. As Phillip Gold said, "God plays Scrabble!"<sup>23</sup>
4. Science is a search for causes that is built on philosophy. There are only two types of causes, intelligent and natural, but Darwinists philosophically rule out intelligent causes before they even look at the evidence. That's why when Darwinists look at those 1,000 encyclopedias—despite observing and recognizing their obvious design—they assert that their cause must be natural. But if "Take out the garbage—Mom" requires an intelligent cause, then so do 1,000 encyclopedias.
5. Spontaneous generation of life, which Darwinism requires to get the theory started, has never been observed. It is believed in by faith. And in light of the strong cosmological and teleological evidence that this is a theistic universe (and for many other reasons), the Darwinian belief in naturalism (or materialism) is also an article of faith. Hence, Darwinism is nothing more than a secular religion masquerading as science.

The skeptic may say, "Wait a minute! You're moving much too fast. What makes you think that Intelligent Design is scientific? Isn't ID just another case of the 'God-of-the-Gaps' fallacy—prematurely bringing God into the picture because you haven't found a natural cause yet? Why should we give up looking for a natural cause? In fact, it seems like ID is just that Bible-thumping, six-day creationism being smuggled into the public debate under a new name. And what about the evidence for the evolution of new life forms that you have yet to mention?"

Answers to these and other Darwinist claims are coming in the next chapter. Not only will we address those claims, but we will also provide more pieces to the puzzle that confirm that the Intelligent Design people, not the Darwinists, have the right box top.

## New Life Forms: From the Goo to You Via the Zoo?

*“In grammar school they taught me that a frog turning into a prince was a fairy tale. In the university they taught me that a frog turning into a prince was a fact!”*

—RON CARLSON

IN THE MOVIE *Contact*, Jodie Foster plays a scientist who is part of the Search for Extra-Terrestrial Intelligence (SETI) research team. SETI, which is a real organization, has scientists who scan space for unmistakable signs of intelligent life. What constitutes an unmistakable sign of intelligent life? A message. That’s right, something like “Take out the garbage—Mom.”

In the movie, Foster gets extremely excited when her antenna picks up radio waves that appear to have an intelligent pattern, “One, two, three, five, seven, eleven ... those are primes!” she exclaims (meaning prime numbers). “That can’t be natural phenomena!”

Indeed, random radio waves can be naturally produced, but those that contain a message always have an intelligent source. Prime numbers, from one to 101 in order, constitute a message that only comes from an intelligent being.

Foster is so confident that ET has been found, she goes public with her discovery. Government and military officials then converge on her facility. “If this is such an intelligent source, then why don’t they just speak English?” one official asks with a hint of derision.

“Because math is the only universal language!” Foster fires back.

Of course she’s right. In fact, alphabets, and thus language itself, can be ultimately reduced to numbers. This is why the English alphabet is mathematically identical to the genetic alphabet of DNA and why the comparison of cell information to encyclopedias is a one-to-one relationship rather than just an analogy.

While Foster and her colleagues later discover a more complicated message embedded in the radio waves, they are absolutely certain the prime numbers alone prove that the message came from intelligent life. Why are they so certain of this? Because repeated observation tells us that only intelligent beings create messages and that natural laws never do. When we see a sequence of prime numbers, we realize that it requires an intelligent cause just like the messages “Take out the garbage—Mom” and “Mary loves Scott” do.

Ironically, *Contact* was based on a novel by the late Carl Sagan, an ardent evolutionist who believed in spontaneous generation and who was instrumental in starting the real SETI program. The irony lies in the fact that Sagan was absolutely convinced that a simple string of prime numbers proves the existence of an intelligent being, but the equivalent of 1,000 encyclopedias in the first one-celled life does not. *It takes a lot of faith not to believe in God. More than we have!*

Moreover, it was Sagan who wrote this about the human brain:

The information content of the human brain expressed in bits is probably comparable to the total number of connections among the neurons—about a hundred trillion bits. If written out in English, say, that information would fill some twenty million volumes, as many as in the world’s largest libraries. The equivalent of twenty million books is inside the heads of every one of us. The brain is a very big place in a very small space.... The neurochemistry of the brain is astonishingly busy. The circuitry of a machine more wonderful than any devised by humans.

Actually, Sagan probably *underestimated* the brain's information content at twenty million books. Nevertheless, the figure is still stunning. To conceptualize it, picture yourself at center court of Madison Square Garden several hours before a basketball game. You are the only one in the arena, and you are looking at almost 20,000 empty seats all around you. How many books would you have to stack on *each seat* in order to fit twenty million books in that arena?

You would need to stack 1,000 books *on each and every seat* to fit twenty million books in Madison Square Garden. Think about that. The roof is not high enough to allow that many books; you'd have to blow off the roof and keep stacking! That's how much specified and complex information is between your ears. Sagan was indeed right that the brain is a very big place in a very small space, and it's something immeasurably more sophisticated than anything humans have ever created.

Now let's review the facts: Sagan realized that the human brain has the information content of twenty million books. He also realized that's drastically more specified and complex than a string of prime numbers. Then why did he think the simpler message required an intelligent being but not the one twenty million books long? We might also ask Sagan and his fellow Darwinists a question of similar weight: If *intelligent* human beings can't create anything close to the human brain, why should we expect *nonintelligent* natural laws to do so?

The Darwinist response will usually involve "natural selection." Is this sufficient to account for new life forms? After all, it's a long way from one cell to the human brain.

### **WHAT ABOUT NEW LIFE FORMS?**

Before discussing the origin of new life forms, we need to revisit the problem of the origin of first life. It certainly is a long way from one cell to the human brain, but the journey may be even longer from nonliving chemicals to the first cell. That's the most difficult problem for Darwinists. Where did the *first* life come from?

Do you see the magnitude of this problem for Darwinists? If Darwinists don't have an explanation for the first life, then what's the point of speaking about new life forms? The process of macroevolution, if it's possible at all, can't even begin unless there's preexisting life.

But as we saw in the last chapter, this doesn't stop the Darwinists. Against all empirical and forensic evidence, Darwinists make up a "just-so" story—spontaneous generation or panspermia—that magically gives them the first life they need. This isn't science—this is a joke. In fact it reminds us of a joke. Steve Martin used to say, "I know how you can be a millionaire and never pay taxes! First, get a million dollars, Okay, now ..."

The Darwinists' position is even more problematic when you consider that they don't even have an explanation for the source of the nonliving chemicals, much less an explanation for life. As we saw in chapter 3, one of the most profound questions to ask is, "If there is no God, why is there something rather than nothing at all?" We saw that the atheists have no plausible answer to this question. Suggesting a possibility is not enough—they have to present evidence if they are going to be scientific. It's obvious they don't know where the universe came from. A good box top (worldview) should be able to plausibly explain all of the data. If it can't answer the fundamental questions of the origin of the world or the origin of life, it's not a viable box top. It's time to look for a new one.

Even though we see that the Darwinist box top is fundamentally flawed, we need to look at a few of the claims the Darwinists make regarding the origin of new life forms. Their theory is macroevolution.

### ***Microevolution vs. Macroevolution***

You remember macroevolution—from the goo to you via the zoo. It's the belief that all life forms have descended from a common ancestor—the first one-celled creature—and all of this has happened by natural processes without any intelligent intervention. God was not involved. It has been a completely blind process.

Darwinists say this has happened by natural selection. But the term “natural selection” is a misnomer. Since the process of evolution is, by definition, without intelligence, there is no “selection” at all going on. It's a blind process. The term “natural selection” simply means that the fittest creatures survive. So what? That's true by definition—the fittest survive (this is called a tautology—a circular argument that doesn't prove anything). Logically, these are the creatures that are best equipped genetically or structurally to deal with changing environmental conditions (that's why they survive).

As an example of “natural selection,” consider what happens to bacteria attacked by antibiotics. When bacteria survive a bout with antibiotics and multiply, that surviving group of bacteria may be resistant to that antibiotic. The surviving bacteria are resistant to that antibiotic because the parent bacteria possessed the genetic capacity to resist, or a rare biochemical mutation somehow helped it survive (we say “rare” because mutations are nearly always harmful). Since the sensitive bacteria die, the surviving bacteria multiply and now dominate.

Darwinists say that the surviving bacteria have evolved. Having adapted to the environment, the surviving bacteria provide us with an example of evolution. Fair enough, but what kind of evolution? The answer we're about to give is absolutely critical. In fact, outside of the philosophical presuppositions we've been exposing, defining “evolution” is perhaps the greatest point of confusion in the creation-evolution controversy. This is where Darwinian errors and false claims begin to multiply like bacteria if not checked by those who believe observation is important to science. Here's what observation tells us: *the surviving bacteria always stay bacteria*. They do not evolve into another type of organism. That would be macroevolution. Natural selection has never been observed to create new types.

But macroevolution is exactly what Darwinists claim from the data. They say that these observable *micro* changes can be extrapolated to prove that unobservable macroevolution has occurred. They make no distinction between *microevolution* and *macroevolution*, and thus use the evidence for micro to prove macro. By failing to make this critical distinction, Darwinists can dupe the general public into thinking that any observable change in any organism proves that all life has evolved from the first one-celled creature.

This is why it is essential that the right distinctions be made and that all hidden assumptions be exposed when discussing the creation-evolution controversy. So if someone ever asks you, “Do you believe in evolution?” you should ask that person, “What do you mean by evolution? Do you mean micro or macroevolution?” Microevolution has been observed; but it cannot be used as evidence for macroevolution, which has never been observed.

Darwinists are masters at defining the term “evolution” broadly enough so that evidence in one situation might be counted as evidence in another. Unfortunately for them, the public is beginning to catch on to this tactic, thanks largely to the popular works of Berkeley law professor Phillip Johnson. Johnson first exposed this Darwinistic sleight of hand with his groundbreaking book *Darwin on Trial*. That's where he points out that, “None of the ‘proofs’ [for natural selection] provides any persuasive reason for believing that natural selection can produce new species, new organs, or other major changes, or even minor changes that are permanent.” Biologist Jonathan



Wells agrees when he writes, “Biochemical mutations cannot explain the large-scale changes in organisms that we see in the history of life.”<sup>3</sup>

Why can’t natural selection do the job? Here are five reasons it can’t:

**1. Genetic Limits**—Darwinists say that microevolution within types proves that macroevolution has occurred. If these small changes can occur over a short period of time, think what natural selection can do over a long period of time.

Unfortunately for Darwinists, genetic limits seem to be built into the basic types. For example, dog breeders always encounter genetic limits when they intelligently attempt to create new breeds of dogs. Dogs may range in size from the Chihuahua to the Great Dane, but despite the best attempts of intelligent breeders, dogs always remain dogs. Likewise, despite the best efforts of intelligent scientists to manipulate fruit flies, their experiments have never turned out anything but more fruit flies (and usually crippled ones at that). This is especially significant because the short life of fruit flies allows scientists to test many generations of genetic variation in a short period of time.

**Fig. 6.1**

Most importantly, the comparison between natural selection and the artificial selection that breeders do is completely invalid, as table 6.1 demonstrates. The biggest difference is the fact that artificial selection is intelligently guided while natural selection is not.

**Crucial**

<b>Differences:</b>	<b>ARTIFICIAL SELECTION</b>	<b>NATURAL SELECTION</b>
<b>Goal</b>	Aim (end) in view	No aim (end) in view
<b>Process</b>	Intelligently guided process	Blind process
<b>Choices</b>	Intelligent choice of breeds	No intelligent choice of breeds
<b>Protection</b>	Breeds guarded from destructive processes	Breeds not guarded from destructive processes
<b>Freaks</b>	Preserves desired freaks	Eliminates most freaks
<b>Interruptions</b>	Continued interruptions to reach desired goal	No continued interruptions to reach any goal
<b>Survival</b>	Preferential survival	Non-preferential survival

**Table 6.1**

Confusing intelligent with nonintelligent processes is a common mistake of Darwinists. This was the case when I (Norm) debated humanist Paul Kurtz in 1986 on the topic of evolution. The debate, moderated by TV apologist John Ankerberg, produced this exchange regarding macroevolution:

Geisler: [Chandra] Wickramasinghe [*who is an atheist*] said, “believing that life came by chance is like believing that a Boeing 747 resulted from a tornado going through a junk yard.” You have to have a lot of faith to believe that!

Kurtz: Well, the Boeing 747 evolved. We can go back to the Wright brothers and see that first kind of airplane they created...

Geisler: Created?

Kurtz: Yes, but...

Ankerberg: By intelligence or by chance? [Laughter]

Kurtz: There was a period of time in which these forms changed...

Ankerberg: But didn't they create those airplanes using intelligence?

Kurtz: I was using the analogy that Dr. Geisler was using.

Geisler: Well, you're helping my argument! [Laughter] You ought to drop that one and find another one!

Kurtz: No, no, I think the point I make is a good one because there have been changes from the simplest to the more complex airplanes.

Geisler: Yes, but those changes were by intelligent intervention!

Indeed, directional change in airplanes *by intelligence* proves nothing about the possibility of directional change in living things *without intelligence*. As we'll see in the next section, directional change in living things by natural selection has not been observed. And directional change in living things *with intelligence* hits genetic limits. So even when it is intelligently guided, evolution hits walls. *In other words, even when scientists intelligently manipulate creatures with an end in mind—which is the antithesis of the blind Darwinian process—macroevolution still doesn't work!* If intelligent scientists cannot break genetic barriers, why should we expect nonintelligent natural selection to do so?

**2. Cyclical Change**—Not only are there genetic limits to change within types, but the change within types appears to be cyclical. In other words, changes are not directional toward the development of new life forms, as macroevolutionary theory requires, but they simply shift back and forth within a limited range. For example, Darwin's finches had varying beak sizes, which correlated with the weather. Larger beaks helped crack larger, harder seeds during droughts, and smaller beaks worked fine when wetter weather brought an abundance of smaller, softer seeds. When the weather became drier, the proportion of finches with larger beaks grew relative to the smaller-beaked finches. The proportion reversed itself following a sustained period of wet weather. Notice that no new life forms came into existence (they always remained finches); only the relative proportion of existing large-beaked to small-beaked finches changed. Notice also that natural selection cannot explain how finches came into existence in the first place. In other words, natural selection may be able to explain the *survival* of a species, but it cannot explain the *arrival* of a species.

**3. Irreducible Complexity**—In 1859, Charles Darwin wrote, “If it could be demonstrated that any complex organ existed, which could not possibly have been formed by numerous, successive,

slight modifications, my theory would absolutely break down.” We now know that there are many organs, systems, and processes in life that fit that description.

One of those is the cell. In Darwin’s day the cell was a “black box”—a mysterious little part of life that no one could see into. But now that we have the ability to peer into the cell, we see that life at the molecular level is immeasurably more complex than Darwin ever dreamed. In fact, it is irreducibly complex. An irreducibly complex system is “composed of several well-matched, interacting parts that contribute to the basic function, wherein the removal of any one of the parts causes the system to effectively cease functioning.”

Those are the words of Michael Behe, professor of biochemistry at Lehigh University, who wrote the revolutionary book *Darwin’s Black Box: The Biochemical Challenge to Evolution*. Behe’s research verifies that living things are literally filled with molecular machines that perform the numerous functions of life. These molecular machines are irreducibly complex, meaning that all the parts of each machine must be completely formed, in the right places, in the right sizes, in operating order, at the same time, for the machine to function.

A car engine is an example of an irreducibly complex system. If a change is made in the size of the pistons, this would require simultaneous changes in the cam shaft, block, cooling system, engine compartment, and other systems, or the new engine would not function.

Behe shows that living things are irreducibly complex, just like a car engine. With painstaking detail, he shows that numerous functions in the body—such as blood clotting, cilia (cell propulsion organisms), and vision—require irreducibly complex systems that could not have developed in the gradual Darwinian fashion. Why? Because intermediates would be nonfunctional. As with a car engine, all the right parts must be in place in the right size at the same time for there to be any function at all. You can build an engine part by part (and that takes intelligence), but you can’t drive to work with only a partial engine under the hood. Nor could you drive to work if one essential part of your engine were modified but others were not. In the same way, living systems quickly would become nonfunctional if they were modified piece by piece.

The degree of irreducible complexity in living things is mind-boggling. Recall that DNA’s genetic alphabet consists of four letters: A, T, C, and G. Well, *within each human cell* there are about 3,000 *million* pairs of those letters. Not only does your body have *trillions* of cells and make millions of new cells every second, but each cell is irreducibly complex and contains irreducibly complex subsystems!

Behe’s discoveries are fatal for Darwinism. Irreducible complexity means that new life cannot come into existence by the Darwinian method of slight, successive changes over a long period of time. Darwinism is akin to natural forces—without any intelligent help—producing a running car engine (i.e., an amoeba) and then modifying that irreducibly complex engine into successive intermediate engines until those natural forces finally produce the space shuttle (i.e., a human being). Darwinists can’t explain the source of the materials to make an engine, much less how any irreducibly complex engine came to be in the first place. Nor can they demonstrate the *unintelligent* process by which any engine has evolved into the space shuttle while providing propulsion at every intermediate step. This is evident from the complete absence of explanations from Darwinists for how irreducibly complex systems could arise gradually. Behe exposes the empty claims of Darwinists when he writes,

*The idea of Darwinian molecular evolution is not based on science.* There is no publication in the scientific literature—in journals or books—that describes how molecular evolution of any real, complex, biochemical system either did occur or even might have occurred. There are assertions that such evolution occurred, but absolutely none are supported by pertinent experiments or

calculations. Since there is no authority on which to base claims of knowledge, *it can truly be said that the assertion of Darwinian molecular evolution is merely bluster.*

The feeble attempts by Darwinists to deal with irreducible complexity reveal the magnitude of the problem for their theory. Darwinist Ken Miller has suggested that irreducible complexity isn't true because he can show that Behe's example of irreducible complexity—a mousetrap—isn't really irreducibly complex. According to Behe, all five parts of a traditional mousetrap need to be in place at the same time, in working order, for the mouse trap to work. You can't catch mice with just a platform and a spring, for example. But Miller thinks he can disprove Behe's point by building a similar mousetrap with only four parts. (Miller actually brought this up during a televised debate on *PBS* in the late nineties.)

But Miller's critique actually misses the mark. First, like a typical Darwinist, Miller ignores the fact that his mousetrap requires intelligence to build. Second, Behe is not saying you need five parts for *any* mousetrap—just for the traditional mousetrap. It turns out that Miller's mousetrap is not a physical precursor to Behe's traditional mousetrap. In other words, transforming Miller's mousetrap into Behe's would require more than one random (i.e., Darwinian) step—it would require the addition of another very specific part and several very specific adjustments to existing parts (and that requires intelligence). Third, even if those changes could somehow be made by mindless processes, the mousetrap would be nonfunctional during the transition period. But for Darwinism to be true, functionality must be maintained at all times because living things cannot survive if, say, their vital organs do not perform their usual function during slow, trial-and-error Darwinian transitions. Finally, a mousetrap is only an illustration. Living systems are immeasurably more complex than a mousetrap. So Behe's point clearly has not been refuted by Miller, nor has it been refuted by any other Darwinist.<sup>11</sup>

During an Intelligent Design conference in July 2002, at which both Behe and I (Frank) were speakers, one particular Darwinist was a bit militant during the question and answer period of the lectures. I wanted to turn the tables and ask him a few questions, so I made it a point to sit next to him during lunch.

“What do you do with Behe's irreducible complexity argument?” I asked between pizza slices.

He rolled his eyes and said, “Oh, that's no big deal. There are biochemical scaffolds that are built around the system to allow it to evolve gradually.”

When I saw Behe later that day, I told him about the Darwinist's explanation. He rightly pointed out that: 1) there's no evidence for such “scaffolds,” and 2) it actually complicates matters for Darwinists; namely, if these “scaffolds” do exist, then who keeps building them in just the right places? That would require intelligence.

Others have tried to find Darwinian paths around irreducible complexity, but all have failed. Behe confirms as much when he categorically states, “There is currently no experimental evidence to show that natural selection can get around irreducible complexity.”

Behe does not underestimate the implications of irreducible complexity and other discoveries regarding the complexity of life. He writes, “The result of these cumulative efforts to investigate the cell—to investigate life at the molecular level—is a loud, clear, piercing cry of ‘design!’ The result is so unambiguous and so significant that it must be ranked as one of the greatest achievements in the history of science. The discovery rivals those of Newton and Einstein.”

**4. Nonviability of Transitional Forms**—Another problem that plagues the plausibility of natural selection creating new life forms is the fact that transitional forms could not survive. For example, consider the Darwinian assertion that birds evolved gradually from reptiles over long

periods of time. This would necessitate a transition from scales to feathers. How could a creature survive that no longer has scales but does not quite have feathers? Feathers are irreducibly complex. A creature with the structure of half a feather has no ability to fly. It would be easy prey on land, in water, and from the air. And as a halfway house between reptiles and birds, it probably wouldn't be adept at finding food for itself either. So the problem for Darwinists is twofold: first, they have no viable mechanism for getting from reptiles to birds; and second, even if a viable mechanism were discovered, the transitional forms would be unlikely to survive anyway.

**5. Molecular Isolation**—Darwinists often say that evidence of common descent lies in the fact that all living things contain DNA. For example, Richard Dawkins states, “The reason we know for certain we are all related, including bacteria, is the universality of the genetic code and other biochemical fundamentals.” Darwinists think the DNA similarity between apes and humans, for example, which some say is 85 to over 95 percent,<sup>15</sup> strongly implies an ancestral relationship.

But is this evidence for common *ancestry* or for a common *creator*? It could be interpreted either way. Perhaps the Darwinists are right—it is possible that we have a common genetic code because we've all descended from a common ancestor. But they could just as easily be wrong—*perhaps we have a common genetic code because a common creator has designed us to live in the same biosphere.* After all, if every living creature were distinct biochemically, a food chain probably could not exist. Perhaps life with a different biochemical makeup is not possible. And even if it is, perhaps it couldn't survive in this biosphere.

As we said before, the capacity of the DNA genetic alphabet to contain a message is equivalent to the capacity of the English alphabet to contain a message (the only difference is that the DNA alphabet has only four letters versus twenty-six for the English alphabet). Since all living things have DNA with its four nitrogen-containing bases (represented by the letters A, T, C, and G), we would expect a high degree of similarity in the information among creatures whether or not they are ancestrally related.

Let's use an example from English to illustrate what we mean. Here are two sentences with exactly the same letters:

Charles Darwin was a scientific god.

Charles Darwin was a scientific dog.

While the letters in the two sentences are identical and the order is virtually the same (greater than 90 percent), the slight difference in order yields opposite meanings. In the same way, only a slight difference in the order of the letters (A, T, C, and G) in living things may yield creatures that are far apart on the hypothetical evolutionary tree. For example, while some studies show that the DNA similarity between humans and the most similar ape may be about 90 percent, other studies show the DNA similarity between humans and *mice* is also about 90 percent. Such comparisons are controversial and are not completely understood. More research needs to be done in this field. But if mice genetically are as close to humans as apes, this would greatly complicate any Darwinian explanation.

But let's suppose that further studies someday show that ape DNA is indeed closer to humans than the DNA of any other creature. This would not prove the Darwinists' conclusion that there is an ancestral relationship. Again, the reason for the similarity could be a common creator rather than a common ancestor. We must find other evidence at the molecular level to help us discover whether the common genetic code is evidence of a common ancestor or of a common creator.

That other evidence *has* been found—by comparing protein sequences. Proteins are the building blocks of life. They are composed of long chains of chemical units called amino acids. Most proteins have in their structure more than 100 of these amino acids, which must be in a very specific order. It's the DNA that contains the instructions for ordering the amino acids in the proteins, and the order is critical because any variation usually renders the protein dysfunctional.

Here's where the problem arises for Darwinists. If all species share a common ancestor, we should expect to find protein sequences that are transitional from, say, fish to amphibian, or from reptile to mammal. But that's not what we find at all. Instead, we find that the basic types are molecularly isolated from one another, which seems to preclude any type of ancestral relationship. Michael Denton observes,

At a molecular level there is no trace of the evolutionary transition from fish → amphibian → reptile → mammal. So amphibia, always traditionally considered intermediate between fish and the other terrestrial vertebrates, are in molecular terms as far from fish as any group of reptiles or mammals! To those well acquainted with the traditional picture of vertebrate evolution the result is truly astonishing.

So even though all organisms share a common genetic code with varying degrees of closeness, that code has ordered the amino acids in proteins in such a way that the basic types are in molecular isolation from one another. There are no Darwinian transitions, only distinct molecular gaps. Darwinists cannot explain the presence of these molecular gaps by natural selection any more than they can explain the presence of huge gaps in the fossil record (which we'll talk about next).

### ***What About the Fossil Record?***

So let's quickly review what we've seen so far. These are the five lines of evidence which show that natural selection could not have produced new life forms:

1. Genetic limits
2. Cyclical change
3. Irreducible complexity
4. Nonviability of transitional forms
5. Molecular isolation

But doesn't the fossil record support the Darwinian theory? Let's take a look.

Without the benefit of today's technology, Charles Darwin could not recognize the problems his theory faced at the cellular level. However, he did recognize that the fossil record posed a big problem for his theory because it didn't show gradualism. That's why he wrote, "Why then is not every geological formation and every stratum full of such intermediate links? Geology assuredly does not reveal any such finely graduated organic chain, and this, perhaps, is the most obvious and gravest objection which can be urged against my theory."

But Darwin thought that further fossil discoveries would reveal that his theory was true. Time has proven him wrong. Contrary to what you may hear in the general media, the fossil record has turned out to be a complete embarrassment for Darwinists. If Darwinism were true, we would have found thousands, if not millions, of transitional fossils by now. Instead, according to the late Harvard paleontologist Stephen Jay Gould (an evolutionist),

The history of most fossil species includes two features particularly inconsistent with gradualism:  
1). Stasis. Most species exhibit no directional change during their tenure on earth. They appear in

the fossil record looking much the same as when they disappear; Morphological change is usually limited and directionless. 2). Sudden Appearance. In any local area, a species does not arise gradually by the steady transformation of its ancestors; it appears all at once and ‘fully formed.’

In other words, Gould is admitting that fossil types appear suddenly, fully formed, and remain the same until extinction without any directional change—exactly what one would expect to find if creation were true.

But instead of adopting creationism, Gould rejected the gradualism of Darwinism and formulated a theory he called “Punctuated Equilibria” (PE). PE suggests that species evolved faster over a shorter period of time, thereby explaining the huge fossil gaps. Gould had no natural mechanism by which this could have occurred, but since he was an atheist he had to explain the fossil record somehow. This is a classic case of allowing your prejudices to taint your observations.

But we digress. The main point here is that the fossil record actually lines up better with supernatural creation than with macroevolution. Indeed, there aren’t missing links—there’s a missing chain!

There is no chain because nearly all of the major groups of animals known to exist appear in the fossil record abruptly and fully formed in strata from the Cambrian period (which many scientists estimate to have occurred between 600 and 500 million years ago). Jonathan Wells writes, “The fossil evidence is so strong, and the event so dramatic, that it has become known as ‘the Cambrian explosion,’ or ‘biology’s big bang.’ ”

This evidence, of course, is completely inconsistent with Darwinism. All animal groups appear separately, fully formed, and at the same time. That’s not evidence of gradual evolution but of instantaneous creation. So, the Darwinian tree we are so used to seeing doesn’t properly illustrate the real fossil record. In fact, as Wells observes, “if any botanical analogy were appropriate, it would be a *lawn* rather than a tree.” And that lawn would have patches of different grasses or plants separated by large areas of nothing but dirt.

At this point you may be thinking, “But what about the skull progression we’re so used to seeing? Doesn’t it appear that man has evolved from apes?”

A number of years ago I (Norm) debated a Darwinist who lined up skulls on a table to illustrate that evolution had occurred. “Ladies and gentlemen, right here is the evidence for evolution,” he declared.

Gee, how can you ignore the fossils? The skulls look like they’re in a progression. They look as if they could be ancestrally related. Is this good evidence for Darwinism? No, it’s not any better than the evidence that the large kettle evolved from the teaspoon.

The problem for the Darwinists is that the fossil record cannot establish ancestral relationships. Why not? Because, according to Michael Denton, “99 percent of the biology of any organism resides in its soft anatomy, which is inaccessible in a fossil.” In other words, it’s extremely difficult to discover the biological makeup of a creature by looking at its fossil remains. Jonathan Wells observes, “The fossil evidence is open to many interpretations because individual specimens can be reconstructed in a variety of ways, and because the fossil record cannot establish ancestor-descendant relationships.”<sup>23</sup>

But this doesn’t stop the Darwinists. Since Darwinism *has* to be true because of their prior philosophical commitment, Darwinists *have* to find evidence supporting it. So instead of admitting that fossils can’t establish ancestral relationships, Darwinists take the one percent that fossils tell them and then use the other 99 percent of leeway to depict their fossil discoveries as filling any gap they want. With such vast leeway and no facts to constrain them, Darwinists have been free to creatively build entire “missing links” from fossil remains as trivial as a single tooth. This is why

many so-called “missing links” have later been exposed as frauds or mistakes. Henry Gee, chief science writer for *Nature*, writes, “To take a line of fossils and claim that they represent a lineage is not a scientific hypothesis that can be tested, but an assertion that carries the same validity as a bedtime story—amusing, perhaps even instructive, but not scientific.”

Not only is the fossil record inadequate to establish ancestral relationships; in light of what we now know about the irreducibly complex nature of biological systems, *the fossil record is irrelevant to the question*. The similarity of structure or anatomy between types (sometimes called homology) also tells us nothing about common ancestry. Michael Behe writes,

Anatomy is, quite simply, irrelevant to the question of whether evolution could take place on the molecular level. So is the fossil record. It no longer matters whether there are huge gaps in the fossil record or whether the record is as continuous as that of U.S. presidents. And if there are gaps, it does not matter whether they can be explained plausibly. The fossil record has nothing to tell us about whether the interactions of 11-cts-retinal with rhodopsin, transducin, and phosphodiesterase [irreducibly complex systems] could have developed step-by-step.

So, according to Behe, biology dwarfs anatomy on the question of the plausibility of macroevolution. Just as the contents of a book provide far more information than its cover, the biology of a creature provides far more information than its skeletal structure. Nevertheless, Darwinists have long argued that similarity of structure between, say, apes and humans is evidence of common ancestry (or common descent). *Does it ever dawn on them that similarity of structure may be evidence of a common designer rather than a common ancestor?* After all, in a world governed by certain physical and chemical laws, perhaps only a certain range of anatomical structures will be conducive to animals designed to walk on two legs. Since we all have to live in the same biosphere, we should expect some creatures to have similar designs.

Moreover, while apes may have a similar structure to humans, what is often overlooked is the fact that apes and humans bear almost no resemblance to snakes, fungus, and trees. But according to Darwinism, all living things have evolved from the same ancestor. To posit Darwinism, you must be able to explain the vast *dissimilarity* between living things. You must explain how the palm tree, the peacock, the octopus, the locust, the bat, the hippopotamus, the porcupine, the sea horse, the Venus flytrap, the human, and mildew, for example, have all descended from the first irreducibly complex life without intelligent intervention. You also have to explain how the first life and the universe came into existence as well. Without viable explanations, which Darwinists have failed to provide, it takes too much faith to be a Darwinist. *And that's why we don't have enough faith to be Darwinists.*

### **IS INTELLIGENT DESIGN AN INTELLIGENT ALTERNATIVE?**

Much more could be said about macroevolution, but space does not permit us to go any further. Nevertheless, a reasonable conclusion can be drawn from the data we have investigated in this chapter. In light of the fossil record, molecular isolation, transitional difficulties, irreducible complexity, cyclical change, and genetic limits (and the fact that they can't explain the origin of the universe or of first life), you would think Darwinists might finally admit that their theory doesn't fit the observable evidence. Instead, Darwinists are still providing unsubstantiated “just-so” stories that actually contradict scientific observation. They continue to insist that evolution is a fact, fact, fact!



We agree that evolution is a fact, but not in the sense the Darwinists mean it. If you define evolution as “change,” then certainly living beings have evolved. But this evolution is on the micro, not the macro level. As we have seen, there’s not only a lack of evidence for macroevolution; *there’s positive evidence that it has not occurred.*

If macroevolution isn’t true, then what is? Well, if there’s no natural explanation for the origin of new life forms, then there must be an intelligent explanation. It’s the only other option. There’s no halfway house between intelligence and nonintelligence. Either intelligence was involved or it wasn’t. But Darwinists don’t like this option. So once they exhaust their ability to adequately defend their own position with unbiased scientific evidence (which is very quickly), Darwinists typically turn their guns on the Intelligent Design people—those of us who believe there’s intelligence behind the universe and life. Here are their typical objections and our responses:

**Objection: Intelligent Design is Not Science.**

**Answer:** As we have seen, science is a search for causes, and there are only two types of causes: intelligent and nonintelligent (natural). The Darwinists’ claim that Intelligent Design is not science is based on their biased definition of science. But that’s arguing in a circle! If your definition of science rules out intelligent causes beforehand, then you’ll never consider Intelligent Design science.

The irony for the Darwinists is this: if Intelligent Design is not science, then neither is Darwinism. Why? Because both Darwinists and Intelligent Design scientists are trying to discover what happened in the past. Origin questions are forensic questions, and thus require the use of the forensic science principles we already have discussed. In fact, for Darwinists to rule out Intelligent Design from the realm of science, in addition to ruling out themselves they would also have to rule out archaeology, cryptology, criminal and accident forensic investigations, and the Search for Extra Terrestrial Intelligence (SETI). These are all legitimate forensic sciences that look into the past for intelligent causes. Something must be wrong with the Darwinists’ definition of science.

Table 6.2 shows the difference between empirical science and forensic science:

<b>Empirical (Operation) Science</b>	<b>Forensic (Origin) Science</b>
Studies present	Studies past
Studies regularities	Studies singularities
Studies repeatable	Studies unrepeatable
Re-creation possible	Re-creation impossible
Studies how things work	Studies how things began
Tested by repeatable experiment	Tested by uniformity
Asks how something operates	Asks what its origin is
Examples:	Examples:
How does water fall?	What’s the origin of a hydroelectric plant?

How does rock erode?	What's the origin of Mount Rushmore?
How does an engine work?	What's the origin of an engine?
How does ink adhere to paper?	What's the origin of this book?
How does life function?	What's the origin of life?
How does the universe operate?	What's the origin of the universe?

**Table 6.2**

**Objection: Intelligent Design Commits the God-of-the-Gaps Fallacy.**

**Answer:** The God-of-the-Gaps fallacy occurs when someone falsely believes that God caused the event when it really was caused by undiscovered natural phenomena. For example, people used to believe that lightning was caused directly by God. There was a gap in our knowledge of nature, so we attributed the effect to God. Darwinists assert that theists are doing the same thing by claiming that God created the universe and life. Are they correct? No, for a number of reasons.

First, when we conclude that intelligence created the first cell or the human brain, it's not simply because we *lack* evidence of a natural explanation; it's also because we have positive, empirically detectable evidence *for* an intelligent cause. A message (specified complexity) is empirically detectable. When we detect a message—like “Take out the garbage—Mom” or 1,000 encyclopedias—we know that it must come from an intelligent being because all of our observational experience tells us that messages come only from intelligent beings. Every time we observe a message, it comes from an intelligent being. We couple this data with the fact that we never observe natural laws creating messages, and we know an intelligent being must be the cause. That's a valid scientific conclusion based on observation and repetition. It's not an argument from ignorance, nor is it based on any “gap” in our knowledge.

Second, Intelligent Design scientists are open to *both* natural and intelligent causes. They are not opposed to continued research into a natural explanation for the first life. They're simply observing that all known natural explanations fail, and all empirically detectable evidence points to an intelligent Designer.

Now, one can question the wisdom of continuing to look for a natural cause of life. William Dembski, who has published extensive research on Intelligent Design, asks, “When does determination [to find a natural cause] become pigheadedness? ... How long are we to continue a search before we have the right to give up the search and declare not only that continuing the search is vain but also that the very object of the search is nonexistent?”

Consider the implications of Dembski's question. Should we keep looking for a natural cause for phenomena like Mount Rushmore or messages like “Take out the garbage—Mom”? When is the case closed?

Walter Bradley, a coauthor of the seminal work *The Mystery of Life's Origin*, believes “there doesn't seem to be the potential of finding a [natural explanation]” for the origin of life. He added,

“I think people who believe that life emerged naturalistically need to have a great deal more faith than people who reasonably infer that there’s an Intelligent Designer.”

Regardless of whether or not you think we should keep looking for a natural explanation, the main point is that ID scientists are open to both natural and intelligent causes. It just so happens that an intelligent cause best fits the evidence.

Third, the Intelligent Design conclusion is falsifiable. In other words, ID could be disproven if natural laws were someday discovered to create specified complexity. However, the same *cannot* be said about the Darwinist position. Darwinists don’t allow falsification of their “creation story” because, as we have described, they don’t allow any other creation story to be considered. Their “science” is not tentative or open to correction; it’s more closed-minded than the most dogmatic church doctrine the Darwinists are so apt to criticize.

Finally, it’s actually the Darwinists who are committing a God-of-the-Gaps fallacy. Darwin himself was once accused of considering natural selection “an active power or Deity” (see chapter 4 of *Origin of Species*). But it seems that natural selection actually *is* the deity or “God of the Gaps” for the Darwinists of today. When they are totally at a loss for how irreducibly complex, information-rich biological systems came into existence, they simply cover their gap in knowledge by claiming that natural selection, time, and chance did it.

The ability of such a mechanism to create information-rich biological systems runs counter to the observational evidence. Mutations are nearly always harmful, and time and chance do the Darwinists no good, as we explained in chapter 5. At best, natural selection may be responsible for minor changes in living species, but it cannot explain the origin of the basic forms of life. You need a living thing to start with for any natural selection to take place. Yet, despite the obvious problems with their mechanism, Darwinists insist that it covers any gap in their knowledge. Moreover, they willfully ignore the positive, empirically detectable evidence for an intelligent being. This is not science but the dogma of a secular religion. Darwinists, like the opponents of Galileo, are letting their religion overrule scientific observations!

### **Objection: Intelligent Design is Religiously Motivated.**

**Answer:** There are two aspects to this objection. The first is that some Intelligent Design people may be religiously motivated. So what? Does that make Intelligent Design false? Does the religious motivation of some Darwinists make Darwinism false? No, the truth doesn’t lie in the motivation of the scientists, but in the quality of the evidence. A scientist’s motivation or bias doesn’t necessarily mean he’s wrong. He could have a bias and still be right. Bias or motivation isn’t the main issue—truth is.

Sometimes the objection is stated this way: “You can’t believe anything he says about origins because he’s a creationist!” Well, if the sword cuts at all, it cuts both ways. We could just as easily say, “You can’t believe anything he says about origins because he’s a Darwinist!”

Why are creationist conclusions immediately thought to be biased but Darwinist conclusions automatically considered objective? Because most people don’t realize that atheists have a worldview just like creationists. As we are seeing, the atheist’s worldview is not neutral and actually requires more faith than the creationist’s.

Now, as we have said earlier, if philosophical or religious biases prevent someone from interpreting the evidence correctly, then we would have grounds for questioning that person’s conclusions. In the current debate, that problem seems to afflict Darwinists more than anyone else. Yet, the main point is that even if someone is motivated by religion or philosophy, their

conclusions can be corrected by an honest look at the evidence. Scientists on both sides of the fence may have a difficult time being neutral, but if they have integrity, they can be objective.

The second aspect of this objection is the charge that Intelligent Design people don't have any evidence for their view—they're simply parroting what the Bible says. This aspect of the objection doesn't work either. Intelligent Design beliefs may be *consistent* with the Bible, but they are not *based* on the Bible. As we have seen, Intelligent Design is a conclusion based on empirically detectable evidence, not sacred texts. As Michael Behe observes, "Life on earth at its most fundamental level, in its most critical components, is the product of intelligent activity. The conclusion of intelligent design flows naturally from the data itself—not from sacred books or sectarian beliefs."

Intelligent Design is not "creation science" either. Intelligent Design scientists don't make claims that so-called "creation scientists" make. They don't say that the data unambiguously supports the six-twenty-four-hour-day view of Genesis, or a worldwide flood. Instead, they acknowledge that the data for Intelligent Design is not based on a specific age or geologic history of the earth. ID scientists study the same objects in nature that the Darwinists study—life and the universe itself—but they come to a more reasonable conclusion about the cause of those objects. In short, regardless of what the Bible may say on the topic, *Darwinism is rejected because it doesn't fit the scientific data*, and Intelligent Design is accepted because it does.

### **Objection: Intelligent Design is False Because the So-Called Design Isn't Perfect.**

**Answer:** Darwinists have long argued that if a designer existed, he would have designed his creatures better. Stephen Jay Gould pointed this out in his book *The Panda's Thumb*, where he cited the apparent sub-optimal design of a bony extrusion pandas have for a thumb.

The problem for the Darwinists is that this actually turns out to be an argument *for* a designer rather than an argument against one. First, the fact that Gould can identify something as sub-optimal design implies that he knows what optimal design is. You can't know something is imperfect unless you know what perfect is. So Gould's observation of even sub-optimal design implies an admission that design is detectable in the panda's thumb. (By the way, this is another reason the Darwinists are wrong when they assert that Intelligent Design is not science. When they claim something isn't designed correctly, they are implying they could tell if it *were* designed correctly. This proves what ID scientists have been saying all along—ID is science because design is empirically detectable.)

Second, sub-optimal design doesn't mean there's no design. In other words, even if you grant that something is not designed optimally, that doesn't mean it's not designed at all. Your car isn't designed optimally, yet it's still designed—it certainly wasn't put together by natural laws.

Third, in order to say that something is sub-optimal, you must know what the objectives or purpose of the designer are. If Gould doesn't know what the designer intended, then he can't say the design falls short of those intentions. How does Gould know the panda's thumb isn't exactly what the designer had in mind? Gould assumes the panda should have opposable thumbs like those of humans. But maybe the designer wanted the panda's thumbs to be just like they are. After all, the panda's thumb works just fine in allowing him to strip bamboo down to its edible interior. Maybe pandas don't need opposable thumbs because they don't need to write books like Gould; they simply need to strip bamboo. Gould can't fault the designer of that thumb if it wasn't intended to do more than strip bamboo.

Finally, in a world constrained by physical reality, all design requires trade-offs. Laptop computers must strike a balance between size, weight, and performance. Larger cars may be more

safe and comfortable, but they also are more difficult to maneuver and consume more fuel. High ceilings make rooms more dramatic, but they also consume more energy. Because trade-offs cannot be avoided in this world, engineers must look for a compromise position that best achieves intended objectives. For example, you can't fault the design in a compact car because it doesn't carry fifteen passengers. The objective is to carry four not fifteen passengers. The carmaker traded size for fuel economy and achieved the intended objective. Likewise, it could be that the design of the panda's thumb is a trade-off that still achieves intended objectives. The thumb is just right for stripping bamboo. Perhaps, if the thumb had been designed any other way, it would have hindered the panda in some other area. We simply don't know without knowing the objectives of the designer. What we do know is that Gould's criticisms cannot succeed without knowing those objectives.

### **HOW IMPORTANT IS THE AGE OF THE UNIVERSE?**

We couldn't leave the discussion of evolution and creation without at least mentioning the age of the universe. Since there are several views on this topic, especially within Christian circles, we do not have space to treat them all here (they are discussed in detail in the *Baker Encyclopedia of Christian Apologetics* and *Systematic Theology, Volume 2*).

However, we do want to point out that while the age of universe is certainly an interesting theological question, the more important point is not *when* the universe was created but *that* it was created. As we have seen, the universe exploded into being out of nothing, and it has been precisely tweaked to support life on earth. Since this universe—including the entire time-space continuum—had a beginning, it required a Beginner no matter how long ago that beginning was. Likewise, since this universe is designed, it required a Designer no matter how long ago it was designed.

We can debate how long the days in Genesis were, or whether the assumptions that are made in dating techniques are valid. But when we do, we must be sure not to obscure the larger point that this creation requires a Creator.

### **SUMMARY AND CONCLUSION**

Now, let's get to the bottom line. There are really only two possibilities: either God created us, or we created God. Either God really exists, or he's just a creation of our own minds. As we have seen, Darwinism—not God—is a creation of the human mind. You've got to have a lot of faith to be a Darwinist. You have to believe that, *without intelligent intervention*:

1. Something arose from nothing (the origin of the universe).
2. Order arose from chaos (the design of the universe).
3. Life arose from non-life (which means that intelligence arose from nonintelligence, and personality arose from nonpersonality).
4. New life forms arose from existing life forms despite evidence to the contrary such as:
  - (1) Genetic limits
  - (2) Cyclical change
  - (3) Irreducible complexity
  - (4) Molecular isolation
  - (5) Nonviability of transitional forms, and
  - (6) The fossil record

Okay, so the evidence is not good for macroevolution. But what about theistic macroevolution? Perhaps what can't be explained naturally makes good sense if you add God to the picture.

Why suggest that? If there were evidence for God *and* for macroevolution, then there might be a reason to combine the two. But, as we have seen, there is no evidence that macroevolution has occurred. It's not like you have contradictory evidence: some evidence that points to macroevolution, and other evidence that disproves it. If you had, say, a fossil record with millions of transitional forms on one hand, but irreducibly complex creatures on another, then perhaps you could suggest that God guided evolution through those unbridgeable gaps. But since that is not the case, it seems that God wasn't needed to guide macroevolution because there's no evidence macroevolution has occurred!

Finally, let's look at the evidence with another question in mind: What would the evidence have to look like for creation (Intelligent Design) to be true? How about:

1. A universe that has exploded into being out of nothing
2. A universe with over 100 fine-tuned, life-enabling constants for this tiny, remote planet called Earth
3. Life that:
  - has been observed to arise only from existing life (it has never been observed to arise spontaneously);
  - consists of thousands and even millions of volumes of empirically detectable specified complexity (and is, therefore, more than just the nonliving chemicals it contains);
  - changes cyclically and only within a limited range;
  - cannot be built or modified gradually (i.e., is irreducibly complex);
  - is molecularly isolated between basic types (there's no ancestral progression at the molecular level);
  - leaves a fossil record of fully formed creatures that appear suddenly, do not change, and then disappear suddenly.

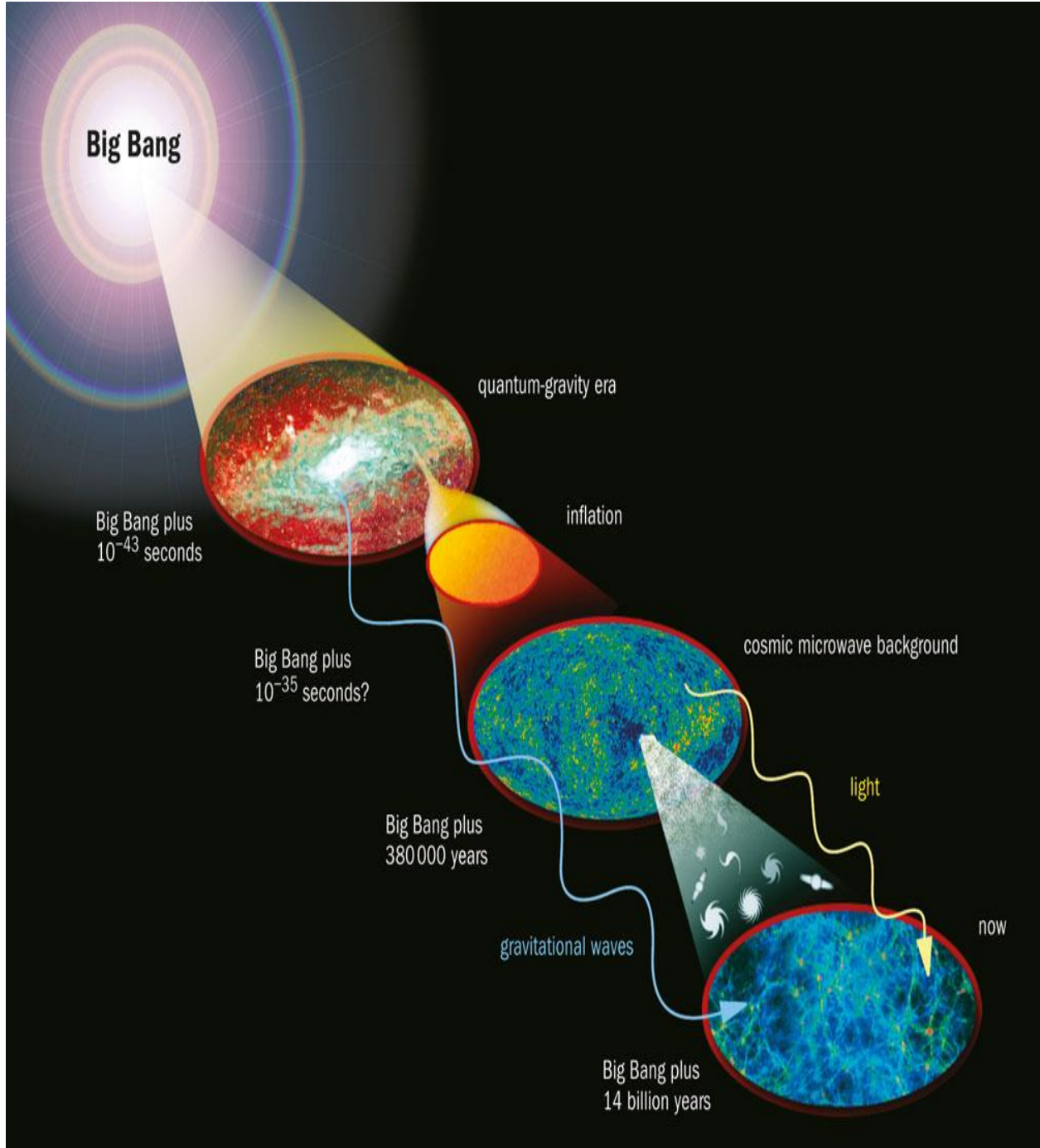
An honest look at the facts suggests creation, not macroevolution, is true. As we have seen, atheists have to work really hard not to conclude the obvious. *That's why they need to have a lot more faith than we do.*

Notice we haven't been quoting Bible verses to make our points. We've been citing scientific evidence. So, this isn't a battle of science versus religion; it's a battle of *good* science versus *bad* science. Right now, most of our children are being taught bad science because they're being taught evolution only. It doesn't have to be that way. What would be unconstitutional about teaching the SURGE evidence, showing them the complexity of the simplest life, making the distinctions between micro- and macroevolution and between forensic and empirical science, or exposing the problems with macroevolution? Nothing. So why do we continue to indoctrinate our children in a flawed and crumbling theory that is based more on philosophical presuppositions than on scientific observations? Darwinists would rather suppress the evidence than allow it to be presented fairly. Why? Because this is the one area where Darwinists lack faith – *they lack the faith to believe that their theory will still be believed after our children see all the evidence.*<sup>15</sup>

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<sup>15</sup> Geisler, N. L., & Turek, F. (2004). [\*I don't have enough faith to be an atheist\*](#) (pp. 72–167). Wheaton, IL: Crossway Books.

# Is The Big Bang In The Big Picture?







NOTHING

GOD

FAITH VS FAITH — WHICH DO YOU BELIEVE?

THE EVIDENCE OF CREATION

<p><b>Creation:</b> Whether the rings of Saturn, radio-potassium halos,<sup>1</sup> or symbiotic relationships,<sup>2</sup> the entire universe points to a single creation event. Genesis 1:1, "In the beginning..."<sup>3</sup></p>	<p><b>Flood:</b> Massive fossil graveyards<sup>4</sup> point to a global catastrophe<sup>5</sup> that killed creatures by the millions without destroying their bodies. Unusual rock layers,<sup>6</sup> human objects found in coal beds,<sup>7</sup> and extreme pressure in oil deposits<sup>8</sup> indicate that this catastrophe was water-based and happened while man was present on earth. Genesis 6-8</p>	<p><b>Red Sea Crossing:</b> The miraculous intervention<sup>9</sup> to save Israel from Pharaoh's army shows God's willingness to intercede on the behalf of mankind.</p>	<p><b>Jesus:</b> Prophesied more than any other event (Jesus Christ's virgin birth and later his death on the cross) was the ultimate gift God could give mankind.<sup>10</sup> John 3:16; Rom 3:23, 6:23</p>	<p><b>Fall of Roman Empire:</b> The collapse of the Roman infrastructure was caused by many years of barbarian raiding. This damage proved to be too much, sending all of Europe into a thousand-year Dark Age.<sup>11</sup></p>	<p><b>Gutenberg:</b> While kings and politicians were still trying to rebuild the glory of the Roman Empire, a poor businessman changed the course of history with his invention of a moveable-type printing press.<sup>12</sup></p>	<p><b>Present:</b> Increasing complexity in a system requires intelligence. When lacking, chaos results. 6,000 years of history proves this fact.</p>
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NOTHING

GOD

FAITH VS FAITH — WHICH DO YOU BELIEVE?

THE STRUGGLE OF EVOLUTION AGAINST SCIENCE

<p><b>Big Bang:</b> There is actually no proof of the big bang.<sup>1</sup></p>	<p><b>Earth Forms:</b> So far, every theory of the earth's formation goes against physical laws.<sup>2</sup></p>	<p><b>Life Appears:</b> Does a car form by chance? Does any mechanical device? Neither could life.<sup>3</sup></p>	<p><b>Man Appears:</b> Pitdown man was a fraud. Nebraska man was a hoax. Lucy was a large chimpanzee, a variant of which is alive in Sumatra. Man has been present throughout earth's history.<sup>4</sup></p>
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(For endnotes, see other side)

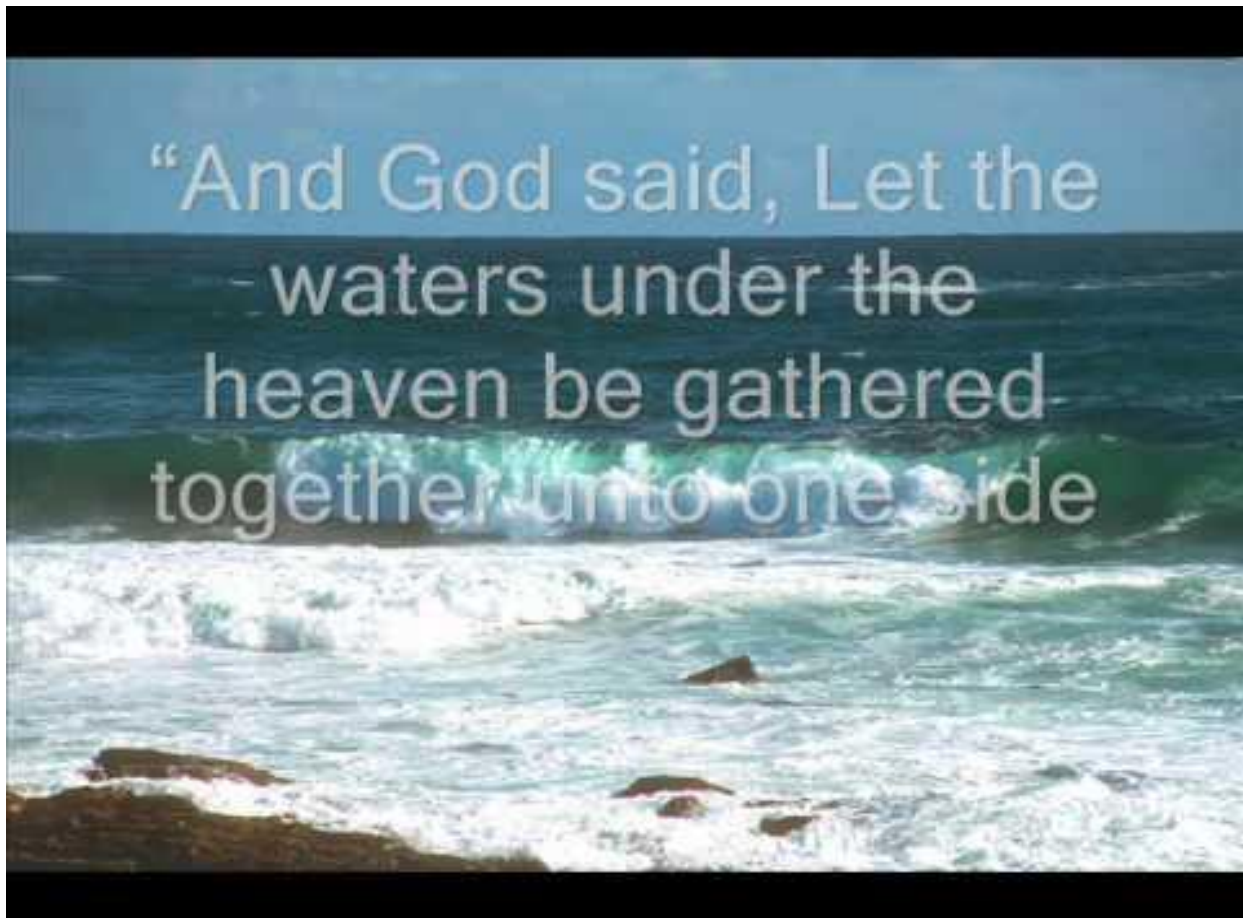
# Big Bang vs. Creation

The order of events in the creation is inconsistent with the evolutionary model.

Order of Appearance (Evolution)	Order of Appearance (Bible)
1. Sun/stars existed before the Earth	1. Earth created before sun/stars
2. Sun is Earth's first light	2. Light on Earth before sun
3. First life = marine organisms	3. First life = land plants
4. Reptiles predate birds	4. Birds predate land reptiles
5. Land mammals predate whales	5. Whales predate land animals
6. Disease/death precede man's sin	6. Disease/death results from man's sin

# God and the Big Bang

# The Big Bang Theory: True or False?



## Big Bang—The Bible Taught It First!

BY HUGH ROSS - JUNE 30, 2000

Most science textbooks that address cosmology credit Arno Penzias and Robert Wilson with the discovery that the universe arose from a hot big bang creation event.

While it is true that they were the first (1965) to detect the radiation left over from the creation event,<sup>1</sup> they were not the first scientists to recognize that the universe expanded from an extremely hot and compact state. In 1946 George Gamow calculated that nothing less than the universe expanding from a near infinitely hot condition could account for the present abundance of elements.<sup>2</sup> In 1929 observations made by Edwin Hubble established that the velocities of galaxies result from a general expansion of the universe.<sup>3</sup> Beginning in 1925 Abbé Georges Lemaître, who was both an astrophysicist and a Jesuit priest, was the first scientist to promote a big bang creation event.<sup>4</sup>

The first direct scientific evidence for a big bang universe dates back to 1916. That is when Albert Einstein noted that his field equations of general relativity predicted an expanding universe.<sup>5</sup> Unwilling to accept the cosmic beginning implied by such expansion, Einstein altered his theory to conform with the common wisdom of his day, namely an eternally existing universe.<sup>6</sup>

All these scientists, however, were upstaged by 2500 years and more by Job, Moses, David, Isaiah, Jeremiah, and other Bible authors. The Bible's prophets and apostles stated explicitly and repeatedly the two most fundamental properties of the big bang, a transcendent cosmic beginning a finite time period ago and a universe undergoing a general, continual expansion. In Isaiah 42:5 both properties were declared, "This is what the Lord says—He who created the heavens and stretched them out."

The Hebrew verb translated "created" in Isaiah 42:5 is *bara'* which has as its primary definition "bringing into existence something new, something that did not exist before."<sup>7</sup> The proclamation that God created (*bara'*) the entirety of the heavens is stated seven times in the Old Testament. (Genesis 1:1; 2:3; 2:4; Psalm 148:5; Isaiah 40:26; 42:5; 45:18). This principle of transcendent creation is made more explicit by passages like Hebrews 11:3 which states that the universe that we humans can measure and detect was made out of that which we cannot measure or detect. Also, Isaiah 45:5-22; John 1:3; and Colossians 1:15-17 stipulate that God alone is the agent for the universe's existence. Biblical claims that God predated the universe and was actively involved in causing certain effects before the existence of the universe is not only found in Colossians 1 but also in Proverbs 8:22-31; John 17:24; Ephesians 1:4; 2 Timothy 1:9; Titus 1:2; and 1 Peter 1:20.

The characteristic of the universe stated more frequently than any other in the Bible is its being "stretched out." Five different Bible authors pen such a statement in eleven different verses: Job 9:8; Psalm 104:2; Isaiah 40:22; 42:5; 44:24; 45:12; 48:13; 51:13; Jeremiah 10:12; 51:15; and Zechariah 12:1. Job 37:18 appears to be a twelfth verse. However, the word used for "heavens" or "skies" is *shehaqîm* which refers to the clouds of fine particles (of water or dust) that are located in Earth's atmosphere,<sup>8</sup> not the *shamayim*, heavens of the astronomical universe.<sup>9</sup> Three of the 11 verses, Job 9:8; Isaiah 44:24; & 45:12 make the point that God alone was responsible for the cosmic stretching.

What is particularly interesting about the eleven verses is that different Hebrew verb forms are used to describe the cosmic stretching. Seven verses, Job 9:8; Psalm 104:2; Isaiah 40:22; 42:5; 44:24; 51:13; and Zechariah 12:1 employ the Qal active participle form of the verb *natah*. This form literally means "the stretcher out of them" (the heavens) and implies continual or ongoing stretching. Four verses, Isaiah 45:12; 48:13; and Jeremiah 10:12; 51:15 use the Qal perfect form. This form literally means that the stretching of the heavens was completed or finished some time ago.

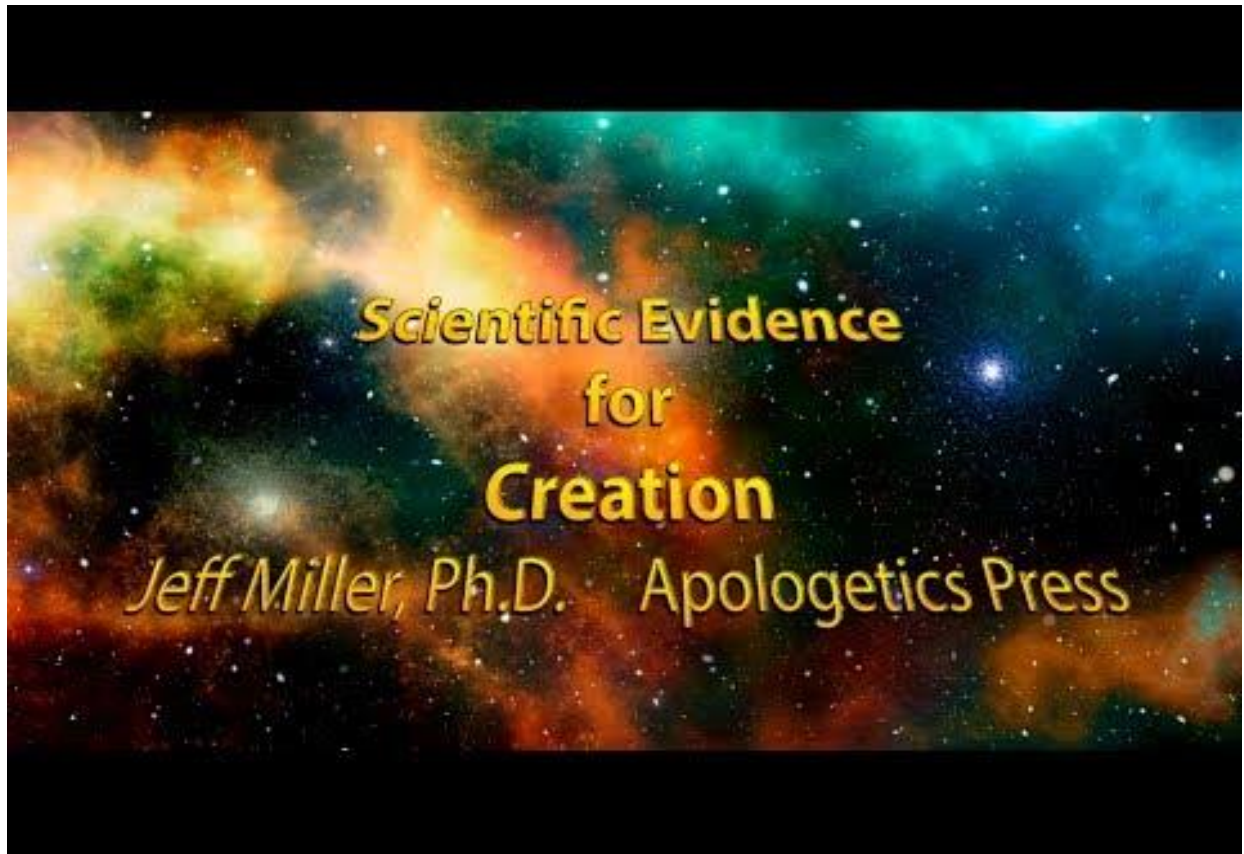
That the Bible really does claim that the stretching out of the heavens is both “finished” and “ongoing” is made all the more evident in Isaiah 40:22. There we find two different verbs used in two different forms. In the first of the final two parallel poetic lines, “stretches out” is the verb *natah* in the Qal active participle form. In the second (final) line the verb “spreads them out” (NASB, NIV, NKJV) is *mathah* (used only this one time in the Old Testament) in the waw consecutive plus Qal imperfect form, so that literally we might translate it “and he has spread them out . . .” The participles in lines one and three of Isaiah 40:22 characterize our sovereign God by His actions in all times, sitting enthroned above the earth and stretching out the heavens, constantly exercising his creative power in His ongoing providential work. This characterization is continued with reference to the past by means of waw consecutive with the imperfect, the conversive form indicating God’s completed act of spreading out the heavens. That is, this one verse literally states that God is both continuing to stretch out the heavens and has stretched them out.

This simultaneously finished and ongoing aspect of cosmic stretching is identical to the big bang concept of cosmic expansion. According to the big bang, at the creation event all the physics (specifically, the laws, constants, and equations of physics) are instantly created, designed, and finished so as to guarantee an ongoing, continual expansion of the universe at exactly the right rates with respect to time so that physical life will be possible.

This biblical claim for simultaneously finished and ongoing acts of creation, incidentally, is not limited to just the universe’s expansion. The same claim, for example, is made for God’s laying Earth’s foundations (Isaiah 51:13; Zechariah 12:1). This is consistent with the geophysical discovery that certain long-lived radiometric elements were placed into the earth’s crust a little more than four billion years ago in just the right quantities so as to guarantee the continual building of continents.

Finally, the Bible indirectly argues for a big bang universe by stating that the laws of thermodynamics, gravity, and electromagnetism have universally operated throughout the universe since the cosmic creation event itself. In Romans 8 we are told that the entire creation has been subjected to the law of decay (the second law of thermodynamics). This law in the context of an expanding universe establishes that the cosmos was much hotter in the past. In Genesis 1 and in many places throughout Job, Psalms, and Proverbs we are informed that stars have existed since the early times of creation. As explained in two Reasons To Believe books,<sup>10</sup> even the slightest changes in either the laws of gravity or electromagnetism would make stars impossible. As already noted in the accompanying article, gravity, electromagnetism, and thermodynamics yield stable orbits of planets around stars and of electrons around the nuclei of atoms only if they operate in a universe described by three very large rapidly expanding dimensions of space.

co-authored by John Rea



**2011 Groves Church Bulletin Article: The “Big Bang” Theory Is A Big Bust  
by Paul Burris (my father)**

The “Big Bang” theory begins with the assumption that everything in the universe was originally concentrated in a “cosmic egg” that they call the “ylem.” This particle, they tell us, was much smaller than the period at the end of this sentence. How much smaller? Much smaller than a proton. A proton is one of the atom’s basic particles. And they think that this “ylem” was  $10^{14}$  times the density of water, i.e., that it is 10 followed by 14 zeroes more dense than water.

These data are mind-boggling assumptions! Not stated is the cause of this particle’s existence. Whence the particle? The theorists do not answer that question because they are loath to admit the possibility of the existence of a Creator, God. Who brought it into existence if it really existed in the first place?

Furthermore, these theorists tell us that this minuscule particle exploded. This is “The big bang”! And, they add, this explosion produced all the matter in the universe.

The law of cause and effect (the law of causality) states that every material effect must have an adequate cause.

Illustrating these “effects”: the size of the universe is estimated to be as much as 20 billion light years. In other words, travelling at the speed of light, which is 180,000 miles per second, it would take you 20 billion years to move from one end of the universe to the other.

The universe is said to contain 25 sextillion stars, and an estimated one billion galaxies.

These data do not logically follow the law of causality – that every material effect must have an adequate cause.

The design of the universe is very impressive, calling for an Intelligent Designer. Nowhere is this more apparent than in the design of our planet earth.

Our earth is exactly the correct distance from our sun, whose interior temperature is estimated at over 36 million degrees Fahrenheit. If our earth were just 10 percent closer to our sun, we would all burn up – too much heat and radiation. If 10 percent farther from our sun, too little heat would be absorbed, and we would all Freeze to death. “Someone” knew just the perfect distance to make it possible for plants, animals and humans to live on the earth.



**Our earth rotates at 1000 miles per hour at the equator and move around our sun at 70,000 miles per hour, while our sun and its solar system moves through space at 70,000 miles per hour. When the earth moves in its orbit around the sun, it departs from a straight line by only 1/9 of an inch for every 18 miles. If it departed by only 1/8 of an inch, we would come so close to the sun that we would all burn up. If it departed by 1/10 of an inch, we would freeze to death, because we would be too far from the sun.**

**Our planet is tilted on its axis at exactly 23.5 degrees, giving us our seasons. If not so tilted, the tropics would be hotter and the deserts bigger.**

**If our atmosphere were much thinner, meteorites would slam into our earth with greater force and frequency, with widespread devastation.**

**Our moon is approximately 240,000 miles from the earth with exactly the right diameter, atmospheric pressure, and tilt. This results in a gravitational pull that gives us our ocean tides. If the moon moved closer to the earth by only 1/5, these tides would reach 35-50 feet high over the earth's surface, drowning a lot of people, while devastating the land.**

**If the earth's rotation were cut in half, the seasons would be double in length, causing such extremes of heat and cold over so much of the earth as to make it impossible to grow enough food for earth's population. If the rate of rotation were doubled, the length of the seasons would be halved, with a similar result - much starvation.**

**These conditions illustrate the existence of an Intelligent Designer, whom we call the Creator of and Designer of the universe, who spoke it into existence by fiat, His spoken word (Hebrews 11:3).**

**The theory of men called "the big bang" isn't just improbable, but it is impossible.**

**"The heavens declare the glory of God, and the firmament shows his handiwork." (Psalm 19:1)**

**"For since the creation of the world, His invisible attributes are clearly seen, being understood by the things that are made, even His eternal power and Godhead, so that they are without excuse --- professing to be wise, they became fools" (Romans 1:20,22). END.**



# The Big Bang Theory vs. God's Word

By **Wayne Jackson**

“We have tried over and over again to point out to readers that the big bang theory is not at odds with the Bible nor with the concept of God as Creator.” So wrote John N. Clayton, of South Bend, Indiana, in the September-October, 1999 issue of his paper, *Does God Exist?* In addition to teaching high school, Mr. Clayton has virtually made a career of lecturing most weekends of the year to churches across the country. His knowledge of science is woefully skewed with ideas of evolution; unfortunately, his acquaintance with the Bible is even more deficient.

A number of conservative Bible students have tried, “over and over again,” to get John Clayton to see that it is a serious compromise of scriptural truth to give credence to the big bang theory. In this article, we examine this materialistic concept of the origin of the universe.

Basically there are two views of the origin of the universe. One of these is the supernatural position set forth in the book of Genesis (chapters one and two), with ample confirmation from other inspired writings. The Genesis narrative affirms that God created the heavens and the earth on the first day of the initial week of earth's history. Subsequently, during the five days remaining of creation activity, attention was directed to this planet, the abode of man—who was uniquely fashioned in the image of the Creator (Genesis 1:26, 27). The sun, moon, and stars were also made (vv. 14ff). The Scriptures make it perfectly clear that the whole creation (inorganic and organic) came into being during this six-day period (see Exodus 20:11).

The second view of the beginning of the universe is wholly materialistic. Modern “scientism” prefers to grapple with its problems without appealing to God, although, as science writer Lincoln Barnett observed, “this seems to become more difficult all the time” (1957, 22). Isaac Asimov wrote: “The Bible describes a Universe created by God, maintained by him & intimately and constantly directed by him, while science describes a Universe in which it is not necessary to postulate the existence of God at all” (1981, 13).

Theories concerning the mechanistic origin of the universe come and go. Today's "science" is tomorrow's superstition. A few years ago scientists were touting the steady-state theory as the most reasonable explanation of the origin of the universe. It asserted that new matter is constantly being created to replace that which is lost by the expanding universe. "Today most astronomers regard the steady-state theory as dead" (Weaver 1974, 625). The current inclination concerning the beginning of our universe is known as the big bang theory, but even the "bang" notion is receiving competition from a newer view called the plasma theory (DeYoung 1992, i-iv).

## The Theory Defined

The big bang concept alleges that some twenty billion years ago (give or take ten billion), all of the matter in the known universe was tightly packed into a microscopic cosmic "egg." One writer expresses it this way: "Astonishingly, scientists now calculate that everything in this vast universe grew out of a region many billions of times smaller than a single proton, one of the atom's basic particles" (Gore 1983, 705). This is truly an incredible statement!

In one of his books, Dr. Robert Jastrow asserts that in the beginning "all matter in the Universe was compressed into an infinitely dense and hot mass" that exploded. Over many eons, supposedly, "the primordial cloud of the Universe expands and cools, stars are born and die, the sun and earth are formed, and life arises on the earth" (1977, 2-3). Dr. Jastrow is describing, of course, what is commonly known as the big bang theory, and it does not require much critical acumen to conclude that the concept is **evolutionary** to the core.

Where the cosmic egg came from no one seems to know. Certainly no cosmic chicken has been located! Some allege that the egg always existed. They speculate that it possibly resulted from some earlier universe that collapsed upon itself. This assumes that matter is eternal. But this idea is refuted by our knowledge of physics (e.g., the 2<sup>nd</sup> law of thermodynamics). Jastrow concedes that "modern science denies an eternal existence to the Universe, either in the past or in the future" (15). Others, like Professor

Victor Stenger of the University of Hawaii, muse that perhaps the universe came from nothing (the egg laid itself!):

[T]he universe is probably the result of a random quantum fluctuation in a spaceless, timeless void . . . the earth and humanity, are not conscious creations but an accident. . . [I]t is not sufficient merely to say, “You can’t get something from nothing.” While everyday experience and common sense seem to support this principle, if there is anything that we have learned from twentieth-century physics, it is this: Common sense is often wrong, and our normal experiences are but a tiny fraction of reality (1987, 26-27).

One thing is certain: one is required to lay aside his “common sense” in order to accept the foregoing incomprehensible speculation. None of these materialistic theories has any credibility—biblically or scientifically. Some scientists should take a hint from the Scottish skeptic David Hume: “I have never asserted so absurd a proposition as that anything might arise without a cause” (1932, 187).

Dr. Mart de Groot, who views the big bang concept as “a possible way of understanding the opening statement of the Bible, ‘in the beginning God . . . ,’” admits that there is an objective difficulty to the theory. And it is this: even if the “primordial matter” exploded, he says, resulting in our present universe, “what is the origin or source of this matter?” He confesses that “probably the most serious shortcoming of the big bang is its inability to go back to the very beginning of time and space” (1999, 20-23). The theory has far more shortcomings than the matter of “matter commencement”!

## Flaws in the Big Bang Scenario

There are a number of logical problems with the big bang scheme of origins:

(1) The big bang scenario speculates the marvelously ordered universe randomly resulted from a gigantic explosion — a “holocaust,” to use Jastrow’s term. Never in the history of human experience has a chaotic explosion been observed producing an intricate order that operates purposefully. A print shop explosion does not produce an encyclopedia. A tornado sweeping through a junkyard does not assemble a Boeing 747. No building contractor dumps his materials on a vacant lot, attaches dynamite,

and then waits for a completed home from the resulting bang. The idea is absurd. Evolutionist Donald Page was correct when he wrote: “There is no mechanism known as yet that would allow the Universe to begin in an arbitrary state and then evolve to its present highly ordered state” (1983, 40).

(2) If the universe started with an explosion, one would expect that all matter-energy should have been propelled radially from the explosion center—consistent with the principle of angular momentum. It would not be expected that the universe would be characterized by the curving and orbiting motions that are commonly observed, e.g., the revolution of our earth around the sun (cf. Morris 1984, 150).

(3) For years scientists have been attempting to measure the microwave radiation that is coming in from all parts of the universe. It is conjectured that this radiation is the left-over heat from the original big bang. The problem is, wherever this radiation has been measured, it has been found to be extremely uniform, which does not harmonize with the fact that the universe itself is not uniform; rather, it is “clumpy,” i.e., composed of intermittent galaxies and voids. If the big bang theory were true, there should be a correlation between the material composition of the universe (since everything emits thermal heat) and the corresponding radiation temperature. But such is not the case.

Over the past few years, the news media have made much of the report that new measurements of background radiation reveal some variation. The press has hailed this as proof of the big bang. The facts are:

(1) The temperature differential supposedly detected was only about thirty millionths of one degree, and there are other possible explanations for this circumstance apart from the hypothetical bang.

(2) Some of the scientists involved in the project question whether the instruments employed for measuring the radiation are sensitive enough to warrant the conclusions that are being drawn.

(3) Others, who claim that additional testing has confirmed their assertion of temperature “ripples,” confess now that it is “harder than ever” to

explain “how these ripples grew into the starry structures that fill the universe” (Flam 1993, 31).

Even the respected science journal *Nature* suggested it is a “cause of some alarm” that the media have characterized this flimsy evidence as “proof” of the big bang (1992, 731). Why do some **religionists** gravitate to these groundless theories in deference to plain Bible statements?

We will not, at this point, discuss other flaws in the big bang hypothesis, but simply refer the reader to several other sources (Morris 1984, 149-151; Major 1991, 21-24; Morris 1992, d; Humphreys 1992, i-iv).

## Fatal Compromises

It is to be expected, of course, when “science” announces some amazing new “discovery,” which purportedly supports its view of the origin of the universe, that liberal religionists will jump on the band wagon—in this case the “bang” wagon—affirming that such is consistent with the Genesis record. When the big bang theory was first heralded, Pope Pius XII wrote that “scientists are beginning to find the finger of God in the creation of the universe.” More recently (1990), Gerald L. Schroeder, an Israeli nuclear physicist, wrote a book titled, *Genesis & the Big Bang*. Therein he contended that there is no contradiction between the biblical account of creation and the current big bang theory (see Ostling 1992, 42-43).

In addition to Clayton (cited above), Arlie Hoover, a professor at Abilene Christian University, has argued similarly:

It is entirely possible, though not at all firmly established, that God used a big bang as His method of creation. You cannot affirm it as a certainty, but neither can you deny it apodictically. Because the Bible does not specify how God did it, we are left to choose the hypothesis that seems to have the best supporting material . . . nothing in the biblical doctrine excludes the big bang (1992, 34, 35).

In an incredible display of illogical meandering, the professor attempted to show why it is possible to accept both the big bang concept and the Genesis account. He suggested, for example, that the question, “Where did I come from?” can be answered a number of correct ways: from God, from

mother's womb, from a hospital, etc. Similarly, he says, one might suggest that the universe came both from God and the big bang.

The problem with this line of argument is this: In Hoover's illustration, each of the possible answers—God, mother, hospital—can be supported with evidence. In the matter of the big bang, this alleged "cause" has not been proved. It is just that simple. But let us go back for a moment to the "Where did I come from?" question. Suppose one responded in this way: "From God. From the hospital. From the stork!" Is each of these answers equally valid? If not, where is the flaw?

## The Bible versus the Big Bang

Are the Bible and the big bang theory in agreement? No. And informed persons, on both sides of the issue are aware of this fact. Paul Steidl, an astronomer, has noted:

[N]o astronomers would ever think of the big bang as the creation event of Genesis. The big bang was invented specifically for the purpose of doing away with the creation event. An astronomer would laugh at the naivety of anyone who chose to equate the two events (1979, 197).

Evolutionist Paul Davies, in a discussion of the big bang, says that this theory of origins "differs greatly in detail from the biblical version." He then quotes Ernan McMullin of Notre Dame University:

What one cannot say is, first, that the Christian doctrine of creation "supports" the Big Bang model, or second, that the Big Bang model "supports" the doctrine of creation (1983, 17-20).

The fact is, there are significant contradictions between the big bang theory and the Bible record. Let us reflect on some of these:

(1) As noted earlier, the Bible plainly teaches that the entire universe, including the earth with its various "kinds" of biological organisms, came into being during the six, literal days of the creation week (Genesis 1; Exodus 20:11). The big bang theory postulates eons of time.



(2) Some, of course, contend that there may have been a vast “gap” between Genesis 1:1 and 1:2, thus accommodating the alleged time involved in the expansion and development of the universe following the big bang.

(3) It is argued that the “days” of Genesis 1 were not literal days.

(4) And perhaps there were “gaps” between the days of the creation week, etc.

But none of these twisted theories has an ounce of credibility if one seriously considers that God has communicated the historical record in an understandable fashion through his inspired word. Each of the theories mentioned above is designed to bring the Bible into harmony with evolutionary chronology. (For further study see Jackson 2003.)

The big bang myth allows that the sun was formed long before the earth. Various theories have been formulated to explain how the universe came to be organized after the initial explosion. Take your choice: the planetesimal theory, the nebular theory, the dust cloud theory. They all have one thing in common—they assert that the earth is a new-comer compared to the sun. However, the Bible teaches that the earth was created **first**, and the sun came later—on the fourth day of the first week (Genesis 1:1, 14-16). The same point can be made regarding the stars. The Bible puts them **after** the earth; the evolutionary model teaches otherwise. Of course some have attempted to solve this difficulty with yet another slippery compromise. They allege that the “creative acts” of Genesis 1 are not necessarily “in chronological order” (Willis 1979, 92).

The big bang theory supposes that the universe started with a chaotic explosion which then proceeded toward order. The Bible teaches the exact opposite. God created the universe as a beautiful and orderly masterpiece, but it has been degenerating toward disorder in the intervening millennia (Psalm 102:25ff; Hebrews 1:10-12).

Big bang cosmology postulates a universe that is nearly twenty billion years old, with the human race evolving only three or four million years ago. According to this view, a vast period of time separates the origin of the universe from that of mankind.

But the Scriptures affirm:

(1) The human family came into existence the same week as the universe (Genesis 1; Exodus 20:11). Man has thus existed from the beginning of the creation (Isaiah 40:21; Mark 10:6; Luke 11:50; Romans 1:20).

(2) Human antiquity extends to only a few thousand years before Christ, as evinced by the genealogical records of the Lord's ancestry all the way back to Adam, the first man (1 Corinthians 15:45). There are some two millennia spanning the present back to Jesus Christ; another 2000 years push history back to the time of Abraham. There are only twenty generations between Abraham and Adam (Luke 3:23-38). Even if one concedes that some minor gaps exist in the Old Testament narrative (cf. Genesis 11:12; Luke 3:35-36), surely no responsible Bible student will contend that twenty billion years can be squeezed into those twenty generations. The universe thus cannot be billions of years old.

Big bang chronology and biblical chronology are woefully at variance.

## **Conclusion**

The big bang theory is without validity. It has the support of neither genuine science nor responsible biblical exegesis. For once we agree with several evolutionists who admit: "Cosmology is unique in science in that it is a very large intellectual edifice based on very few facts" (Arp et al. 1990, 812).

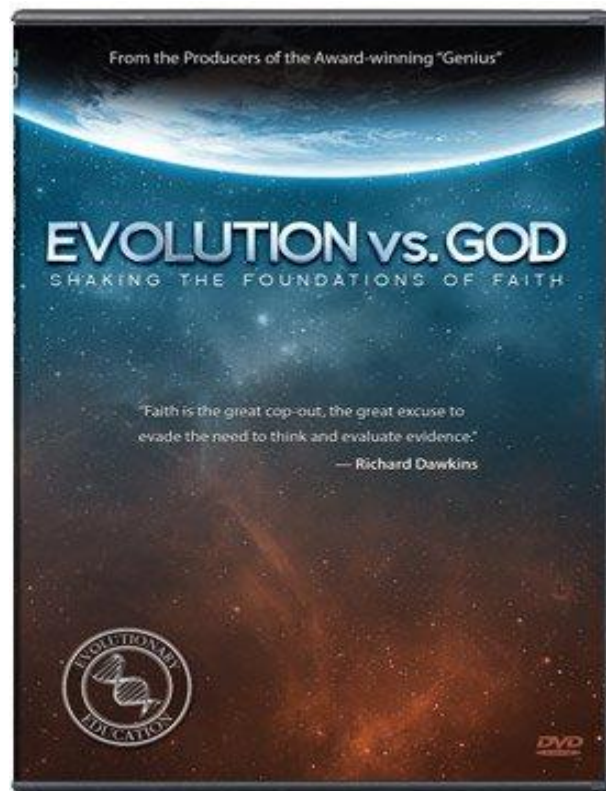
In view of that, it can hardly be classified as "science."

# Does the Big Bang Fit with the Bible?

by [Dr. Jason Lisle](#) on April 15, 2010

Share:

*The “big bang” is a story about how the universe came into existence.*



The “big bang” is a story about how the universe came into existence. It proposes that billions of years ago the universe began in a tiny, infinitely hot and dense point called a *singularity*. This singularity supposedly contained not only all the mass and energy that would become everything we see today, but also “space” itself. According to the story, the singularity rapidly expanded, spreading out the energy and space.



It is supposed that over vast periods of time, the energy from the big bang cooled down as the universe expanded. Some of it turned into matter—hydrogen and helium gas. These gases collapsed to form stars and galaxies of stars. Some of the stars created the heavier elements in their core and then exploded, distributing these elements into space. Some of the heavier elements allegedly began to stick together and formed the earth and other planets.

This story of origins is entirely fiction. But sadly, many people claim to believe the big-bang model. It is particularly distressing that many professing Christians have been taken in by the big bang, perhaps without realizing its atheistic underpinnings. They have chosen to reinterpret the plain teachings of Scripture in an attempt to make it mesh with secular beliefs about origins.

## Secular Compromises

There are several reasons why we cannot just add the big bang to the Bible. Ultimately, the big bang is a *secular* story of origins. When first proposed, it was an attempt to explain how the universe could have been created without God. Really, it is an *alternative* to the Bible, so it makes no sense to try to “add” it to the Bible. Let us examine some of the profound differences between the Bible and the secular big-bang view of origins.

The Bible teaches that God created the universe in six days (*Genesis 1*; [Exodus 20:11](#)). It is clear from the context in Genesis that these were days in the ordinary sense (i.e., 24-hour days) since they are bounded by evening and morning and occur in an ordered list (second day, third day, etc.). Conversely, the big bang teaches the universe has evolved over billions of years.



The Bible says that earth was created before the stars and that trees were created before the sun.<sup>1</sup> However, the big-bang view teaches the exact opposite. The Bible tells us that the earth was created as a paradise; the secular model teaches it was created as a molten blob. The big bang and the Bible certainly do not agree about the past.

Many people don't realize that the big bang is a story not only about the past but also about the future. The most popular version of the big bang teaches that the universe will expand forever and eventually run out of usable energy. According to the story, it will remain that way forever in a state that astronomers call "heat death."<sup>2</sup> But the Bible teaches that the world will be judged and remade. Paradise will be restored. The big bang denies this crucial biblical teaching.



## Scientific Problems with the Big Bang

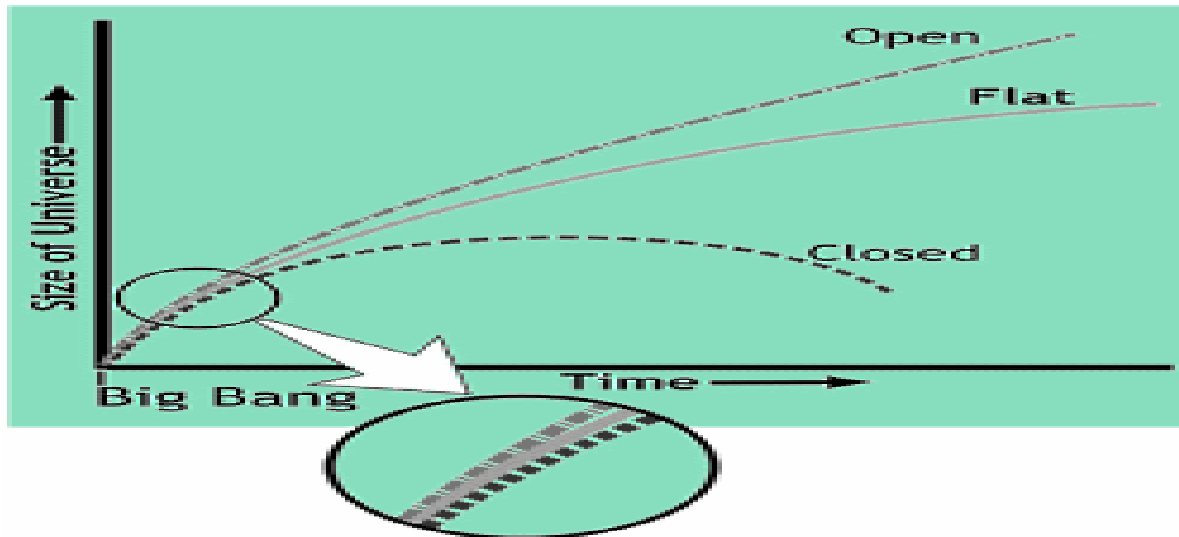
The big bang also has a number of scientific problems. Big-bang supporters are forced to accept on “blind faith” a number of notions that are completely *inconsistent* with real observational science. Let’s explore some of the inconsistencies between the big-bang story and the real universe.

### Missing Monopoles

Most people know something about magnets—like the kind found in a compass or the kind that sticks to a refrigerator. We often say that magnets have two “poles” — a north pole and a south pole. Poles that are alike will repel each other, while opposites attract. A “monopole” is a hypothetical massive particle that is just like a magnet but has only one pole. So a monopole would have either a north pole or a south pole, but not both.

Particle physicists claim that many magnetic monopoles should have been created in the high temperature conditions of the big bang. Since monopoles are stable, they should have lasted to this day. Yet, despite considerable search efforts, monopoles have not been found. Where are the monopoles? The fact that we don’t find any monopoles suggests that the universe never was that hot. This indicates that there never was a big bang, but it is perfectly consistent with the Bible’s account of creation, since the universe did not start infinitely hot.

## The Flatness Problem



Another serious challenge to the big-bang model is called the flatness problem. The expansion rate of the universe appears to be very finely balanced with the force of gravity; this condition is known as flat. If the universe were the accidental by-product of a big bang, it is difficult to imagine how such a fantastic coincidence could occur. Big-bang cosmology cannot explain why the matter density in the universe isn't greater, causing it to collapse upon itself (closed universe), or less, causing the universe to rapidly fly apart (open universe).

The problem is even more severe when we extrapolate into the past. Since any deviation from perfect flatness tends to increase as time moves forward, it logically follows that the universe must have been *even more* precisely balanced in the past than it is today. Thus, at the moment of the big bang, the universe would have been virtually flat to an extremely high precision. This must have been the case (assuming the big bang), despite the fact that the laws of physics allow for an *infinite* range of values. This is a coincidence that stretches credulity to the breaking point. Of course, in the creation model, "balance" is expected since the Lord has fine-tuned the universe for life.

### Inflating the Complexities

Many secular astronomers have come up with an idea called "inflation" in an attempt to address the flatness and monopole problems (as well as other problems not addressed in detail here, such as the horizon problem). Inflation proposes that the universe temporarily went through a period of accelerated expansion. There is no real supporting evidence for inflation; it appears to be nothing more than an unsubstantiated conjecture—much like the big bang itself. Moreover, the inflation idea has difficulties of its own, such as what would start it and how it would stop smoothly. In addition, other problems with the big bang are not solved, even if inflation were true. These are examined below.

## Where Is the Antimatter?

Consider the “baryon number problem.” Recall that the big bang supposes that matter (hydrogen and helium gas) was created from energy as the universe expanded. However, experimental physics tells us that whenever matter is created from energy, such a reaction also produces *antimatter*. Antimatter has similar properties to matter, except the charges of the particles are reversed. (So whereas a proton has a positive charge, an antiproton has a negative charge.) Any reaction where energy is transformed into matter produces an exactly equal amount of antimatter; there are no known exceptions.

***THE BIG BANG...SHOULD HAVE PRODUCED EXACTLY EQUAL AMOUNTS OF MATTER AND ANTIMATTER, AND THAT SHOULD BE WHAT WE SEE TODAY. BUT WE DO NOT.***

The big bang (which has no matter to begin with, only energy) should have produced exactly equal amounts of matter and antimatter, and that should be what we see today. But we do not. The visible universe is comprised almost entirely of matter—with only trace amounts of antimatter anywhere.

This devastating problem for the big bang is actually consistent with biblical creation; it is a design feature. God created the universe to be essentially matter only—and it’s a good thing He did. When matter and antimatter come together, they violently destroy each other. If the universe had equal amounts of matter and antimatter (as the big bang requires), life would not be possible.

## Missing Population III Stars

The big-bang model by itself can only account for the existence of the three lightest elements (hydrogen, helium, and trace amounts of lithium). This leaves about 90 or so of the other naturally occurring elements to be explained. Since the conditions in the big bang are not right to form these heavier elements (as big-bang supporters readily concede), secular astronomers believe that the stars have produced the remaining elements by nuclear fusion in the core. This is thought to occur in the final stages of a massive star as it supernovas. The explosion then distributes the heavier elements into space. Second-generation and third-generation stars are thus “contaminated” with small amounts of these heavier elements.

If this story were true, then the *first* stars would have been comprised of only the three lightest elements (since these would have been the only elements in existence initially). Some such stars<sup>3</sup> should still be around today since their potential life span is calculated to exceed the (big bang) age of the universe. Such stars would be called “Population III” stars.<sup>4</sup> Amazingly (to those who believe in the big bang), Population III stars have not been found anywhere. All known stars have at least



trace amounts of heavy elements in them. It is amazing to think that our galaxy alone is estimated to have over 100 billion stars in it, yet not one star has been discovered that is comprised of only the three lightest elements.

## The Collapse of the Big Bang

With all the problems listed above, as well as many others too numerous to include, it is not surprising that quite a few secular astronomers are beginning to abandon the big bang. Although it is still the dominant model at present, increasing numbers of physicists and astronomers are realizing that the big bang simply is not a good explanation of how the universe began. In the May 22, 2004, issue of *New Scientist*, there appeared an open letter to the scientific community written primarily by *secular scientists*<sup>5</sup> who challenge the big bang. These scientists pointed out that the copious arbitrary assumptions and the lack of successful big-bang predictions challenge the legitimacy of the model. Among other things, they state:

The big bang today relies on a growing number of hypothetical entities, things that we have never observed—inflation, dark matter and dark energy are the most prominent examples. Without them, there would be a fatal contradiction between the observations made by astronomers and the predictions of the big bang theory. In no other field of physics would this continual recourse to new hypothetical objects be accepted as a way of bridging the gap between theory and observation. It would, at the least, raise serious questions about the validity of the underlying theory.<sup>6</sup>

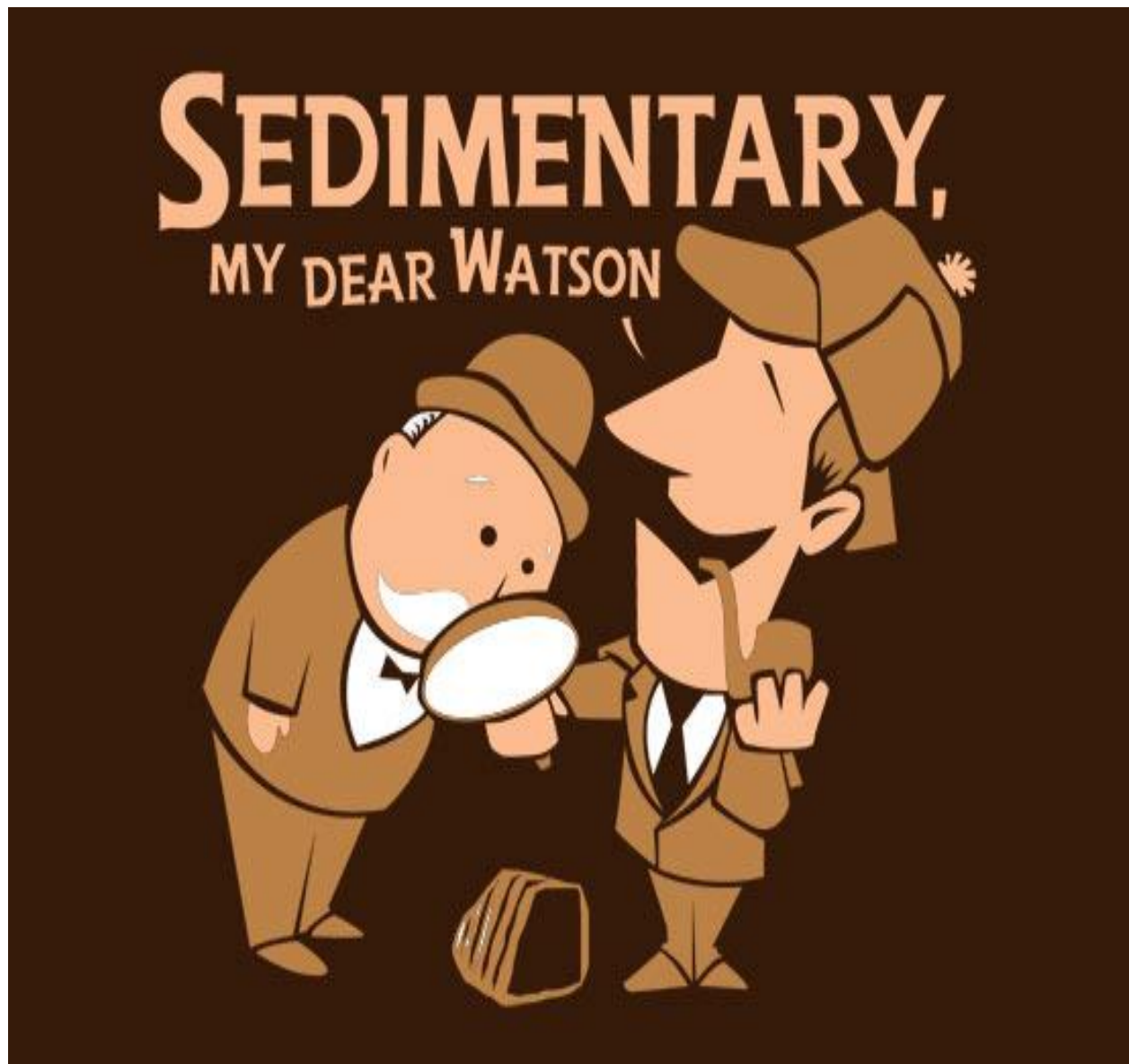
This statement has since been signed by hundreds of other scientists and professors at various institutions. The big bang seems to be losing considerable popularity. Secular scientists are increasingly rejecting the big bang in favor of other models. If the big bang is abandoned, what will happen to all the Christians who compromised and claimed that the Bible is compatible with the big bang? What will they say? Will they claim that the Bible actually does not teach the big bang, but instead that it teaches the latest secular model? Secular models come and go, but God's Word does not need to be changed because God got it exactly right the first time.

## Conclusion

The big bang has many scientific problems. These problems are symptomatic of the underlying incorrect worldview. The big bang erroneously assumes that the universe was *not* supernaturally created, but that it came about by natural processes billions of years ago. However, reality does not line up with this notion. Biblical creation explains the evidence in a more straightforward way without the ubiquitous speculations prevalent in secular models. But ultimately, the best reason to reject the big bang is that it goes against what the Creator of the universe himself has taught: "In the beginning God created the heaven and the earth" ([Genesis 1:1](#)).

Part\_Six

# UNIFORMITARIANISM Vs CATASTROPHISM



# **GOD'S REVELATION IN HIS ROCKS AND IN HIS WORD**

**by John N. Clayton**

## **The Nature of Fossils**

I am a high school earth science teacher. I took my advanced degree work in a program sponsored by the National Science Foundation and, since it was government sponsored and involved locations all over the United States, I was able to see first-hand the geology of North America. I have been blessed by being able to travel throughout North America, Europe, and Australia and have been able to see major points of geologic interest in those areas. I also have been able to collect large numbers of fossils from all kinds of living things and all sorts of geologic formations. Any standard geology textbook, museum, or encyclopedia will show you pictures of fossils. The fossils have many stories to tell us about the past. A fossil can be defined as any evidence of life that has lived on the earth in the past. This means it can be a bone, a piece of skin, a footprint, the dung of an animal, a nest, an egg, or the imprint of one of these.

The lessons in the fossils are many and varied. We see animals that have lived in the past that are very different than animals living today, and we see that the conditions under which they lived were also very different. I have seen the fossils of tropical animals in Alaska. I have seen coal deposits with a dinosaur buried in the coal deep under the ground in several places. I have seen the eggs of dinosaurs with the fossilized babies still inside at various stages of embryonic development. Dinosaurs lived, and their fossilized remains tell us a great deal about them. Michigan's state rock is the Petosky Stone, a tropical coral that will not grow in water colder than 68° F. The tennis courts in Petosky, Michigan, have massive amounts of this material around them. Few of us would believe that Petosky, Michigan, is a tropical paradise today! I have seen drill cores from the north slopes in Alaska where there have been redwood deposits found. Today, the intense cold prevents any plant like that from growing there.

Another lesson that fossils teach us is that there is such a thing as factual evolution. On a trip in the Grand Canyon many years ago, a friend of mine named Alan Doty (who lives in Arizona and is an expert on the Grand Canyon) showed me a slab of brachiopod remains on an outcrop near the top of the Canyon. All of the fossils were the same creature. Some time later, Dr. John McDowell (a boatman for Hatch Expeditions and a geology professor from Tulane University) showed me a similar slab of brachiopods near the bottom of the Canyon. The brachiopod is an ocean creature that looks a little like a clam. These two slabs of brachiopods were about the same size, but the brachiopods were radically different and wear different names. One is called eospirifer and the other is called olenothyryus. They have different shapes, they have different grooves in their shells, and other cosmetic differences. It is obvious that they are as different one from the other as a Chihuahua is from a St. Bernard. These animals are

different because of evolution. Evolutionary change like this can be seen in everything from horses to bacteria, and we see it taking place today in cattle, dogs, and even the races of men. The Bible also tells us about this kind of change when it records what Jacob did with Laban's flocks in Genesis chapter 30. This is evolution. There are many examples of evolution in the Bible. Some may say that this is variation, not evolution; but to invent your own vocabulary just confuses the issues. This is what the textbook from which I teach calls evolution. There is the fact of evolution which can be seen in the fossils or on any farm today and which the Bible teaches. There are the various theories of evolution which suggest that this kind of change can explain how every creature on the earth today came from a single cell in some distant ocean at a time long ago. The fossils show us the fact that animals have changed. The theoretical extrapolations made from this fact are the subject of debate among scientists and religionists, and the "in" theory changes from time to time. The fact that living things can change is indisputable. It might be useful to point out that the two brachiopod slabs could not have been produced by a flood. Floods do not put one kind of animal in one layer and a different kind of animal with the same size, mass, and density in another. Floods make a huge twisted mess of everything. This is one of the many problems with flood geology.

One of the major lessons that fossils have to tell us is the nature of the history of planet Earth. Evolution and much of geology has assumed that the nature of the history of the earth has been a constant history. The snappy way of saying this is "the present is the key to the past." The idea is that, when we look at a rock or a fossil, we assume that the processes that produced what we are looking at have been processes that are still operational today. The processes may not have been functioning at the same rate that they are today, but that the processes are the same. That means that all of the earth has been shaped and molded by volcanoes, glaciers, earthquakes, landslides, flash floods, water erosion, wind erosion, weathering, etc. This assumption has been given the name uniformitarianism.

The alternative to this view would be that processes we do not see operational today have worked in the past and have been major players in shaping the earth. The biblical flood of Noah would certainly not be a uniformitarian event. The Bible actually tells us that God has created with consistency & uniformity ([Numbers 23:19-20](#); [Psalm 33:11](#); [Psalm 119:89-91](#); [Malachi 3:6](#); [James 1:17](#); [Deuteronomy 33:15](#); [Psalm 104:5](#)). The Bible also tells us that, on rare occasions, God has punctuated history with catastrophic events that have an effect on large sections of this planet or even on the entire earth. The flood of Noah is an example, as are the plagues in Egypt, the events when Jesus died, and certainly what will happen when He comes again.

What does the fossil record tell us about this question? There are many illustrations that can be given on this question, but the best, in this writer's opinion, is extinction of the dinosaurs. The dinosaurs were wiped out along with numerous other plants and animals, by an event that is not taking place today. When studies were made of the deposits in which the last remains of the dinosaurs are found, it was discovered that there were large amounts of the elements iridium, osmium, & rhenium in the deposits. These elements are found on the earth in trace amounts, but they are found in the deposits of the rocks that contain evidence of dinosaurs' destruction in concentrations 500 times higher than normal earth rocks. These elements are found in asteroids — large chunks of rocks from outer space. Most scientists now agree that, at the end of

the time when the dinosaurs lived on the earth, a large asteroid hit the earth — perhaps off the Yucatan Peninsula. There are a number of facts that support this event, and the event would explain the mass extinction of the dinosaurs and other things that disappeared from the earth.

Here is a case where the Bible was thought to have been in error about the nature of events that have occurred in the past. As the evidence has become stronger, the integrity of the biblical record has been proven. Most fossils show us a past with conditions like what we see happening today, but God has interrupted his normally hospitable conditions with an occasional catastrophe which does have a significant affect upon life. The fossil record also shows that animals very different than animals living today have existed in the past — animals that we call dinosaurs. I have met people who wanted to deny that dinosaurs ever lived on this planet, but I have seen dried out specimens in the ground with skin on their bodies. I have looked at the dung of dinosaurs and I have seen how easy it is to tell what they ate — some of the dung being full of plant material, and some of it being full of the remains of the bodies of other animals. Most of the dinosaurs were very small animals being no larger than a collie, but I have seen the remains of huge animals dwarfing most land animals of today. It is interesting to note that the largest animal ever to have lived on this planet still lives on the earth today — the blue whale. The aorta of this giant animal is so large that you could swim through it. For land animals as large as a brontosaurus to have lived on the earth, the land must have been very different than it is today. Land plants that we know today would have a hard time reproducing and growing fast enough to satisfy these animals' food needs. The plants that the dinosaurs ate were gymnosperms — fast-growing plants like ferns and conifers. Temperatures must have been high to minimize metabolic problems in the animals.

In spite of these obvious problems, there have been those who have tried to maintain that humans and dinosaurs lived at the same time. The first time I heard of any claims like this was in reference to a park in Glen Rose, Texas. A man named Jake McFall who lived near the state park just outside of Glen Rose had been involved in a film titled *Footprints in Stone* in which human and dinosaur tracks were claimed to have been found in the same rock. For a nominal fee, Jake took me to the tracks and to a number of other tracks on his farm. The tracks were sandal shaped tracks some 16 inches long, with a few of them having erosion grooves in the front that looked a little like toes. The tracks were obviously not human tracks to me, but I went on to town and the Somerville County Museum where other materials were displayed. A local man who spent a great deal of time in the museum assured me the human tracks were not real.

During the next several years, I made many more trips to Glen Rose looking at other claimed tracks and even had contact with Carl Baugh who has attempted to keep this story alive. Gene Kuban, a science teacher in Waxahatche, Texas, released a study of the tracks in 1986 in which he demonstrated that, if one cut the rocks parallel to the surface of the ground, one could see that the tracks were clearly dinosaur tracks with a three-toed imprint at the bottom. The soft mud had fallen into the track leaving a sandal shaped impression that looked like a human footprint, but clearly was not. Everyone associated with the situation seemed to be in agreement. John Morris of the Institute for Creation Research was quoted in *Time* (June 30, 1986, page 75) as agreeing that there were no human tracks at Glen Rose and the film *Footprints in Stone* was withdrawn from circulation. There are still people today who are trying to

maintain that humans and dinosaurs lived together, and films like *Jurassic Park* have not changed that view any. I believe that the major problem is that the only way certain religious views can be seriously entertained is to refuse to admit that the earth is much more than 6,000 years old, and that view requires dinosaurs and humans to be contemporaries.



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## UNIFORMITARIANISM

By Paul Burris (my father)

II Peter 3:3-7

It was in a college Geology class where I first heard that stupendous word, “uniformitarianism,” uttered by the professor as he stood before the class. He explained it as the idea that “the present is the key to the past,” which he believed. By this is meant that what we see today is the result of slow and gradual processes acting over long ages.

The Bible, and especially the true history in Genesis chapters 1-11 with reference to the creation and the Noachian world-wide flood, has thus been successfully “disproved.” We do not agree.

The uniformitarian idea began as long ago as the ancient Greek Philosophers. It was popularized by Sir Charles Lyell, who wrote the book, “Principals of Geology.”

Lyell’s influence didn’t stop with him. A disillusioned seminary student, who had turned amateur naturalist, named Charles Darwin, accepted the concept. Lyell arranged for Darwin to join him on a scientific exploration trip around the world on the ship, The HMS Beagle. As the on-board naturalist, Darwin with Lyell’s book in hand, interpreted everything he saw in the “light” of Lyell.

Several other scientists, surveyors and anthropologists were aboard The HMS Beagle, who rancorously disagreed with Lyell’s and Darwin’s ideas. The ship’s captain, Robert Fitzroy, later even publicly challenged Darwin’s views.

However, Darwin prevailed, with the publication of his book, “The Origin of Species,” referencing with terms of “uniformity” and “evolution by natural selection.”



In SE Argentina, Darwin postulated that the Santa Cruz river had calmly and ever so slowly, carved out the broad canyon found there (which is similar to our Grand Canyon), over millions of years. But scientists now agree that the river and canyon were carved by “ice age” melt water floods and other occasional flooding. (The “Ice Age” itself is another subject).

On the Galapagos Islands, Darwin theorized in his book that the animal populations there were of different species, brought about by slow and gradual changes, with “natural selection” in operation.

But these were not in a process of evolving. For examples, the finch species are now known to interbreed. The salt and marine iguanas also interbreed. The large Galapagos turtles were only different varieties of the same animal “kind.”

(The above adapted from an article in “Acts & Facts,” Dec., 2011)

The Bible warned about these false ideas in II Peter 3:3-7 –

“Knowing this first, that there shall come in the last days scoffers, walking after their own lusts,

“And saying, Where is the promise of his coming? for since the fathers fell asleep, all things continue as they were from the beginning of the creation.

“For this they willingly are ignorant of, that by the word of God the heavens were of old, and the earth standing out of the water and in the water:

“Whereby the world that then was, being overflowed with water, perished:

“But the heavens and the earth, which are now, by the same word are kept in store, reserved unto fire against the day of judgment and perdition of ungodly men.”

Contradictions between Genesis and uniformitarian 'science' in the order of events.

Day	Biblical creation	Big bang, evolution	Evolutionary sequence
1a	Heavens and Earth	Light	1
1a	Darkness	Expanse ('space')	2
1a	Water, oceans	Stars	3
1b	Light	Water	4
2	Expanse	Sun	5
3a	Dry Land	Earth	6
3b	First life: land plants, trees	Dry land	7
4	Sun, moon, stars, other planets	Oceans	8
5a	Fish, whales (including dolphins) Aquatic reptiles (including ichthyosaurs, mosasaurs, plesiosaurs, pliosaurus)	First life: single-celled organisms	9
		Death	10
		Fish	11
		Trees	12
5b	Birds, bats, pterosaurs (flying reptiles)	Land reptiles	13
6a	Land mammals	Aquatic reptiles and flying reptiles, all from land reptiles.	14
6a	Land reptiles ('creeping things')	Land mammals (from land reptiles)	15
6b	One man from dust	Birds from land reptiles	16
6c	One woman from the man's rib	Bats and whales (from land mammals)	17
A few days after Creation Week	Death (from Adam's sin)	A population of ape-like creatures evolved into a population of humans.	18



## **Cracked Eggs and a Cracked Earth**

What theory best explains the Earth's geology? Why do the ocean floors look like the shell of a boiled egg that has been dropped on the floor several times? How were mountain ranges formed, and why are they in wave-like patterns around the world? What caused the Ice Age? What pushed rivers of ice up and over mountains? How were thousands of mammoths suddenly frozen—with subtropical foliage still unchewed in their mouths and undigested in their stomachs?

How could Noah's Flood have covered every mountain around the world? What produced thousands of fossil graveyards, each jammed with tens of thousands of shredded bones? What formed the layers of rock visible on mountains and in canyons such as the Grand Canyon? Were the continents once a single land mass? Has the Earth been subject to a slow, continuous and mild change over millions and millions of years as evolutionism states? Or have catastrophic events changed the Earth's appearance rather quickly? These and other questions will be explored in this volume and the following volume, entitled *The Original Star Wars And The Age Of Ice*.

## **Hydraulic, Volcanic, And Tectonic**

The Great Flood of Genesis 6–9 was neither a “local flood” nor a “tranquil flood,” as alleged by evolutionists and even some evangelicals. This worldwide Flood was hydraulic (pertaining to the movement of water), volcanic (pertaining to the movement of magma and lava) and tectonic (pertaining to the movement of the Earth's continental plates and the formations of mountains). This upheaval left in its wake a sedimentary rock graveyard averaging a mile in depth all around the Earth.

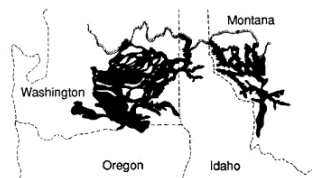
## **Reshaping the Earth**

Many of the Earth's geological features can be explained only by a world Flood such as described in Genesis. Numerous theories have been concocted in an effort to decode the silent messages lying beneath the Earth's surface. Yet all of these formations can be viewed as a direct result of a single event: the worldwide cataclysmic Flood, with waters bursting forth from subterranean and interconnected chambers below the Earth's surface and from the heavens above the Earth. The energy released during the Flood would make the explosion of man's entire nuclear arsenal seem puny in comparison.

**All of the following geological features can be explained by attributing them to the Great Flood of Genesis:**

- 1. Layers of strata (sedimentary rock)**
- 2. Mountains**
- 3. Volcanoes**
- 4. Extinction of the dinosaurs**
- 5. Fossil graveyards**
- 6. Coal and oil formations**
- 7. Continental drift**
- 8. Continental shelves and slopes**
- 9. Mid-oceanic ridge**
- 10. Submarine canyons**
- 11. Ocean trenches**
- 12. Fossils of sea life on every major mountain range**
- 13. Glaciers and the ice Age**
- 14. Frozen mammoths<sup>16</sup>**

**Figure 87. 1,000-FOOT WALL OF WATER**



*Geologists have discovered evidence that a 1,000 foot wall of water once devastated a third of the state of Washington and parts of Idaho, Montana and Oregon. The amount of water equaled approximately half of the present volume of Lake Michigan. This evidence of flooding harmonizes perfectly with creation geology associated with the Genesis Flood.<sup>17</sup>*

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<sup>16</sup> Lindsay, D. G. (1992). [\*The genesis flood: continents in collision\*](#). Dallas, TX: Christ for the Nations.

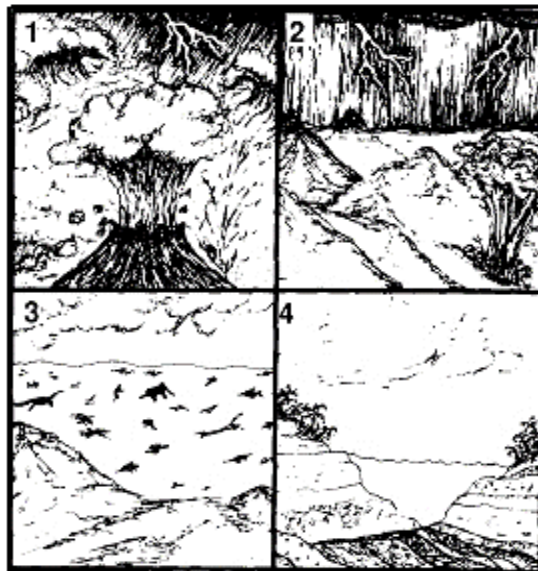
<sup>17</sup> Lindsay, D. G. (1992). [\*The genesis flood: continents in collision\*](#). Dallas, TX: Christ for the Nations.

## Worldwide Occurrence of Water-laid Sedimentary Rock

(See fig. 13.)

The Flood of Genesis was not a spring flood, it was a worldwide, catastrophic, hydraulic, volcanic and tectonic upheaval. It literally turned the world upside down, leaving a sedimentary graveyard averaging a mile in depth all over the Earth. Approximately 75% of Earth's crust is sedimentary rock, which is rock formed in and by water. The geological and fossil evidence reveals that the world was once inundated by physical forces with which modern man is not acquainted. A global Flood would have deposited huge amounts of sediment throughout the world.

**Figure 13. STAGES OF THE FLOOD**



**STAGE 1:** *The catastrophic nature of the Flood included a continental upheaval, which combined with gigantic tidal action sweeping over the surface of the Earth.*

**STAGE 2:** *Torrential rain continued to flood the Earth.*

**STAGE 3:** *The waters began to subside. Dead creatures left in the Flood's wake began to settle to the bottom of the floodwaters, where they were covered by sediment.*

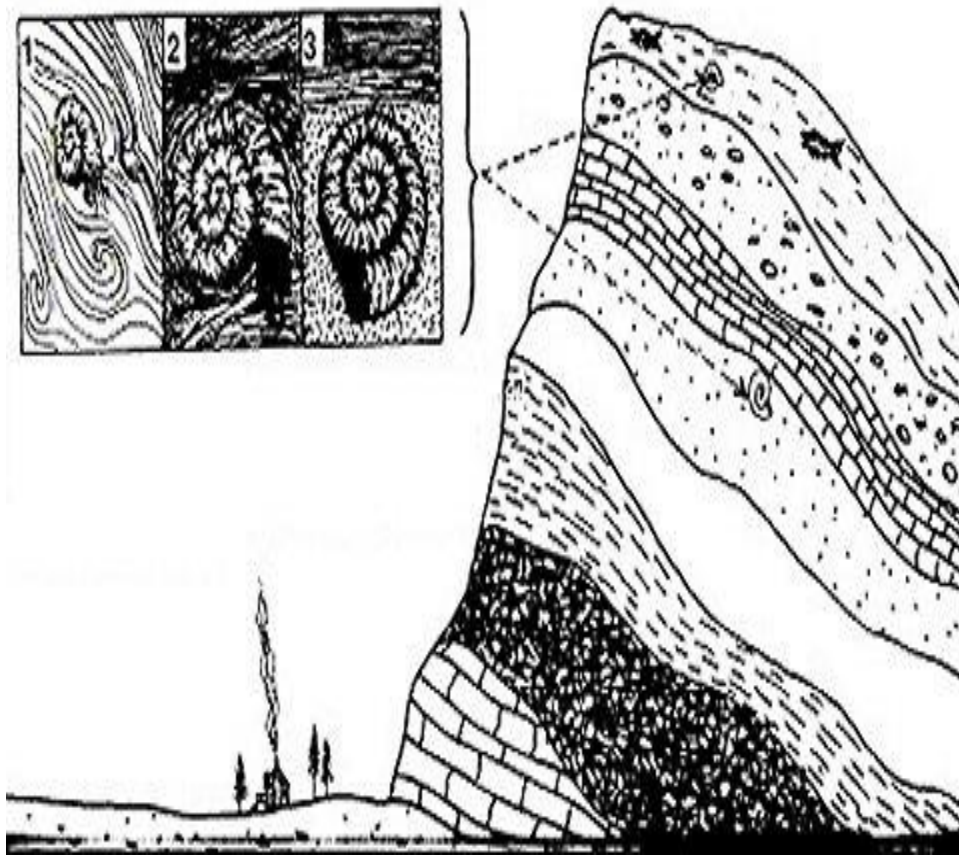
**STAGE 4:** *Depositing and layering of sediments occurred all over the Earth. The water began to drain off the continents and into the present basins.*

## Marine Fossils On Crests of Mountains

(See fig. 14.)

The highest mountain on Earth, Mt. Everest, along with the tops of every other mountain, contains rocks and fossils that were once under water. Marine fossils and salt clusters formed by sea water have been found atop Mt. Ararat. Such evidence harmonizes perfectly with the biblical account: a worldwide Flood which covered every mountain on the face of the Earth.

**Figure 14. FISH FOSSILS FOUND ON MOUNTAINTOPS**



*Fossilized marine life can be found on every mountaintop in the world. During the Flood, living creatures were (1) trapped by water and (2) buried beneath the sediment. The impressions of their remains were then preserved in the rock (3).*

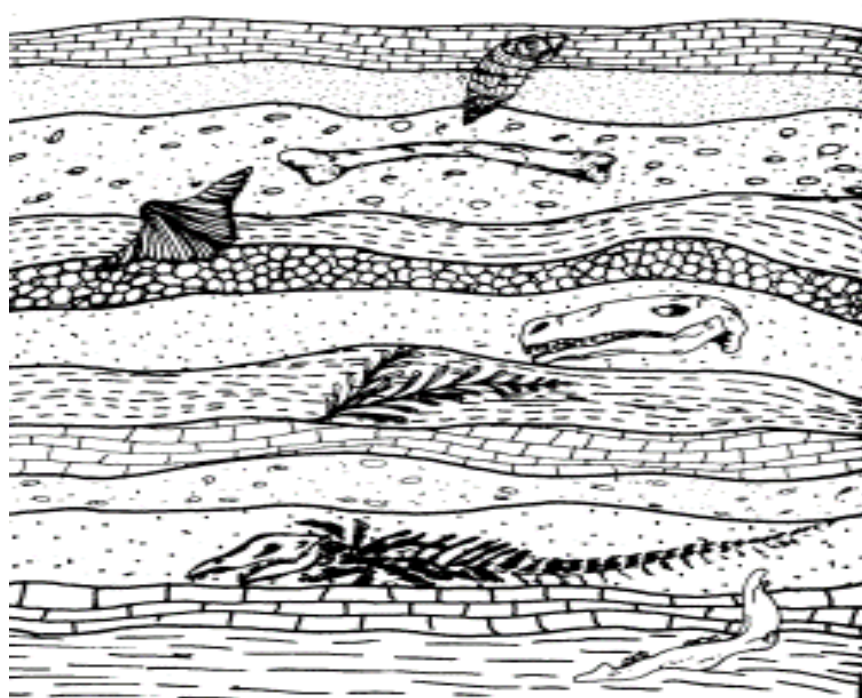
## Formation of Fossils

(See fig. 15.)

Fossils are found all over the world; but by and large, these are not being formed today. Sudden death, sudden and instant burial and sudden pressure—all at the same time—are required in order to form fossils. Otherwise, decay from oxygen and other elements block the process from occurring.

A question often asked is: if the Flood is responsible for the fossils, why aren't there more human fossils found alongside those of animals? The answer is: there is evidence of such discoveries; however, these fossils disturb the evolutionary charts of time, and evolutionists have tried to hush up most of these finds. Announcements of such discoveries have become more rare in recent years because evolutionists have learned these discoveries weaken their case while strengthening the case for creation.

**Figure 15. FOSSIL FORMATION**



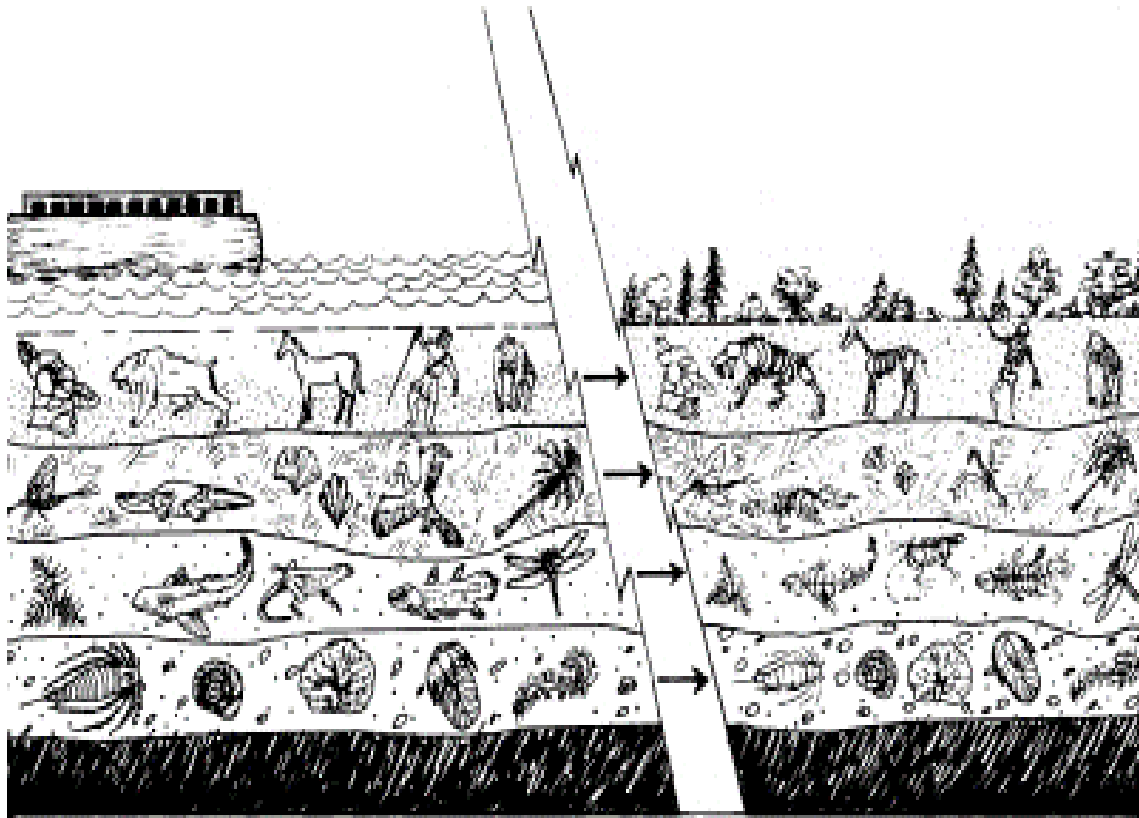
*Fossils are found all over the world. The catastrophic nature of the Flood provides the best explanation for their formation, as fossilization requires sudden death and instant burial.*



A major flood would generally create a fossil order from the “simple” to the complex forms of life according to an animal’s habitat, mobility, and density. Hydrodynamic selectivity would then layer out the dense, less mobile marine beings (such as tiny creatures like the trilobites, crustaceans, mollusks, and echinoderms) in the cambrian rock (lowest layer of strata) more rapidly than less dense, more mobile ones.

(See fig. 16.)

Figure 16. FOSSIL LAYERING

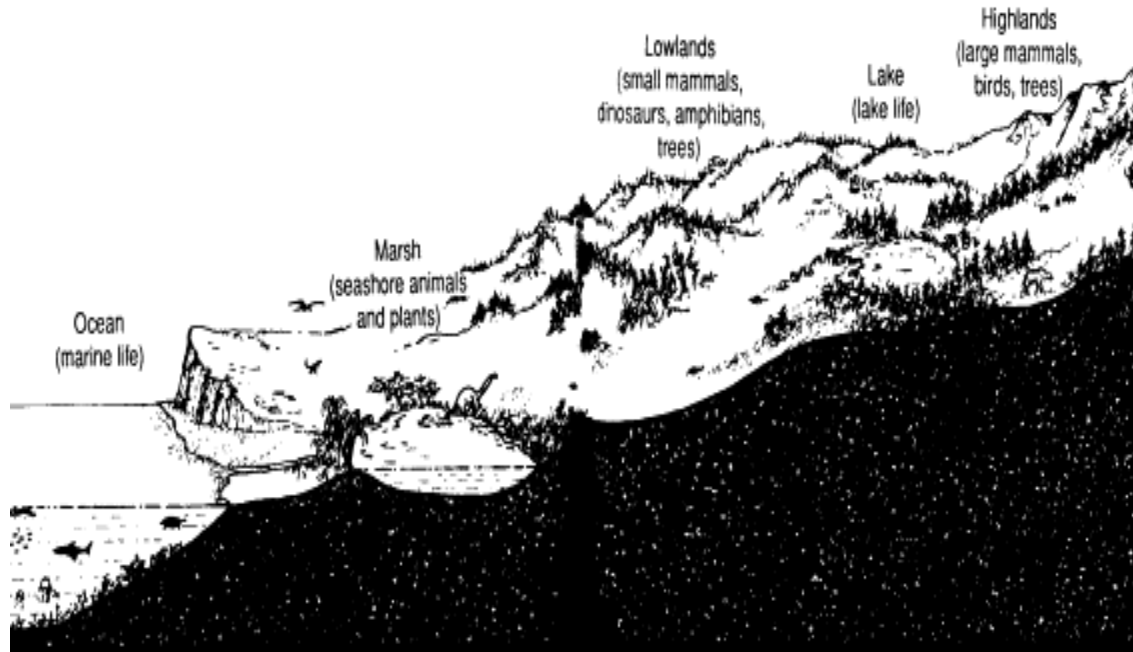


*In the aftermath of a major flood, the location and layering of fossils generally would be based upon the animals’ habitats, mobility, and body densities. However, the catastrophic nature of the Flood caused exceptions to this pattern. Many fossil graveyards were jammed with every type of creature.*

As the waters rose, the slow-moving shore creatures (the amphibians) would be trapped next, then the slow-moving reptiles. Finally the waters would overtake the more rapidly fleeing birds and mammals, including—at last—man. The illustration reveals various types of environments in which animals live and how they could be buried in a roughly predictable order by rising floodwaters.

(See fig. 17.)

**Figure 17. FOSSIL BURYING**



*The habitats and ecological zones of the various groupings of animals illustrated above reveal how such creatures could be buried by the rising floodwaters in a rather predictable way: fish and marine first, amphibians second, mammals and birds third, etc.*<sup>18</sup>

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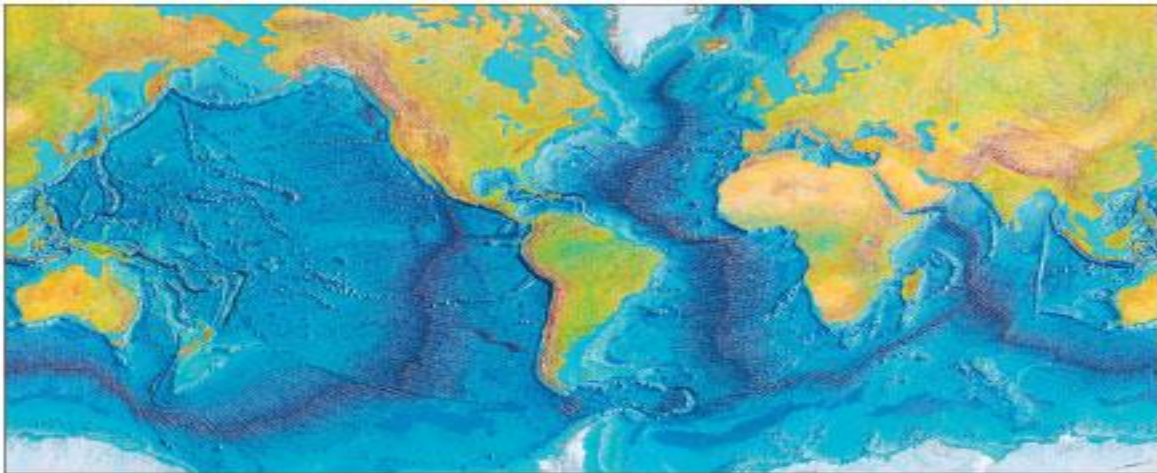
<sup>18</sup> Lindsay, D. G. (1992). [The genesis flood: continents in collision](#). Dallas, TX: Christ for the Nations.

# Embracing Catastrophic Plate Tectonics

BY [TIM CLAREY, PH.D.](#) \* |  
FRIDAY, APRIL 29, 2016

Some Christians hesitate to embrace the notion that the earth's outer surface is moving—and moved even more dramatically during the Flood year. However, tremendous amounts of empirical data suggest significant plate movement occurred just thousands of years ago.<sup>1</sup> Much of these data are independent of secular deep time and the geologic timescale. In addition, the catastrophic plate tectonics (CPT) model offers a mechanism for the flooding of the continents, the subsequent lowering and draining of the floodwaters, and a cause for the post-Flood Ice Age.

## Continental Drift



*Figure 1. Bathymetry map of the ocean floor showing the presence of dark gray-colored ridges (subsea mountain ranges) in every ocean.*

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Geologists derive the theory of plate tectonics from much data collected over many decades. In the early 20th century, Alfred Wegener examined how the continents seem to fit together like a

puzzle and matched fossils and mountain ranges across vast oceans to suggest that the continents had split in the past. At the time, his ideas were ridiculed and ignored. It was not until the 1960s, after immense quantities of oceanographic data were collected, including the publication of Harry Hess' hypothesis of seafloor spreading<sup>2</sup> and J. Tuzo Wilson's early work on plate tectonics,<sup>3</sup> that secular geologists slowly accepted these ideas. Nearly 50 years after Wegener first proposed the concept of continental drift, the secular community was overwhelmed with empirical data and reluctantly acknowledged plate tectonics.

### **Rapid Seafloor Spreading and Runaway Subduction**

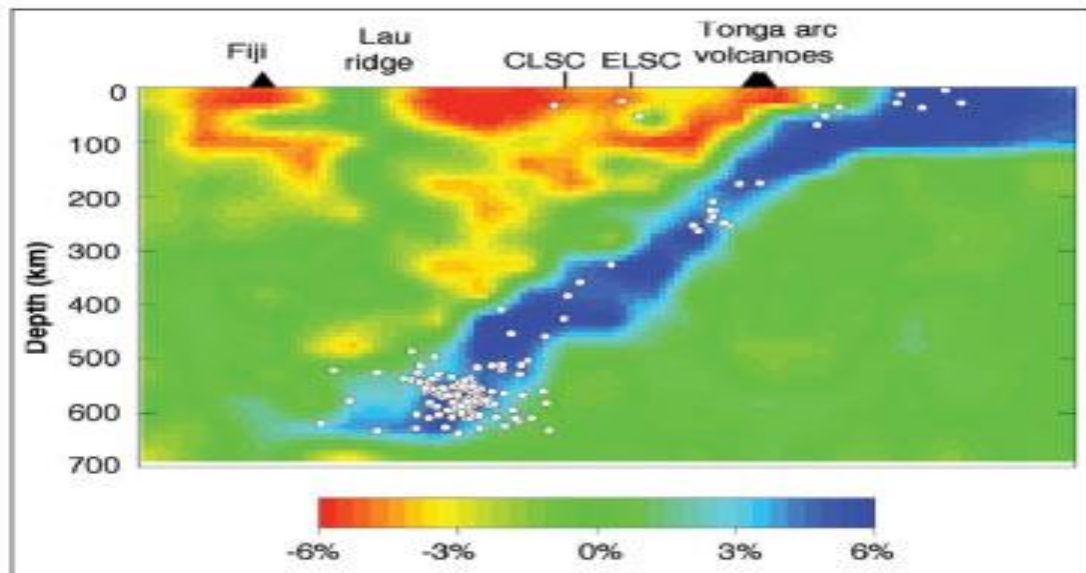
If continents split, we should find evidence to support these movements under the oceans. In the 1950s and 1960s, geologists discovered that the ocean crust is very young compared to many of the rocks on the continents. In fact, the oldest ocean crust goes back to a brief episode in the Flood during the deposition of the Jurassic system. And at every ridge, the crust gets systematically older in both directions. Although secular ocean floor maps claim ages in millions of years, they do seem to be correct in a relative sense. Older age dates usually indicate older rocks. In addition, a tremendous amount of data affirms seafloor spreading independent of absolute dating methods.

Consider, for example:

- (a) The temperatures recorded from wells in the ocean crust and the heat flow measured near the ocean ridges show a systematic pattern of cooling with distance from the ridges in both directions. Sclater and Francheteau originally defined a relationship between heat flow & distance from the ocean ridge in 1970 that still holds today.<sup>4</sup> This empirical data set is not dependent on any dating methods, absolute or relative.

(b) The magnetic reversal “stripe” pattern shows symmetry on each side of the ocean ridges, supporting simultaneous seafloor spreading outward in both directions from the ridges. The overall symmetry to this data cannot be merely dismissed. The patterns initially observed by Heirtzler and his colleagues for the ridge southwest of Iceland show a near-perfect symmetry for 200 km in both directions about the ridge.<sup>5</sup> The raw magnetic anomalies are based only on distance from the ridges and not on the secular ages of the rocks.

(c) The presence of the ocean ridges suggests a common origin by seafloor spreading. Ocean ridges are found in every ocean of the world (Figure 1). The ridge system extends 45,000 miles, connecting all of the seas. They consist of huge, linear mountain chains rising 10,000 feet above the abyssal plains with a rift valley at the center, actively spewing out basaltic magma.



*Figure 2. P-wave tomography under the Tonga Trench, Pacific Ocean. The blue shows the colder ocean lithosphere descending down into the mantle to a depth of nearly 700 km (435 miles). The white dots represent earthquake foci.*

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(d) The internal images of the mantle (tomography) show visible lithospheric slabs of oceanic crust going down hundreds of miles beneath ocean trenches and into subduction zones (Figure 2).<sup>6</sup> These are not merely faults, as some have proposed,<sup>7</sup> but 62-mile-thick slabs of brittle, dense rock descending into the mantle. The cooler temperatures exhibited by these subducted slabs of rock create a thermal dilemma for the secular and old-earth geologists, who must demonstrate how these slabs remained cold for millions of years. Colder, subducted slabs are best explained by runaway subduction just thousands of years ago during the great Flood.<sup>8</sup>



*Figure 3. Thick, black pseudotachylite (PST) layers in a subduction zone on Kodiak Island, Alaska. The PST layers are nearly a foot thick, indicating extraordinary amounts of frictional heat during runaway subduction.*

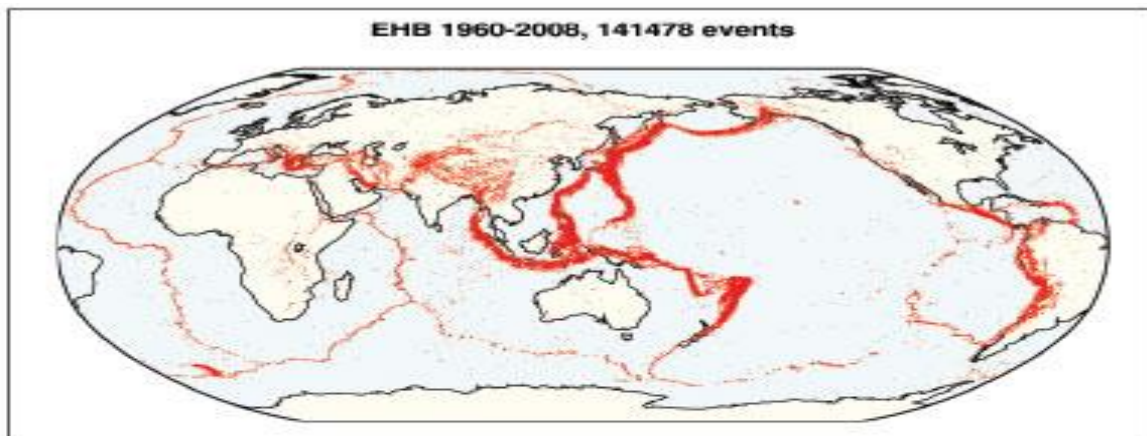
**Image Credit:** Copyright © Tim Clarey.

(e) Creation scientist Dr. John Baumgardner first found evidence of runaway subduction in his computer modeling. Baumgardner found that once the older, colder, originally created oceanic crust and lithosphere began to subduct, it would speed up and drop into the less-dense hot mantle like a fishing weight in water. He suggested rates of movement of meters per second, not just centimeters per year as secular scientists like to suggest. Recent discoveries in Alaska confirmed these rapid subduction rates.

Rocks found on the edge of a subduction zone on Kodiak Island have exhibited frictional melting and the formation of thick pseudotachylite (PST) from rapid, runaway subduction (Figure 3).<sup>9</sup>

Empirical data, independent of the chronostratigraphic timescale, demonstrate that the modern ocean lithosphere was completely recreated in a conveyor-belt fashion at the ridges during the Flood, causing systematic spreading in both directions.

### CPT Explains the Pattern of Earthquakes and Volcanoes



*Figure 4. Map of earthquake epicenters showing clearly marked outlines of the tectonic plates. The thicker red bands represent epicenters clustered along subduction zones by plotting the foci at the surface as shown in figure 2.*

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Maps of current earthquake activity define the boundaries of the majority of the plates (Figure 4). Earthquake epicenters still clearly trace the boundaries of discernable and coherent lithospheric plates even today, nearly 4,500 years after most of the plate movement ceased. Further support for these plate boundaries is shown by the linear chains of volcanoes found along the edge of the Pacific plate, associated with the Pacific Ocean’s “Ring of Fire.”

In addition, many of the major mountain ranges of the world also follow the edges of active plate boundaries, such as the Andes and Himalayas. These long, linear chains of mountains run parallel, and in close proximity, to many of the convergent-style plate boundaries. This explains many of the world's largest and deepest earthquakes.

## **CPT Explains the Flooding of the Continents**

The Bible plainly states that the “fountains of the great deep were broken up, and the windows of heaven were opened” during the initiation of the Flood ([Genesis 7:11](#)). In terms of CPT, the breaking up of the fountains of the great deep may be a description of the rifting that took place at ocean ridges & even within continents.<sup>10</sup> Obviously, the rainfall described as the opening of the “windows of heaven” must have contributed to the Flood. Additionally, because newly created oceanic lithosphere is hot, less dense, and more buoyant, the CPT model provides another source for enough water to completely flood the continents. After its formation at the ridges, the freshly formed, lower-density oceanic lithosphere simply pushed up the top of the seafloor from below, displacing ocean water and forcing it on land. Creation geologist Dr. Andrew Snelling calculated that this elevated seafloor could have raised the global sea level by as much as 1.6 km, greatly helping flood the continents.<sup>11</sup>

Rapid movement of the plates during runaway subduction further supplied tsunami-like waves to wash across the land, helping deposit blanket-type sediments across continents. Recent numerical modeling by Dr. Baumgardner has found that repetitive tsunami waves, caused by rapid plate movement, could result in water accumulation more than a kilometer (0.62 miles) deep on the continents, contributing to the flooding.<sup>12</sup> The runaway model also provides a mechanism to lower the continental crust about two miles in the proximity of the subduction zones, causing more extensive flooding of the land and creating room for thousands of feet of sediment.<sup>8</sup>



Subsequent cooling of the newly created ocean lithosphere later in the Flood year (after Day 150) offers an explanation for the lowering of the floodwaters. The 62-mile-thick ocean lithosphere cooled and sank, lowering the bottom of the oceans and drawing the water back off the continents and into the ocean basins.

### **CPT Explains the Conditions Necessary for the Ice Age**

Finally, CPT provides a mechanism for the Ice Age that occurred at the end of the Flood. A hot, newly formed ocean crust would have provided tremendous amounts of heat to the ocean waters above. This would have raised the overall temperature of the ocean and caused a greater amount of evaporation, resulting in staggering amounts of precipitation.<sup>13</sup> The increased volcanic activity from the subduction zone volcanoes within the Ring of Fire and elsewhere late in the Flood would have placed huge volumes of ash & aerosols into the atmosphere, cooling the climate most noticeably in the higher latitudes.<sup>13</sup>

The distinctive magmas generated by the partial melt of subducted ocean lithosphere provide the perfect recipe for explosive, ash-rich eruptions. These types of volcanoes (stratovolcanoes) are highest in silica, making them thicker and more explosive.<sup>14</sup> The net result of hotter oceans and tremendous silica-rich volcanic activity brought on from plate motion would be enough to start a widespread Ice Age. As commonly observed across the bulk of the ocean basins, basalt-rich magmatic volcanoes (shield volcanoes) do not produce the necessary ash-rich explosions to generate sun-blocking aerosols.<sup>14</sup> Only such subduction provides these ash-rich magmas. Finally, as the ocean water slowly cooled and volcanic activity diminished over the centuries after Flood, the Ice Age would have ended as abruptly as it began.<sup>13</sup>

## Summary

Creation geologists who advocate CPT do not claim to understand all aspects of the theory, but they accept it as a sound working model steeped in empirical data. Secular and creation scientists alike debate how subduction is initiated<sup>15</sup> and how the major continents originated,<sup>16</sup> but most do not use this lack of understanding to question the overall validity of plate tectonics and/or the CPT model.

Catastrophic plate tectonics presents a mechanism that explains much of the geology that scientists observe and measure. The overwhelming geological evidence supports the conclusion that catastrophic plate movement occurred just thousands of years ago and contributed to the flooding of the earth.

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# Untangling Uniformitarianism, Level II: Actualism in Crisis

by [Dr. John K. Reed](#) on November 30, 2011

## Abstract

*Uniformitarian geology has opposed biblical history for over two centuries. Most creationist critiques focus on contrary empirical evidence, but this series pursues a logical and axiomatic critique of the “four-definition” formulation of uniformitarianism. Three of these facets—stasis, gradualism, and generic uniformity—fail to support the concept. The remaining “uniformity of process,” also called actualism, seems on the surface to work well, but can be addressed by seeking justification of its use as an axiom of natural history. Actualism rests on uniformity, and uniformity in turn on causal continuity. These concepts can be evaluated relative to the worldviews of Christianity and Naturalism by the truth test of coherence. Naturalism fails that test, but Christianity passes because causal continuity is coherent with—and only with—Christianity’s God. As a theological issue, uniformity and actualism are best understood as physical expressions of divine providence. Since providence is distinct from God’s acts of creation, actualism is irrelevant to that part of the rock record and its relevance to the Flood depends on the nature of divine action during that event.*



## Introduction

Although the term *uniformitarianism* was not introduced until 1832, the concepts that Lyell so cleverly fused together (Gould 1987) had already been operating in the nascent discipline of geology for some decades (Laudan 1987; Rudwick 2005, 2008). Lyell linked Newton's method of "actual causes" to a quasi-static directional gradualism, fusing method and historical narrative. In short order, this new concept became the bedrock of the new geology and continued as its fundamental principle until recently. In fact, many practicing geologists continue to affirm it, unaware of its problems. One of the effects of uniformitarian geology was to destroy confidence in the biblical record of origins and early earth history, and the concept of uniformitarianism still stands as a bulwark against today's Flood geology.

Therefore, it is incumbent upon creationists to address uniformitarianism. This can be done in two ways. The most common is to adduce empirical evidence that contradicts uniformitarianism—an approach dating back to Whitcomb and Morris (1961) and still prominent (Oard and Reed 2009; Snelling 2009). The empirical approach has also proven popular on the secular side, as seen in the rise of neocatastrophism (for example, Ager 1973, 1993; Alvarez et al. 1980). The second approach is a logical analysis of the ideas and concepts behind uniformitarianism.

Since the 1960s, the intellectuals of the earth sciences have recognized problems in the standard Lyellian formulation and have resolved those problems by following Gould's (1965) lead in subdividing the term into four discrete definitions (Albritton 1967; Gould 1965, 1975, 1984; Hooykaas 1963, 1970; Rudwick 1971, 1972; Shea 1982). These definitions (fig. 1) and their inability to save the concept are discussed in Reed (2010), and for convenience are summarized here.

The strategy of this series is to demonstrate that the concept of uniformitarianism, as presently defined and defended in secular geology, is faulty. The first paper argued that three of the four definitions of uniformitarianism were outmoded, invalid, or irrelevant to geology. Semantic confusion was documented, and a proposed solution offered, in the elimination of a number of redundant terms (fig. 2). This paper will address the final facet of uniformitarianism in more depth and attempt to show that it, too, fails to provide a firm foundation for modern secular geology. Thus, with the failure of all four definitions, uniformitarianism as a whole must be considered invalid unless its advocates can reformulate its meaning.

## Recap of Part I

From 1832 to the 1960s, uniformitarianism was as undefined as it was important, thanks largely to Lyell's blending ideas about geological method and historical narrative under his principle of actual causes (Gould 1987). Growing concern, perhaps related to the introduction of Flood geology and problems noted by

Professor Reijer Hooykaas (1963), stirred leading geologists to address the issue. Consensus solidified around the strategy of Gould, who proposed explicating multiple meanings of uniformitarianism.

	Gould (1975, 1984)	Rudwick (1971)	Austin (1979)
Methodological	<i>uniformity of law</i> a priori claim about science; laws same over time, space	<i>theological status</i> primary act of God secondary, “naturalistic” manifestation	<i>methodological uniformitarianism</i> agreed with Gould that this is an a priori claim about science
	<i>uniformity of process</i> actualism	<i>methodological status</i> past geological causes same as present; “actualistic” versus “non-actualistic”	<i>causal uniformitarianism</i> argued for both known present causes, unknown present causes, and unique past causes
Substantive	<i>uniformity of rate</i> gradualism	<i>rate</i> gradualistic or saltatory	<i>actional uniformitarianism</i> uniformity of process rates
	<i>uniformity of conditions</i> non- directionalism, dynamic steady state	<i>“pattern” of past geological cause</i> steady-state or directional	<i>configurational uniformitarianism</i> steady state conditions through time

**Fig. 1.** The “four definition” solution to uniformitarianism’s problems as proposed by Austin (1979), Gould (1984), and Rudwick (1971). Gould’s terminology is the most widely known and will be employed here. Modified from Reed (2010).

Four were generally agreed upon. From his “substantive” and “methodological” uniformitarianism in 1965, Gould (1984) finally arrived at:

1. Uniformity of law
2. Uniformity of process (also called actualism)
3. Uniformity of rate (also called gradualism)
4. Uniformity of conditions

The first two were considered “methodological” and the latter two “substantive.” Similar strategies by Austin (1979) and Rudwick (1971) are shown in Fig. 1. In the first paper in this series (Reed 2010), significant flaws in three of these definitions were seen as unworkable. The first was deemed irrelevant to geology and errors in the third and fourth had led to their rejection by leading secular thinkers. Logical issues in defining gradualism were also addressed in Reed (1998). A short recap will set the stage for the discussion of actualism below.

The first definition—uniformity of law—is generic to science, preceded geology, and is not directly applicable to geological method except as a principle affirming that physicochemical “laws” remain constant universally. Clearly, that alone cannot resolve debates about the tempo and mode of geologic history, since it does not require anything of geological processes except that they obey the laws of physics and chemistry. More importantly, secular thinkers are inconsistent when using this principle since it was historically derived from Christian theology. If Christianity is rejected, then the uniformity of law becomes nothing more than a naked assumption. Claims of an empirical justification (for example, Simpson 1963) are dashed on the rock of Hume’s argument that a limited number of observations cannot prove a universal proposition, a problem exacerbated by deep time.

<del>1. Uniformity of law</del>	replaced by prior term <i>uniformity</i>
<del>2. Uniformity of process</del>	replaced by prior term <i>actualism</i>
<del>3. Uniformity of rate</del>	replaced with synonym <i>gradualism</i> for the late Lyell
<del>4. Uniformity of conditions</del>	replaced with <i>Huttonism</i> for historical models of Hutton and early Lyell
5. Actualism	rock record explained by observed processes
6. Uniformity	natural laws do not vary with time or location
<del>7. Uniformity of Nature</del>	replaced by prior term <i>uniformity</i>
<del>8. Methodological Uniformitarianism</del>	unnecessary and discarded
<del>9. Substantive Uniformitarianism</del>	unnecessary and discarded

Fig. 2. Reed (2010) proposed a revision in terminology that would focus on the two primary concepts of actualism and uniformity and eliminate or change confusing terms.

The third definition is the one most commonly associated with Lyell and is often called gradualism. Many geologists today try to maintain it by re-defining gradualism to allow some catastrophism, but of course that position is antithetical to Lyell's, given his vigorous opposition to the similar position of secular catastrophists like Cuvier. Lyell advocated a uniformity of the rate. Gould (1984) labeled this a testable empirical proposition, although Reed (2010) pointed out weaknesses in that claim. Ager (1973) claimed that most of the geologic record is that of rare high-energy events rather than a gradual accumulation from normal geologic processes. Also, empirical findings of geologists in recent decades have undermined gradualism. Examples abound; the most famous being the Lake Missoula Flood argued by Bretz during the mid-20th century. Another example is found in the rock eroded by this flood, the Columbia River Basalt (fig. 3). Its large individual flows apparently happened in a few days (Tolan et al. 1989), with, of course, no record of the millions of years between them. And these basalt flows are among the smaller of the identified Large Igneous Provinces (LIPs), which typically show rates far in excess of those observed today. Also, regardless of the specific model, creationists agree that Grand Canyon (fig. 4) was eroded in a remarkably short period of time (Austin 1994; Brown 2008; Oard 2011). On the secular side, neocatastrophism has advanced so far that Young and Stearley (2008) berated creationists for equating uniformitarianism with gradualism, claiming that most geologists no longer accept Lyell's formulation. However, they are strangely silent on why that incorrect idea prevailed in geology for more than 150 years.

The fourth definition has long been rejected. A static history has been most closely associated with Hutton's cycling "earth machine" (Rudwick 2005). Gould (1987) provides an interesting discussion of Hutton in the context of the conceptual tension between cycles and linear time. Rudwick (2005) also provides an in-depth analysis of Hutton's ideas, agreeing with Gould that they were unique to Hutton, were strongly influenced by his deistic theology, and were corrupted, not clarified, by Playfair. Lyell toyed with the idea (Rudwick 2005), to the extent that he was lampooned by Sir Henry de la Beche in an 1830 cartoon showing a class of Ichthyosauri discussing human fossils! Lyell quickly retreated to the directional gradualism for which he is best known, and the directional, rather than static, view of earth history was sealed by evolution. Thus, most of the terms available to discuss uniformitarianism are obsolete or redundant (fig. 2). Many should be discarded or replaced, including *uniformitarianism* itself, except for historical reference. Clarity in terminology will help move the debate forward, but it is not the only problem. Although many geologists today call themselves "uniformitarian" and default to gradualistic interpretations when the evidence for catastrophism is not overwhelming, Shea's (1982) critique probably still applies. He noted that most geologists cannot even define the term, much less explain it.

Slow changes in the geological perception of uniformitarianism can be seen in the evolution of its definition in the *Glossary of Geology* between 1987 and 2005. Reed (2010) analyzes the transition from a loose Lyellianism in 1987 to a hesitant neocatastrophism in 2005.



**Fig. 3.** Large basalt flows of the Columbia River Basalts, shown here as stacked layers at Palouse Falls, Washington, could have been emplaced in a matter of days. Photo: Michael Oard.

If the first, third, and fourth definitions of uniformitarianism cannot support the concept as geology's fundamental principle, then attention must be directed at the second; Gould's (1984) "uniformity of process." This view is also called *actualism*, resurrecting the term that Prevost introduced in 1825. Only it can save uniformitarianism. If so, it must be a powerful concept and deserves careful analysis.

## What is Actualism?

Actualism, like uniformity, is an axiomatic universal principle of method. As such, empirical arguments cannot prove it true because actualism is assumed in the argument. We cannot know that actualism was valid in the past because non-actualistic explanations of the rocks record are logically possible. This indicates how it must be evaluated—by logical truth tests, not observations. Like uniformity, modern geologists have never really validated actualism; they assume it was done long ago. But early naturalists did not rigorously examine their presuppositions; actualism was "validated" by nothing more than a passing analogy to physics (Baker 1998; Laudan 1987). This link between Newtonian physics and Lyellian geology rested on broader errors, including materialism & positivism of the Enlightenment (Reed 2001; Stark 2003). These errors de-emphasized the philosophical tools by which these basic principles could have been examined. Instead, empirical inconsistencies such as the Spokane Flood controversy (Baker 2008) garnered attention, but could not resolve the debate over method. That debate was further confused because it was too closely tied to arguments over catastrophism vs. gradualism.





**Fig. 4.** The Grand Canyon was likely eroded in a matter of hours or days, whether from post-Flood lakes or receding floodwaters. Photo: Michael Oard.

Secular geologists sway from gradualism to catastrophism, but seldom raise deeper questions about the method by which they might affirm either narrative. In that sense, such debates are red herrings. Yet it is surprising that something as momentous as the recent rejection of uniformitarianism by many thinkers (Ager 1973; Alvarez et al. 1980; Gould 1984; Young and Stearley 2008) has not spurred more philosophers of science to consider the underlying actualistic method. Even Hooykaas' (1963, 1970) rigorous analysis did not scale the barrier of positivism.

The problem with the argument over catastrophism and gradualism is that the positions are not qualitative contraries. Instead, they are only quantitatively distinct, being two points on a continuum of rate and scale, as recognized decades ago by Hooykaas (1963, p. 16):

Thus, one of the early exponents of uniformitarianism is already an example confirming our thesis that there is no hard and fast rule to distinguish it from catastrophism.

Lyell set the precedent for conflating gradualism with geologic method & geology as a whole has not yet rid itself of that error. The development of the "four-definition" solution allowed method and mode to be distinguished, but more importantly, it provided secular geologists room to dance around challenges. For example, if a creationist pointed to a formation formed by catastrophic processes, a secular opponent could still stand foursquare on uniformitarianism by affirming the methodological definition. Defenses of gradualism typically revert to generic uniformity.

But the “four-definition” solution fails—first in the semantic realm because there is a significant difference between defining the problem and solving it. Reed (2010) offered a wholesale revision of terminology (fig. 2) that left two clear and relevant terms: *uniformity* and *actualism*. *Uniformity* reverts to its primary meaning—the regular and universal operation of natural processes in relationships defined by cause and effect. It is most commonly understood as axiom of science in general—not just geology—referring to the constancy of “natural laws.” As such, it does not really demonstrate actualism.

Assessing actualism is complex. Several problems impede clear analysis. First, the term itself is much misunderstood and misapplied in modern geology:

De Luc’s actual causes [causes actuelles] were “actual” not in the modern Anglophone sense of real and not imaginary, but in the older sense still retained in other European languages, meaning current or of the present day . . . . Hence the analytical term actualism, applied to the earth sciences, denotes the methodological strategy of using a comparison with observable present features, processes, or phenomena as the basis for inferences about the unobservable deep past: in epigrammatic form, “the present is the key to the past.” . . . the heuristic value of this strategy was taken for granted by all the geologists . . . it was not—as modern historical myth would have it—first proposed by Charles Lyell in 1830. The arguments were about its adequacy for causal explanation, not about its validity or its value (Rudwick 2008, p. 15, n4).

Thus, when philosopher of science William Whewell introduced in 1832 the dichotomy between catastrophists and uniformitarians, he was not accusing catastrophists of questioning the validity of actual causes (as later uniformitarians would). The argument was instead about the adequacy of observed rates of these causes to explain the rock record (Rudwick 2005, 2008). Whewell’s insights into the method of geological investigation were rejected and lost for many decades (Baker 1998), but time has demonstrated that his concept of approaching the rock record without an a priori template (such as Lyell’s gradualism) was a valid insight into forensic investigation (Baker 2008), and one congenial to creationist studies. However, the nature and validity of actualism as a method remains a topic that needs to be addressed.

Another problem in understanding actualism is the tendency of some geologists to confuse it with uniformity. There are significant differences between geologic processes and physicochemical causes. Although theoretical works (for example, Julien 1998) predict some geological processes based on principles of physics or chemistry, the rock record is too complex to allow comprehensive explanation in this fashion.

Geologic processes can seldom be reduced in their totality to simple “laws,” being prone to greater complexity arising from variations in scale, rate, and process. For example, all eruptions obey physical principles regarding interactions between heat, pressure, density, viscosity & flow dynamics, but the application of these principles to individual eruptions can be very difficult. Eruptions range from small Kilauea basalt flows to giant explosive events like Tambora, and the resulting rock record of each is quite different. Likewise, sedimentary particles in water, air, or ice follow principles of flow dynamics, but the many rapidly-changing variables (grain size, shape, flow depth, velocity, bottom effects, etc.) preclude any simplistic “law” of sedimentation that can accurately predict exact bedforms or particle distribution of an entire deposit. Groundwater flow models can work well in controlled conditions, but no modeler would claim to be able to predict the motion of each particle of water in a real aquifer (Bredehoeft 2005). So, although there is a clear relationship between uniformity and actualism, as between physicochemical processes and geological processes, the relationship is not univocal.

This lack of evidence is exacerbated by the partial preservation of the rock record. Because secular geologists affirm that most of all the rocks ever deposited are absent, usually by erosion, it would not be possible to reconstruct a comprehensive geologic history even if geologists possessed the ability to accurately explain every rock body available to observation. And, of course, only a small percentage of the rock record has been directly observed. The persistence of Lyell’s uniformitarianism over decades that saw dramatic increases in empirical knowledge illustrates how his principle acted as an a priori template, not an interactive model. The confidence of Lyell and his followers was predicated on their mistaken idea that geology was as definitive as Newtonian physics. Laudan (1987, pp. 202, 203, brackets added) noted:

He [Lyell] did *not* try to apply one version or another of Newton’s substantive theories to geology. Instead, he argued that geologists should adopt the scientific methods advocated by Newton, for only in this way could geology achieve the status of sciences like astronomy and mechanics . . . . Lyell also wanted to develop a geological theory with impeccable methodological credentials. In Lyell’s mind there was no better way to accomplish this than to adopt the method favored by Newton himself—the so-called *vera causa* method, or method of true causes—and adapt it to geology.

But is Newton’s method appropriate for forensic earth history? Baker (1998) disagreed, arguing that Lyell’s primary error was his misguided idea that physics could serve as a methodological template for the new geology. So not only must actualism be distinguished from gradualism, but it must be shown not to be an outmoded or arbitrary assumption of method. The essential question then becomes: how do we justify actualism as a fundamental doctrine of modern geology? Secular geologists interpret the rock record by analogy with observed geological processes.

But how do they know? If no justification can be offered, then the entire edifice of uniformitarianism will lie in shambles, with all of its four facets discredited.

Secular thinkers have typically taken one of two paths to justify actualism: (1) an appeal to an underlying uniformity of nature (for example, Gould 1965, 1984) or (2) an appeal to experience (for example, Simpson 1970). The first path has several flaws. First, uniformity and actualism are not univocal. Second, the question of how uniformity is justified must then be raised. Thus, an appeal to uniformity only changes the question; it does not answer it. The second path is clearly fallacious. The limited & uncertain observations of a few years cannot be validly extrapolated across billions. Neocatastrophism presents another barrier to the empirical appeal. A static world is amenable to extrapolation from an observed present, but a dynamic earth increases unpredictability as preserved strata are less representative of the past as a whole.

Actualism permeates geohistorical theory. Core disciplines such as stratigraphy, paleontology, tectonics, and geochronology all rely on actualism. As far back as the 17th century, Steno proposed that his principle of superposition could apply to the entire rock record based on his single observation in the Bay of Naples. That thinking was actualistic. Today, the assumption that crustal plate motions have occurred throughout earth history relies on actualism, as does the idea that modern sedimentary environments are represented in ancient rocks. If actualism cannot be justified, large parts of the earth sciences would be open to question.

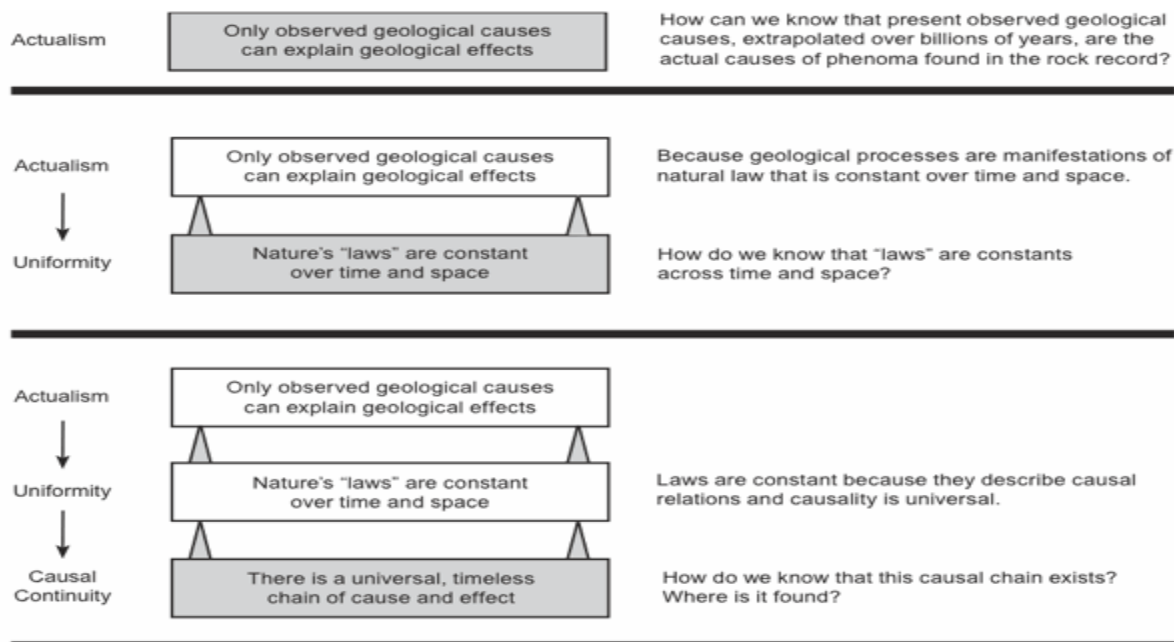
Logically, there are three possible answers to the question of whether actualism can be justified: (1) actualism cannot be justified, (2) actualism can be justified within the current framework of earth history, or (3) actualism can be justified, but only by modifying that framework. The first or third options will have a profound effect on contemporary geohistory and biohistory. Since actualism cannot be justified empirically, it must be justified by logical truth tests. This process entails 3 steps:

1. Dig down to the fundamental propositions supporting actualism.
2. Determine whether and how actualism and those related concepts can be justified.
3. Assess the implications of the answer.

## Finding the Basis for Actualism in Uniformity and Causality

Actualism can be self-evidently true or it can be true by reference to another proven principle. Because actualism is an axiom of method for materialist earth history, it must be universal in the physical world. So what is actualism? At root, it is a statement about cause and effect. It links a set of causes—observed geologic processes—to consequent effects, defined as features of the rock record. How can the validity of that link be affirmed, especially since our knowledge of the effects (the rock record) is poor, due to problems in observing the entire entity, to incomplete preservation, and to diagenetic or metamorphic changes?

Is actualism self-evident? The answer is “no.” We can conceive of non-actualistic approaches to the rock record (for example, Hooykaas 1970). Furthermore, I am unaware of any author claiming this status for actualism. Most scholarly efforts to justify it do so by reference to the principle of uniformity (for example, see Gould 1965, 1984). This logical relationship—actualism as a subset of uniformity—makes sense because the two ideas are similar, but it does not completely answer the question because the two principles are not the same. But that relationship can be explored as a means by which to better understand how to justify actualism. If uniformity is a precondition of actualism, then actualism is contingent on uniformity and before actualism can be justified, uniformity must first be shown to be true.



**Fig. 5.** Drilling down through concepts to get to the root of the issue moves us to causal continuity. Starting at the top, we ask how to justify actualism. That takes us to uniformity (middle) and finally to causal continuity (bottom), which is the foundational principle.

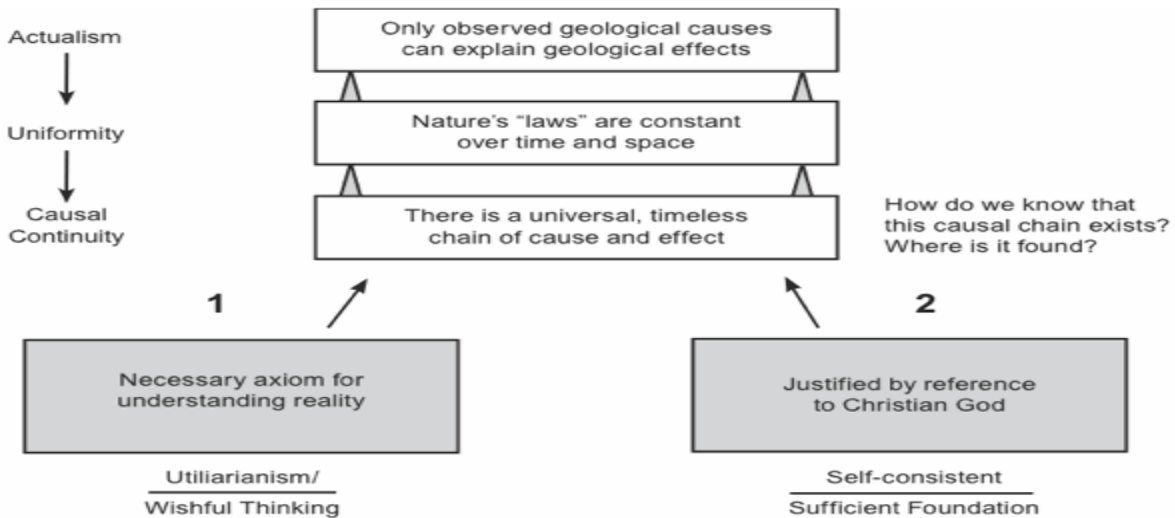
This is as far as secular thinkers go because everyone “knows” uniformity is true. But how do we know? Uniformity is not absolute. It too is contingent, and rests on the proposition that there exists an unbreakable chain of cause and effect in the physical world across time. Fig. 5 shows the progression from actualism to uniformity to causal continuity. Actualism demands uniformity and uniformity demands the validity of the underlying principle of the continuity of cause and effect. Is it enough to simply affirm cause and effect and consider uniformity and actualism justified too? If we know that cause and effect is universal, then the uniformity of physical and chemical processes may be a valid corollary. If uniformity is universal, then perhaps actualism can be justified by reference to it.

But since causal continuity and uniformity are thus both necessary preconditions of actualism, then if neither is valid, then actualism cannot be justified. Only a few secular thinkers have attempted a logical analysis (for example, Hooykaas 1963; 1970), but his positivist view of knowledge prevented them from moving to the metaphysical level. Hooykaas never discussed the links between uniformity and causal continuity; he assumed them valid a priori.

But was that a valid assumption? For the sake of argument, let us assume that none of the ideas are valid a priori. Instead, let us attempt to justify the most basic level of causal continuity, recognizing that the validity of both uniformity and actualism would be called into question if this more fundamental principle could not be confidently affirmed. If we cannot validate causality and uniformity, then no amount of empirical evidence can save actualism. Having climbed down the steps to the foundation, we must then move back up, carrying validation back up through the sequence.

## **Using Coherence as a Means of Validation**

Having defined the questions (fig. 5), how can these principles be validated? As with other metaphysical or epistemological axioms, “proof” cannot be found in empirical tests of truth, but in those of logic. In this case, the test of coherence is appropriate. That is because the assertion of actualism is not made in a vacuum, but in the context of a worldview. Thus, it is legitimate to evaluate its coherence with that worldview’s tenets of reality and knowledge. Inconsistencies would indicate a failure of the test of coherence. This test provides two logical checks. The first is the validation of the fundamental principle of causal continuity. The second checks the basis for deriving uniformity. Though coherence is not “scientific,” it is a valid truth test. Rational people understand that the principle of causality, like that of contradiction, is a prerequisite of truth. Since science is the pursuit of truth in the natural realm, then causality is also crucial to science. If an effect can occur spontaneously without cause, empirical predictability is not absolute.



**Fig. 6.** Of the two possible answers justifying the doctrines of causal continuity, uniformity, and actualism, only Christianity provides the consistent tenets to do so.

There are two possible ways to justify causal continuity (fig. 6). Both return a positive result, but one way is less rigorous and satisfying. The first method is to treat causality as a pure axiom. But saying that causal continuity is necessary (Answer 1 in fig. 6) is not a justification of the assumption, except on utilitarian grounds. In other words, we accept causal continuity because rational knowledge and practical living are not possible without it. For example, we rest our life on the causal continuity between stepping on the brake and the car stopping. In a negative sense, this perhaps justifies causality; we cannot imagine it not being true. But is there a better answer? The second option provides one by going one step further and providing a positive coherence with metaphysical reality. That method may seem strange to our positivist culture, but it is certainly better than the first option.

Statements about ultimate being and reality are found in worldviews. The two worldviews relevant to this discussion are orthodox Christianity and Enlightenment secularism (that is, Naturalism). Each makes distinct metaphysical assertions that can be used to evaluate the legitimacy of the axiom of causal continuity. Christianity (answer 2 in fig. 6) presents a metaphysical justification for causality by virtue of its coherence with the nature of God and with His acts of creation and providence. God is rational, unified, and unchanging, thus continuity of cause and effect is assured. God is eternal, and so causal continuity is operative everywhere in time. God is infinite, so cause and effect applies everywhere. Causal continuity exists in the material realm because the cosmos is the contingent creation of God, and His creation manifests His attributes. That view is confirmed by the doctrine of providence; God's causation behind every ongoing function of His work of creation guarantees the validity of causal continuity. But there is one important distinction in the Christian position—absolute causal continuity exists in the person of God, not in the physical creation.

In contrast, the worldview of Naturalism fails at this point because its metaphysical materialism demands that absolute causal continuity be found in matter or energy. That proposition is contradicted by any beginning for the universe (Reed and Williams, in press). It does not matter what kind of origin or how long ago it occurred; any origin represents a discontinuity in material cause and effect which in turn disallows a materialist rationale for causal continuity, and thus for uniformity and actualism. Another conflict is found in the epistemological realm. Reed (1998) noted that uniformitarianism and positivism—the epistemology of Naturalism—are also incompatible because uniformitarianism cannot be validated by empirical data. Neither uniformity nor causal continuity can be justified empirically, therefore Naturalism fails the test again with its restrictive epistemology.

Although widely unrecognized as such, this axiomatic failure of the truth test of coherence is the fundamental crisis of modern natural history because it precludes uniformity and its derivative actualism. How did this come about and why is it so widely unrecognized? That is a question for professional philosophers of science, but one possible explanation is that geology (like other aspects of Enlightenment knowledge) was built on a secular foundation, but one that unconsciously embedded various Christian concepts already accepted as presuppositions of science (Lisle 2009; Reed 2001). It is ironic that the same geologists who were accepting these axioms, such as linear, progressive time, were at the same time vociferously attacking historical tenets of Christianity. Even those who were Christians (for example, Buckland and Sedgwick) dismissed the Genesis account, not recognizing the stunning inconsistency in their position. If Naturalism cannot justify causal continuity or uniformity, then it cannot possibly justify actualism. Yet, geohistory rests on the mistaken assumption that it has already done so.

The positivism of the secular worldview elevates science above theology and first-order philosophy, blinding thinkers to first-order problems of the nature of reality and the necessity of knowing it through theology and philosophy, not science. Even Christians in the modern age have been influenced by culture; theological truth seems out of place in the scientific realm. By failing to ask the appropriate questions about the nature of their own axioms, natural historians cannot possibly provide the correct answers. This is illustrated by the long-time emphasis on the tempo of the past instead of the basis for the method of deriving it. They avoid the logical inconsistencies, focusing instead on “uniformitarianism vs. catastrophism.” But the ultimate problem in Lyell’s thought (and that of many other early geologists)—his inconsistent method—escapes scrutiny.

Thus, actualism can be justified, but only within the framework of Christianity. But that creates another problem of consistency. Because Christianity also speaks to ancient history and to the beginnings of the cosmos, consistency demands that the framework of natural history be aligned with the biblical narrative.



The results of this truth test raise several related questions:

1. Why did Lyellian gradualism rule geology for so long?
2. Why do geologists who reject gradualism think that actualism and neocatastrophism are valid fallback positions?
3. To what extent must geology be reevaluated and transformed in the wake of the Lyellian failure?
4. If Christianity alone justifies actualism, then what changes are necessary in geology and natural history to ensure consistency?

## **Implications of the Answer: Christian Actualism?**

The last question will be answered first. If actualism is derived from uniformity, and if uniformity is derived from causal continuity, and if causal continuity is validated by the nature of God, then all three concepts are only justified by Christianity. Absolute causal continuity can only exist in a being who is also absolute. Christianity's God, who is eternal, infinite, and unchanging, meets these criteria. Based on information God has revealed about how He created and governs the cosmos, we can expect continuity of cause and effect, uniformity, and even actualism to be valid tools in examining the natural world. But it would be illogical to accept these principles while rejecting other relevant parts of the Christian worldview, including the divine prerogative to act directly (what we call "miraculously") in His creation. Since the metaphysical and historical frameworks that underlie natural history must be those of Christianity, then propositions contrary to Christianity must be abandoned. This entails sweeping changes in the way both uniformity and actualism are understood.

## **The Nature of Uniformity**

As noted earlier, most secular thinkers predicate actualism on the prior principle of uniformity. But if all three principles are validated only by Christianity, then none of them are absolute. That creates another problem, because secular thinkers treat uniformity as absolute. What are the consequences of having to change that view? If uniformity is the facet of causal continuity that applies to the normal operation of matter and energy in the created cosmos—the predictable "laws" of the natural world—then those laws are not absolute, but are contingent on God's will and subject to modification at His whim. That is the argument for scientific naturalism and has been for several centuries. It is claimed that science is impossible in a world governed by divine caprice.

But that raises the question of how science originated in the Christian worldview. The answer to the problem is that secularists make a logical error: they conflate the need for science to be absolute with the need for it to be true. The latter does not demand the former. Christians have long affirmed uniformity’s contingency in both theory and practice. In theory, since causal continuity is justified by Christianity, then there is a God who created and governs the cosmos. His ability to work apart from uniform “natural laws” is inherent to His being; after all, He made the universe using non-uniform methods. Thus, He could conceivably create, change, or destroy anything apart from these “laws.” In practice, that principle is illustrated by each historical account of a miracle. Everything from Joshua’s long day to the healing of the lame beggar at the Temple by the Apostles demonstrates that God can and does act in non-uniform ways.

Secularists see this as a problem. They claim that God’s potential to violate “natural laws” makes science impossible & superstition inevitable. However, their unspoken assumption is materialism. For them, “natural laws” are inherent to matter and energy; God is then able to be falsely portrayed as the enemy of the natural order. But how can God not act upon what He has made? The issue is not one of science, but of theology. Furthermore, science does not demand materialism; in fact, science is only possible within the framework of Christianity because only God can guarantee its necessary conditions (D’Souza 2008; Glover 1984; Hooykaas 1972; Keller 2008; Reed 2001; Reed et al. 2004; Stark 2003). Thus, both logically and historically, science and a theology of divine providence are not at odds.

Philosophy	Primary Causality	God’s act of creation God’s ongoing sustaining of universe
Theology	Immediate Works	God’s direct action to accomplish His will
Philosophy	Secondary Causality	Ordinary manner by which God rules His creation—”laws of nature” natural causes = ordinary providence
Theology	Mediate Works	God’s intermediate use of created things to accomplish His will

**Fig. 7.** Both philosophy and theology have special terms to refer to causality and providence. Different terms can refer to different aspects of the same thing. Of key importance in understanding God’s use of cause and effect are the differences between His mediate and immediate works.

Christians have been confused by secular attacks because they have ignored their legacy of theology and allowed the secular scientific view—which is materialistic or deistic—to direct their thinking. Plantinga (1997, p. 143) called this view “provisional atheism.” A clear understanding of the doctrine of divine providence corrects these misunderstandings. Natural “laws” are simply the physical description of divine providence as it governs the material world. Providence is God’s mediate work; in other words, it describes the regular, everyday manner in which God keeps the universe operating. Secularists fail to see the issue theologically, and, in doing so, they fail to see that God can and does also work immediately. In this context, the term does not mean that God does something right away; it means that He acts directly in a given situation, without regard for the “normal” causal chain that marks His mediate actions. We often call His immediate acts miracles, set apart from actions of providence involving second causes (fig. 7).

Secularists and many Christians make a crucial error by ignoring God’s mediate acts of providence and emphasizing His immediate acts, or miracles, as God’s only interaction with nature. This assumes a deistic view which grants the power of continuing existence to matter and energy, making uniformity a material property rather than a divine act. However, since uniformity can only be justified by God, then it is wrong to set it in opposition to God’s works, since God’s efforts include both His works of creation and providence. A proper theological appreciation of these doctrines corrects this error and removes the tension between God and creation vis a vis causality.

Thus, while terms like uniformity and natural law are the currency of contemporary vocabulary, the Christian understanding of causality and uniformity rests in the theology of providence. God governs the universe. His power upholds it. In that sense, everything is a wonder, pointing to God’s exercise of His divine power. Centuries of a scientific emphasis on the physical world have robbed us of that legacy. But neither science nor materialism can justify uniformity. For that reason, Christians who are also scientists need to understand the theological basis for their work and not be hesitant to affirm its logical superiority to the secular worldview. Uniformity is affirmed, but it is not absolute for it rests ultimately on the will of God expressed in his providential governance of the cosmos.

Since uniformity is validated by Christian theology, and since even secular thinkers relate the justification of geological actualism to the principle of uniformity, we must re-examine our view of actualism too. It must also be rooted in Christian theology and subject to consistency tests with the rest of the Christian worldview, including Genesis. This leaves us with something that sounds quite curious in our present culture—Christian actualism.

## The Nature of Actualism

If uniformity is a sub-principle of causality with regard to the “laws” of nature, then actualism describes the subset of geological processes. However, it is still fundamentally an axiom of cause and effect. Laudan (1987, p. 206) thought that:

In short, Lyell’s requirement of kind uniformitarianism can be seen as a straightforward extension of the *vera causa* principle to a situation in which the cause and effect are widely separated in time.

This statement reveals a bias toward deep time inherent in the views of secular geologists. It is not the cause (geological process) and effect (feature of the rock record) that are necessarily separated by large amounts of time, but it is our observation of the effect. That in itself might be seen as an effect, but there is a vast difference between the physical cause and effect and our observation of the latter. One is physical; the other is informational. The degradation of information results from several factors, including our incomplete understanding of natural processes, our incomplete knowledge of the rock record, the failure of the rocks to preserve sufficient effects to show the original physical causes, and the partial preservation and erosion of what was originally deposited. All are barriers to a complete understanding of the geological processes that produced the rocks.

Actualism, like uniformitarianism, does not inherently demand deep time (Shea 1982). Instead, secularists have long assumed such a relationship because an extended prehistory is a core assumption of secular history. It is an axiom, not an inductive conclusion. That is why the Christian justification of actualism and its prior principles of uniformity and causal continuity present such a crisis for secular natural history. Actualism can be justified, but only within a framework completely different from the one that informs the secular narrative of the past—including deep time.

What modifications must be made in changing this framework to accommodate the logical consistency demanded by the outcome of the coherence test? The most important change is epistemological; if these principles are justified by Christianity, then the foundation of ultimate truth in science and natural history is transferred from human empirical investigation to divine revelation. God has revealed His works of creation and providence to people who can comprehend them because they are created in His image. Science is contingent upon Scripture; it is not the template against which Scripture is judged. Some rightly argue that God also reveals himself in nature, and then equate natural revelation with modern secular science. However, they miss one key point; that special revelation takes precedence over general revelation when an apparent conflict exists.

While Scripture does not reveal everything about earth's natural past, those things that it does reveal must form the framework for empirical pursuit of this knowledge. For example, we do not know all of the geological mechanisms of the Flood, but we do know that such a Flood occurred, and can thus investigate in that context.

This view brings a new framework of history. Its high points include: (1) ex nihilo creation by an eternally self-existing God, (2) creation of man in God's image, providing the basis for comprehending revelational knowledge, (3) a providential understanding of God's ongoing interactions with what He has made, (4) the concomitant rejection of the deistic view that inheres matter and energy with their autonomous existence and inherent properties that cause the uniform action of natural processes, (5) the reality of miracles as God's immediate acts, (6) the ultimate unity of mediate and immediate causality in the mind of God, and (7) the reality of biblical history, including the Genesis Flood. Without all of these facets, actualism cannot be applied as a principle of geological interpretation other than as a subjective and inconsistent imposition.

## Irony of "Flood Actualism"

There is no denying the irony in this situation. Actualism was seen by early geologists as a means of ridding themselves of the constraints of biblical history. It was a symbol of freedom from theology; Cuvier in 1812 had waxed eloquent:

"Would it not be glorious," Cuvier had asked rhetorically, for geologists to "burst the limits of time", just as astronomers had "burst the limits of space?" (Rudwick 2008, p.1).

Cuvier's wish was granted in the development of secular natural history, culminating in Lyell's *Principles of Geology* (1830–1833). Along with time, geologists had burst biblical history, creating a secular mythology built around the geological time scale. Further "freedoms" from Christianity followed: Lyell's earth history, Darwin's evolution, and social derivatives of the two, including modern political and social pathologies, marking the descent of Western culture.

But we have now seen that actualism cannot be divorced from the biblical narrative of creation and the Flood. It follows that the same is true of the rock record. But how do we deal with the discontinuities associated with creation and the Flood? The secular worldview provides a physical uniformity, but cannot justify it because matter is not absolute. Therefore, we must refocus from science to theology, and see the contingency of actualism. Only God is absolute; thus actualism is simply the contingent manifestation of God's mediate work of providence in the natural realm with regard to geological processes. That means that actualism is not applicable to all of God's works.

Scripture's description of these past discontinuities in no way invalidates actualism as a methodological assumption for much of the chronology of earth's past; it represents the continuing, regular function of earth's geological and geophysical processes. In other words, actualism is an appropriate template for the vast majority of earth's time—every minute in which God did not act in an immediate fashion. We may not know every instance of God's immediate work from revelation, but we must honor those that we do know. But based on revelation, we are faced with a conundrum; the vast majority of the rock record represents relatively insignificant amounts of time. Thus while actualism applies to most of history chronologically, it does not apply to much of the rock record.

The biblical record strongly implies that the Flood is the cause of most of the rock record. Secular assumptions of deep time, and the linking actualism to the rock record are therefore invalid, not because actualism is invalid, but because its absolute link to the rock record is. "Christian actualism" then is of limited application; it applies only to those parts of the rock record deposited after the Flood or between creation and the Flood. Therefore, a sound interpretation of the rock record demands a non-uniformity of geologic process, requiring that interpretation be built from observation of the rocks per se, and not from an a priori actualism.

This points us away from traditional secular geology. We must recognize that geohistory is an investigation of unique past events. Because our concern is with natural processes, then the investigation is natural history. Science is applicable, but as a forensic tool, not as the determinative driver. Adler (1965) called natural history a "mixed question," an adequate definition described in more depth by Reed (2001) and Reed, Klevberg, and Froede (2006). Understanding that the secular approach is invalid, and that the biblical approach includes non-actualistic interpretation, we must elevate empirical investigation over the imposition of theoretical templates. Austin (1979, p. 39) described this approach, recognizing that interpretation was complicated by:

... unusual ancient processes, undiscovered processes, and inversions of actualistic reasoning as important problems for causal uniformitarianism. The geologist's technique in deciphering ancient processes, they affirm, relies not only on analogies with products of modern geological processes, but on analogies with products of similar ancient processes, on analogies with products from experimental replicas and other non-geological systems, and on logical deductions from theories or scientific laws. Proper interpretations of ancient processes should, they say, involve complex techniques of inference, not just simple one-to-one association of products of modern and ancient processes. By using complex inference techniques, the geologist retains the maximum flexibility when confronted with anomalous facts, the proper perception of which is probably the crucial step in the act of scientific discovery.

In a similar fashion, Baker (2008, p. 47) noted:

William Whewell, one of the few philosophers of science to have had any familiarity with geology, suggested from his historical studies of science that the validity of hypotheses . . . was demonstrated by their ability to bring together disparate observations under an overarching explanation and to produce explanatory surprises, such that previously unknown phenomena are also found to fit under that explanation . . . a procedure that he called “consilience of inductions” . . . . Hypotheses are not mere propositions to be tested. They are “working” elements of inquiry, intimately connected to the phenomena that they explain, and are subject to modification.

As Reed, Klevberg, and Froede (2006) noted, stratigraphy became progressively less empirical, as theoretical templates, or “geotheories” (Reed and Klevberg 2011) drove interpretation. Interpretation driven by field evidence is preferred, whether it reflects actualistic processes or not.

## Summary

Although many practicing geologists would describe themselves “uniformitarians,” the intellectual leaders of the discipline have shown that Lyell’s construct was unworkable. They have divided the concept into four facets; rejecting gradualism and stasis, but affirming uniformity and actualism. Reed (2010) showed that the former is not directly relevant to geological interpretation, and we have seen here that actualism fails in their worldview because it fails the truth test of coherence. Thus, “uniformitarianism,” as defined by its secular proponents, fails in all four of its definitions. Therefore, the concept is empty, despite its continued use in secular geology.

Some have abandoned Lyellian uniformitarianism and replaced it with the method of actualism conjoined with the narrative of neocatastrophism. But instead of saving geology, this new combination still affirms a method that it cannot justify. Freed from the blinkers of 19th century positivism, we now see that actualism cannot be justified by simple analogy to Newtonian physics, nor can it be justified by reference to uniformity. Both concepts are congenial to Christian worldview, but incompatible with that of Naturalism.

As Fig. 8 demonstrates, Christianity can answer the hard questions about earth history that secularism cannot. Thus, secularists are faced with a difficult choice; they must either abandon their assumptions about interpreting the rock record or their animosity towards orthodox Christianity. A few have begun to understand the problems created by actualism and its implications. Baker (1998, p. 180) noted:

Geology is a realistic science, not an actualistic one. A science that would limit itself to using the present as the arbitrator of what counts as natural evidence condemns itself to being actualistically unrealistic. The realism in geology derives not so much through inductive experimental contiguity as through coherence and consistency of observation with hypothesis.

Concept	Secular Answer	Christian Answer
actualism	Method of geology consistent with Newton's <i>vera causa</i> method; since nature is absolute, actualism is too	Method of those parts of history governed by mediate providence; not absolute since God also uses immediate actions by His will
uniformity	Inherent laws of nature are constant across space and time; also absolute since matter/energy are absolute	Describes work of God's mediate providence; contingent and subject to interruption by immediate actions
causality	Every effect has a cause	Every effect has a cause; note that God is not an effect
justification of continuity	If causality is not: (1) absolute and (2) material, then reality cannot possibly be understood = incoherent	Causality is unlimited by time and space because God is infinite, unchanging and eternal = coherent
location of continuity	In nature; materialism allows no other option	In God; natural discontinuities at physico-chemical or geological levels do not compromise causality

**Fig. 8.** Actualism and its associated concepts are viewed much differently by secularists and by Christians. However, the secular formulation of any of these cannot be justified. Thus Christian tenets touching natural history, including creation and the Flood, are mandatory, if actualism is true.



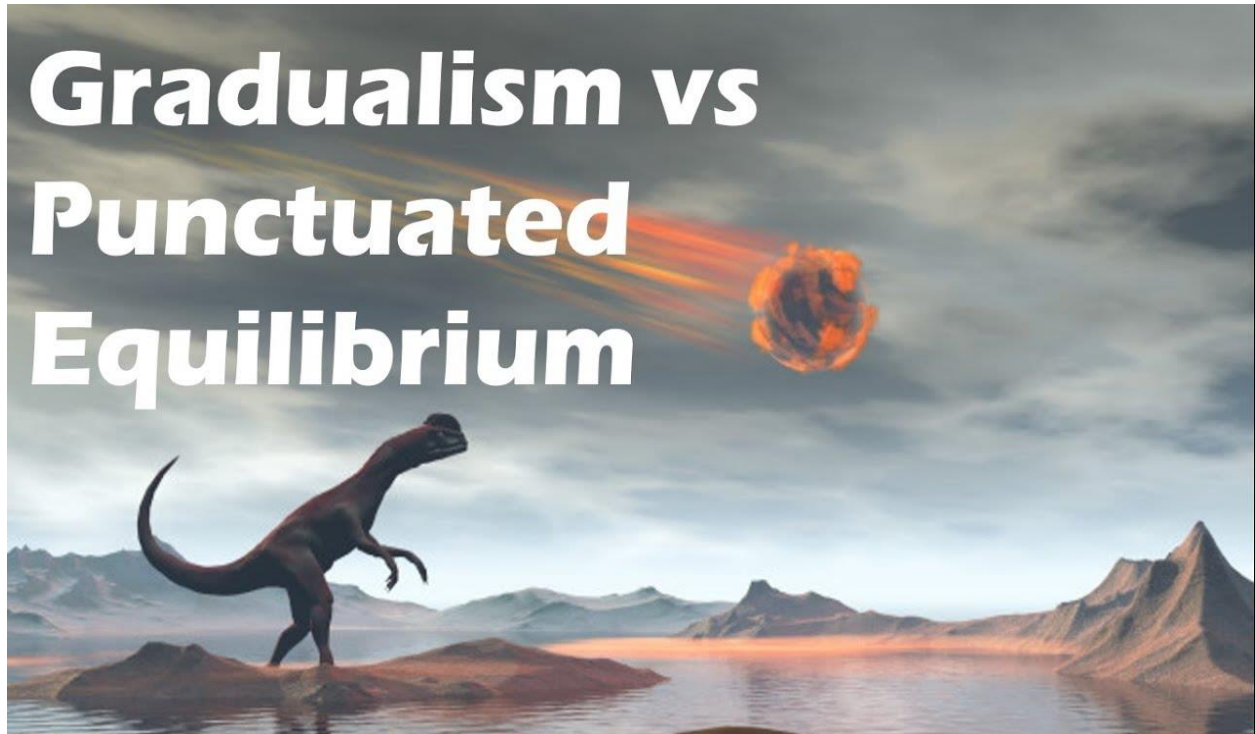
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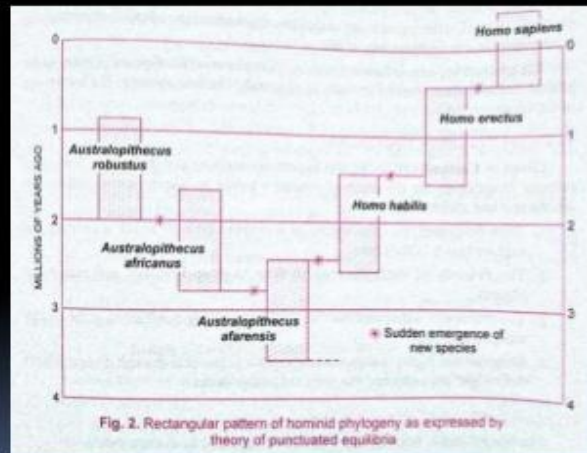
# Gradualism vs Punctuated Equilibrium

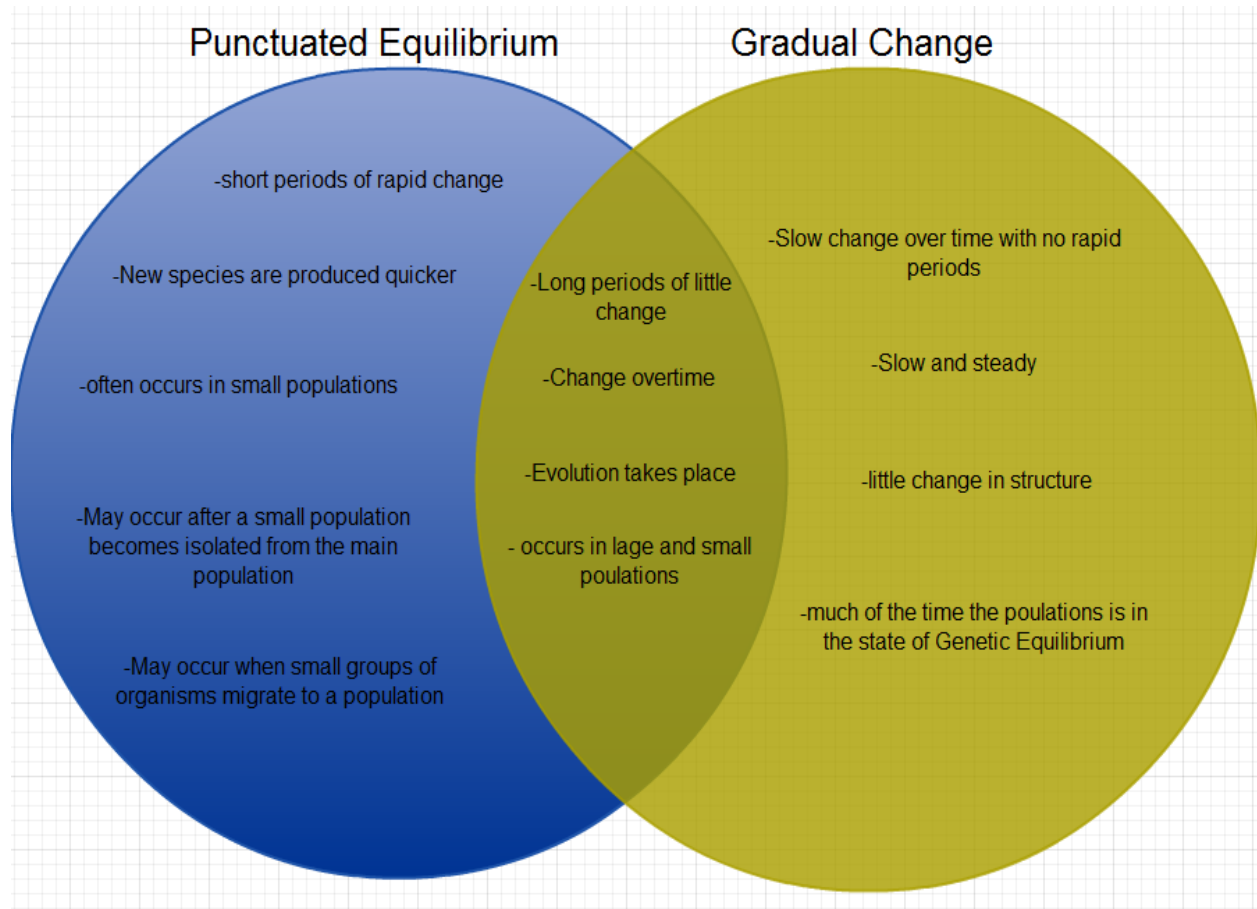


## CORRELATED TO NATURAL DISASTERS

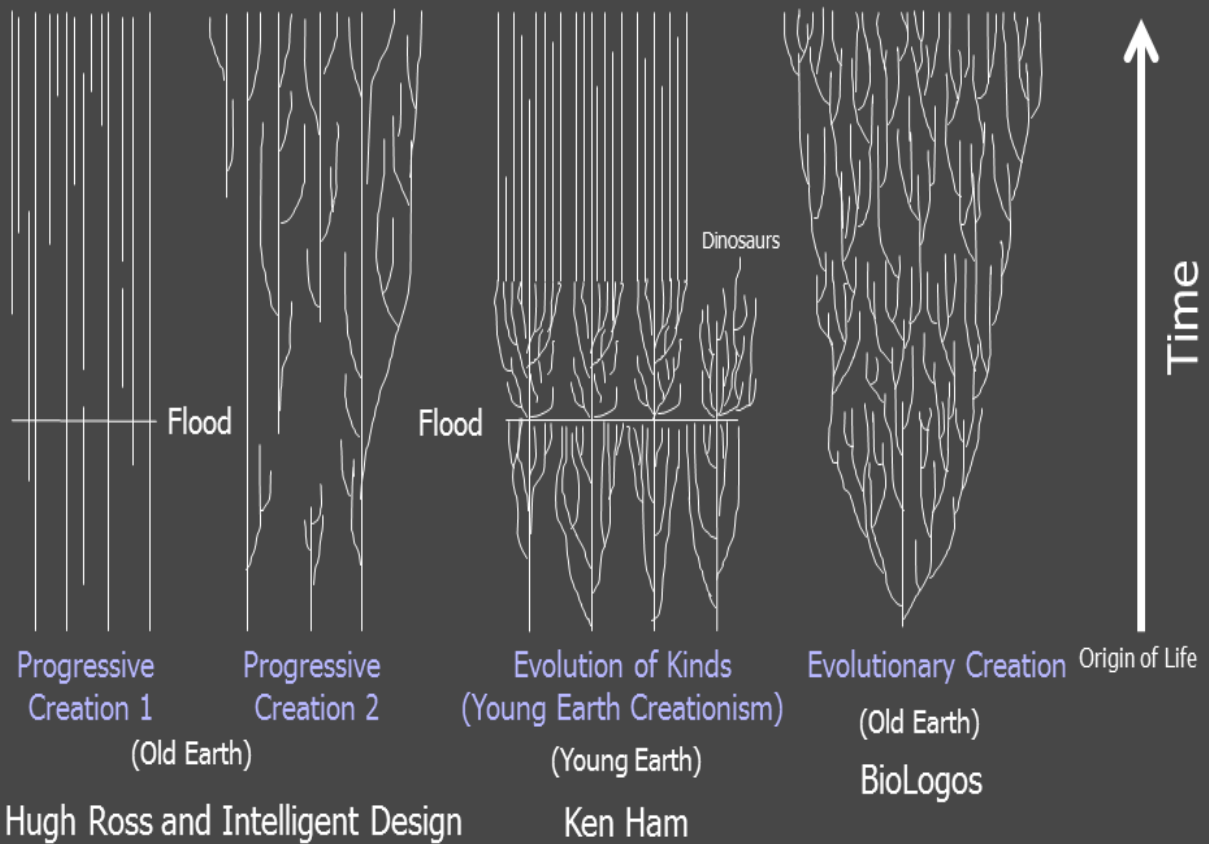
### PUNCTUATED EQUILIBRIUM IN HUMAN EVOLUTION

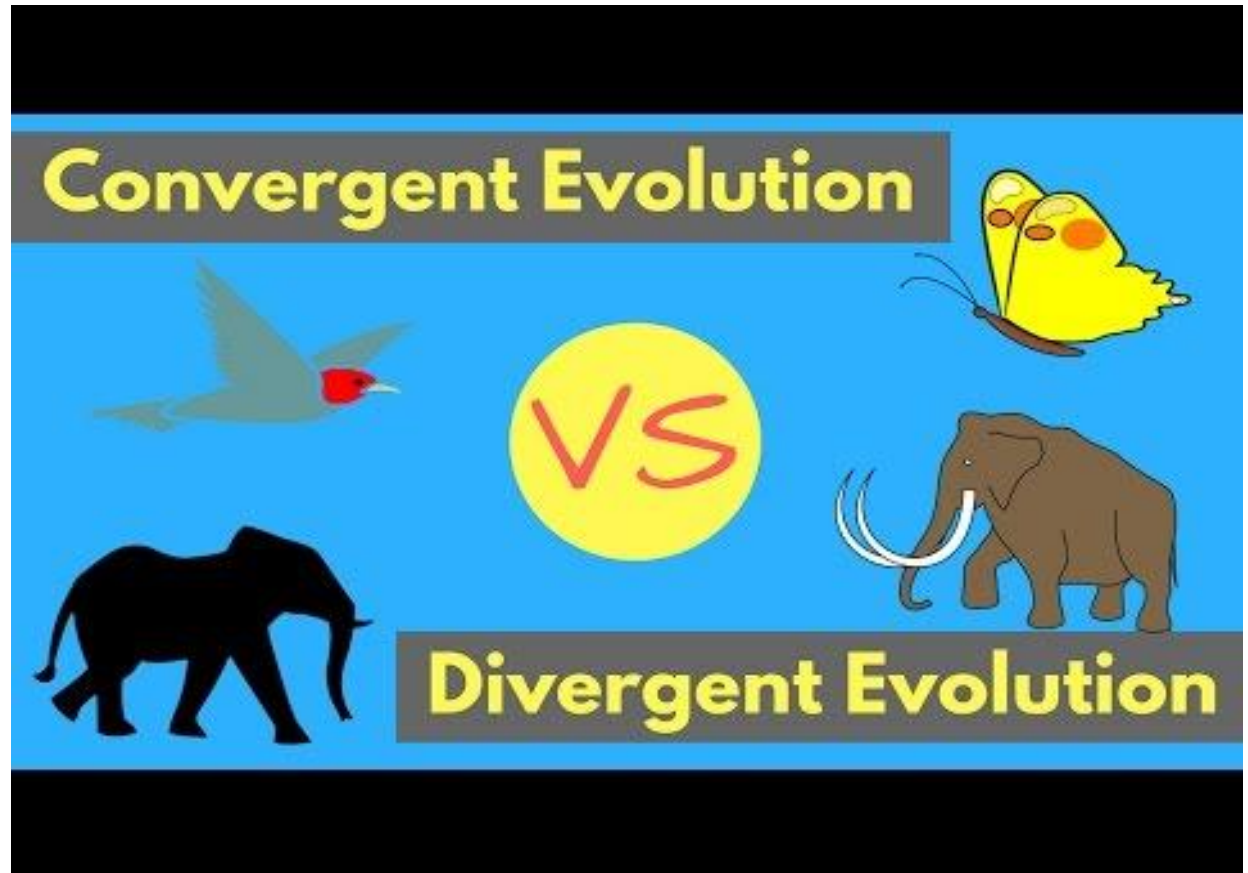
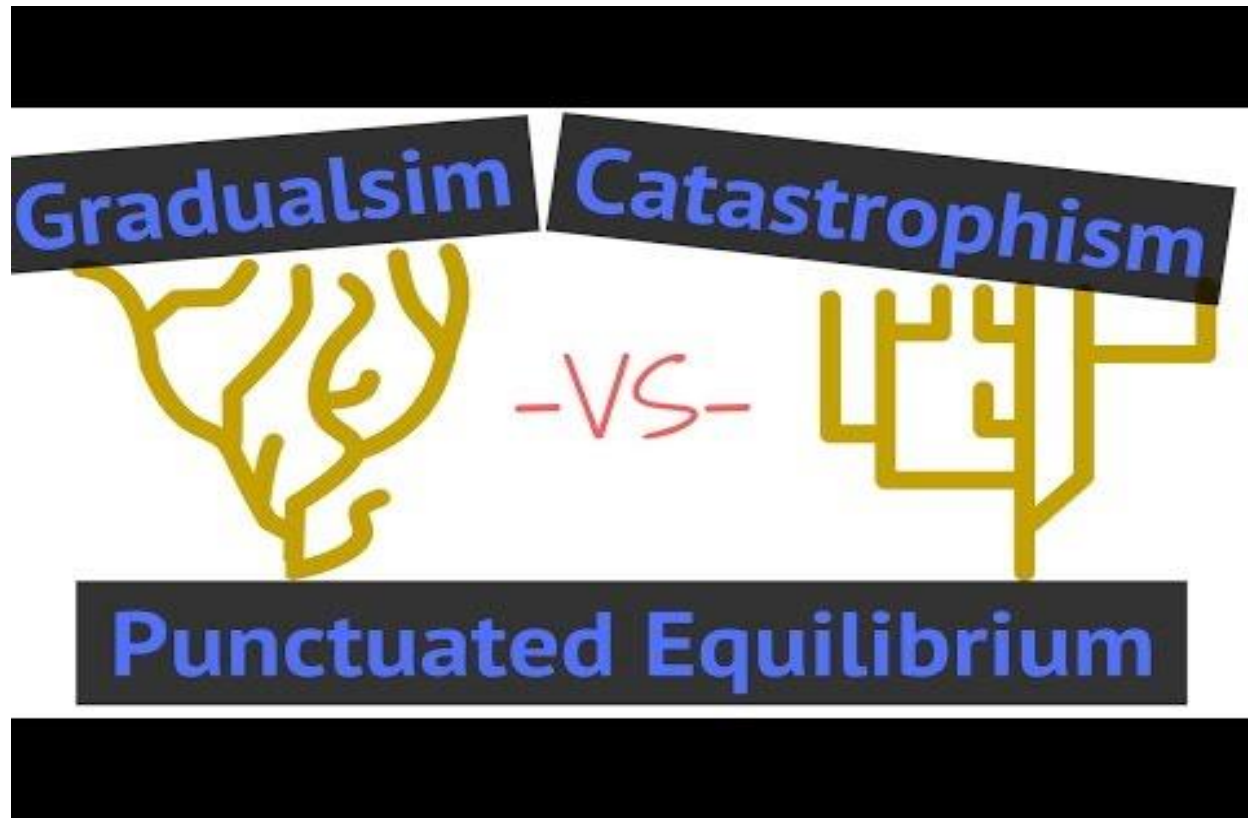
- According to this theory, evolutionary changes occurred in rapid bursts. These punctuated episodes were separated from long periods of stasis in hominid lineages during which little or no morphological change took place. This is described as rectangular pattern instead of tree like pattern as found in the evolution of different groups.

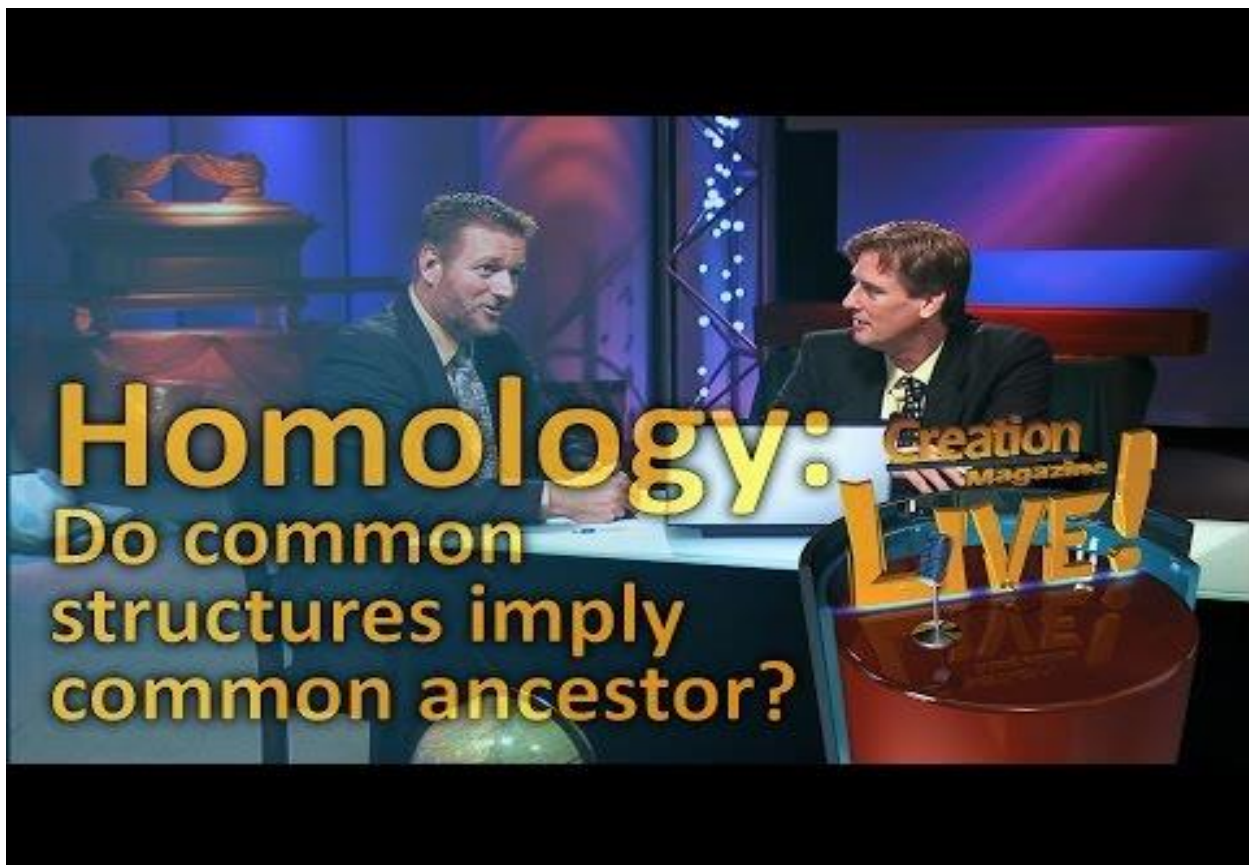




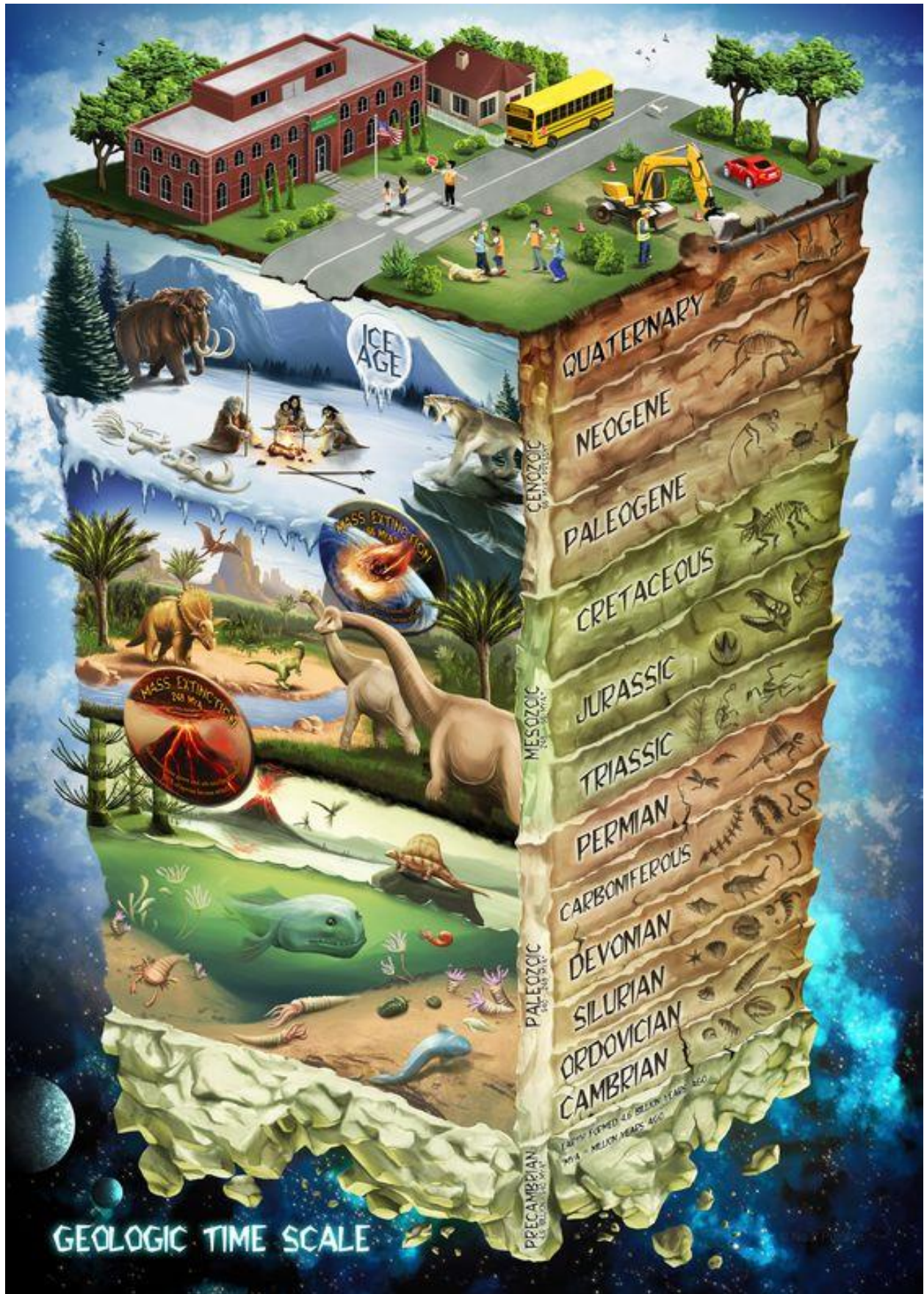
# Theistic Models of the History of Life











## The Cambrian Explosion

“New discoveries show that life as we know it began in an amazing biological frenzy that changed the planet almost overnight.”

*Time 1995*

## The Cambrian Explosion

“Virtually everyone agrees that the Cambrian started almost exactly 543 million years ago and, even more startling, that all but one of the phyla in the fossil record appeared within the first 5 million to 10 million years.”

*Time (1995)*

## Origin of Major Body Plans

“The term ‘explosion’ should not be taken too literally, but in terms of evolution it is still very **dramatic**. What it means is rapid diversification of animal life. ‘Rapid’ in this case means a few million years, rather than the tens or even hundreds of millions of years that are more typical . . .

S. Morris, *Crucible of Creation*, 1998, p. 31

“Even more speculative are scientists’ attempts to address the flip side of the Cambrian mystery: why this evolutionary **burst**, so stunning in speed and scope, has never been equaled . . . . Why no new phyla?”

*Time* magazine

## How Different Are Phyla?

Arthropoda - insects, crustaceans, centipedes, etc.



Chordata - fish, amphibians, reptiles, birds, and mammals



## The Speed of Change

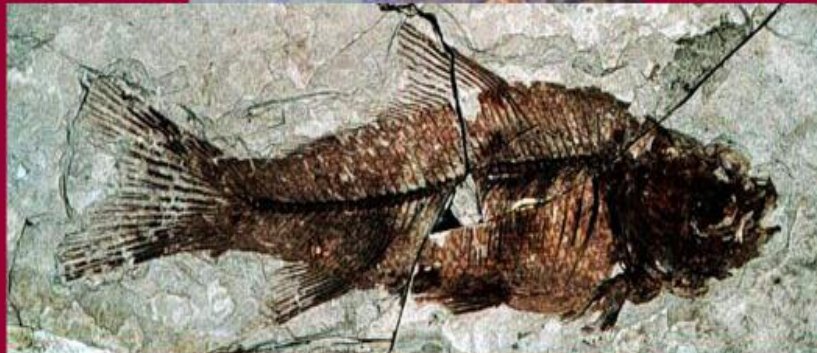
“We now know how fast fast is. And what I like to ask my biologist friends is, How fast can evolution get before they start feeling uncomfortable?”

Samuel Bowring, 1995

## How Significant Was the Change

“For billions of years, simple creatures like plankton, bacteria and algae ruled the earth. Then, suddenly, life got very complicated.”

*Time*, 1995



“Of course, understanding what made the Cambrian explosion possible doesn’t address the larger question of what made it happen so fast. Here scientists slide across data-thin ice, suggesting scenarios that are based on **intuition** rather than solid evidence.”

*Time, 1995*

## **Origin of Major Body Plans**

“Imagine an organism built of a hundred basic features, with twenty possible forms per feature. The grabbag contains a hundred compartments, with twenty different tokens in each.”

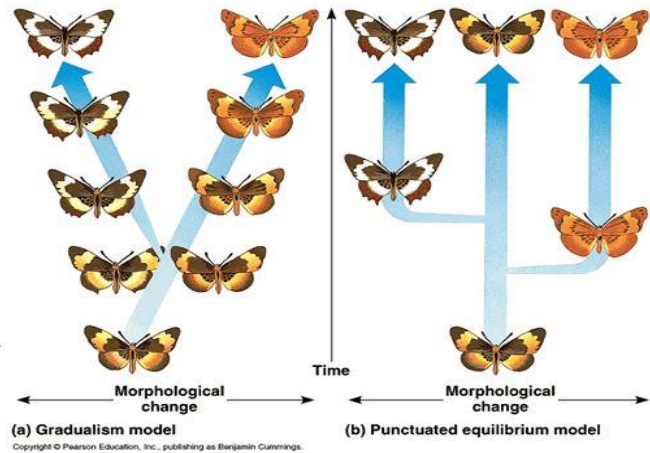
Stephen Jay Gould

“To make a new Burgess creature, the Great Token-Stringer takes one token at random from each compartment and strings them together. *Voila*, the creature works – and you have nearly as many successful experiments as a **musical scale** can build catchy tunes.”

Stephen Jay Gould

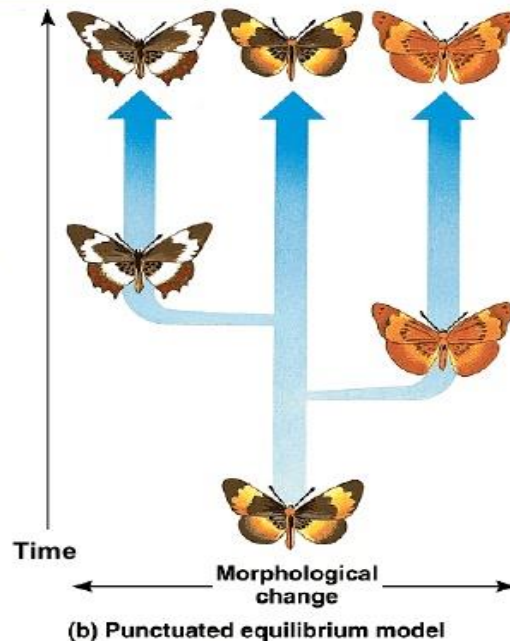
# Patterns of macroevolution

- **Phyletic gradualism-** evolution occurs by the gradual accumulation of small changes. The intermediate stages of evolution not represented by fossils merely testifies to the incompleteness of the fossil record.
- **Punctuated Equilibrium-** evolutionary history consists of geologically long periods of stasis with little or no evolution, interrupted or “punctuated” by geologically short periods of rapid evolution.

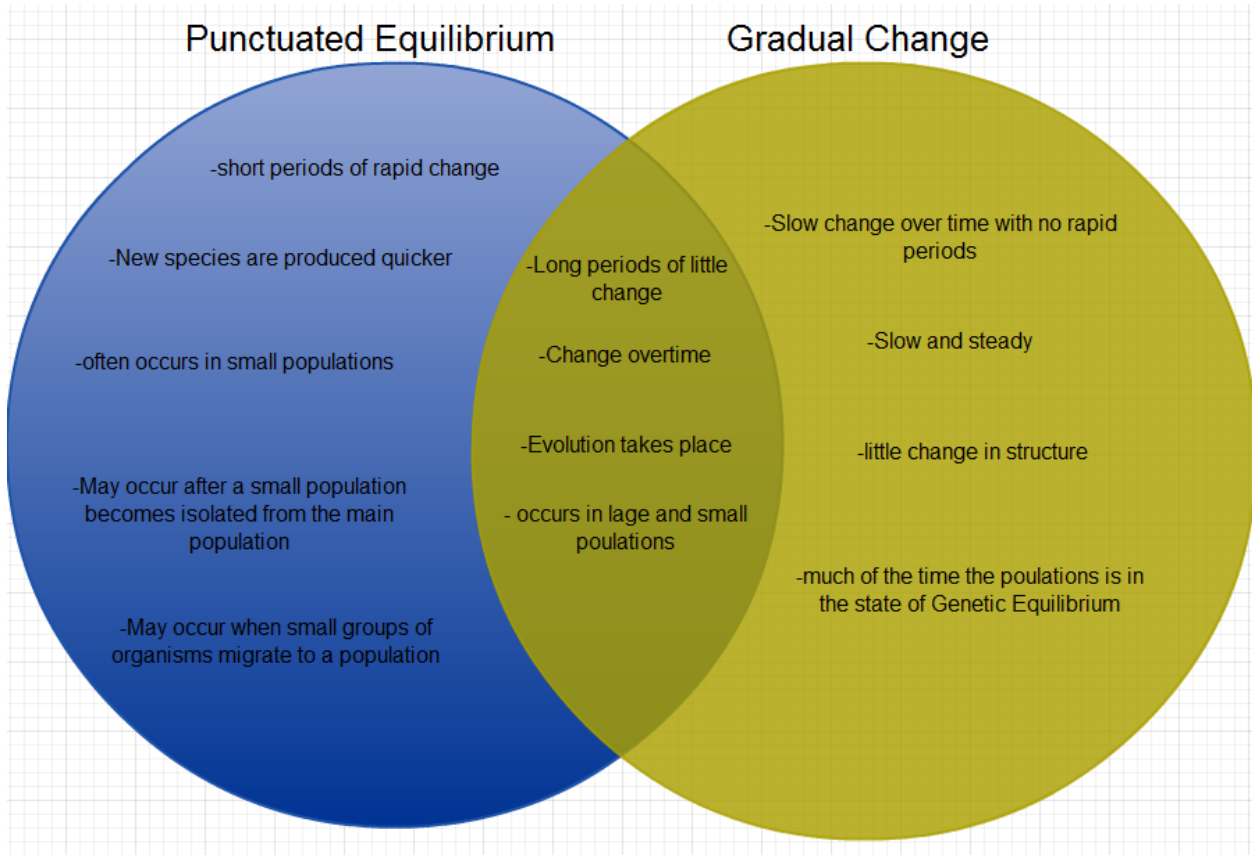
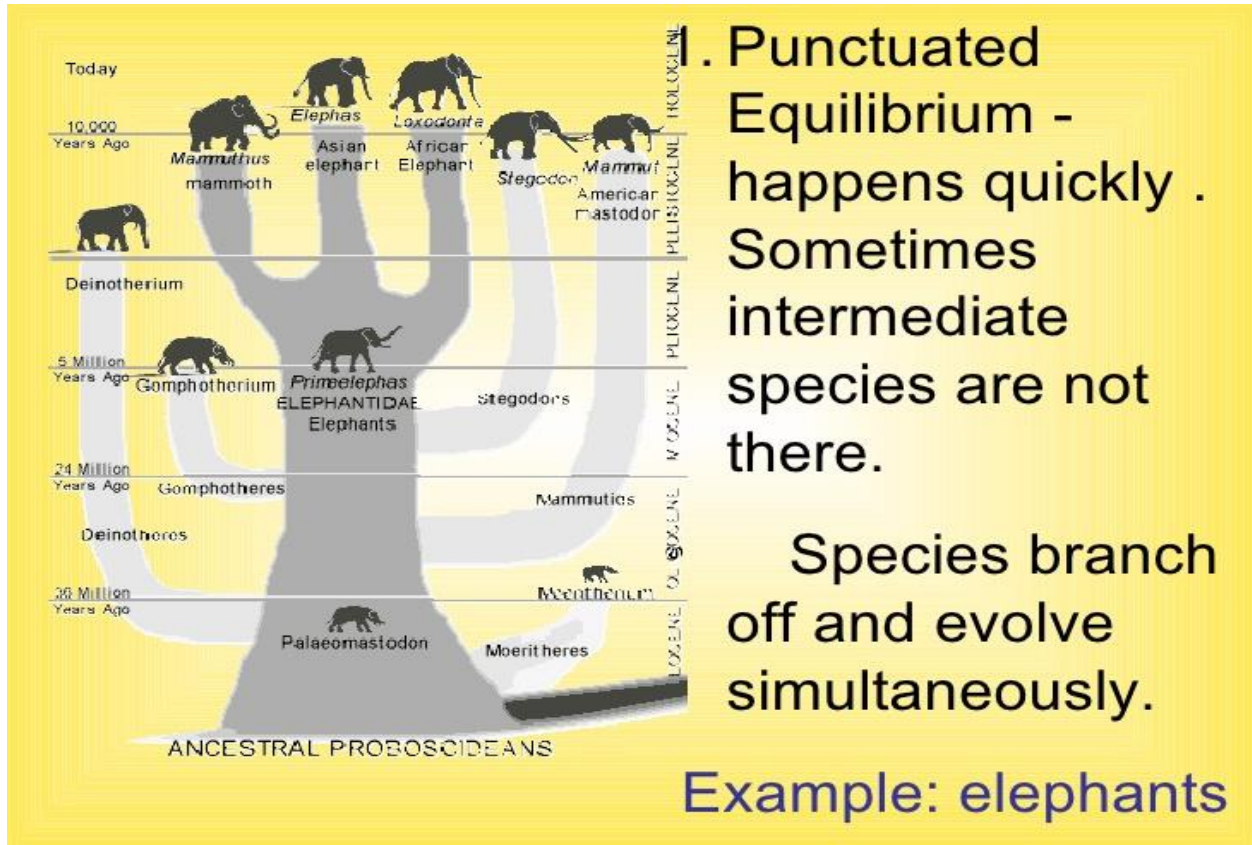


## Punctuated Equilibrium

- **Rate of speciation is not constant**
  - ◆ rapid bursts of change
  - ◆ long periods of little or no change
  - ◆ species undergo rapid change when they 1<sup>st</sup> bud from parent population







# GRADUALISM VERSUS PUNCTUATED EQUILIBRIUM

## GRADUALISM

Hypothesis that evolution proceeds by imperceptibly small, cumulative steps over long periods of time rather than by abrupt, major changes

Brings small variation to a particular species

Occurs over a long period of time

Describes evolution as a slow process

Not proven by fossil records

## PUNCTUATED EQUILIBRIUM

Hypothesis that evolutionary development is marked by isolated episodes of rapid speciation between long periods of little or no change

Emphasizes consistent and cumulative changes to a species

Occurs within a short period of time

Brings short events, which speed up the slow evolution

Better model to describe evolution

Visit [www.PEDIAA.com](http://www.PEDIAA.com)



***"I am quite conscious  
that my speculations  
run quite beyond  
the bounds of true science."***

**Charles Darwin, Evolution Theorist,  
in a letter to Asa Gray  
June 18, 1857**



## What Is Evolution?

Like many words, evolution has many different uses depending on its context. The general concept of the word is “change over time.” In that sense, one might say that a butterfly evolves from an egg to a caterpillar to a winged butterfly and a child evolves into an adult. There is no disputing that individual organisms change over time. However, using the word in this way is quite misleading for the origins debate. Darwin’s hypothesis involves a very different concept.

As *evolution* is used in this chapter and in all science textbooks, natural history museums, and science programs on television, it refers to the biological idea that all life on Earth has descended from a single common ancestor. There are many different variations on this theme as well as several explanations of how the first organism came into existence from non-living matter. Examining some of the historical evolutionary positions and comparing them to the ideas that are popular in scientific circles today shows how much those concepts have changed. In general, evolution will be used to refer to the concept of molecules turning into men over time. This concept of evolution is in direct opposition to the biblical account of creation presented in the book of Genesis.<sup>1</sup>

## Evolution—An Ancient Idea

The concept of molecules-to-man evolution is certainly not a new idea. Several Greek philosophers before the time of Christ wrote on the topic. For example, Lucretius and Empedocles promoted a form of natural selection that did not rely on any type of purpose. In *De Rerum Natura (On the Nature of Things)* Lucretius writes: And many species of animals must have perished at that time, unable by procreation to forge out the chain of posterity: for whatever you see feeding on the breath of life, either cunning or courage or at least quickness must have guarded and kept that kind from its earliest existence. . . . But those to which nature gave no such qualities, so that they could neither live by themselves at their own will, nor give us some usefulness for which we might suffer to feed them under our protection and be safe, these certainly lay at the mercy of others for prey and profit, being all hampered by their own fateful chains, until nature brought that race to destruction.<sup>2</sup>

This stands in opposition to the thinking of Aristotle, who promoted the idea of purpose in nature. Aristotle also imagined forms of life advancing through history, but he believed nature had the aim of producing beauty.<sup>3</sup> This idea of purpose in nature, or teleology, is later seen in the works of Thomas Aquinas and other Christian philosophers.

***THE CONCEPT OF EVOLUTION WAS NOT LOST FROM WESTERN THINKING UNTIL DARWIN REDISCOVERED IT.***

The concept of evolution was not lost from Western thinking until Darwin rediscovered it—it was always present in various forms. Because much of the thinking was dominated by Aristotelian ideas, the idea of a purposeless evolutionary process was not popular. Most saw a purpose in nature and the interactions between living things. The dominance of the Roman Catholic Church in Europe (where modern science was born) and its adherence to Aristotelian philosophies also played a role in limiting the promotion of evolution and other contrary ideas as these would have been seen as heresy. As the Enlightenment took hold in Europe in the 17th and 18th centuries, explanations that looked beyond a directed cause became more popular.

## Erasmus Darwin

Coming to the mid-to-late 18th century, Kant, Leibnitz, Buffon, and others began to talk openly of a natural force that has driven the change of organisms from simple to complex over time. The idea of evolution was well established in the literature, but there seemed to be no legitimate mechanism to adequately explain this idea in scientific terms. Following the spirit of the Greek poets Lucretius and Empedocles, Erasmus Darwin, the atheist grandfather of Charles, wrote some of his ideas in poetic verse. Brushing up against the idea of survival of the fittest, Erasmus spoke of the struggle for existence between different animals and even plants. This struggle is a part of the evolutionary process he outlines in his *Temple of Nature* (1803) in the section titled “Production of Life”:

Hence without parent by spontaneous birth  
Rise the first specks of animated Earth;  
From Nature’s womb the plant or insect swims,  
And buds or breathes, with microscopic limbs.<sup>4</sup>

And he continues:

Organic Life beneath the shoreless waves  
Was born and nursed in Ocean’s pearly caves;  
First forms minute, unseen by spheric glass,  
Move on the mud, or pierce the watery mass;  
These, as successive generations bloom,  
New powers acquire, and larger limbs assume;  
Whence countless groups of vegetation spring,  
And breathing realms of fin, and feet, and wing.<sup>5</sup>

Starting with spontaneous generation from inanimate matter, Erasmus imagined life evolving into more complex forms over time. He did not identify any mechanisms that may have caused the change, other than general references to nature and a vague driving force.

In the introduction to this work, Erasmus Darwin states that it is not intended to instruct but rather to amuse, and he then includes many notes describing his ideas.

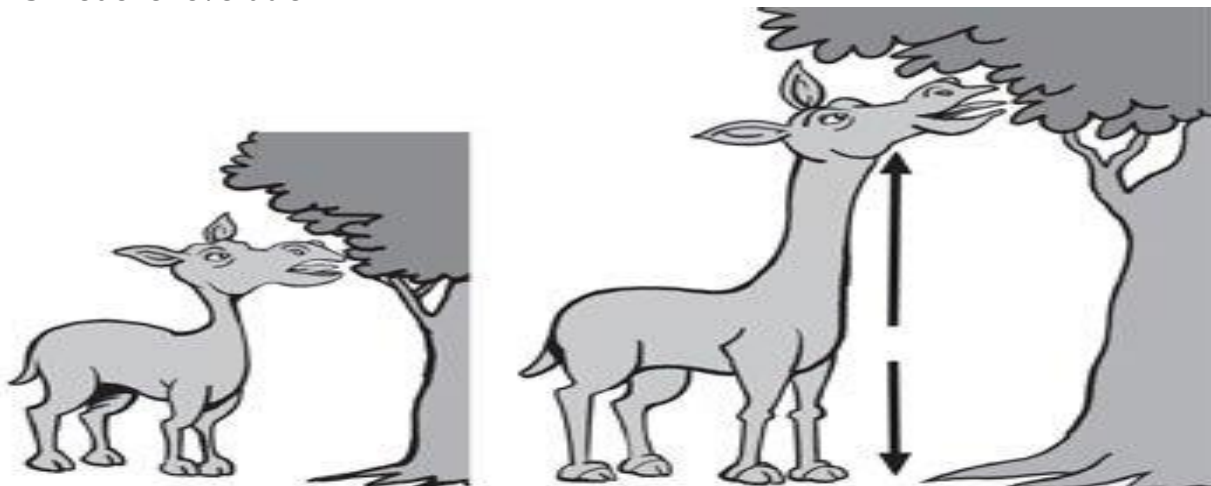
Despite his claimed-to-be-innocent intentions, this poem lays out the gradual, simple-to-complex progression of matter to living creature—a view very consciously different from the biblical account of creation which the vast majority of his contemporaries knew and believed. He traces the development of life in the seas to life on land with the four-footed creatures eventually culminating in humans and the creation of society. There is no doubt that when Charles began his studies, the idea of evolution apart from the supernatural was present in Western thought (even in his own extended family). The arguments in support of special creation were certainly prominent, but evolutionary ideas were being pressed into mainstream thinking in the era of modernism.<sup>6</sup>

To underscore the early acceptance of evolution, the following passage from *Zoonomia* (3 vol., 1794–1796) illustrates Erasmus Darwin’s belief that all life had come from a common “filament” of life.

From thus meditating on the great similarity of the structure of the warm-blooded animals . . . would it be too bold to imagine that, in the great length of time since the Earth began to exist, perhaps millions of ages before the commencement of the history of mankind would it be too bold to imagine that all warm-blooded animals have arisen from one living filament?<sup>7</sup>

## Lamarckian Evolution or Use and Disuse

In France, and at the same time as Erasmus, Jean Baptiste Lamarck developed his theories of the origin and evolution of life. Initially, he had argued for the immutability of species, but in his later works he laid out a clear alternative to the special creation of plants and animals. Lamarck believed that the geology of the Earth was the result of gradual processes acting over vast periods of time—a view later to be known as uniformitarianism. Lamarck developed four laws of evolution and put them forward in his *Philosophie Zoologique* published in 1809. Lamarck proposed that an internal force and the need for new organs caused creatures to develop new characteristics. Once developed, the use or disuse of the organs would determine how they would be passed on to a creature’s offspring. This idea of the transmission or inheritance of acquired characteristics is the hallmark of this model of evolution.



In Lamarckian evolution, animals change due to environmental factors and the use or disuse of a feature. For example, a giraffe's neck will get longer over time as it continually stretches it to reach higher leaves on trees.

Lamarck's mechanism of use and disuse of characters was widely rejected in his lifetime, especially by the prominent French naturalist Georges Cuvier, and was never supported by observations. Lamarck did attempt to explain how the characteristics were inherited, but there was still no clear biological mechanism of inheritance that would support his claims. Lamarck also proposed a tree of life with various branching structures that showed how life evolved from simple to complex forms. Much of what Lamarck proposed seems unreasonable to us today with a modern understanding of genetics. A husband and wife who are both bodybuilders will not have an extraordinarily muscular child—that acquired trait does not have any affect on the genetic information in the germ cells of the parents' bodies. However, recent research has revealed instances of bacterial inheritance that appear to be very Lamarckian in nature. Future research in this area may reveal that Lamarck was correct to some degree. But there are many good reasons to expect that this would provide no support for the idea of molecules-to-man evolution.<sup>8</sup>

## Darwinian Evolution

Charles Darwin was at least familiar with all of these different views, and their influence can be found throughout his writings. Darwin often referred to the effects of natural selection along with the use or disuse of the parts. The legs and wings of the ostrich, the absence of feet and wings in beetles, and the absence of eyes in moles and cave-dwelling animals are all mentioned by Darwin as a result of use or disuse alongside natural selection.<sup>9</sup> Exactly how this process happened was a mystery to Darwin. He proposed the idea of "pangenes" as the mechanism of passing traits from parent to offspring. This idea is not significantly different from Lamarck's, for it relies on the use and disuse of organs and structures that are passed on to offspring through pangenes over vast ages.



Darwin originally proposed that natural selection would be the primary mechanism acting to change organisms over millions of years. He was not aware of the role of mutations in heredity.



In his work *The Variation of Animals and Plants under Domestication*, Darwin suggested that gemmules are shed by body cells, and that the combination of these gemmules would determine the appearance and constitution of the offspring. If the parent had a long neck, then more gemmules for a long neck would be passed to the offspring. In Darwin's defense, he was not aware of the work of his contemporary, Gregor Mendel. In his garden in the Czech lands, Mendel was studying the heredity of pea plants. Neither man knew of the existence of genes, or the DNA genes are composed of, but both of them understood there was a factor involved in transmitting characteristics from one generation to the next. Despite evidence from experiments conducted by his cousin Francis Galton, Darwin clung to his pangenesis hypothesis and defended it in his later work *Descent of Man*.

Darwin believed that all organisms had evolved by natural processes over vast expanses of time. In the introduction to *Origin of Species* he wrote the following: As many more individuals of each species are born than can possibly survive; and as, consequently, there is a frequently recurring struggle for existence, it follows that any being, if it vary however slightly in any manner profitable to itself, under the complex and sometimes varying conditions of life, will have a better chance of surviving, and thus be naturally selected. From the strong principle of inheritance, any selected variety will tend to propagate its new and modified form.<sup>10</sup>

Darwin's belief that slight modifications were selected to produce big changes in organisms over the course of millions of years was the foundation of his model for the evolution of life on Earth. We know today that Darwin's notion of gemmules and pangenes leading to new features or the development of enhanced characteristics is a false notion. However, that does not mean, by itself, that Darwin's conclusion is wrong—just that his reasoning was faulty.

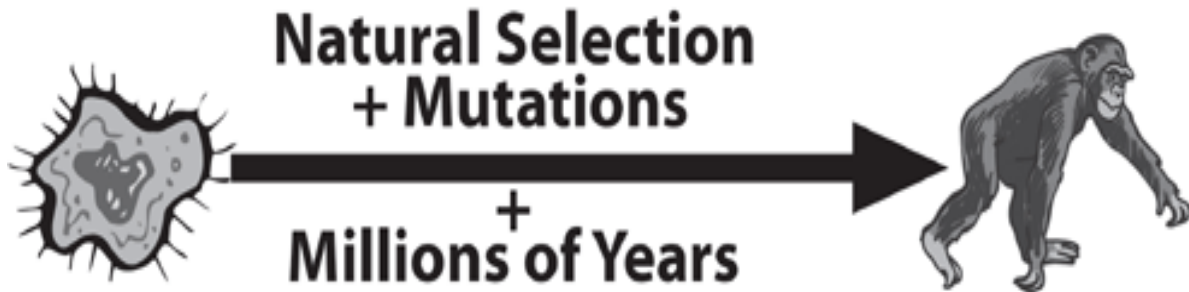
## Neo-Darwinian Evolution and the Modern Synthesis

The discovery of DNA and the rediscovery of Mendel's work on heredity in pea plants have shown that Darwin's hereditary mechanism does not work. But his conclusion of molecules-to-man transformation over millions of years is still held as true by proponents of evolution. In the early 20th century, Mendelian genetics was rediscovered and it came to be understood that DNA was responsible for the transmission and storage of hereditary information. The scientific majority was still fixed on a naturalistic explanation for the evolution of organisms.

That evolution happened was never a question—finding the mechanism was the goal of these naturalistic scientists.

Mutation of genetic information came to be viewed as the likely mechanism for providing the raw material for natural selection to act on. Combining genetic studies of creatures in the lab and in the wild, models of speciation and change over time

were developed and used to explain what was seen in the present. These small changes that resulted from mutations were believed to provide the genetic diversity that would lead to new forms over eons of time. This small change was referred to as “microevolution” since it involved small changes over a short amount of time. The evolutionists claim that the small changes add up to big changes over millions of years, leading to new kinds of life. Thus, microevolution leads to “macroevolution” in the evolutionary view. However, the acceptance of these terms just leads to confusion, and they should be avoided.



After the discovery of DNA and its role in inheritance, evolutionists pointed to mutations in the DNA as the source for new traits. These accidental mutations provide differences in the offspring that can be selected for. This selection is believed to lead to new kinds of life.

This is not fundamentally different from what Charles Darwin taught; it simply uses a different mechanism to explain the process. The problem is that the change in speciation and adaptation is heading in the opposite direction needed for macroevolution. The small changes seen in species as they adapt to their environments and form new species through mutation are the result of losses of information. Darwinian evolution requires the addition of traits (such as forelimbs changing into wings, and scales turning into feathers in dinosaur-to-bird evolution), which requires the addition of new information. Selecting from information that is already present in the genome and that was damaged through copying mistakes in the genes cannot be the process that adds new information to the genome.

***IT HAS BECOME SO PLASTIC THAT IT CAN BE MOLDED TO EXPLAIN ANY EVIDENCE, NO MATTER HOW INCONSISTENT THE EXPLANATIONS MAY BECOME.***

Today, evolution has been combined with the study of embryology, genetics, the fossil record, molecular structures, plate tectonics, radiometric dating, anthropology, forensics, population studies, psychology, brain chemistry, etc. This leads to the intertwining of so many different ideas that the modern view of evolution can explain anything. It has become so plastic that it can be molded to explain any evidence, no matter how inconsistent the explanations may become.

Even Darwin was willing to admit that there may be evidence that would invalidate his hypothesis. That is no longer the view held by the vast majority of evolutionists today—evolution has become a fact, even a scientific law (on par with the law of gravity), in the minds of many.

To help us see this more clearly, let us take a look at the idea of different races. Darwin published his views on the different races in *Descent of Man*. Though Darwin spoke against slavery, he clearly believed that the different people groups around the world were the result of various levels of evolutionary development. Darwin wrote the following:

At some future period, not very distant as measured by centuries, the civilized races of man will almost certainly exterminate and replace the savage races throughout the world. At the same time the anthropomorphous apes . . . will no doubt be exterminated. The break between man and his nearest allies will then be wider, for it will intervene between man in a more civilized state, as we may hope, even than the Caucasian, and some ape as low as a baboon, instead of as now between the negro or Australian [Aborigine] and the gorilla.<sup>11</sup>

This is the conclusion Darwin came to—that different rates of evolution would lead to different classes of humans. He often refers to the distinction between the civilized Europeans and the savages of various areas of the world. He concludes that some of these savages are so closely related to apes that there is no clear dividing line in human history “where the term ‘man’ ought to be used.”<sup>12</sup> Consistent with his naturalistic view of the world, Darwin saw various groups of humans, whether they are distinct species or not, as less advanced than others. This naturally leads to racist attitudes and, as Dr. Stephen J. Gould noted, biological arguments for racism “increased by orders of magnitude following the acceptance of evolutionary theory,”<sup>13</sup> though this was likely only an excuse to act on underlying social prejudices.

Dr. James Watson (co-discoverer of the double-helix structure of the DNA molecule and a leading atheistic evolutionist) was caught in a storm of evolutionary racism in 2007. The *Times of London* reported the following in an interview:

He says that he is “inherently gloomy about the prospect of Africa” because “all our social policies are based on the fact that their intelligence is the same as ours—whereas all the testing says not really,” and I know that this “hot potato” is going to be difficult to address. His hope is that everyone is equal, but he counters that “people who have to deal with black employees find this not true.” He says that you should not discriminate on the basis of colour, because “there are many people of colour who are very talented, but don’t promote them when they haven’t succeeded at the lower level.” He writes, “there is no firm reason to anticipate that the intellectual capacities of peoples geographically separated in their evolution should prove to have evolved identically. Our wanting to reserve equal powers of reason as some universal heritage of humanity will not be enough to make it so.”<sup>14</sup>

Though he later stated that he did not intend to imply that black Africans are genetically inferior, he is being consistent with his evolutionary beliefs. His remarks were considered offensive, even by those who endorse evolution.

*THOSE WHO WOULD SUGGEST THAT EVOLUTION CAN EXPLAIN WHY ALL HUMANS HAVE VALUE MUST BATTLE AGAINST THOSE EVOLUTIONISTS WHO WOULD DISAGREE.*

This exposes an inconsistency in the thinking of many evolutionists today—if we evolved by random chance, we are nothing special. If humans evolved, it is only reasonable to conclude that different groups have evolved at different rates and with different abilities, and mental ability could be higher in one group than another. If the data supported this claim, in the evolutionary framework, then it should be embraced. Those who would suggest that evolution can explain why all humans have value must battle against those evolutionists who would disagree. This exposes the inconsistent and plastic nature of evolution as an overarching framework—who gets to decide what evolution should mean? Darwin and Watson are applying the concepts in a consistent way and setting emotion and political correctness aside, when it is deemed necessary. Darwin noted that “it is only our natural prejudice and . . . arrogance” that lead us to believe we are special in the animal world.<sup>15</sup>

Without an objective standard, such as that provided by the Bible, the value and dignity of human beings are left up to the opinions of people and their biased interpretations of the world around us. God tells us through His Word that each human has dignity and is a special part of the creation because each one is made in the image of God. We are all of “one blood” in a line descended from Adam, the first man, who was made distinct from all animals and was not made by modifying any previously existing animal (*Genesis 2:7*).



## Saltation and Punctuated Equilibrium

Contrasted with Darwin's view of a gradual process of change acting over vast ages of time, others have seen the history of life on Earth as one of giant leaps of rapid evolutionary change sprinkled through the millions of years. Darwin noted that the fossil record seemed to be missing the transitions from one kind of organism to the next that would confirm his gradualistic notion of evolution. Shortly after Darwin, there were proponents of evolutionary saltation—the notion that evolution happens in great leaps. The almost complete absence of transitional forms in the fossil record seemed to support this saltation concept and this was later coupled with genetics to provide a mechanism where “hopeful monsters” would appear and almost instantaneously produce a new kind of creature (e.g., changing a reptile into a bird). These “monsters” would be the foundation for new kinds of animals.

Saltation fell out of favor, but the inconsistency between the fossil record and the gradualism promoted by Darwin and others was still a problem. The work of Ernst Mayr, Stephen J. Gould, and Niles Eldredge was the foundation for the model of “punctuated equilibrium.” This model explained great periods of stasis in the fossil record punctuated with occasional periods of rapid change in small populations of a certain kind of creature. This rapid change is relative to the geologic time scale—acting over tens of thousands of years rather than millions. This idea is not inconsistent with Darwin's grand evolutionary scheme. However, it seems that Darwin did not anticipate such a mechanism, though he commented that different organisms would have evolved at different rates. Whether evolution has occurred by gradual steps or rapid leaps (or some combination) is still a topic of debate among those who hold to the neo-Darwinian synthesis of mutations and natural selection as the driving forces of evolutionary change.



Contrary to Neo-Darwinism, punctuated equilibrium tries to account for the lack of fossil intermediates by appealing to rapid bursts of change interspersed in the millions of years. They still rely on mutations and natural selection, but at a much faster rate.

# Conclusion

Sir Isaac Newton provided us with a general theory of gravity (and described laws in support of that theory) based on observational science. Even in light of modern understandings, those laws still apply today. Einstein did expand the concepts, but the functionality of Newtonian physics still applies today as much as ever.

*WHAT IS CALLED DARWINISM TODAY BEARS LITTLE RESEMBLANCE TO WHAT DARWIN ACTUALLY WROTE.*

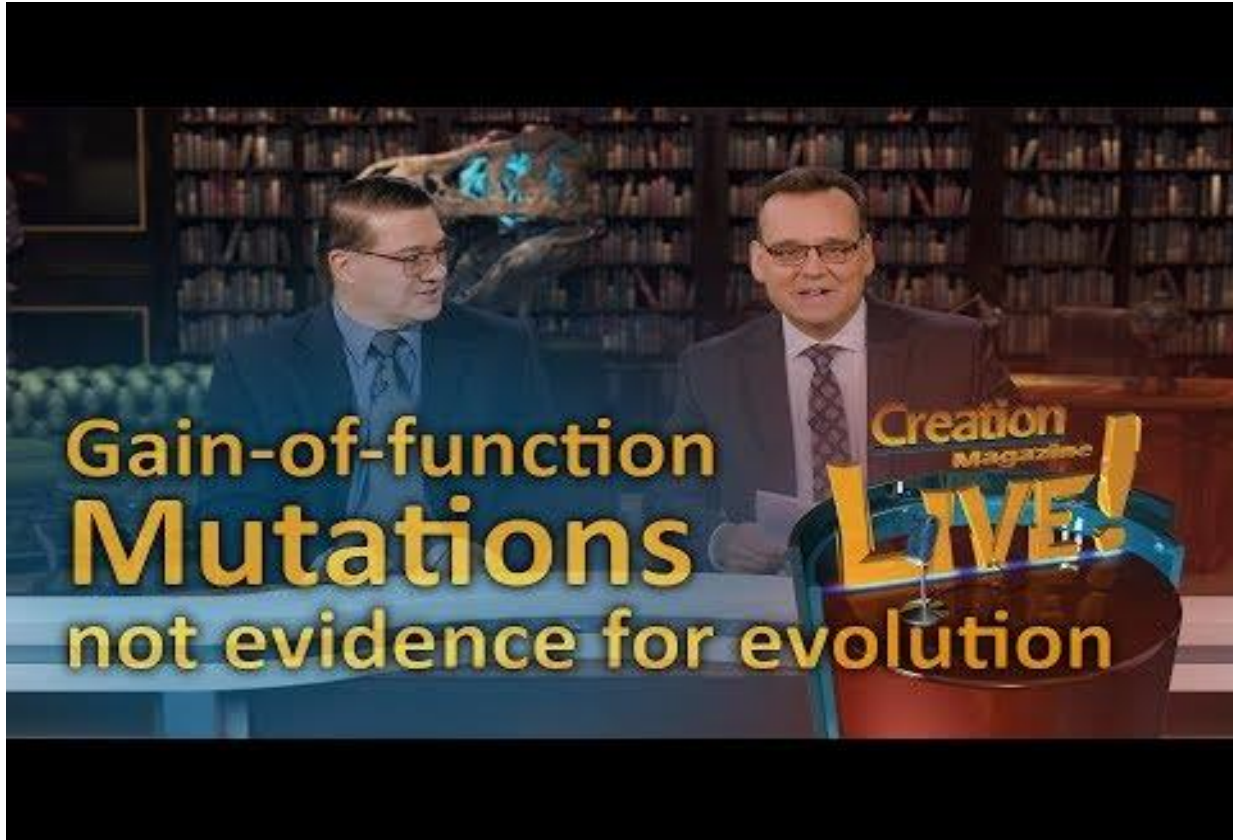
The same cannot be said for Darwin's ideas. Darwin's hypothesized mechanism of natural selection (even with the added understanding of mutations) has failed to provide an explanation for the origin and diversity of life we see on Earth today. His confident expectation that the fossil record would confirm his hypothesis has utterly failed, and the mind-boggling irreducible complexity seen in biological systems today defies the explanations of Darwin or his disciples. To say that evolutionary thinking today is Darwinian in nature can only mean that evolutionists believe that life has evolved from simpler to complex over time. Beyond that, what is called Darwinism today bears little resemblance to what Darwin actually wrote. All of these ideas of the evolution of organisms from simple to complex are contrary to the clear teaching of Scripture that God made separate kinds of plants and animals and one kind of man, each to reproduce after its own kind. As such, these evolutionary ideas are bound to fail when attempting to describe the history of life and to predict the future changes to kinds of life in this universe where we live. When we start our thinking with the Bible, we can know we are starting on solid ground. Both the fossil record and the study of how plants, animals, and people change in the present fit perfectly with what the Bible says about Creation, the Flood, and the Tower of Babel in Genesis 1–11. The Bible makes sense of the world around us.

# EPIGENETICS & SPECIATION

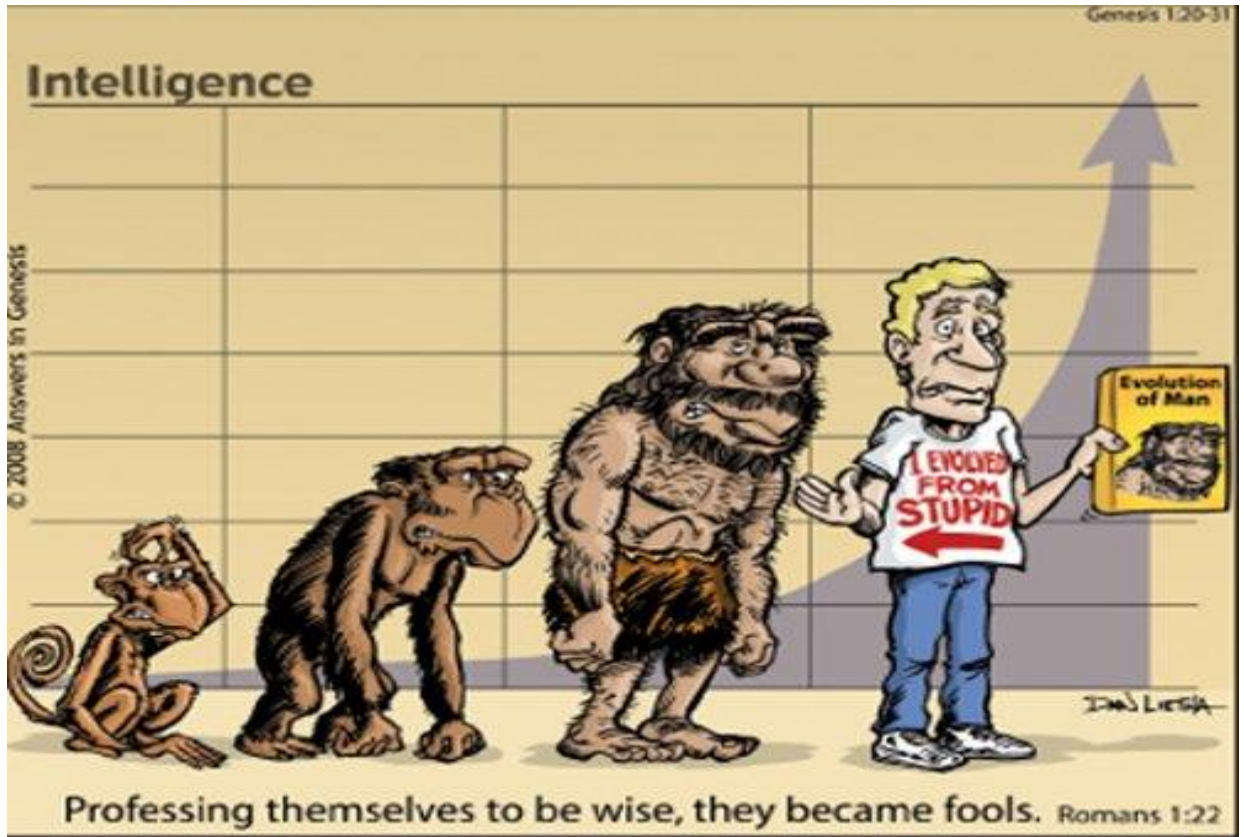












## LET THERE BE TRUTH



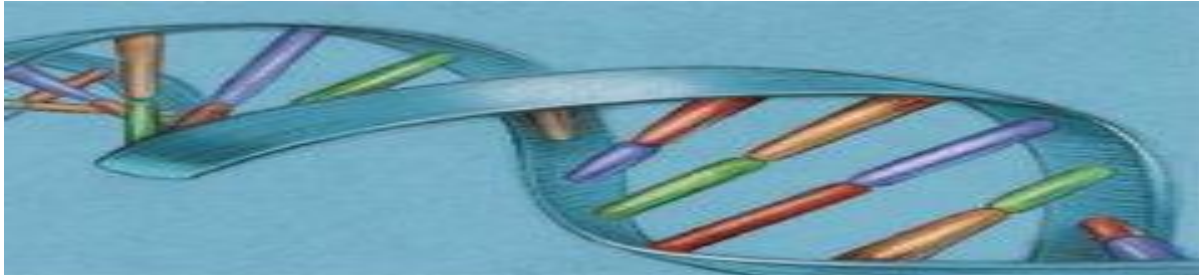
# Comprehensive Analysis of Chimpanzee and Human Chromosomes Reveals Average DNA Similarity of 70%

by [Jeffrey P. Tomkins](#) on February 20, 2013

## Abstract

*Since the original 2005 report for the chimpanzee (chimp) genome assembly (5X rough draft), an additional one-fold redundant coverage has been added. Using the new 6X chimpanzee assembly, a sequential comparison to the human genome was performed on an individual chromosome basis. The chimpanzee chromosomes, were sliced into new individual query files of varying string lengths and then queried against their human chromosome homolog using the BLASTN algorithm. Using this approach, queries could be optimized for each chromosome irrespective of gene/feature linear order. Non-DNA letters (gap filling 'N's) were stripped from the query data and excluded from the analyses. The definition of similarity for each chromosome was the amount (percent) of optimally aligned chimp DNA. This definition was considered to be conservative because it did not include the amount of human DNA absent in chimp nor did it include chimp DNA that was not aligned to the human genome assembly (unanchored sequence contigs). For the chimp autosomes, the amount of optimally aligned DNA sequence provided similarities between 66 and 76%, depending on the chromosome. In general, the smaller and more gene-dense the chromosomes, the higher the DNA similarity—although there were several notable exceptions defying this trend. **Only 69% of the chimpanzee X chromosome was similar to human and only 43% of the Y chromosome. Genome-wide, only 70% of the chimpanzee DNA was similar to human under the most optimal sequence-slice conditions.***

*While, chimpanzees and humans share many localized protein-coding regions of high similarity, the overall extreme discontinuity between the two genomes defies evolutionary timescales and dogmatic presuppositions about a common ancestor.*



## Introduction

A common evolutionary claim is that the DNA of chimpanzees (*Pan troglodytes*) and humans (*Homo sapiens*) are nearly identical. However, this over-simplified and often-touted claim is now becoming much less popular among primate evolutionists as modern DNA research is showing much higher levels of discontinuity between the structure and function of the human and chimp genomes. This change in attitude within the secular research community was well-characterized by leading primate evolutionist Todd Preuss when he made the following statement in the abstract of a 2012 *Proceedings of the National Academy of Sciences of the United States of America* review.

It is now clear that the genetic differences between humans and chimpanzees are far more extensive than previously thought; their genomes are not 98% or 99% identical (Preuss 2012, p. 10709).

One of the major problems with past research in comparative DNA analysis between chimps and humans was recently reviewed in several reports (Bergman and Tomkins 2012; Tomkins and Bergman, 2012). They found that there is a great deal of preferential and selective treatment of the data being analyzed. In many cases, only the most promising data such as gene-rich sequences that exist in both species (homologs) is utilized from a much larger data pool. This pre-selected data is often further subjected to more filtering before being analyzed and discussed. Non-alignable regions and large gaps in DNA sequence alignments are also typically omitted, thus increasing the levels of reported similarity. The major milestone publication regarding the chimp genome comparison to human was the 2005 *Nature* paper from the International Chimpanzee Genome Sequencing Consortium. Unfortunately, this paper presented the comparative data with human in a highly selective and obfuscated format and the non-similar data from the alignments was largely absent.

In general, the paper was more concerned with hypothetical evolutionary analyses for various divergence rates and selective forces in selected homologous regions than reporting the true levels of discontinuity between chimp and human DNA. In fact, the critical issue of overall genome similarity was largely avoided. Nevertheless, enough data from the 2005 chimp genome project was available to allow rough estimates of overall genome similarity. Tomkins and Bergman (2012) derived a calculation that included published concurrent information from the human genome project along with the data reported in the 2005 chimpanzee paper and estimated an overall genome DNA similarity of 80.6%, which they proposed as a very conservative figure (see Tomkins and Bergman 2012, for details).

Interestingly, geneticist Richard Buggs took an even more exacting approach in calculating genome-wide DNA similarity using data from both the 2005 chimp genome report and the human genome project in a brief news report published in 2008. Because Buggs' estimates closely match the outcome of this study, his work is quoted below.

To compare the two genomes, the first thing we must do is to line up the parts of each genome that are similar. When we do this alignment, we discover that only 2,400 million of the human genome's 3,164.7 million "letters" align with the chimpanzee genome—that is, 76% of the human genome. Some scientists have argued that the 24% of the human genome that does not line up with the chimpanzee genome is useless "junk DNA". However, it now seems that this DNA could contain over 600 protein-coding genes, and also code for functional RNA molecules.

Looking closely at the chimpanzee-like 76% of the human genome, we find that to make an exact alignment, we often have to introduce artificial gaps in either the human or the chimp genome. These gaps give another 3% difference. So now we have a 73% similarity between the two genomes.

In the neatly aligned sequences we now find another form of difference, where a single "letter" is different between the human and chimp genomes. These provide another 1.23% difference between the two genomes. Thus, the percentage difference is now at around 72%.

We also find places where two pieces of human genome align with only one piece of chimp genome, or two pieces of chimp genome align with one piece of human genome. This "copy number variation" causes another 2.7% difference between the two species. Therefore the total similarity of the genomes could be below 70%.

This figure does not include differences in the organization of the two genomes. At present we cannot fully assess the difference in structure of the two genomes, because the human genome was used as a template (or "scaffold") when the chimpanzee draft genome was assembled (Buggs 2008).

Outside of these analyses of the original 2005 chimp report, additional genome-wide comparisons of an objective nature have been very limited. However, there have been several recent reports that are noteworthy. At the time of this report, the details of a research study in which the individual chromosomes of chimp were compared to their counterpart in human is available in a privately published, but well-documented and freely available report (Progetto cosmo 2012). This effort employed an algorithm that involved the random selection of 10,000 30-base sequences from the query (chimp chromosome) and then determined their identity based on a query against their human chromosome counterpart. Excluding the Y chromosome, this study came up with an average 63% DNA identity (similarity) genome-wide. While the approach of this study was novel, it only involved the random sampling of a limited subset of small chromosomal pieces from each chimp chromosome across the genome.

In 2011 Tomkins queried 40,000 chimpanzee genomic DNA sequences against four different versions of the human genome assembly using a wide variety of BLASTN algorithm parameters (Tomkins 2011c). For just the aligned regions, depending on the algorithm parameter combinations, an 86–89% DNA similarity was observed. However, less than 20% of the total chimp DNA sequence actually aligned under the most optimal algorithm conditions. The average length of the chimp query sequences in the Tomkins 2011 study were 740 bases. These results indicate that localized regions of human-chimp DNA similarity breaks down significantly at stretches of DNA 740 bases long or less on average. The question then arises as to what query sequence lengths would be more optimal for comparing the chimp genome against human.

For a recent review of the creationist literature on human-chimp DNA similarity, see Tomkins (2011c, pp. 234–236). For several recent reviews of the secular (evolutionary) literature on the subject of human-chimp DNA similarity, see Bergman & Tomkins (2012) and Tomkins and Bergman (2012). Since the original 2005 chimpanzee genome paper, additional redundant coverage has been added to the rough draft assembly of the chimpanzee genome as stated at the web site for the Genome Institute at Washington University—one of the lead sequencing centers on the project.

The present chimpanzee genome assembly now includes a total 6-fold redundant coverage ([http://genome.wustl.edu/genomes/view/pan\\_troglodytes/](http://genome.wustl.edu/genomes/view/pan_troglodytes/)). Despite the fact that a DNA clone-based physical map has been constructed for chimpanzee, the 6-fold rough draft assembly of the chimpanzee genome is still largely based on the human genome assembly (Warren et al. 2006). In several recent review papers, Tomkins discussed how the chimp genome assembly was performed and listed a variety of important caveats and evolutionary biases associated with the technology (Tomkins 2011a; Tomkins 2011b).



For ongoing research, the chimpanzee genome assembly is now more complete and is also freely available as individual chromosome files that are homologous to their human counterparts to which they were anchored and assembled. This allows for a new less biased and complete comparison between the chimp and human genomes on an individual chromosome basis.

The preliminary analyses of Buggs (2008) and Progetto cosmo (2012) indicate that in conflict with evolutionary claims, overall chimp DNA similarity compared to human may be as low as 70% or less. These results demand a deeper re-evaluation of the data. The study testing BLASTN algorithm parameters in chimp DNA queries against the human genome by Tomkins (2011c), warrants an even more comprehensive genome analysis using smaller sequence slices that would maximize the alignment of chimp DNA. Using a range of smaller sequence slices for queries would not only allow for individual chromosome optimization, but would also increase alignment levels because it would be irrespective of gene/feature linear order. Therefore, a comprehensive chromosome-by-chromosome genome comparison between chimpanzee and human was undertaken using a complete range of sub-experiments based on different chimp DNA sequence slices. This allowed for the selection of chromosome-specific, sequence-slice optimized comparisons.

## Materials and Methods

The most recent versions of the chimpanzee and human chromosome assemblies were downloaded from the UCSC Genome Browser FTP site (<ftp://hgdownload.cse.ucsc.edu/goldenPath/panTro2/chromosomes/>, <http://hgdownload.cse.ucsc.edu/goldenPath/hg19/chromosomes/>). Each chimp and human chromosome was unpackaged in fasta format. Individual human chromosome query databases were created using the makeblastdb program. A python script written by author Tomkins and Daryl Robbins (Institute for Creation Research, Manager of Information Technology) was used to produce new fasta query files taking filename and desired sequence slice size as arguments. BLASTN jobs were individually employed using a set of sequentially modified POSIX shell scripts via VIM commands and a perl script written by author Tomkins. BLASTN results were outputted as CSV format text files. Output \*.csv files were parsed and analyzed via an integrated set of python and POSIX shell scripts written by Tomkins.

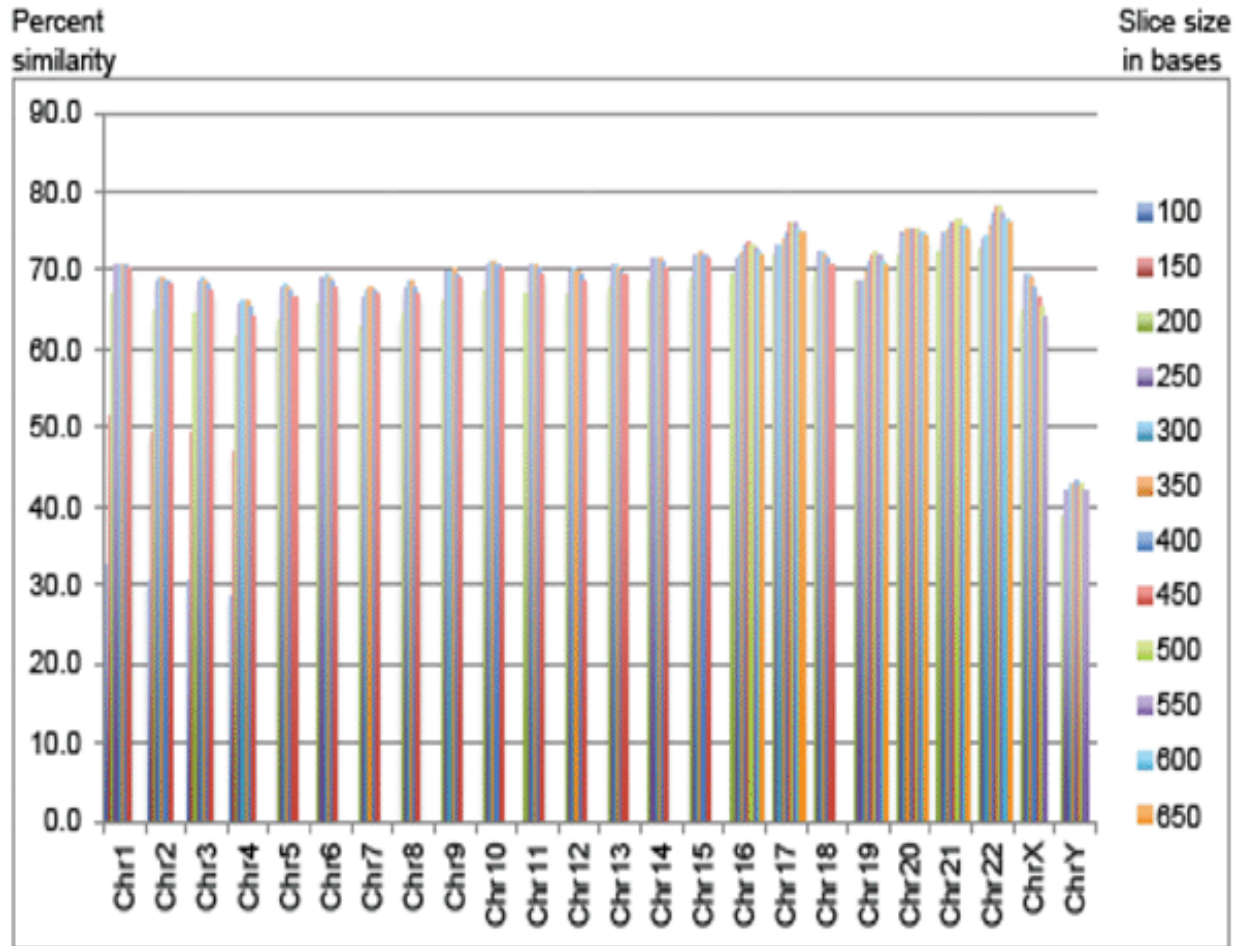
The computational server employed for BLASTN searches (Altschul et al. 1990) utilized an ASUS Sabertooth 990FX motherboard containing a single 6-CORE AMD FX-6200 CPU running at 3.8 GHz with 32 GB of DDR3 RAM and a Crucial 512 GB SSD main drive containing the Debian 6.0 Linux operating system. The most recent 64-bit version of the BLAST software package (ncbi-blast-2.2.27+) was utilized (<ftp://ftp.ncbi.nlm.nih.gov/blast/executables/blast+/LATEST/>).

BLASTN algorithm parameters for the main study were as follows: -word\_size 11, -evalue 10, -max\_target\_seqs 1, -dust no, -soft\_masking false, -ungapped. These optimized parameters were chosen largely on the results of Tomkins (2011c) and an extensive set of preliminary studies performed for the present project to optimize alignments. Preliminary issues analyzed prior to the main experiment included the testing of sequence slices as small as 50 bases, word size increases to 15, evalue stringencies to 0.00001, and the allowance/negation of sequence masking of both target and query data. Typically, multiple query jobs were run simultaneously using BLASTN CPU optimization for thread numbers (parameter '-num\_threads').

Post BLASTN output file analyses were transferred following completion, from the linux computational server using lftp and performed on a dual quad core Intel Xeon Apple Mac G5 Desktop system with 20 gigabytes of ram (Mac OS v10.8.2). Graph development for the data was performed in Excel using MS Office 2011 for Mac.

## Results and Discussion

The most recent version of the chimpanzee chromosome assembly (aligned and anchored to human) was downloaded from the UCSC Genome Browser site. On an individual chromosome basis, new fasta query subfiles were created that produced fasta header line demarcated query files with sequences of 100 to 450 bases in 50-base increments for chimp chromosomes 1 to 4. For example, the first chimp chromosome 1 file contained sequences of 100 bases in length, the second file 150 bases, etc. Chimp chromosomes 2A and 2B were concatenated prior to processing for queries against human chromosome 2. In addition, the script used for making new fasta files also removed all 'N's from the chimp sequence that would have produced false alignments to the large spans of 'N's in the human assembly. Thus, for chromosomes 1 to 4, there were 8 different BLASTN query file experiments per chromosome for a total of 32 query experiments (Fig. 1). The top percentages for chimp DNA aligned to human are then reported in Table 1. For comparison of these results to the known gene density and level of sequence completion for human chromosomes, see Table 2 which contains data extracted from current information available from Cold Spring Harbor's "Guide to the Human Genome" available at the [www.cshlp.org](http://www.cshlp.org) web site.



**Fig. 1.** Percent of chimp sequence aligned using optimized sequence slices sorted by chromosome.

Since the sequence slices below 200 bases produced non-optimal alignments, they were omitted for the rest of the chimp chromosomes (Fig. 1). For chimp chromosomes 5 to 15, and chromosome 18, sequence slice files of 200 to 450 base increments provided a complete range of results to select an optimal query slice. For chimp chromosomes 16, 17, and 19 to 22, sequence slice files of 200 to 650 base increments provided a complete range of results to select an optimal query file string size (10 query files per chromosome). In general, the larger chimp chromosomes, which contained larger stretches of non-coding DNA, had regions of similarity that were on average shorter than the smaller and more gene-dense chimp chromosomes, although there were several exceptions to this trend as discussed below.

**Table 1.** Individual chromosome similarities for chimpanzee compared to human using optimized sequence slices and the BLASTN algorithm.

<b>Chromosomes compared</b>	<b>Optimized slice size producing top similarity (number bases)</b>	<b>Percent chimp sequence aligned to human</b>
1	350	70.9
2A, 2B vs 2 (human)	300	69.0
3	300	68.9
4	300	66.1
5	300	68.2
6	300	69.2
7	350	67.3
8	300	68.4
9	350	70.1
10	300	71.0
11	300	70.8
12	300	70.1
13	300	70.8
14	300	71.6
15	350	72.0
16	450	73.3
17	500	76.1
18	250	72.5
19	500	72.0
20	400	75.2
21	500	76.2
22	450	77.9
X	300	69.4
Y	400	43.2

**Table 2.** Gene density per chromosome and DNA sequencing completion data for the human genome. Data adapted from Cold Spring Harbor’s “Guide to the Human Genome.” Retrieved from [http://www.cshlp.org/ghg5\\_all/section/dna.shtml](http://www.cshlp.org/ghg5_all/section/dna.shtml).

<b>Chromosome</b>	<b>Total size (Mb)</b>	<b>Sequenced (Mb)</b>	<b>Genes</b>	<b>Genes/Mb</b>	<b>Genes/sequenced MB</b>
1	249.3	225.3	1959.0	7.9	8.7
2	243.2	238.2	1184.0	4.9	5.0
3	198.0	194.8	1029.0	5.2	5.3
4	191.2	187.7	721.0	3.8	3.8
5	180.9	177.7	835.0	4.6	4.7
6	171.1	167.4	1002.0	5.9	6.0
7	159.1	155.4	855.0	5.4	5.5
8	146.4	142.9	638.0	4.4	4.5
9	141.2	120.1	748.0	5.3	6.2
10	135.5	131.3	714.0	5.3	5.4
11	135.0	131.1	1236.0	9.2	9.4
12	133.9	130.5	987.0	7.4	7.6
13	115.2	95.6	305.0	2.7	3.2
14	107.3	88.3	577.0	5.4	6.5
15	102.5	81.7	547.0	5.3	6.7
16	90.4	78.9	783.0	8.7	9.9
17	81.2	77.8	1111.0	13.7	14.3
18	78.1	74.7	257.0	3.3	3.4
19	59.1	55.8	1332.0	22.5	23.9
20	63.0	59.5	518.0	8.2	8.7
21	48.1	35.1	213.0	4.4	6.1
22	51.3	34.9	418.0	8.2	12.0
X	155.3	151.1	806.0	5.2	5.3
Y	59.4	25.7	65.0	1.1	2.5

The definition of similarity for each chimp chromosome was the amount (percent) of optimally aligned chimp DNA (minus 'N's). This definition was considered to be quite conservative because it did not include the amount of human DNA absent in the chimp genome nor does it include chimp DNA that could not be aligned to the human genome assembly—a category of chimp DNA termed “unanchored contigs”. The inclusion of chimp DNA not able to be aligned and anchored to human, although negligible for most chromosomes, would have produced slightly lower overall similarities. Likewise, if the amount of human DNA not present in chimp could have also been factored in, this would have also produced somewhat lower overall chromosome similarities as well.

For the chimp autosomes, the amount of optimally aligned DNA sequence provided similarities between 66% and 76%, depending on the chromosome. In general, the smaller and more gene-dense the chromosomes, the higher the DNA similarity. Interestingly, the one autosome (chromosome 22) that was selected by secular researchers in 2004 for extensive comparison to human (Watanabe et al. 2004) also happens to be the most similar chromosome in the chimp genome at 77.9% in the present study. Furthermore, Watanabe et al. omitted large sections of chromosome 22 that contained extreme dissimilarities.

However, there were several exceptions to this generalized trend. For example, the most gene-dense human chromosome at 22.5 genes per megabase (Mb) of DNA is chr 19, and was not present in the top five highest chromosomes regarding percent chimp-human DNA similarity. Furthermore, the human chromosome that had the second highest similarity with chimp, which was number 21, only has a gene density of 4.4 genes per Mb—one of the lowest levels.

This data illustrates the fact that gene density is not always a dependable predictor of high similarity between chimp and human DNA. In the past, evolutionists have selectively used certain homologous gene-dense DNA segments between human and chimps to produce high levels of DNA similarity, claiming that it represented genome-wide patterns (Bergman and Tomkins, 2012; Tomkins and Bergman, 2012). This is clearly not always the case, even within gene-dense chromosomes.

Only 69% of the chimpanzee X chromosome was similar to human and only 43% of the Y chromosome. The MSY regions of the chimp and human Y-chromosomes were recently compared in great detail and found to be extremely dissimilar in not only DNA sequence similarity, but also gene content (Hughes et al. 2010). This present study confirms the striking difference between human and chimp Y chromosomes, and indicates that these differences are still being largely understated.

Genome-wide, only 70% of the chimpanzee DNA was similar to human under the most optimal sequence-slice conditions. In fact, this would be considered to be a

conservative estimate well within the range of results provided by other recent attempts by Buggs (2008) and Progetto cosmo (2012), mentioned above. One must also keep in mind the fact that the chimpanzee genome assembly is still based largely on the human genomic framework as discussed in detail by author Tomkins in several journal publications (Tomkins, 2011a; Tomkins 2011b). In fact, this current study did not use any of the unanchored chimpanzee sequencing contigs that could not be aligned to the human genome.

Had these additional segments of DNA been included, similarities would have been lowered even further, although only slightly. Furthermore, human DNA not found in chimp was also not included in the comparison—another factor that would have lowered similarity estimates. While, chimpanzees and humans do share many localized protein-coding regions of very high similarity, there is overall an extreme DNA sequence discontinuity between the two genomes, which defies evolutionary time-scales and dogmatic presuppositions about a common ancestor.

## Conclusions

Since the original publication of the chimpanzee (chimp) genome assembly (5X rough draft) in 2005, an additional one-fold redundant coverage has been performed and integrated into the currently available version of the chimpanzee genome assembly. Using the currently available 6X chimpanzee assembly, a new genome-wide sequential comparison of chimp DNA to the human genome was performed on an individual chromosome basis. The chimp chromosomes were sliced into new individual query files of varying string lengths and then queried against their human chromosome homolog using the BLASTN algorithm with optimized parameters.

Using this approach, multiple queries could be performed for each chromosome and the most optimized set of results could be selected that provided the highest percentage of DNA alignment. Further enhancing the amount of alignment is the fact that this analysis was performed irrespective of the linear order of genes and other genomic features. The non-DNA letters (gap-filling 'N's) present in the chimp DNA were also stripped from the query data and excluded from the analyses—reducing the presence of false positives associated with matching 'N's.

The definition of DNA similarity for each chromosomal comparison was the amount (percent) of optimally aligned chimp DNA (excluding 'N's). This definition was considered to be conservative because it did not include the amount of human DNA absent in chimp nor did it include chimp DNA that was not aligned to the human genome assembly referred to as unanchored contigs.

For the chimp autosomes, the amount of optimally aligned DNA sequence provided similarities between 66% and 76%, depending on the chromosome. In general, the smaller and more gene-dense the chromosomes, the higher the DNA similarity. However, there were several notable exceptions (chimp chromosomes 19 and 21) that not only defied this trend, but proved that not all gene-rich areas of the chimp and human genomes are highly similar.

## Summary

Only 69% of the chimpanzee X chromosome was similar to human and only 43% of the Y chromosome. Chimp autosomal similarity to human on average was 70.7% with a range of 66.1% to 77.9%, depending on the chromosome (Table 1 and Fig. 1). Genome-wide, only 70% of the chimpanzee DNA was similar to human under the most optimal sequence-slice conditions.

Chimpanzees and humans share many localized protein-coding regions of high similarity. However, overall there is extreme DNA sequence discontinuity between the two genomes. The current study along with several other recent reports confirm this. This defies standard evolutionary time-scales and dogmatic presuppositions about a common ancestor.





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# Likely Discontinuity Between Humans and Non-Human Hominins Based on Endocranial Volume and Body Mass with a Special Focus on *Homo naledi*—A Short Analysis

by [Jean O'Micks](#) on October 11, 2017

## Abstract

*Encephalization is the perceived process of brain size increase during evolution. However, this process is oversimplified. Previous results from the analysis of the encephalization residual show that significant ER exists only for all members of the genus Homo, except for Homo naledi, but also for Australopithecus sediba and Australopithecus africanus. Analyzing the same data set, plotting mean endocranial volume as a function of mean body weight and applying Ward hierarchical clustering shows that six species of Homo segregate from two species of Homo, three species of Australopithecus, two species of Paranthropus, and Ardipithecus ramidus. These two species of Homo include Homo naledi and Homo habilis. This serves as further evidence supporting the idea that H. naledi should be classified as an ape and is non-human.*

## Introduction

According to the popular concept of hominin evolution, endocranial volume (ECV) increases from more primitive species to more developed ones according to evolutionary time. This process is known as encephalization, and evolutionists claim that measurements for primate species is a proof of evolution (Matzke 2006). This concept however, is oversimplified, as in the case of the Neanderthals which have a larger ECV than *Homo sapiens* (Bruner, Manzi, and Arsuaga 2003). Furthermore, it has been shown that ECV also scales with body mass (Martin 1981). Recently Wood (2016) analyzed ECV and body mass data for primates from data sets compiled by Isler et al. (2008), Schoenemann (2013) and De Miguel and Henneberg (2001). Here we must note that measurements of cranial capacity can be influenced by bias, and that the body mass measurements in these studies are also estimates, thus the results in this paper are tentative, contingent upon the accuracy

of these estimates and measurements. In Figure 2 of his paper, Wood depicted the relationship between the  $\log(\text{ECV [cc]})$  value as a function of the  $\log(\text{body mass [g]})$  value based on a linear model (Wood 2016). Furthermore, it was found that the endocranial residual (ER) value, calculated as the difference between the expected and observed  $\log(\text{ECV})$  values followed a normal distribution, with a mean value of  $-8.3 \cdot 10^{-18}$  and a standard deviation of 0.1194. Based on this normal distribution, different species could be shown to have a significant ER value if their value was either less than  $-0.234$  or greater than  $0.234$  at the 2.5% level.

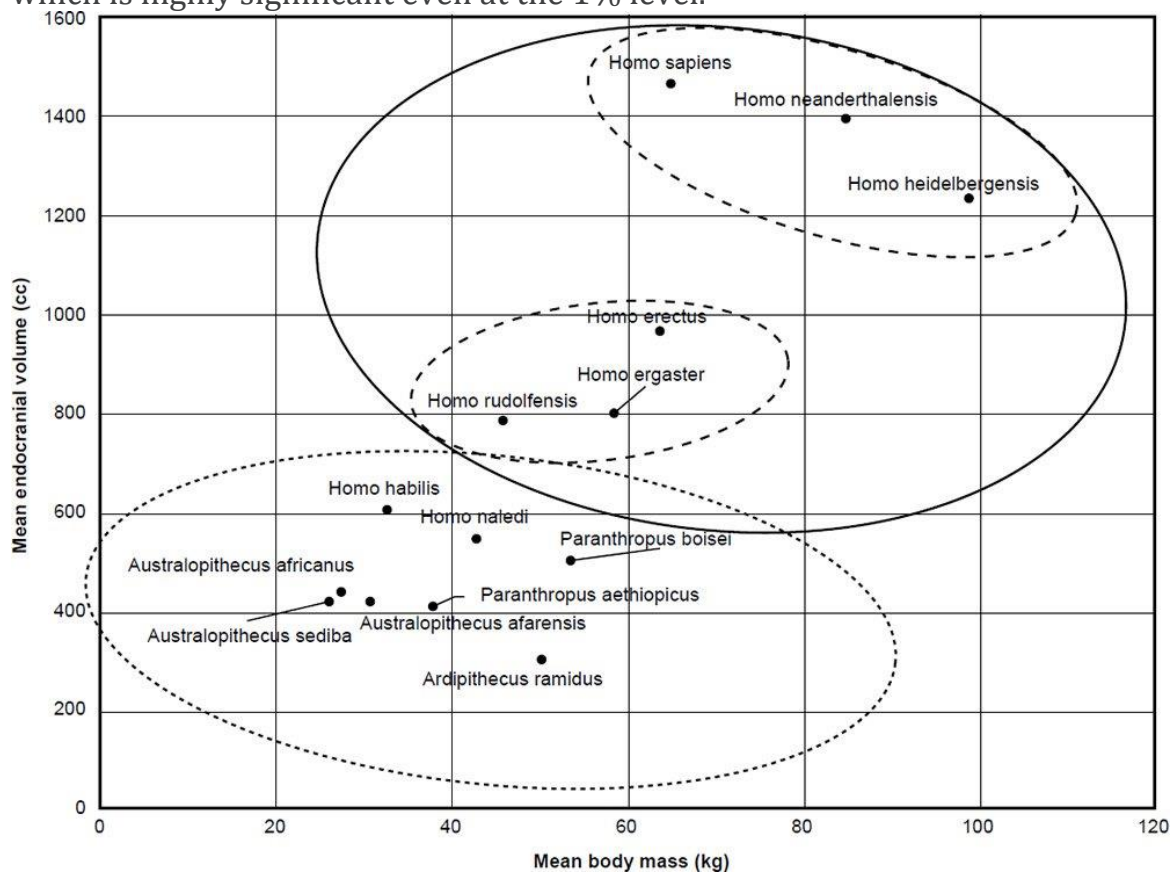
*Homo naledi* showed a non-significant ER value of 0.201, with a p-value of 0.046, due to a moderate body mass but an unusually small cranium. Also, *Australopithecus africanus* has a significant ER value of 0.201 ( $p = 0.0079$ ). The value of the analysis is that it shows that although there may be a smooth transition in ECV from *Ardipithecus ramidus* to *Homo sapiens*, ER increases much more abruptly than ECV, from *A. africanus* to *H. sapiens*, and then another abrupt increase before *Homo sapiens/neanderthalensis/heidelbergensis*.

Species	Mean Endocranial Volume (cc)	Mean Body Mass (kg)	Cluster No.
<i>Ardipithecus ramidus</i>	300.0	50.0	2
<i>Australopithecus afarensis</i>	419.5	30.4	2
<i>Paranthropus aethiopicus</i>	410.0	37.7	2
<i>Paranthropus boisei</i>	503.3	53.1	2
<i>Australopithecus africanus</i>	441.7	27.2	2
<i>Australopithecus sediba</i>	420.0	25.8	2
<i>Homo naledi</i>	545.0	42.8	2
<i>Homo habilis</i>	609.3	32.6	2
<i>Homo rudolfensis</i>	788.5	45.6	1b
<i>Homo ergaster</i>	800.7	58.3	1b
<i>Homo erectus</i>	960.1	63.4	1b
<i>Homo heidelbergensis</i>	1231.6	98.9	1a
<i>Homo neanderthalensis</i>	1391.4	84.5	1a
<i>Homo sapiens</i>	1463.8	64.7	1a

**Table 1.** Endocranial volume and mean body mass listed for several hominid species, columns 1–3 taken from Table 1 of Wood, 2016. The mean endocranial volume of *H. naledi* was updated to 545 cc with the addition of the LES1 skull's ECV value of 610 cc (Hawks et al. 2017).

## Results and Discussion

The mean ECV (cc) was plotted for 14 taxa taken from Wood's analysis (Wood 2016) as a function of mean body mass (kg). The results can be seen in Fig. 1. Clustering was performed using Ward's hierarchical clustering. As we can see, two or three clusters are visible, depending on how deep the cutoff is for the clustering. With two clusters, the first main cluster is made up of *Homo sapiens*, *Homo neanderthalensis*, *Homo heidelbergensis* + *Homo rudolfensis*, *Homo erectus*, and *Homo ergaster*. The second cluster is made up of *Homo habilis*, *Homo naledi*, *Australopithecus sediba*, *Australopithecus africanus*, *Australopithecus afarensis*, *Paranthropus boisei*, *Paranthropus aethiopicus*, and *Ardipithecus ramidus*. Using a Student's t-test, the p-value for the ECV values for the two clusters is 0.0023, which is highly significant even at the 1% level.



**Fig. 1.** Mean endocranial volume of the 14 hominin species according to mean body mass from Table 1.

As to whether the first cluster can be split into two subclusters or not, the fact still remains that eight species, including *H. habilis*, *H. naledi*, and *A. sediba* both belong to the same cluster, at least based on ECV and body mass. Therefore, baraminic discontinuity exists between these three species and humans in this aspect. Despite the majority view of *H. naledi* being at the base of the genus *Homo* and possibly being a transition species between the genus *Australopithecus* and *Homo*, other views dissent. Jeffrey Schwartz, professor of anthropology at the University of

Pittsburgh thinks that the fossil remains of *H. naledi* are a mixture of multiple species, based on differences in skull shape in three of the specimens (Callaway 2015). Also, a recent set of analyses based on Principal Component Analysis of 8–12 species of the original data set of Berger et al. (2015) by Neves, Bernardo, and Pantaleoni (2017) showed that *H. habilis*, *H. naledi*, and *A. sediba* belong to the same clade. In both studies, principal component 1 of 2 was influenced by cranial capacity, among other factors. It has been the majority creationist view that *H. habilis* was not human. For example, Lubenow refers to the remains of *H. habilis* being a mix of human and non-human fossils (Lubenow 2004). Interestingly, Young classified *H. habilis* as an australopithecine based on its encephalization (Young 2006). Thus, since *H. naledi* groups with *H. habilis*, then transitively, *H. naledi* is not human, if indeed *H. habilis* can be assumed to be an australopithecine. There is the possibility that the fossil remains of *H. naledi* were pathological, although what kind of disease these *H. naledi* specimens may have been suffering from goes unnamed. However, all 15 remains of *H. naledi* found in the Dinaledi chamber showed the same set of unusual hominin features.

Thus, it would be unlikely that all of the *H. naledi* individuals had the same malformities in the same bones. Thus, based on results from previous analyses of *H. naledi* (O'Micks 2016, 2017a, 2017b), and also the fact that *H. naledi* clusters together with species from the genera *Australopithecus* and *Paranthropus* based on encephalization tendencies dependent on body mass give further support to the idea that *H. naledi* is not a member of the human holobaramin, but is rather a species of ape, most likely an australopithecine. While it is true that just because a hominin species has a small cranial capacity does not automatically mean that it is an ape or less intelligent, the converse is also true, namely that it cannot be assumed that if a species has a small cranial capacity, then it is not an ape. Baraminology is based on additive evidence (Wood and Murray 2003), meaning that we can add species to a core set of species only if we show continuity between the new species and the already existing set of species. As opposed to this, present analysis shows *discontinuity* between *H. naledi* and human species based *not just* on endocranial volume but also on body weight, assuming that the measured values in the data set for brain size and body mass are accurate.

## Materials and Methods

Mean ECV (cc) and mean body mass (kg) were taken from Table 1 of Wood (2016) for 14 hominin taxa. Euclidean distances were calculated for the data and clustering was performed using the `hclust` function using the Ward hierarchical clustering method. Calculations were done in R version 3.4.1.

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# Darwin vs. Genetics: Surprises and Snags in the Science of Common Ancestry

BY [NATHANIEL T. JEANSON, PH.D.](#) \* |  
FRIDAY, AUGUST 29, 2014

For over 150 years, Darwin's hypothesis that all species share a common ancestor has dominated the creation-evolution debate. Surprisingly, when Darwin wrote his seminal work, he had no direct evidence for these genealogical relationships — he knew nothing about DNA sequences. In fact, before the discovery of the structure and function of DNA, obtaining direct scientific evidence for common ancestry was impossible. Now, with online databases full of DNA-sequence information from thousands of species, the direct testing of Darwin's hypothesis has finally commenced. What follows is a critical reevaluation of the four major lines of genetic evidence that secular scientists use to support evolutionary common ancestry.

## Evidence 1: Relative Genetic Similarities

One of the most commonly cited evidences for evolution is the hierarchical classification of life,<sup>1</sup> which is based on anatomy and physiology. If evolution were true, then genetics should clearly reflect this pattern.

A brief examination of DNA inheritance shows the theoretical basis for this evolutionary expectation. When life begins at conception, DNA is transmitted through both the sperm and the egg, but the process of transmission happens imperfectly. Thus, each successive generation grows more genetically distant from previous generations as each new fertilization event contributes more genetic mistakes to the lineage.



By analogy, it's as if a group of people were tasked with transcribing the text of a book and, in the process, made several errors with each transcription. If each flawed copy was used as the basis for the next copy, each successive transcription event would contribute more mistakes to the final product. Since the errors are cumulative, then comparing the number of mistakes between individual copies of the book would reveal which copies were transcribed earlier and which ones were transcribed later. Similarly, under the evolutionary paradigm, comparing the number of DNA mistakes between species should reveal which ones have a recent common ancestor and which ones have an older genealogical connection.<sup>2</sup>



Darwin's iconic "tree of life" embodies the sum of evolution's relative predictions about species' common ancestry (Figure 1A), and many genetic observations seem to support his hierarchical depiction of the genealogical relationships among species. For example, humans tend to share more DNA with the great apes than with frogs, and these species share more DNA with one another than they do with insects. This is consistent with predicted nesting of the human evolutionary branch within the primate branch of the tree of life and with the clustering of vertebrate species with one another but not with invertebrates on the tree.

These results would seem to confirm evolution. The problem? Numerous genetic patterns contradict this tree.<sup>3</sup> In addition, for those patterns that do fit the tree, this result by itself demonstrates nothing about its validity. Why? Scientific tests must distinguish between hypotheses—supporting one while destabilizing the other—and the hierarchical pattern of life supports two hypotheses that are radically different. What hypothesis other than evolution predicts a hierarchical pattern? Design! Although some might protest that the design hypothesis does not explicitly predict hierarchies as a signature, empirical observations quickly put this objection to rest.<sup>4</sup>



For example, consider the similarities and differences among major types of transportation vehicles. An Indy racing car has much more in common with a sedan (e.g., four wheels, movement restricted to land, etc.) than with a hovercraft. However, all three vehicles have more in common with one another (e.g., movement restricted to sea or land) than with a helicopter. Thus, a "tree of transportation" could be drawn without much effort by simply observing and classifying the products of *design* that surround us, and this tree would depict vehicles in a hierarchical pattern (Figure 1B).

Hence, genetic hierarchies do not provide valid scientific evidence for evolution. Bona fide evidence for evolution must support Darwinism to

the clear exclusion of design. If the relative hierarchy of genetic similarities fails to do this, then perhaps another line of evidence will?

## **Evidence 2: Absolute Genetic Differences**

At first glance, the design hypothesis doesn't seem to predict exactly how many genetic differences should exist between humans and chimpanzees. However, the evolutionary hypothesis does. Since evolutionary progress ultimately occurs via imperfect inheritance of DNA, the accumulation of these mistakes over evolutionary time leads to precise expectations about the absolute genetic differences among species, and a match between these predictions and reality could strengthen Darwin's case.

Unfortunately for Darwin, genetic differences contradict evolutionary predictions. The evolutionary timescale & mechanism underestimate the genetic diversity among species. For example, about 900,000,000 DNA "letter" differences exist between the human species and the chimpanzee.<sup>5</sup> Under the evolutionary timescale, these differences must arise via imperfect DNA inheritance in just six million years. Since humans and chimpanzees both reproduce relatively slowly, establishing genetic differences in the entire chimpanzee and human populations is enormously challenging. Both theoretical calculations and computer simulations indicate that the current differences could not arise in six million years of evolutionary change.<sup>6,7</sup> Evolution predicts far fewer genetic differences between us and chimpanzees than actually exist and, therefore, *underestimates* the actual absolute genetic differences.

Evolutionary predictions for other species suffer from the problem opposite to the one that plagues human-chimp comparisons. For example, mitochondrial DNA—located in the microscopic energy factories of the cell—is found across the animal kingdom, and it is inherited imperfectly as well. The rate of mitochondrial DNA mistake accumulation has been experimentally measured for only three distinct animal species, yet all three of these species have far too few mitochondrial DNA differences for any of the species to have arisen

millions of years ago. In fact, mitochondrial DNA mistakes are accumulating so rapidly that if these species did indeed evolve millions of years ago, then they would have undergone mutations in every single one of their mitochondrial DNA positions multiple times over.<sup>8</sup> Here, the evolutionary hypothesis dramatically *overestimates* the actual genetic diversity within these species.

Together, these results reveal that genetic differences are no friends of Darwinism; the Darwinists aren't even getting the basic predicted counts right. Furthermore, these results either call into question the very mechanism of Darwinian change—mutations—or they call into question Darwin's timescale. Perhaps both.

### **Evidence 3: Junk DNA**

The third line of evolutionary evidence from genetics leads to the same conclusion. Since the mechanism of evolutionary change is based on genetic mistakes, evolutionists expect the genomes of certain species to be littered with useless DNA—essentially leftovers from the clumsy, unguided evolutionary process. Evolutionist Dan Graur and his colleagues make this clear: “Evolution can only produce a genome devoid of ‘junk’ if and only if the effective population size is huge and the deleterious effects of increasing genome size are very considerable... In humans, there seems to be no selection against excess genomic baggage. Our effective population size is pitiful and DNA replication does not correlate with genome size.”<sup>9</sup> Therefore, evolutionists predict that the human genome should be filled with junk DNA.

The ENCODE project, a massive undertaking that is funded by the National Human Genome Research Institute, corralled a large amount of preliminary data that effectively refuted this hypothesis.<sup>10</sup> In fact, the quote cited above comes from a paper actually written to dispute the conclusions of ENCODE—not because the experiments were flawed but simply because the project's results were found inconsistent with evolutionary expectations. The idea of a species having large amounts of junk DNA seems to be a relic of the past.

Evolutionists have further responded to ENCODE by citing organisms whose DNA sequence seems inexplicable apart from invoking junk as an explanation. For example, evolutionist T. Ryan Gregory coined the “onion test” as a challenge to claims of function for junk DNA.<sup>11</sup> The essence of his test, which has been publicized by a prominent theistic evolutionist,<sup>12</sup> draws on the fact that the onion has much more DNA than humans and that much of this DNA falls into the category of sequence previously labeled “junk.” Since humans are obviously much more complex than onions, Gregory sees no reason why the onion should carry around so much extra DNA.

This challenge is simply another example of the logical flaw that beset earlier claims of junk DNA. For Gregory to insist that creationists must explain the onion’s DNA reflects a fundamental misunderstanding of the argument. Creationists did not insist that all DNA was functional. Rather, evolutionists prematurely claimed non-functional DNA in the absence of laboratory evidence. No creationist explanation is needed until the onion’s DNA has been tested in the laboratory.<sup>13</sup>

Evolutionists have yet to demonstrate that junk DNA exists at the levels they expect to find in light of evolution, and this discrepancy effectively removes junk DNA as a line of evidence for evolution. In addition, this fact raises the question of whether all genetic differences arise via mutation. For example, one potential source of genetic differences that evolutionists regularly ignore is divine creation. In humans, modeling the common genetic differences as originating via creation rather than mutation explains the human genetic diversity data and leads to dramatically different predictions for the function of these DNA variants.<sup>14</sup>

Despite the weight of these preliminary findings, some evolutionists still cite what seem to be examples of junk DNA to support evolution. How well do these examples fare?

## Evidence 4: Shared DNA Mistakes

A prominent and persuasive-sounding example of junk DNA is the purported fusion site on human chromosome 2 where, supposedly, two ancestral ape-like chromosomes came together to form a single chromosome. Evolutionists have been repeating the fusion claim for years without actually examining the sequence closely. Doctor Jeff Tomkins' analysis of this sequence reveals that the fusion is actually functional and bears little, if any, resemblance to the predicted fusion sequence.<sup>15</sup> This means that one of the best lines of evidence for human-chimp ancestry has become one of the biggest evolutionary challenges: If humans and great apes have a common ancestor, why do they have different chromosome numbers?

Other examples of junk DNA collapse under close examination as well. For example, small subsets of the 3,000,000,000 human DNA letters represent recognizable functional sequences called *genes*. A comparison of these genes to the remaining DNA letters in the human DNA sequence reveals the existence of *pseudogenes*. As their name implies, pseudogenes look like genes that once were functional but now are broken. Evolutionists have compared pseudogenes between humans and primates and found common sequences, a pattern that evolutionists maintain is best interpreted as evidence of common ancestry.<sup>16</sup>

An analogy to human language strengthens the force of this argument. For example, if two students submitted identical essays to their teacher, the teacher might suspect that one student copied his essay from the other. If the teacher also found that both essays contained numerous errors and that the errors occurred in the same paragraphs and sentences in both essays, her suspicion of plagiarism would grow stronger. The chance is miniscule that both students would just happen to make the same typo at the same location in each of their essays. By analogy, the chance is also miniscule that two different species would randomly have the same error in the same place in their DNA sequences, especially since the human and chimpanzee DNA sequences are each billions of DNA letters long.

Therefore, if two species do share errors in the exact same DNA location (i.e., both have the same pseudogenes), then evolutionists maintain that these species must have “plagiarized” these mistakes from a common source.<sup>17,18</sup>

The key assumption in this analogy is that errors can be identified unambiguously. Evolutionists have again assumed that pseudogenes are non-functional without doing any laboratory experiments. These tests have now begun to be performed, and recent results revealed that pseudogenes are quite likely functional.<sup>19</sup> Hence, pseudogenes are not “plagiarized” mistakes from a common human-chimp ancestor but probably represent functional code. So instead of supporting evolution, pseudogenes seem to support design!

## Summary

Darwin was completely ignorant of the biological role of DNA when he penned his theory a century and a half ago. Now the evolutionary case from genetics is unravelling at multiple levels because it was never based on any direct evidence for common ancestry in the first place. Do the evolutionists have any lines of genetic evidence left? Evolution fails to predict either the absolute number or the function of genetic differences among species. This is remarkable since the supposed “engine” of evolutionary change is the genetic mistakes themselves. If evolutionists can't even get their fundamental mechanisms to line up with their models, then why do they continue to present Darwin's grand hypothesis as fact?

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**Over 25% of human genes  
are the same as those  
of a banana...**



**Chimp Eating Banana = Human DNA Match?**



## THE LAST UNIVERSAL COMMON ANCESTOR

### Last Universal Common Ancestor

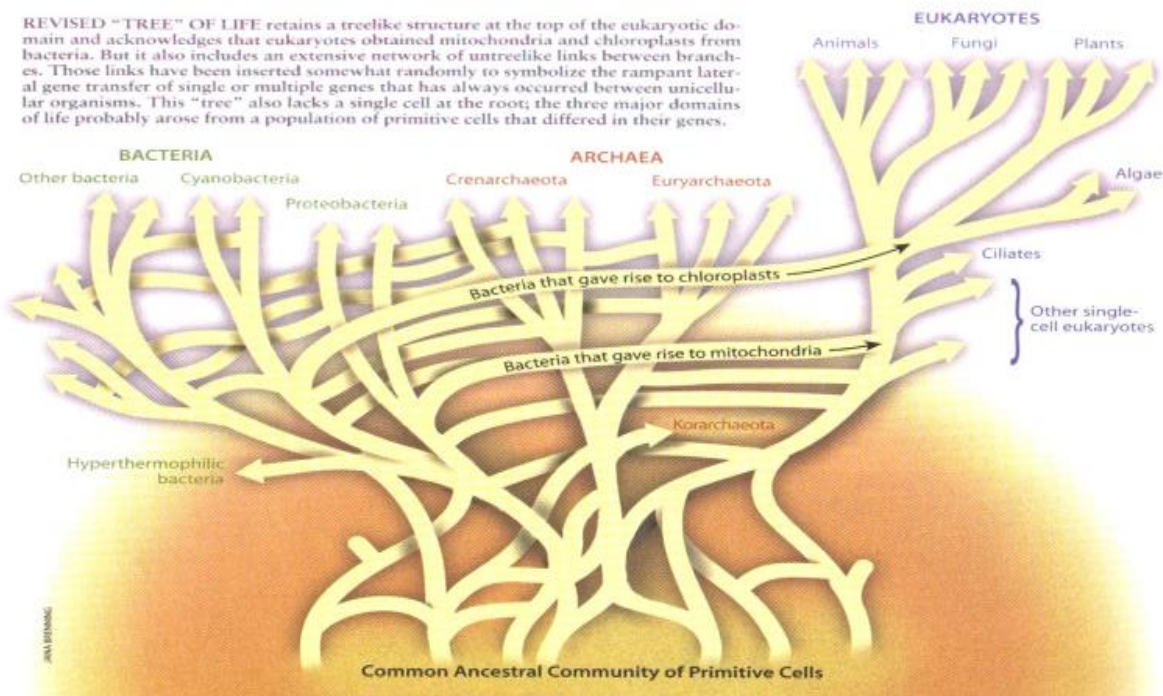
- ♦ Even evolutionists have maintained that life is so improbable that it only could have evolved once.
- ♦ Therefore they have embarked on an odyssey trying to identify that last universal common ancestor or LUCA.
- ♦ Basically, they have searched by comparing gene sequences.

### Last Universal Common Ancestor

- ♦ But recently there have arisen some complications. Archaeobacteria genes have been found in bacteria and vice-versa.
- ♦ To save an evolutionary scenario, multiple gene transfers between numerous ancestors is required.
- ♦ "The most reasonable explanation for these various contrarian results is that the pattern of evolution is not as linear and treelike as Darwin imagined it." (W. Ford Doolittle, Scientific American, Feb. 2000, p. 90-95)

# LAST UNIVERSAL COMMON ANCESTOR

REVISED "TREE" OF LIFE retains a treelike structure at the top of the eukaryotic domain and acknowledges that eukaryotes obtained mitochondria and chloroplasts from bacteria. But it also includes an extensive network of untreetlike links between branches. Those links have been inserted somewhat randomly to symbolize the rampant lateral gene transfer of single or multiple genes that has always occurred between unicellular organisms. This "tree" also lacks a single cell at the root; the three major domains of life probably arose from a population of primitive cells that differed in their genes.



## Last Universal Common Ancestor

**"Some biologists find these notions confusing and discouraging. It is as if we have failed at the task that Darwin set for us: delineating the unique structure of the tree of life. In fact, our science is working just as it should. Now new hypotheses, having forms we can only guess, are called for."**

# The problem of genetic improbability

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by Ashby Camp

From *The Myth of Natural Origins; How Science Points to Divine Creation*

Ashby Camp, Ktisis Publishing, Tempe, Arizona, 1994, pp. 53-57, used by permission.

Even on a theoretical level, it does not seem possible for mutations to account for the diversity of life on earth, at least not in the time available. According to Professor Ambrose, the minimum number of mutations necessary to produce the simplest new structure in an organism is 5 (*Davis, 67-68; Bird, 1:88*), but these five mutations must be the proper type and must affect five genes that are functionally related. *Davis, 67-68*. In other words, not just any five mutations will do. The odds against this occurring in a single organism are astronomical.

Mutations of any kind are believed to occur once in every 100,000 gene replications (though some estimate they occur far less frequently). *Davis, 68; Wysong, 272*. Assuming that the first single-celled organism had 10,000 genes, the same number as *E. coli* (*Wysong, 113*), one mutation would exist for every ten cells. Since only one mutation per 1,000 is non-harmful (*Davis, 66*), there would be only one non-harmful mutation in a population of 10,000 such cells. The odds that this one non-harmful mutation would affect a particular gene, however, is 1 in 10,000 (since there are 10,000 genes). Therefore, one would need a population of 100,000,000 cells before one of them would be expected to possess a non-harmful mutation of a specific gene.

The odds of a single cell possessing non-harmful mutations of five specific (functionally related) genes is the product of their separate probabilities. *Morris, 63*. In other words, the probability is 1 in  $10^8 \times 10^8 \times 10^8 \times 10^8 \times 10^8$ , or 1 in  $10^{40}$ . If one hundred trillion ( $10^{14}$ ) bacteria were produced every second for five billion years ( $10^{17}$  seconds), the resulting population ( $10^{31}$ ) would be only 1/1,000,000,000 of what was needed!

But even this is not the whole story. These are the odds of getting just any kind of non-harmful mutations of five related genes. In order to create a new structure, however, the mutated genes must integrate or function in concert with one another. According to Professor Ambrose, the difficulties of obtaining non-harmful mutations of five related genes "fade into insignificance when we recognize that there must be a close integration of functions between the individual genes of the cluster, which must also be integrated into the development of the entire organism." *Davis, 68*.

In addition to this, the structure resulting from the cluster of the five integrated genes must, in the words of Ambrose, "give some selective advantage, or else become scattered once more within the population at large, due to interbreeding." *Bird, 1:87*. Ambrose concludes that "it

seems impossible to explain [the origin of increased complexity] in terms of random mutations alone." *Bird, 1:87*.

When one considers that a structure as "simple" as the wing on a fruit fly involves 30-40 genes (*Bird, 1:88*), it is mathematically absurd to think that random genetic mutations can account for the vast diversity of life on earth. Even Julian Huxley, a staunch evolutionist who made assumptions very favorable to the theory, computed the odds against the evolution of a horse to be 1 in  $10^{300,000}$ . *Pitman, 68*. If only more Christians had that kind of faith!

This probability problem is not the delusion of some radical scientific fringe. As stated by William Fix:

Whether one looks to mutations or gene flow for the source of the variations needed to fuel evolution, there is an enormous probability problem at the core of Darwinist and neo-Darwinist theory, which has been cited by hundreds of scientists and professionals. Engineers, physicists, astronomers, and biologists who have looked without prejudice at the notion of such variations producing ever more complex organisms have come to the same conclusion: The evolutionists are assuming the impossible. *Fix, 196*.

Renowned French zoologist Pierre-Paul Grass' has made no secret of his skepticism:

What gambler would be crazy enough to play roulette with random evolution? The probability of dust carried by the wind reproducing Dürer's (Matt, I can't get the 'u' to go small for me there!) "Melancholia" is less infinitesimal than the probability of copy errors in the DNA molecule leading to the formation of the eye; besides, these errors had no relationship whatsoever with the function that the eye would have to perform or was starting to perform. There is no law against daydreaming, but science must not indulge in it. *Grass', 104*.

In 1967 a group of internationally known biologists and mathematicians met to consider whether random mutations and natural selection could qualify as the mechanism of evolutionary change. The answer of the mathematicians was "No." *Morris, 64-65; Sunderland, 128-36*. Participants at the symposium, all evolutionists, recognized the need for some type of mechanism to reduce the odds against evolution. In the words of Dr. Murray Eden of M.I.T.:

What I am claiming is that without some constraint on the notion of random variation, in either the properties of the organism or the sequence of the DNA, there is no particular reason to expect that we could have gotten any kind of viable form other than nonsense. *Sunderland, 138*.

Summarizing his and Hoyle's analysis of the mechanism of evolution, Wickramasinghe states:

We found that there's just no way it could happen. If you start with a simple micro-organism, no matter how it arose on the earth, primordial soup or otherwise, then if you just have that single organizational, informational unit and you said that you copied this sequentially time and time again, the question is does that accumulate enough copying errors, enough mistakes in copying, and do these accumulations of copying errors lead to the diversity of living forms that one sees on the earth. That's the general, usual formulation of the theory of evolution.... We looked at this quite systematically, quite carefully, in numerical terms. Checking all the numbers, rates of mutation and so on, we decided that there is no way in which that could even marginally approach the truth. *Varghese, 28*.

Thus, several decades have only confirmed the observation of Gertrude Himmelfarb in her book *Darwin and the Darwinian Revolution* (1959):

[I]t is now discovered that favorable mutations are not only small but exceedingly rare, and the fortuitous combination of favorable mutations such as would be required for the production of even a fruit fly, let alone a man, is so much rarer still that the odds against it would be expressed by a number containing as many noughts as there are letters in the average novel, "a number greater than that of all the electrons and protons in the visible universe" -- an improbability as great as that a monkey provided with a typewriter would by chance peck out the works of Shakespeare. *Fix, 196.*

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**THE BASICS**

## EPIGENETICS: A PRIMER

There are many ways that epigenetic effects regulate the activation or repression of genes. Here are a few molecular tricks cells use to read off the right genetic program. By Stefan Kubicek

**1 OVERVIEW**  
Epigenetic events regulate the activities of genes without changing the DNA sequence. Different genes are expressed depending on the methyl-marks attached to DNA itself and by changes in the structure and/or composition of chromatin. The main components of chromatin are histones (in bundles of eight units) around which 146 base-pairs of DNA are wound like a thread around a spool, forming a structure called the nucleosome. There are various epigenetic mechanisms that can affect the nucleosome: chemical modification (via molecular additions to histone tails or DNA), a change its positioning on DNA (via chromatin remodeling proteins), or a variation in histone subtypes.

**2 CELL DIFFERENTIATION**  
Epigenetic marks are critical for determining and maintaining cell fate during development. Although almost every cell in the human body contains the same DNA, epigenetic marks act to program the cell to express genes that are relevant for a particular tissue type. A neuronal cell expresses genes that help it develop dendrites and axons. In a liver cell those same genes are marked with epigenetic tags that cause tighter binding of neuron-specific DNA, making it inaccessible to transcription machinery.

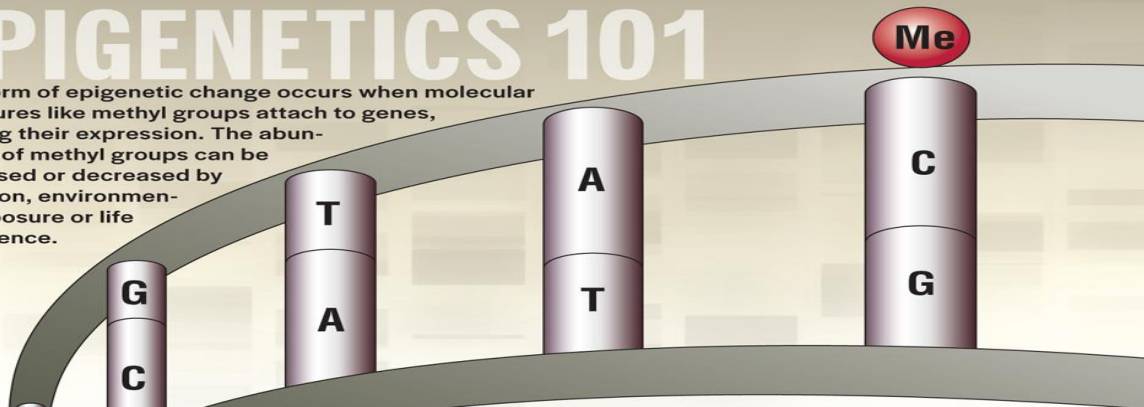
**3 INACTIVATING MARKS**  
There are many epigenetic modifications that change whether or how much of a gene is transcribed into RNA. Epigenetic marks that inactivate genes include methylation at certain positions on histone tails **A**. These chemical modifications are made by a number of histone-modifying enzymes and then recognized by other chromatin regulators **B**. Evidence is beginning to emerge that different classes of noncoding RNAs (ncRNA) regulate these enzymes. Many of the histone modifications that inactivate genes can be reversed by other epigenetic changes (see below). However, direct methylation of DNA causes a permanent and heritable change in gene expression **C**. Methylation of the DNA often occurs at clusters or "islands" of cytosine (CpG islands) that commonly occur within gene promoters.

**4 ACTIVATING MARKS**  
The heritability of DNA methylation, which often occurs in the early stages of development, allows cells to keep irrelevant genes silenced in successive generations of liver or skin cells. However some genes—such as the plant genes that govern winter dormancy and springtime flowering—require silenced genes to be reactivated. Several modifications, including the acetylation, phosphorylation, as well as methylation of certain positions on a histone tail **A**, can cause DNA to unwind, releasing the genes that are otherwise inaccessible. These modifications occur mostly at specific positions on the accessible tails of the histones, and subsequently recruit additional activating proteins **B**. Histone-remodeling complexes, which slide histones in one direction or another, can also make genes accessible to transcription **C**.

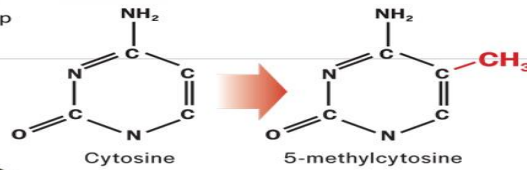
Stefan Kubicek is at CeMM-Research Center for Molecular Medicine of the Austrian Academy of Sciences in Vienna.

# EPIGENETICS 101

One form of epigenetic change occurs when molecular structures like methyl groups attach to genes, altering their expression. The abundance of methyl groups can be increased or decreased by infection, environmental exposure or life experience.

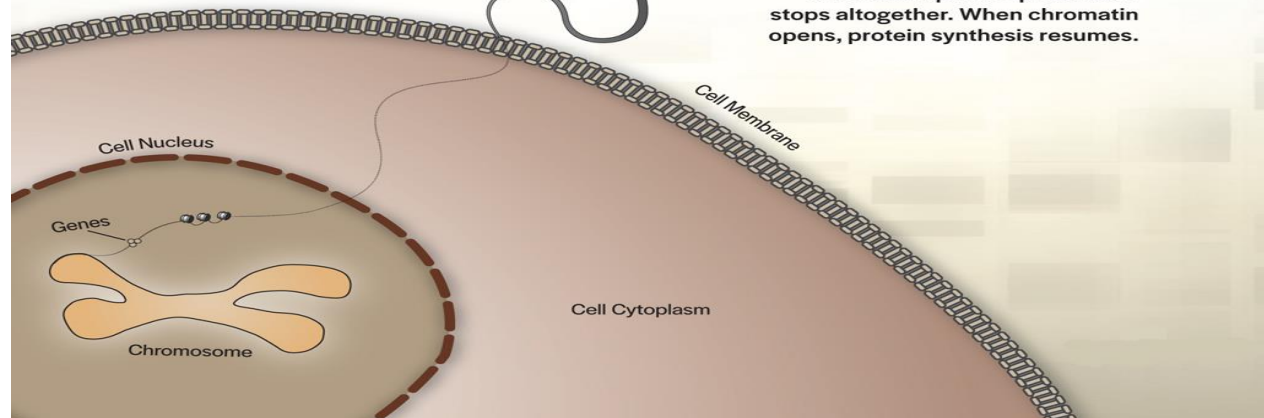
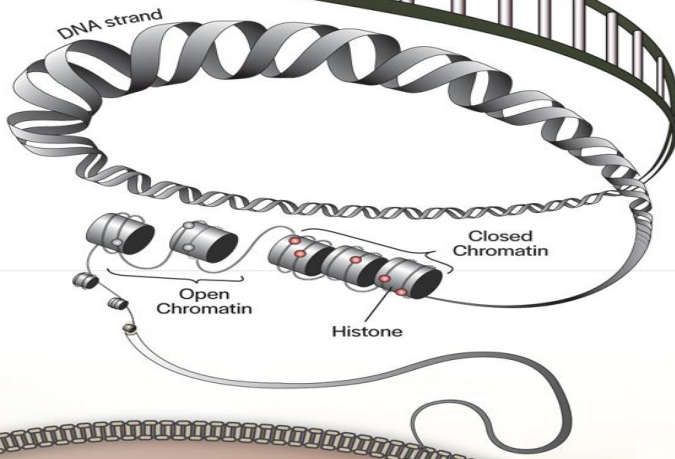


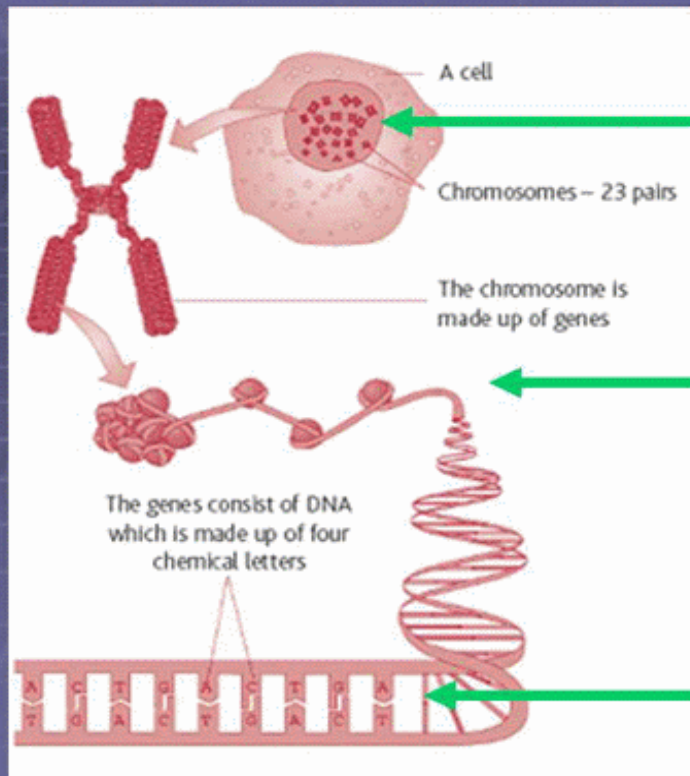
A **methyl group** (Me) is an organic compound consisting of one carbon atom bonded to three hydrogen atoms (CH<sub>3</sub>).



When a methyl group becomes attached to the nucleotide base cytosine, the DNA has been **methylated**. Methyl groups can attach to DNA for life, changing the activity of any gene involved. Behavioral traits associated with those genes are likewise changed and can be transmitted across generations.

Methyl groups attach to DNA, which is wrapped around a molecular spool called a **histone**. Histones are the units that make up **chromatin**; chromatin includes DNA and non-histone proteins as well. When chromatin is closed, DNA transcription ceases and protein production stops altogether. When chromatin opens, protein synthesis resumes.

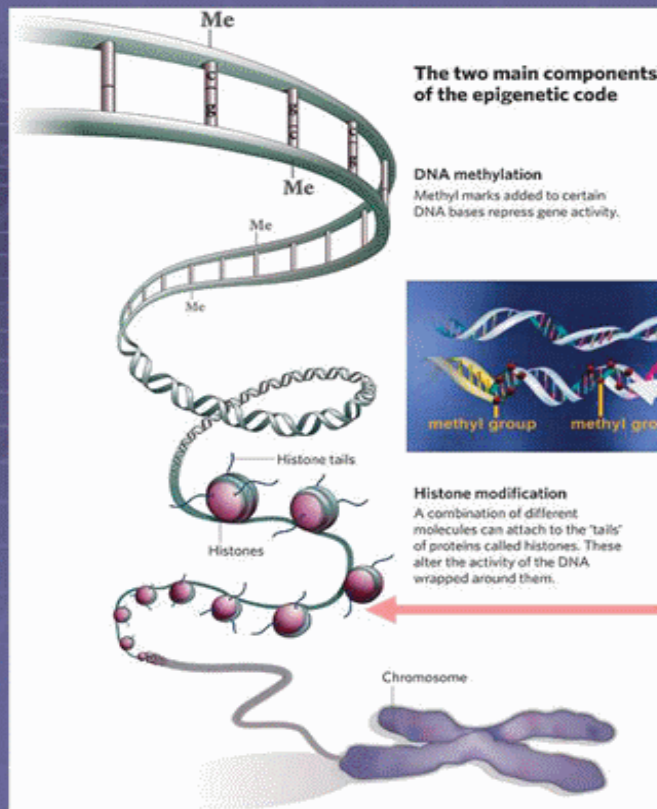




**HUMAN GENOME**  
~25,000 genes  
packaged in every  
human cell

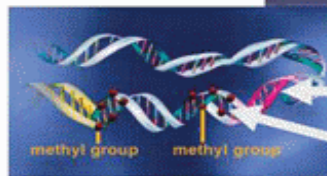
**EPIGENETICS:**  
Environment (temperature,  
radiation, food, drugs,  
nutrients produce  
immediate effects that can  
be imprinted long-term

**MUTATION HERE CAN  
PRODUCE GENOTYPES OR  
RARE GENETIC DISORDERS**



**TWO WAYS TO ACTIVATE OR SILENCE GENES**

1. **Methylation**
2. **Small molecules/ histones**



**ACTIVATED GENE**

**SILENCED GENE**  
(Folic acid, Vitamin B12, Choline)

**SILENCE GENES**  
Resveratrol, quercetin,  
curcumin, other small  
molecules (histone  
deacetylase inhibitors)



# Epigenetics Proves Humans and Chimps Are Different

BY [JEFFREY P. TOMKINS, PH.D.](#) \* |  
FRIDAY, DECEMBER 28, 2012

One of the rapidly expanding and exciting research fields in molecular biology is the area of epigenetics. In study of epigenetic modifications, scientists analyze DNA that has been modified in such a way that its chemistry is changed, but not the actual base pairs that make up the genetic code of the sequence. It's like a separate control code and system imposed upon and within the standard code of DNA sequence.

There are two general ways in which the DNA of an organism can be modified chemically. First, methyl groups can be added to DNA base molecules. Second, proteins called histones that integrate with the DNA can also be modified in different ways. Both of these types of DNA modification determine how accessible the DNA is to proteins that bind to the DNA and control and help regulate gene activity. Epigenetic DNA modification is highly controlled in the genome and plays a major role in the way that many different types of genes are expressed. In fact, a variety of human diseases are associated with epigenetic changes that are not part of a normal genomic profile.

Because chimpanzees are thought to be our closest living relatives, they have been compared genetically to modern humans in a variety of different types of studies. One segment of human-chimp genetic comparison research—comparisons of gene expression—has been particularly unfruitful for evolutionists. A number of research reports show how large differences in gene expression are commonly observed between humans and chimps for many genes that both species share, particularly in those associated with brain activity.<sup>1, 2</sup>

Because epigenetic modifications in the genome are related to gene expression, researchers have been using highly advanced

technologies for comparing these differences in humans and chimps for regions of the genome that they both have in common.

Several recent studies show that dramatic differences exist between humans & chimps in regard to the methylation aspect of epigenetics. When considering this type of research, it is important to know that the epigenome is tissue-specific and the patterns vary between the types of cells that are studied.

A 2011 study was performed on purified white blood cells (neutrophils) from living humans, chimps & orangutans. The researchers selected neutrophils because they are nearly similar in their appearance and characteristics between humans and apes. Despite the fact that the most similar type of cell known between humans & apes was selected, scientists were surprised that they detected major methylation profile differences in over 1,500 different regions of the human genome when they were compared to chimp genomes. The orangutans also showed uniqueness from humans & chimps in their epigenome data clustering.

Another exciting discovery in this study was that these epigenetic differences between humans and chimps were not only present in adult white blood cells, but also in the germline (sperm and egg cells)—indicating that these were permanent heritable differences between humans and apes. The authors of the report wrote:

The mechanisms leading to the methylation differences between species are unknown. The separate clustering of humans and chimps is consistent with the stable inheritance of methylation states within the two species.<sup>3</sup>

An even more recent study in 2012 used a new, highly accurate method of studying methylation profiles of DNA surrounding genes in brain genes shared by both humans and chimps. The differences noted between humans and chimps were strikingly marked and extensive:

We also found extensive species-level divergence in patterns of DNA methylation and that hundreds of genes exhibit significantly lower levels of promoter methylation in the human brain than in the chimpanzee brain.<sup>4</sup>

This study reported that these types of brain genes could tolerate very little epigenetic modification outside the normal profile for the human brain. In fact, researchers found that abnormal human brain gene methylation patterns are associated with a wide variety of severe human neurological diseases. These findings show how methylation changes in brain genes are not well-tolerated, thus negating ideas of epigenetic evolution in primates. Obviously, brain gene methylation patterns are finely tuned and species specific. The authors made the following comment regarding this discovery:

Finally, we found that differentially methylated genes are strikingly enriched with loci associated with neurological disorders, psychological disorders, and cancers.<sup>4</sup>

This research further broke down the gene regions into different areas. One key area of interest was the promoter region—the area preceding a gene that controls its function like a genetic switch. The researchers also studied the main gene body, which is the region of a gene that includes the protein-coding segments. Finally, they also analyzed the ends of genes because they play key roles in genetic regulation. In this regard, they found that the largest differences between human and chimp brain gene methylation patterns were in the control regions that play a role in regulation. The human gene promoters were much less methylated, a finding that corresponded well to the higher levels of human brain gene activity, compared to their gene counterparts in chimps. The other regions of the genes also exhibited differences between species but were less dramatic.

Overall, 1,055 genes showed significantly different methylation patterns between humans and chimps. Of these, the researchers found 468 different genes that were highly diverse in their methylation patterns. These were the types of genes that play key roles in

controlling other genes and modifying the types of proteins in the cell that regulate processes at the top of the cell system hierarchy. In other words, the genes that showed these marked differences were the key controlling regions in the genome for brain cell activity.

These results derived from the field of epigenetics dramatically illustrate the profound genetic differences that exist between humans and apes. Once again, cutting-edge science fits closely with the biblical paradigm that God created all animals “after their kind” ([Genesis 1:21](#)) & humans uniquely in the “image of God” ([Genesis 1:27](#)).

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Cite this article: Tomkins, J. 2013. Epigenetics Proves Humans and Chimps Are Different. *Acts & Facts*. 42 (1): 11-12.

# God created with functional maturity, not ‘appearance of age’

by [Jonathan Sarfati](#)

Published: 10 March 2015 (GMT+10)



Philip Gosse (1810–1888)

**Extracted and adapted from the author’s landmark 2015 book *The Genesis Account: A theological, historical, and scientific commentary on [Genesis 1–11](#)*.<sup>1</sup>**

One striking feature of the record of God’s creative acts in [Genesis 1](#) is that the created things are fully ready to perform their appointed tasks. On Day 3, God created the plants mature, already bearing seeds. Later on, on Days 5 and 6, He created animals as adults ready to multiply, and finally Adam and Eve, likewise as adults, able to speak and multiply. For inanimate objects, on Day 4, God created the sun and stars already shining. All this is *creation with functional maturity*.

In contrast, there is an errant concept of ‘creation with apparent age’. One obvious flaw is that *age has no appearance!* Rather, we *infer* an age from appearance, after making certain *assumptions* about processes changing over time, and about the starting conditions.<sup>2</sup>

I will try to explain further, presenting some case studies from Scripture and from various Christians, including the errant but often-misunderstood ideas of Philip Gosse.

## What would be observed

A hypothetical modern observer who travelled back in time to see Adam and Eve at the end of Day 6 might infer that they were 20-year-old adults, but in reality they were less than a day old. However, they were mature adults. Also, when created, the blood in their arteries was already oxygenated so it could power the cells in the body. Nowadays, the oxygen comes from the air through the lungs into the blood.



But one striking feature, distinguishing them from all their descendants, would be the absence of navels, since the navel (umbilicus or belly button) is the scar where the umbilical cord attached us to our mothers via the placenta. There is also a thinning of the abdominal muscles, which is a potential vulnerability to hernias. Adam and Eve were direct creations of God, so had no navel. A navel in either of them would seem to have no function apart from looking like a history that never happened.

Some have fallaciously claimed that Adam and Eve had navels, because they would have had genes for them to pass on to their offspring. However, it's not just a matter of having genes for a navel. Genes are also switched on and off in precise sequence during embryonic development. Any genes controlling the navel are expressed during embryo development as tissues accommodate the umbilical cord. So today, our tissues are arranged in this way because of developmental sequence more than genetic coding *per se*. So since Adam and Eve had no mothers, there would have been no development of the navel.

Such arguments also overlook that Adam and Eve also had genes for embryonic and fetal hemoglobin, deciduous teeth, growth hormone, and controlling the changes in puberty, since these were also passed on to their descendants. But in this founding couple created as fully grown adults, these genes were never expressed either.

Similarly, the trees on Day 3 would be mature trees, and a time-travelling observer might infer that they were hundreds of years old. But if he chopped a tree down, he might be dumbfounded by the lack of growth rings. Growth rings today are a record of mostly seasonal changes in the rate of wood growth, although not always annual. E.g. in dry climates, such as those in which the long-lived bristlecone pines grow, each heavy rainfall can produce a new ring. Also, even trees growing next to each other don't always have the same growth patterns, so correlations are problematic.<sup>3</sup>

There is an errant concept of 'creation with apparent age'. One obvious flaw is that age has no appearance! Rather, we infer an age from appearance, after making certain assumptions about processes changing over time, and about the starting conditions.

Similarly, God probably created the sun with a fair amount of helium. A good amount of helium seems like a *design feature* so that the sun is hot enough. The reason is as follows. A helium nucleus (alpha particle) takes up less room than four hydrogen nuclei (protons). This makes the core contract & the higher temperature & pressure increases the rate of nuclear fusion, hence energy output. It may also be responsible for the sun's exceptional stability.<sup>4</sup>

But working back, a pure hydrogen sun would be much cooler—this is called the *faint young sun paradox*.<sup>5</sup> Evolutionists and long-agers believe that life appeared on the earth about 3.8 billion years ago. But if that were true, the sun would be 25% brighter today than it was back then. This implies that the earth would have been frozen at an average temperature of  $-3^{\circ}\text{C}$ . However, most paleontologists believe that, if anything, the earth was warmer in the past.<sup>6</sup>

Adam and Eve were direct creations of God, so had no navel. A navel in either of them would seem to have no function apart from looking like a history that never happened.

## Does 'mature creation' make God a deceiver?

By no means! Since age is an inference based on assumptions, there is no deception involved when people make the wrong assumptions about the starting conditions. Indeed, how could God be deceiving when He has told us plainly when He created? Rather, those who deny His word are deceiving themselves. A charge of deception

could only apply if the appearance of a false history were created, one which was totally unnecessary for functional maturity. Some examples are given in the discussion on Gosse and ‘Light created in transit?’ in the boxes below.

This concept has been cleverly illustrated by a parable about a candle, which I thoroughly recommend as a good way of understanding why maturity is not deceptive.<sup>7</sup>

## Gosse and Omphalos

Philip Henry Gosse (1810–1888) was an English biblical creationist who was also a leading science writer and popularizer, almost the [David Attenborough](#) of Victorian England (apart from [Attenborough’s staunch atheopathy](#) of course). He was also an accomplished marine biologist and ornithologist, and inventor of the seawater aquarium. Unfortunately, he is best known for one monumental blunder.

Gosse was a contemporary of Darwin. To understand the background, Darwin’s biological evolution was firmly based on geological evolution and long ages as taught by his mentor Charles Lyell,<sup>8</sup> and Lyell’s hero [James Hutton](#) (1726–1797).<sup>9</sup> By Darwin’s time, much of the church had already capitulated on the latter.<sup>10</sup>

Gosse had not though. In 1857, two years before Darwin wrote *Origin of Species*, Gosse tried to refute long ages with his *Omphalos: an Attempt to Untie the Geological Knot*.

*Omphalos* (ὀμφαλός) is Greek for navel, and Gosse believed that Adam and Eve were created with them.

Most modern readers actually misunderstood what Gosse proposed. Gosse’s failure was unfortunately to propose the unbiblical idea that time moved in a circle, which God interrupted when He created. Gosse called this time of real history since creation, ‘diachronic’; while ‘before’ creation, the cycling time was unreal, ‘virtual’ time he called ‘prochronic’. Thus Adam and Eve would have been created with a navel to reflect a prochronic history of growing from a mother’s womb, even though there was no real ‘diachronic’ history of such a thing. Indeed, no evidence in the present could differentiate features produced in diachronic or prochronic time:

... we cannot avoid the conclusion that each organism was from the first marked with the records of a previous being. But since creation and previous history are inconsistent with each other; as the very idea of the creation of an organism excludes the idea of pre-existence of that organism, or any part of it; it follows, that such records are false, so far as they testify to time; that the developments and processes thus recorded have been produced without time, or are what I call ‘prochronic’.



However, he won not a single convert to his views at the time, precisely because Christians thought that it would make God a deceiver. As shown, this was not Gosse's intention, but this is what everyone inferred. Also, scientists didn't like it because it was *ad hoc*, and making no *practical* difference was also thus untestable.

Nor has any modern creationist ever accepted the idea of God faking it, or planting evidence to test faith or such rubbish—despite the dishonest claims to the contrary by some misotheists, and even some sloppily-researching theists who should know better.<sup>11</sup> But under an atheistic morality, what's wrong with deception? One evolutionist educator is even on record claiming that it's OK to deceive kids if it helps them believe in evolution.<sup>12</sup>

However, although Gosse was trying to defend the Bible, the Bible teaches a real *linear* history. Indeed, this was one feature that led to the blossoming of modern science in Christianized Europe.<sup>13</sup> Conversely, a cyclical view of history goes back to the pagan Greek philosophers and is still followed by eastern religions. Gosse's view also contradicts [2 Peter 3:3–6](#):  
Scoffers will ... deliberately ignore this fact, ... the world that then existed was deluged with water and perished.

This suggests that the Flood must have left some dramatic evidence, otherwise why would scoffers be held culpable for 'deliberately ignoring' the fact of the Flood if there is no evidence? Yet Gosse's theory of prochronic time is *by definition* indistinguishable from uniformitarian real time. By similar reasoning, [Romans 1:18–22](#) is a good argument against theistic evolution. Verse 20 says:

Ever since the creation of the world his invisible nature, namely, his eternal power and deity, has been clearly perceived in the things that have been made. So, they are without excuse.

This passage clearly teaches that unbelievers won't have the slightest excuse for unbelief, because God's power and deity can be 'clearly seen' from nature. This seems to be a strong support for the argument from design. Both these passages imply that the fault is not just ignoring the testimony of God's written Word, although that is bad enough. Rather, they hold the unbelievers culpable even for ignoring the independent support in nature.

It's common to claim that this book made Gosse a lifelong failure, largely because of the purported biography *Father and Son* (1907) by his embittered apostate son Edmund (1849–1928). In reality, *Omphalos* was more an anomaly, written in the months after Philip's beloved first wife Emily died painfully of breast cancer. In the three years after *Omphalos*, Gosse published four books & over 30 scientific papers. And in 1860, he began a second very happy marriage with Eliza Brightwen (1813–1900), who became a loving stepmother to young Edmund. A modern biographer of the Gosses has documented serious errors of fact in *Father*

*and Son*, and argued that Edmund was jealous of his father's superior abilities and tried to elevate himself by denigrating his father's character.<sup>14</sup>

## Light created in transit? A modern *Omphalos*

Many creationists in the past have proposed a solution for the distant starlight problem: that God created not only the stars but also the light beams in transit. But this is reminiscent of Gosse's *Omphalos* idea. It fails for the same reason: while neither Gosse nor these creationists intend this, it would make God into a deceiver, by *showing 'evidence' of events that have not happened*. That is, this light pattern would show events that under this theory have never happened. For example, a supernova is an explosion of a massive star that temporarily outshines its entire galaxy. But in 'core collapse' supernovae, this explosion is preceded by a collapse of the outer layers. This results in huge amounts of fusion reactions that produce enormous numbers of neutrinos. These are ghostly particles that interact only by the 'nuclear weak force', so mostly pass straight through matter. Then this *implosion* 'bounces', creating the *explosion* that we see. But because neutrinos pass almost unimpeded through matter, while light doesn't, we detect the neutrinos from a supernova several hours before the light. But the 'light-created-in-transit' model would entail that a neutrino stream was created followed by a light stream, and just *appear* as if a supernova had exploded according to the laws of physics.

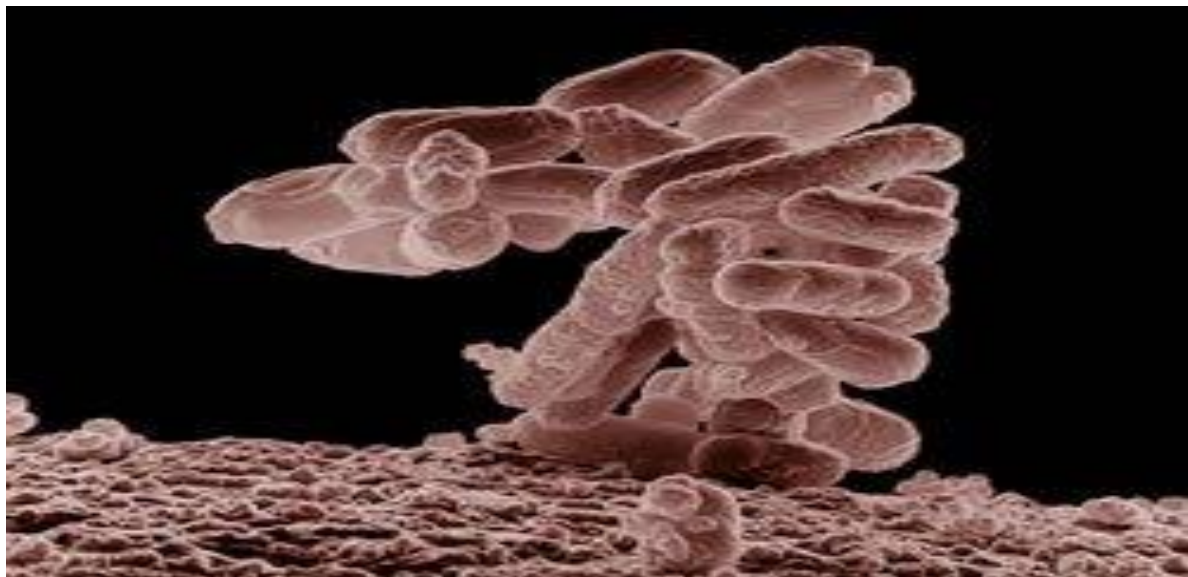


# Towards a Creationary Classification of Mutations

by [Jonathan Bartlett](#) on December 2, 2009

## Abstract

*Mutations are normally classified according to their proximal effect on an organism's fitness, whether beneficial, deleterious, or neutral. While this is a very useful first-pass categorization of mutations, the realization that mutations are not always haphazard, but in fact may be part of a regulated design, means that creationists should be looking for a deeper classification of mutations based on whether or not they conform to their organism's design. Design-consistent mutations are those which occur within the pattern expected by the genome's architecture, and design-inconsistent mutations are those which occur outside of the genome's architecture. Features such as metabolic consistency, mutational mechanism, mutation rate, reversibility, and preservation of genome semantics can be used by biologists to assess whether or not a mutation is design-consistent or design-inconsistent.*



## Introduction

Modern biochemistry has shown that the cell is a much more fascinating piece of machinery than ever would have been expected a century earlier. It has moved in our understanding from being a blob of protoplasm to an intricate wonder of nanotechnology.

Likewise, our understanding of the genome and its intricacies has increased by leaps and bounds over the last few decades. While it was previously thought that only protein-coding genes would be relevant, it is now known that the regulation of protein-coding genes is just as important, if not more so. While it was previously thought to be intellectually irresponsible to consider a biological function for transposable elements, we are now understanding their ubiquity and importance in shaping the genome (Sternberg 2002).

Our understanding of the process of mutation is undergoing a similar revolution. Historically, creationists and evolutionists have been in agreement that mutations which occur in organisms are haphazard—that is, there is no designed purpose for them. This understanding is beginning to change. It is becoming increasingly apparent that the cell itself can induce mutational processes in the right genes to produce beneficial changes at appropriate times. The most well-studied of these systems is the somatic hypermutation (SMH) system in the vertebrate immune system. In order to increase the binding potential of immunoglobulins to antigens, the cells direct mutations to a specific region of a specific gene in order to produce immunoglobulins that have a higher affinity to the antigens (Papavasiliou and Schatz 2002).

This mutational process skips the region of the gene which attaches to the B-cell entirely, and focuses only on the region of the gene which binds to the antigen. It is not deterministic — that is, the specific changes which are made seem to be stochastic — but the changes are focused to the right gene in the right situation, bypassing well over 99.99% of the genome & focusing on the correct few hundred base pairs which would matter.

More & more examples of focused mutation have been explored. Some transposable elements are triggered in direct response to specific cell stressors. For instance, Hall (1999) showed that *E. coli* can use insertion sequences to activate the gene required to metabolize beta-glucoside sugars. Simple sequence repeats (SSRs) have shown to mutate primarily in copy-number, acting as a genomic tuning knob or state switch. King, Trifonov, and Kashi (2006) enumerate several, including an AC repeat in a promoter which causes variation in body weight in Angus beef cattle, and an AC repeat in tilapia fish with similar effects. Bayless and Moxon (2006) report that a

4-nucleotide repeat (CAAC) can cause the *lic2A* gene of *H. influenzae* to switch between three states—off, low expression, and high expression—as it alters the reading frame on which the ATG start codon is found. Semi-palindromic DNA often points to potentially beneficial areas where mutations might take place.

For instance, one study of the genetic adaptation of *E. coli* to low glucose in multiple concentrations found identical modifications of the *mgl* operator sequence (*mglO*) in multiple populations (Notley-McRobb and Ferenci 1999). These were later found to be in loops that were near stem-loop structures in DNA, formed by semi-palindromic sequences (Wright 2004).

Caporale has synthesized this new research into what she terms an “implicit genome.” That is, a genome has an implicit range of mutations which are likely to occur, and these mutations are part of evolutionary “strategies” for organisms to survive changing environments (Caporale 1999; Caporale 2006).

While Caporale and others attribute the creation of implicit genomes to indirect selection, this idea also seems to play well into a creationary understanding of the way that genomes should work. In fact, understanding cells to have internal mechanisms for large-scale genetic adaptation has been steadily growing in creation thinking over the last decade (Anderson and Purdom 2008; Ashcraft 2003; Bartlett 2006, 2008; Borger 2009; Lightner 2008; Wood and Cavanaugh 2001).

## The Need for a Second-Order Classification of Mutations

In the current literature of both creationists and evolutionists, mutations often are classified according to their effect on an organism’s survival within a specific environment (Baumgardner et al 2008; Eyre-Walker and Keightley 2007). A mutation is considered “beneficial” if it helps the organism survive, “deleterious” if it hinders the organism, and “neutral” or “nearly-neutral” if there is little observed effect. This convention of using beneficial/neutral/ deleterious for categorization is useful because it can often be measured directly and quantitatively.

Unfortunately, many people take these categorizations to signify more than can be inferred from them. For example, those who view all mutations as haphazard often view beneficial mutations as evidence of evolution. Likewise, those who view mutations as being possibly internally generated by a guided process within an organism may view the fact that a mutation is beneficial as being *prima facie evidence* that a mutation was internally generated, and likewise view the fact that a mutation is deleterious to be *prima facie evidence* that a mutation was haphazard.

Upon closer examination, however, knowing whether a mutation is “beneficial,” “deleterious,” or “neutral” does not by itself tell us whether or not a given mutation occurred according to design or not.

For instance, in order to survive large-scale environmental changes, organism populations may keep a supply of organisms with alternative biochemical configurations through a mutational process (Bartlett 2008). Compared to the overall population of organisms, these mutations would actually be phenotypically deleterious, even though they are part of the overall biological design for hedging against possible environmental changes.

Likewise, a phenotypically beneficial mutation is not necessarily part of an overall design. Behe has termed this sort of event “trench warfare”—the mutation may give a phenotypic advantage within a competitive environment, but at the cost of debilitating some important function of the organism. An easy example of this would be sickle-cell anemia—while it may be beneficial in some circumstances because it prevents malaria, the way it debilitates the person who has it overall leads to the conclusion that this was not a designed feature (Behe 2007). Many such locally beneficial mutations which have an overall deleterious effect on the complexity of a cell’s biochemistry have been documented (Anderson 2005).

Therefore, while the scale of beneficial/neutral/ deleterious works well for a first-order classification of mutations, creation biologists should be looking deeper into a second-order classification based on its consistency with the design of the organism. This classification separates mutations into one of two possibilities — “design-consistent” mutations, and “design-inconsistent” mutations. A “design-consistent” mutation is one which appears to have occurred within the genome’s implicit range, and a “design-inconsistent” mutation is one which appears to be haphazard (that is, philosophically random as described by Bartlett (2008).

## **Guidelines for Determining Second-Order Classification**

The problem with a second-order classification system is that since we do not have total knowledge of the original plan, it makes it difficult to determine whether a mutation was consistent with that design or not. However, creationists can apply theological concepts to achieve a basic understanding of the plan, which can then illuminate our investigations, even in absence of full prior knowledge of the full plan. The notion of a Genesis “created kind” (called baramins in creation biology) is a key theological notion which will aid our investigation. Because God created the animals according to their kinds ([Genesis 1:11](#); [1:21](#); [1:24](#); [1:25](#)), it can be presumed

that the biological plan is a sort of dynamic stasis, where basic patterns are preserved, yet variance is allowed to aid in both survival of the baramin and the fulfillment of the baramin's role. The extent of the intended dynamic and static elements of the baramin are not known *a priori*. The criteria presented here should help creation biologists take the basic theological concepts provided by scripture, and combine these with the data of biology to achieve a fuller understanding of the pattern of life that God created.

The following are several parameters which can be considered which will help make the second-order classification of mutations based on the assumed dynamic stasis of the original kinds.

## Metabolic consistency

One of the major ways of determining whether or not a mutation is design-consistent is to look at the internal operation of the organism, examining the consistency of function of organisms with and without the mutation. Design-consistent mutations should maintain internal consistency whether or not they are beneficial within the current environment. It is hard to separate problems which occur from internal metabolic problems as opposed to those caused from the outside. A decent test of metabolic consistency in single-celled organisms would be whether or not a mutation caused metabolic problems for an organism which was growing in a nutrient-rich environment free of competition, predation, and toxic compounds. Similar stress-free environments could be constructed for testing the metabolic consistency of mutations in multicellular organisms.

Sickle-cell anemia, for instance, while it is beneficial as far as preventing malaria, causes large-scale functional problems for the organism even in best environments. Therefore, the mutation causing sickle-cell anemia is metabolically inconsistent, even though it may provide benefit in certain circumstances.

Anderson (2005) pointed out that most drug-resistant mutations of bacteria involve a fitness cost in most normal environments. However, for some of the mutations cited, the fitness cost was not severe, and therefore, by this criteria, would be considered metabolically consistent. In *Mycobacterium tuberculosis*, for example, some mutations which confer rifampin resistance also do well in normal cultures. In the three mutations isolated by Billington, McHugh, and Gillespie (1999), one mutation type had no relative fitness decreases, and another one had only moderate relative fitness decreases, thus indicating that they are metabolically consistent. One of the mutations had a drastic reduction in relative fitness, indicating that this mutation was probably not metabolically consistent.

## Mutational mechanism

A mutation which is in response to a specific stress or group of stresses, or is timed to occur with a particular stage of life for an organism, or for which there is an enzyme whose core function is to produce such a mutation, is likely to be design-consistent. Williams uses mutational mechanism as the primary differentiator between design-consistent mutations, which he terms as “recombination,” and design-inconsistent mutations, which he terms as simply “mutations” (Williams 2005). Other creationists have followed this approach as well (Ashcraft 2003). This criteria by itself is not sufficient, especially considering that the physical cause of many mutations is unknown. In addition, some design-consistent mutational events may be the result of DNA sequence alone & may occur without specialized enzyme assistance. In addition, some mutational mechanisms may become mistargeted due to either a problem in the mutational mechanism or the sites which are targeted.

An obvious example of a mutational mechanism would be the V(D)J recombination system used in the production of immunoglobulins. This system recombines three types of gene fragments (variable, diversity, and joining) into a nearly-limitless array of immunoglobulins. This system uses a combination of a pair of enzymes (RAG1 and RAG2) and a recombination signal sequence (RSS), to cut and splice gene fragments at the appropriate locations (Market and Papavasiliou 2003). However, this targeting mechanism can also lead to cancers when cryptic RSS sequences (sequences similar to the RSS used by V(D)J reactions, but in other parts of the genome) become accessible to the recombination enzymes (Schlissel, Kaffer, and Curry 2006).

As mentioned earlier in the paper, Hall (1999) showed that *E. coli* can use insertion sequences to activate the gene required to metabolize beta-glucoside sugars. Because this mutation only occurs under the conditions where the mutation is needed, it can be inferred that this is the result of a cellular mechanism.

## Mutation rate

A mutation which occurs at a significantly higher rate than the average mutation rate for the organism is likely to be design-consistent. This points to the mutation being part of the phenotype of the organism, rather than the mutation occurring arbitrarily. Even though we are living in a post-Fall world, we assume that most of our biological systems function properly according to their design on a daily basis. Thus, a high mutation rate, especially across an entire population, is suggestive that a mutation is design-consistent.



Problematic mutations can cause a site to become mutationally active when it should not be. One test suggested by Bartlett (2008) in differentiating between a design-consistent and a design-inconsistent hotspot would be to compare the average fitness effects of mutations at that hotspot with the average fitness effects of induced arbitrary mutations. If the mutations in the hotspot tend to be metabolically consistent, and their relative fitness is greater than the relative fitness of organisms with arbitrary mutations, then this is evidence of a mutational hotspot being design-consistent.

In the human genome, this appears to hold as a general pattern. Chuang and Li (2004) have noted that mutational hotspots tend to occur in genomic regions involved in extracellular communication, while mutational coldspots tend to occur in cellular housekeeping functions. Thus, the mutations seem to be targeted at areas that would provide adaptation to new environments, and silenced at areas that would more likely cause metabolic inconsistencies.

## **Reversibility**

If a mutation is easily reversible (that is, the frequency of reversion is significantly greater than what would be expected from the overall mutation rate), this is good evidence that the mutation is design-consistent. If one of the purposes of mutations is to provide a hedge against environmental changes, then it would be reasonable to think that if the hedge is successful, the organism needs to be able to make a future hedge of going back to the original configuration. Therefore, reversibility is a key indicator of design-consistent mutations.

SSRs are quite interesting subjects because, in general, they are both highly mutable as well as being easily reversible. Historically, they've been viewed as evolutionary byproducts, or junk DNA. However, current research is continually finding new ways in which SSRs allow for the genome to adapt to changing circumstances (Kashi and King 2006).

## **Preservation of genomic semantics**

Every day we are learning more and more about the semantics of the genome. The genome's semantics can be considered its internal logic—how different sequences serve to regulate & format the genome's function and adaptation (Sternberg 2002). In computer programming, a program's semantics is the set of rules, conventions, and axioms which are assumed to hold true as the program progresses.

Many mutations that lead to sickness are those which cause certain regions of the genome to operate in a semantically different way than before. For instance, some mutations have transformed a non-SSR sequence into an SSR. This causes the cell to modify the SSR's copy number where it would not have before (King, Trifonov, and Kashi 2006). One example of this is in a heritable form of colorectal cancer. In this cancer, a T to A mutation creates a novel SSR. In later generations, the expansion of this SSR leads to colorectal cancer (Laken et al 1997). Other types of signals may also be created improperly due to mutation, which could cause other systems to act on the wrong site (see for instance the previous discussion about V(D)J recombination).

Therefore, in many cases, the altering of the semantics of the genome often points to a design-inconsistent mutation. However, this criteria should be used with care. DNA might contain a large quantity of meta-information. Meta-information is "information about information." If, for instance, the cell has sufficient meta-information *about the roles* of different DNA sequences (as opposed to simply the sequences themselves), there is no reason to think that it could not add or remove semantic elements as needed, using the meta-information as a guide. Dipterans, for example, have a class of transposable elements known as *mini-me* elements (microsatellite initiating mobile elements), which are retrotransposons that contain primers for SSRs (Wilder and Hollocher 2001). The functions of these are not well-characterized, but their abundance within Diptera (comprising, for instance, 1.2% of the *Drosophila melanogaster* genome), indicates that they are probably a part of the organism's design.

Since scientific knowledge of genome semantics is still in its infancy, other factors such as metabolic consistency and precision should be considered in determining whether or not a violation of genomic semantics has taken place, or if the mutation is simply a part of a higher-level or undiscovered semantic within the cell.

## Other Considerations

These heuristic guidelines are certainly not complete, nor do any of them stand on their own. Nonetheless, when used in combination, they can open up a new way for creationists to look at mutational processes within cells.

Also note that weighting of the various criteria are dependent on our understanding of God's general plan for organisms. If the goal is a dynamic stasis, then reversibility should be a heavily weighted factor. If the goal is for life to proceed according to a specific direction (for instance, see Gene 2009<sup>1</sup>), then mutation rate should be weighted higher.

## Conclusions

While the first-level classifications of mutations as beneficial, neutral, or deleterious is certainly useful, the perspective of creation biology can add additional depth by looking at whether a mutation is consistent with the cell's overall architecture, or if the mutation goes against that architecture. Only distinguishing between mutations on the basis of fitness gains or losses can blind biologists to the architecture in which those mutations are made. By differentiating between design-consistent and design-inconsistent mutations, creation biologists can better understand the overall architecture of each baramin, and ultimately understand both God's purposes for these organisms as well as how humans can best cooperate with their designs in ecological and biotechnical endeavors.

## Appendix—Experimental Methodology

A basic outline of how an experimenter could test each of these criteria is given below. Because experimental mutational studies are generally easier on single-celled organisms which can be grown in a laboratory setting, these methodologies are tailored to that environment. It is the hope of this author that further work can expand upon these methodologies and demonstrate the most effective ways of experimentally determining whether mutations are design-consistent or design-inconsistent.

- **Metabolic Consistency**—to determine metabolic consistency, plate both the wild-type and the mutant-type on several different media, and examine the relative fitness of the mutant-type on each. Compare the best fitness scores of both the wild-type and mutant-type. If the relative fitness of the mutant-type on its best media is significantly lower than the fitness of the wild-type on its best media, then the mutation is probably metabolically inconsistent. Further experimental work comparing relative fitness values of mutations in the context of the other criteria is required for determining what the relative fitness value ranges should be for a mutation to be considered metabolically consistent.
- **Mutational Mechanism**—this criteria is easy to rule in (by knowing a mutational mechanism capable of producing the mutation) but hard to rule out. If no known mutational mechanism causes the mutation, but a specific environmental inducer causes a specific or semi-specific mutational response, then it is reasonable to infer a mutational mechanism even without knowing what it is.
- **Mutation Rate**—the rate of mutation should be compared to other sites within this organism's genome. If the production of this mutation is significantly higher than the average site for the organism, then a high mutation rate is established.

- **Reversibility**—the reversion rate for a given mutation should be compared to the mutation rate for the mutant’s original production. It is best if specific gene sequences can be obtained for the wild-type, the mutant, and the reversion, in order to determine if the reversion is a true genetic reversion, or if a different mutation supplied the missing functionality. If the original mutation was a spontaneous mutation by the fluctuation test (Luria and Delbrück 1943) or the Lederberg test (Lederberg and Lederberg 1952), then it is reasonable to think the reversions should be spontaneous, too. If the original mutation is adaptive, however, then the reversion mutation might require a specific environmental signal to occur, and it might take some effort for the experimenter to determine what this signal is.
- **Preservation of Genomic Semantics**—the interplay of the mutant sequence and the surrounding genetic context should be examined. Known genetic sequence motifs should be identified, as well as the mutation’s impact on those motifs. If the mutation corrupts an existing motif, then it is likely that the mutation is violating genomic semantics. However, if a set of mutations are consistently altering motifs in narrow ways, then it is possible that the mutations are following an as-yet-unknown semantic rule within the cell.

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# Exploring Adaptation from an Engineering Perspective

TUESDAY, OCTOBER 29, 2019

For more than a century, biologists have appealed to Darwinian natural selection to explain how living organisms adapt to different environments. But research over the last several decades has consistently dethroned Darwin's view of natural selection. Rather than corroborating the concept that environments mold creatures through "survival of the fittest," the research supports the astonishing idea that to a great extent creatures actively sense their environments and adapt accordingly.

Recent discoveries indicate that something radical & impressive is happening. Adaptation is a result of *brilliant biological engineering* rather than trial-and-error death and survival, which flips the mechanism of adaptation completely on its head. This approach views biological adaptation as primarily occurring through *internal* mechanisms (the ability to actively sense the environment & adapt) rather than *external* influence (the environment molds creatures through Darwinian natural selection).

Abundant evidence can be found that creatures actively sense their environments and responsively adapt. Many such adaptations occur within one generation or less, which is far too rapid for Darwin's notion of trial-and-error natural selection. Here are only a few examples of what studies have shown:

- Darwin’s famous finches rapidly adapted their beak shapes by the sensing of the environment rather than strictly through inherited genetic changes.<sup>1</sup>
- A species of carp expeditiously changed its morphology in the presence of predators. These changes made the carps’ bodies more difficult to devour and increased their speed and acceleration.<sup>2</sup>
- A study of over 1,000 pythons and boas demonstrated that they expressed similar traits to adapt to their environments, with no recorded mutations.<sup>3</sup>
- Certain populations of mice vary their tail lengths in response to eastern or western prairies and forests. This appears to happen by specific genetic mechanisms—not mutations.<sup>4</sup>
- Clutches of eggs for various reptiles sense environmental temperature and sand content and produce different ratios of male and female. The changes occur after the eggs are laid and are not a result of mutations. Specific sensors for this process were discovered in 2015.<sup>5</sup>
- When a certain species of sighted river fish lays eggs in a cave environment, larvae indirectly sense the cave environment and produce fish with greater eye and orbit size variations. No inactivating mutation in regulatory genes have been identified.<sup>6</sup>

Many evolutionary scientists significantly disagree over the challenge this “warp-speed evolution” presents to Darwinism.<sup>7</sup> *Nature* magazine published a point-counterpoint article 2014 on the issue titled “Does evolutionary theory need a rethink?”<sup>8</sup> In sharp contrast with traditional Darwinian thought, attendees of an April 2016 conference at the University of Pittsburgh explored the possibility of examining biology in the light of engineering principles.<sup>9</sup> In November 2016, the United Kingdom’s Royal Society hosted a conference in which advocates of “externalist” Darwinian mechanisms debated critics within their own camp who supported a more “internalist” revision of evolutionary theory that aligns with new research.<sup>10</sup> As the *Nature* article authors phrased it, “This is no storm in an academic tearoom, it is a struggle for the very soul of the discipline.”<sup>11</sup> In light of recent discoveries, ICR’s Dr. Randy Guliuzza has incorporated the newest research into a pioneering, design-based, organism-focused method of interpreting biological adaptation. So far, critiques of Darwinism have focused on the inadequacies of its mechanisms or the insurmountable hurdles it would need to overcome to actually work. But this criticism offers little alternative. As both a medical doctor and a registered Professional Engineer, Dr. Guliuzza has the education and experience to provide a solution with unique insights in the area of biological engineering.<sup>12</sup> Over the last few years, Dr. Guliuzza has worked on a theory of design that not only exposes Darwinism’s inadequacy but replaces it with a better, engineering-focused theory — *the continuous environmental tracking* (CET) model. This model proposes that we evaluate biological organisms using the same engineering principles found in man-made devices. CET’s core principle is creatures have an *interface system* that actively senses environments similar to how human-designed machines sense their surroundings. Such interface systems require 1) input sensors to gather data from surroundings, 2) internal programming that responds to the input data, and 3) output actuators to execute responses.<sup>13</sup> Sensors and interface systems have already been observed at work in many organisms. CET proposes that scientists closely examine these systems using engineering principles as guides for research.<sup>14</sup>



ICR CEO Dr. Henry M. Morris III is encouraged by the response to Dr. Guliuzza's work, saying, "Dr. Guliuzza's publications and excellent presentations on this subject have established strong support for the CET model." Other members of ICR's research team are excited about the future of the CET project. Geneticist Dr. Jeffrey Tomkins calls Dr. Guliuzza's research "refreshing," "exciting," and "foundational to understanding the built-in adaptive designs of living things." Paleobiochemist Dr. Brian Thomas says, "Doctor Randy Guliuzza's research has bravely re-evaluated old ideas about the way animals adjust their biology." Nuclear physicist Vernon Cupps, author of the book *Rethinking Radiometric Dating*, says, "Creationists in general & ICR in particular can look forward to a bright future in study of biological engineering thanks to the work of Dr. Guliuzza."

As research advances, ICR scientists are discovering more evidence of God's brilliant engineering. This should come as no surprise to Christian believers. Romans 1:20 says, "For since the creation of the world His invisible attributes are clearly seen, being understood by the things that are made." Dr. Guliuzza's CET project will provide further insight into these attributes as he explores new areas of creation evidence and highlights the depth of God's wisdom as revealed in His handiwork.

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12. Randy Guliuzza has a B.S. in Engineering from the South Dakota School of Mines and Technology, a B.A. in theology from Moody Bible Institute, an M.D. from the University of Minnesota, and a Master of Public Health from Harvard University. He also served nine years in the Navy Civil Engineer Corps.
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14. [Dr. Guliuzza's Engineered Adaptability article series](#) on ICR.org offers a more in-depth explanation of the continuous environmental tracking model.



## Evolution: Bacteria to Beethoven