

# PERSPECTIVES on Science and Christian Faith

JOURNAL OF THE AMERICAN SCIENTIFIC AFFILIATION

## *In This Issue ...*

Original Sin with Respect to Science, Origins, Historicity of Genesis, and Traditional Church Views

Three Theological Arguments in Support of Carol Hill's Reading of the Historicity of Genesis and Original Sin

The Twofold Character of Original Sin in the Real World

The Significance of *The Mystery of Life's Origin*

*"The fear of the Lord  
is the beginning of Wisdom."  
Psalm 111:10*

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James C. Peterson

# Jacob's Stick Trick and NOMA

The American Scientific Affiliation that founded this journal recently held its first-ever virtual annual meeting. As an interdisciplinary society for the sciences and Christian faith, how exactly these two relate to each other was endemic to a myriad of conversations and presentations. One of the most affirmed or challenged descriptions cited was Stephen Jay Gould's theory of non-overlapping magisteria (NOMA). For Gould, science and theology study two separate realms. NOMA protects the integrity and contribution of both science and religion. Both approaches bring important insights, and each has its proponents who warn that their perspective should not be corrupted by the other. Indeed, from the faith side, some warn that disaster ensues when the book of nature trumps the book of scripture.

However, it is a great good if looking carefully at God's Works helps one to realize what the Book of God's Words is actually saying. That is, to listen better to the text, not to escape it. All truth is God's truth. Scripture does not teach that water, H<sub>2</sub>O, is made of two hydrogen atoms connected to one oxygen atom. But we know that is true. We can often learn from other sources what scripture does not address, and better interpret some scriptural texts to hear what it does. Indeed, one often finds insight in the interactions where overlap does seem present. At the conference, Bob Geddes cited the parallel that the edges in ecosystems of sea and coast, or woods and meadow, are often the most productive for life.

Here is an example that I did not hear at the conference. Genesis 30:29-43 tells of Jacob and his father-in-law Laban, making a deal. Jacob's wage would be the speckled lambs and goats born to the Laban flock that Jacob was shepherding. The text then tells us what Jacob thought and did. Jacob placed speckled sticks in the water trough where his

father-in-law's sheep and goats were mating so that more speckled lambs and kids would be born. As time passed, more of the new births were speckled, to Jacob's advantage. Jacob thought he had achieved this by his clever stick trick.

People have been breeding stock for millennia and actively doing so; they would have had good reason to be skeptical of whether Jacob's sticks were going to work here. Faced with omnipresent scarcity, shepherds would not support or mate progeny that did not meet their purpose. A sheep that ate the limited grass and drank hard-won well water, but did not lamb, would serve as food directly. The sheep that were nurtured to lamb were the sheep that consistently added to the flock. This knowledge of God's world, that some lines of sheep were more productive and could be selected and enabled for better breeding, would be quite evident. Shepherds who did not recognize that connection would likely not themselves survive. Laban understood this and so removed the speckled sheep from the flock he gave Jacob to tend. He knew by experience and observation that removing the speckled sheep parents would suppress Jacob's wage. Shepherds who heard of Jacob's stick solution would have good reason to laugh. Speckled sticks were not coming to Jacob's aid. Our present understanding of genetics helps us to see this, even more clearly. What sheep see does not determine the color coat of their lambs.

Yet Jacob's share grew. The subtext is once again God's grace and character. Jacob's increase in the flock was the result of God's accommodation and generosity. Although Jacob is blessed with the covenant for God's purpose, he connives to gain his own way by trading a meal for Esau's birthright when Esau was famished, and another time by stealing Isaac's blessing meant for Esau by pretending to be

## Editorial

Esau; now he thinks that he is increasing his payment from Laban by placing speckled branches in the water troughs of the ewes before they mated. This is an account of Jacob's mistaken ideas and character. The sheep and goats had more speckled lambs and kids that hence belonged to Jacob, but ancient awareness of how the world works and the modern science of genetics tells us that this was the result of God's intervention, not Jacob's irrelevant attempt at influence. His share of the flocks does grow and prosper, but only because of God making it so, not because of Jacob's sticks. What we now know of genetics highlights what is actually happening: yet again, Jacob is prospering because of God's abundant generosity, not because of Jacob's conniving. Ancient shepherding know-how and modern science that studies God's Works—in this case, genetics—can help us to

see more clearly what is happening in the biblical account.

We should always make our best effort, but how often do we think we have accomplished something that actually God has kindly given? How often do we not even realize what God has done behind the scenes on our behalf? Genesis 30:29–43 is not teaching how inheriting coat color works in livestock. It is not about genetics. It is about God's care for God's people. Our knowing more of how God's creation materially works, helps us to see what was happening in this account as yet another occasion for thanks and praise to God for God's gracious provision in Jacob's life and ours. †

**James C. Peterson**

*Editor-in-Chief*

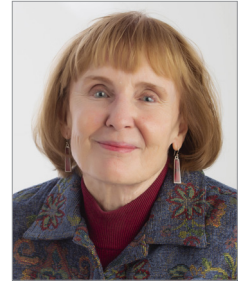
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Carol A. Hill

# Original Sin with Respect to Science, Origins, Historicity of Genesis, and Traditional Church Views

Carol A. Hill

*In the matter of origins, the anthropological and DNA evidence shows that Homo sapiens dates from ca. 200,000 YBP (Years Before the Present) in Africa and humans migrated around the world from Africa starting at ca. 60,000 YBP. By ~10,000 YBP humans are known to have practiced agriculture and husbandry in the Near East, with Genesis 4:2 placing Adam and Eve in the Ubaid archeological period (~5000 BC) in southern Mesopotamia. This evidence brings up the seemingly insurmountable problem of how sin could have been biologically transmitted by Adam and Eve to the entire human race as in the Augustinian doctrine of original sin. This paper is the first of three consecutive articles on different aspects of original sin. The first two (Hill and Clouser) are each dependent on the other: Hill's article describes the science related to origins, historicity, and traditional church views; Clouser's article theologically supports Hill's proposals that Adam and Eve were not the first humans, but that they were real people. The third article (Murphy) deals pastorally with the origin of original sin.*

Keywords: origins, original sin, anthropology, archaeology, historicity of Genesis, pre-Adamites

A substantial portion of the western church today holds to the doctrine of original sin as it was worked out by Augustine.<sup>1</sup> He considered Adam and Eve to have been the biological parents of the entire human race, so as to be consistent with all people being guilty of sin from birth due to Adam's failure to obey God. In this article, I will approach the subject of Augustine's doctrine of original sin from the scientific evidence, state three main science-theology responses to that evidence, and provide the evidence for the historicity of the Genesis text. I will end this article by briefly examining the Augustinian doctrine of original sin and by proposing that a spiritual, rather than a physical, transmission of sin can be reconciled with science. However, since I am not a trained theologian or biblical scholar versed in the history of the church,

the important theological implications for some of the positions taken here will be supported by Roy Clouser in the next article.

## Scientific Evidence Related to the Doctrine of Original Sin

We will begin by examining the scientific evidence for human origins: first, the anthropological and DNA evidence since it pertains to the earliest humans; second, the archeological evidence since it pertains to the time when Genesis says that Adam and Eve resided in the four-rivers-of-Eden area of Southern Mesopotamia;

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# Article

## Original Sin with Respect to Science, Origins, Historicity of Genesis, and Traditional Church Views

Period	Date	Homo Species/Artifacts
<b>Pre-Paleolithic</b>		
Hominids	~6,500,000–2,500,000 YBP	<i>Australopithecus</i> (“Lucy”).
Homo	~2,500,000–1,500,000 YBP	<i>Homo habilis</i> ; earliest tool maker; flaked tools.
	~1,500,000–400,000 YBP	<i>Homo erectus</i> ; flaked and chopping tools, fire control. Found in Europe, Israel, Africa, Asia (“Java man,” “Peking man”).
<b>Paleolithic</b> (paleo = old, lithic = stone)		
<b>Lower Paleolithic</b>	~1,000,000–45,000 YBP	<i>Homo neanderthalensis</i> (~650,000–45,000 YBP); <i>Homo denisovan</i> (~300,000–50,000 YBP); <i>Homo naledi</i> (~300,000 YBP); ritual burials, flint tools, fire, spears, pendants, carvings. <i>Homo sapiens</i> located in Africa (~200,000 YBP); stone hand-axes, huts, bone markings, use of ocher, “Mitochondrial Eve,” “Y-Chromosome Adam.”
<b>Middle Paleolithic</b>	~120,000–45,000 YBP	<i>Homo sapiens</i> migrate out of Africa in two waves: a minor one at ~100,000 YBP (Nubian), and a major one at ~60,000 YBP (fig. 2); <i>Homo floresiensis</i> (~100,000–50,000 YBP).
<b>Upper Paleolithic</b>	~45,000–20,000 YBP	<i>Homo sapiens</i> appear abruptly in Europe at ~45,000 YBP ( <i>Cro-Magnon</i> ). Neanderthals coexist and interbreed with <i>Homo sapiens</i> in Europe from ~45,000–40,000 YBP. Cave art, sculptures, beadwork, weaving, spears, ritual burials, use of primitive boats. Animism and shamanism (?).
<b>Mesolithic</b> (meso = middle, lithic = stone)	~20,000–10,000 YBP	<i>Homo sapiens</i> : Natufian, Kebaran cultures in Europe; bow-arrow, cave art, “Venus” figurines. Use/trade of obsidian and bitumen in Middle East. Animism and shamanism.
<b>Neolithic</b> (neo = new, lithic = stone)		
Pre-Pottery	~10,000 YBP–5000 BC	<i>Homo sapiens</i> ; beginnings of agriculture and domestication of animals. Animism, beginnings of polytheism. “Cheddar Man” in Great Britain at ~8000 YBP.
Pottery	~5500–5000 BC to present Adam, Cain	Mesopotamian culture; irrigation, first cities, temple building, polytheism; early pottery.
<b>Chalcolithic</b> (chalco = copper; use of copper)	~5000 BC–3200 BC Tubal-Cain	Metallurgy (copper); city-states, warfare between cities; “Ötzi the Ice Man” in Europe.
<b>Bronze Age</b> (use of bronze)	~3200 BC–1200 BC Noah (~2900 BC) Abraham (~2000 BC)	Metallurgy (bronze = copper + tin); boat making; import and export of goods; city-states consolidated into countries.
<b>Iron Age</b> (use of iron)	~1200 BC–600 BC Solomon-David	Manufacture of iron; larger-scale warfare. Biblical history well founded.

**Table 1.** Chart of anthropological and archeological periods, including where Adam and his descendants fit in time according to Genesis. Note that the first archeological evidence of “religiously modern humans” (for example, cave art, ritual burials) dates from the Upper Paleolithic, but it could also extend into the latter part of the Middle Paleolithic. **YBP** = Years Before Present, **BC** = Years Before Christ.<sup>2</sup>



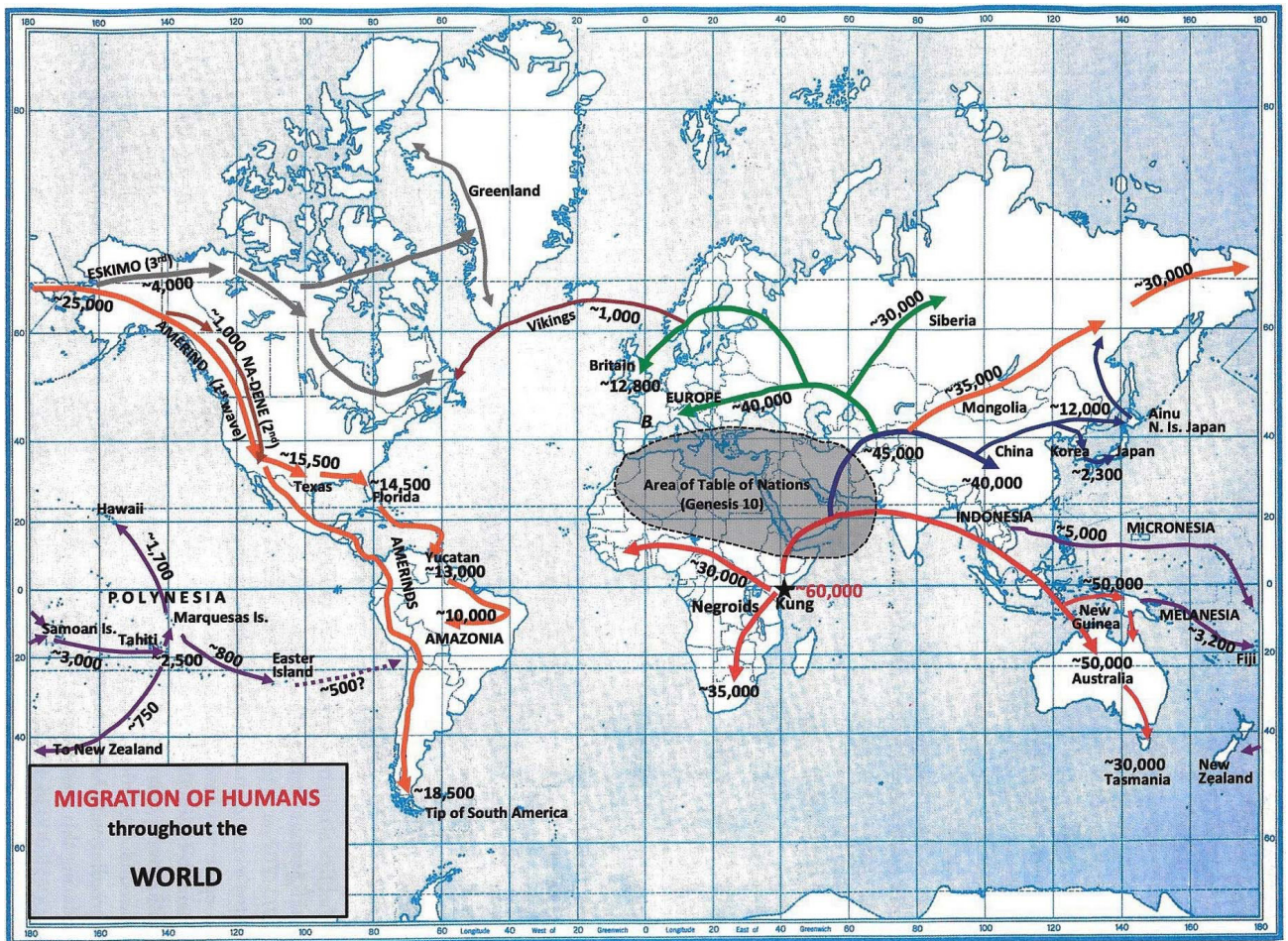
third, the technological evidence from early Mesopotamia that shows the sophistication of Adam's world; and fourth, the ethnological and linguistic evidence for the Table of Nations and Tower of Babel.

*Anthropological and DNA Evidence for Placing Homo sapiens in the Paleolithic*

The anthropological evidence for the appearance of humans in the fossil record is in direct conflict with the doctrine of Adam and Eve being the first humans who biologically transmitted original sin to the entire human race. Table 1 shows the anthropological evidence for the better-known *Homo* species and the approximate times that they lived. As you go forward in time on this chart, the more fossil, DNA, and artifact evidence becomes available, and the dates get more specific and reliable. *Homo sapiens* is the youngest of these *Homo* species, and is thought to

have evolved in Africa approximately 200,000+ YBP in the Paleolithic.<sup>3</sup> It has also been established from DNA evidence that *Homo sapiens* interbred with both *Homo neanderthalensis* (Neanderthal) and *Homo denisovan*, because there are small amounts of DNA of these two *Homo* species in the DNA of some humans today (and of human DNA in Neanderthal bones).<sup>4</sup>

Based mainly on DNA evidence, figure 1 shows the migration of *Homo sapiens* out of Africa and around the world. The earliest, but relatively minor, migration out of Africa and into the Middle East is believed to have occurred ca. 100,000 years ago,<sup>5</sup> but the major migration of humans out of Africa occurred at about 60,000 YBP, and then from there, this mass migration extended to all parts of planet Earth (fig. 1). It is known that most humans alive today are related to this last migration, based on the DNA sampling of



**Figure 1.** The main (~60,000 YBP) migration routes of humans (arrows) throughout the world, starting in eastern Africa with the !Kung people (black star). The gray area denotes the ethnological extent of the Table of Nations: i.e., the area where the descendants of Noah migrated after the flood (Genesis 10). All the dates are Years Before Present (YBP). B = Basque.

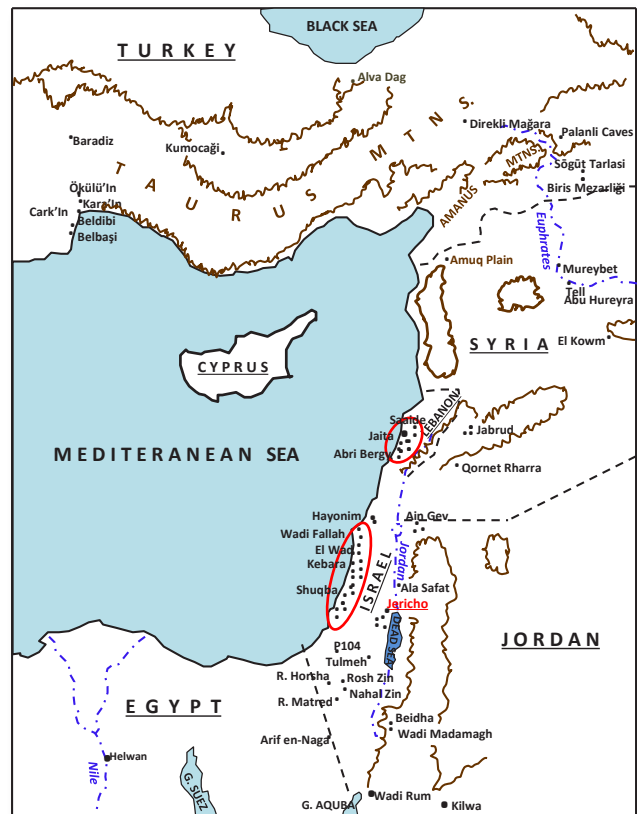
# Article

## Original Sin with Respect to Science, Origins, Historicity of Genesis, and Traditional Church Views

millions of modern humans and on human remains found in the fossil record.

### Archeological Evidence for Placing Adam and Eve in the Neolithic-Chalcolithic

In the Mesolithic (~20,000–10,000 YBP, table 1), humans began to inhabit the area around the Mediterranean Sea, and by about 12,000–10,000 YBP the Natufians were already cultivating wild wheat and barley (fig. 2).<sup>6</sup> It is also known that the domestication of cattle, sheep, and goats occurred ca. 10,000 YBP in areas surrounding Mesopotamia. Genesis 4:2 also places Adam and Eve in this same time frame because it says that “Abel was a keeper of sheep, but Cain was a tiller of the ground” (Gen. 4:2, KJV). Culturally modern humans arrived in southern Mesopotamia in the time frame of 5500–5000 BC, as documented by the archeological evidence of early cities, irrigation, temple building, and pottery types.<sup>7</sup> Genesis 4:17 (NIV) states that “Cain was then building a city, and he named it after his son Enoch,” implying that the building of cities in Mesopotamia had begun by this time. Thus, the Bible (and C-14 dating) squarely places Adam and Eve in the Ubaid Period of the Chalcolithic (~5500 BC–3800 BC), which approximately concords with the genealogies of Genesis 5. This concordance also continues for later archeological periods in Mesopotamia and with biblical persons and events (table 2).



**Figure 2.** Seventy-eight Early Neolithic Natufian sites in the eastern Mediterranean area, ~12,000 to 10,000 years ago, by which time the Natufians were already cultivating wild wheat and barley. Within the circled areas, many of the less prominent sites are not named. This map shows that people groups inhabited the Near East long before 6,000 years ago, the age of Earth claimed by young-earth creationists. Modified from James Mellaart, *The Neolithic of the Near East* (London: Thames and Hudson, 1975).

Archeological Period	Archeological Assigned Age	C-14 Dates (calibrated)	Biblical Person/Event
Ubaid	~5500–3800 BC	ca. 6000–4000 BC	Eridu, Adam and Eve?
Uruk	~3800–3100 BC	ca. 4000–3350 BC	Tubal-Cain, Jabal, Jubal?
Jemdet Nasr	~3100–2900 BC	3350–2960 BC	Shuruppak, Noah and flood?
Early Dynastic I	~2900–2750 BC	2960–2760 BC	Nimrod?
Early Dynastic II	~2750–2600 BC	2760–2655 BC	Tower of Babel?
Early Dynastic III	~2600–2350 BC	2655–2260 BC	
Dynasty of Akkad	~2350–2150 BC		
Third Dynasty of Ur	~2150–2000 BC		
Old Babylonian	~2000–1600 BC		
			Abraham = ~2000 BC
			Joseph = 1800 BC

**Table 2.** Archeological periods of Mesopotamia and their possible correlation with people, places, and events in Genesis. If Adam lived in southern Mesopotamia, where Genesis says the Garden of Eden was located, it would have been at the beginning of the Ubaid Period, since that is the earliest archeological period identified for that area. The radiocarbon (calibrated C-14) dates are from a variety of sources.<sup>8</sup>



In the Chalcolithic (chalco=copper), the mining, transportation, and metallurgical working of copper ore began in the Middle East and Europe at about 5000 BC or a little before (table 1). This was also the time when larger city-states arose in the region, and when foreign trade relations began to range far and wide. Raw materials were acquired from all over the Near East and Middle East, and objects, techniques, and artistic artifacts of various origins began flowing into Chalcolithic settlements. This was the time period when the famous “Ötzi the Iceman” lived in the mountainous border between Italy and Austria 5,250 years ago (fig. 3),<sup>9</sup> and it is into this Neolithic-Chalcolithic time frame that Genesis places Adam and Eve and Cain and Abel. That there were other people coeval with Adam and Eve and Cain and

Abel at this time and place, is seen in Cain finding a wife from a group of people outside the Garden of Eden, and building a city from that population (Gen. 4:17).

### *Technological Evidence for the Sophistication of Adam’s World*

After the Chalcolithic, during the Bronze Age (~3200–1200 BC)—or within the period that Noah lived (ca. 3100–2900 BC; tables 1 and 2)—the technological prowess of the Mesopotamians began to advance quickly. The Mesopotamians had what is considered to have been one of the first technologically based civilizations. The Mesopotamians developed astronomy and mathematics. They invented the wheel and potter’s wheel; they discovered how to make glass. In architecture, they developed the arch, dome, and vault and they laid out the plans for cities, temples, and canals. They invented writing and a numbering system, and they also set up a legal system and compiled collections of laws. Their literature included epic texts, ritual texts, chronicles, prayers, hymns, proverbs, love poems, laments, and myths.<sup>10</sup> Some of these technological advances are evident even in the Ubaid Period, during which time Adam and Eve and their immediate descendants lived (table 2). Bitumen for the caulking of boats has been documented for the Ubaid Period; the Tigris and Euphrates Rivers were diverted into canals during this time; and Ubaid architects were familiar with geometric principles such as 1:2, 1:4, 3:5, 3:4:5, and 5:12:13 triangles for laying out buildings.<sup>11</sup> The world of Adam and Eve was *not* that of an aboriginal pair living in the far distant past, but a civilization starting to develop technological sophistication.



**Figure 3.** Reconstruction of Ötzi the Iceman, showing his clothes, copper axe, and bow and arrows; also note his clothes of animal hides and plant fibers. He also has the oldest known tattoos on his body (not shown). Ötzi was roughly contemporaneous with Adam (around 5000 BC), but at this time his world in Europe was primarily one of hunting and gathering, not one of agriculture and husbandry. Ötzi’s body and his belongings are on display in the South Tyrol Museum of Archeology in Bolzano, northern Italy. Google image.

Pictographic writing arose in Mesopotamia around the end of the fourth millennium, as did the establishment of a well-developed system of numbers and measures. Writing evolved from clay tokens (fig. 4A) to markings on envelopes enclosing these tokens, to impressed signs on tablets, to pictographic script (fig. 4B).<sup>12</sup> By Jemdet Nasr time (ca. 3000–2900 BC, or when Noah lived; table 2), the tablet-pictographic stage had been reached, but it wasn’t until about 2500–2000 BC that narrative and religious writings were being recorded on clay (cuneiform) tablets.

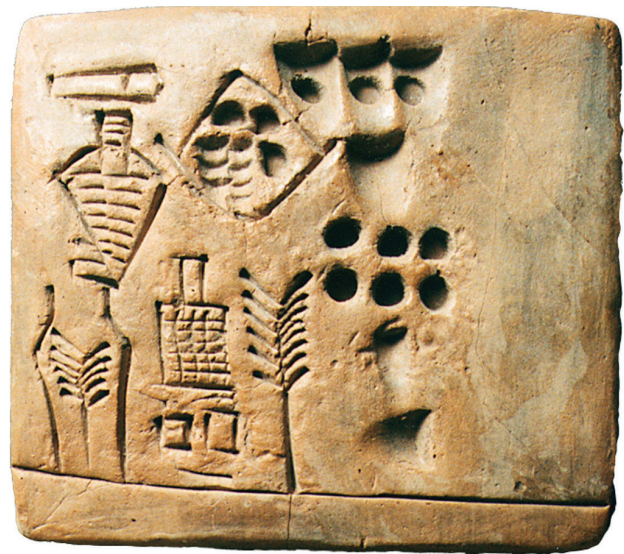
# Article

## Original Sin with Respect to Science, Origins, Historicity of Genesis, and Traditional Church Views

Thus, ca. 2500 BC would have been the earliest that the Genesis stories could have been written down and copied by scribes. Before that time, they would have been passed down orally.



**Figure 4A.** Tokens from Susa, around 3300 BC, used throughout the Near East for counting commodities. *Musée du Louvre, Département des Antiquités*; image by Denise Schmandt-Bessart, with her permission.



**Figure 4B.** Early pictographic script from Uruk, made using a reed stylus with a prismatic tip. It is probable that Noah read/wrote pictographic script. *The Schøyen Collection MS1717, Oslo and London*.

### *Ethnological and Linguistic Evidence for the Table of Nations and Tower of Babel*

As shown in table 2, the genealogies of Genesis 5 also concord with other known archeological periods in Mesopotamia, and also with biblical persons and events. If the migration scenario shown in figure 1 is correct, then what about the Table of Nations described in Genesis 10 and the Tower of

Babel described in Genesis 11? Doesn't the Table of Nations imply that all the world's peoples are descended from Noah? And doesn't the Tower of Babel story say that Noah's descendants built a tower that reached to the heavens, "and from thence did the LORD scatter them abroad upon the face of all the earth" (Gen. 11:9, KJV)? This line of scientific research is called *ethnology*, which is the branch of anthropology that deals with racial origins and distributions. The Table of Nations traces the lineages of Noah's sons, Shem, Ham, and Japheth, to regions that roughly surround the Mediterranean-Near East area (the gray oval of fig. 1), and linguistic and ethnological studies have verified that the Table of Nations is correct in its tracing of the sons of Noah<sup>13</sup>—but not over the entire planet Earth! Thousands to tens of thousands of years ago, the major human racial groups that we know of today had *already* spread around the world (fig. 1). [See buttress 1 in the next article by Roy Clouser.<sup>14</sup>]

The Genesis 11:1 passage, "And the whole earth was of one language, and one speech" (KJV), in connection with the Tower of Babel, may refer to the ancient Sumerian language, which was the "universal" (to Mesopotamia) language used by the Sumerians until by about 2700–2600 BC (table 2, "Tower of Babel?"). After this time, the Sumerian language was gradually replaced by Early Semitic and Old Akkadian dialects, and by about 2400 BC, it became replaced as a "living language" but still remained as a written language.<sup>15</sup> A date of around 2750–2600 BC for the dispersion of languages story in Genesis 11 also correlates in time with other ancient Sumerian stories on the same topic.<sup>16</sup> The "scattering of people" and the "dispersion" of languages other than Sumerian both imply the migration of some of Noah's descendants out of Mesopotamia at approximately this time (fig. 1, gray area).

The purpose of this entire scientific section has been to show that the placement of Adam and Eve and their immediate descendants into a late Neolithic world is correct (table 1), and that the Old Testament begins its story at that time *and not before*. That is, the intent of the Old Testament was *not* to cover the entire human race as it existed throughout planet



Earth at that time (fig. 1), but was *primarily* concerned with the genealogical line from Adam to Christ, and only marginally concerned with non-Adamite people groups or the non-Israelite (Gentile) line of Adam. In other words, it is *Jewish covenantal history*, not human history. God chose to take his plan of redemption to all people *through this line*, starting with the sin of Adam in the Garden of Eden and leading to the forgiveness of sin by Christ.

## The Church's Response to the Scientific Evidence in the Matter of Original Sin

There are three main Christian interpretations of original sin that are popular today.

### 1. Young-Earth Creationist View

From the archeological evidence discussed above, it appears that young-earth creationists are approximately correct in their view that Adam and Eve lived about 6000–7000 years ago in Southern Mesopotamia (table 2). But their position, that Adam and Eve were the ancestors of all other humans, is *not* correct because *Homo sapiens* occupied the entire Earth (fig. 1), and specifically the Mediterranean region (fig. 2), way before that time. While the date set by young-earth creationists for a historical Adam and Eve (~4000 BC) based on the Genesis genealogies is probably not far wrong, the young-earth creationists' denial of all of the anthropological, archeological, and genetic (DNA) evidence related to human origins and to original sin renders this position of Adam and Eve being the first parents of the human race untenable.

### 2. Progressive Creationist View

Progressive creationists attempt to solve the problem of how sin could have been biologically transmitted by Adam and Eve to the whole human race by placing them in time between ca. 200,000–50,000 years ago in Africa in order for them to have lived *before* the migration of humans over planet Earth (table 1; fig. 1).<sup>17</sup> However, many serious problems exist with the idea of Adam living approximately 50,000 or more years ago, along with a Noachian flood of somewhat lesser age. If the genealogies of Adam are

to be believed at all, Adam is not far removed in time from the flood or the Table of Nations, and certainly not by tens to hundreds of thousands of years. This whole scenario simply does *not fit* with the evidence *specified by Genesis*, which places Adam and Eve in the Neolithic Period after the advent of farming and husbandry. Not only is the timing wrong, but the place is also wrong. Genesis specifically places Adam and Eve in the Garden of Eden where the four rivers of Eden meet near the Persian Gulf (Gen. 2:10–14)—not somewhere in Africa as per the DNA evidence (fig. 1). In addition, according to Genesis, the Noachian flood occurred in Mesopotamia, within the Mesopotamian hydrologic basin.<sup>18</sup>

Other difficulties with the progressive creationist view abound. First, can the “gaps” in the genealogies of Genesis possibly be stretched back this far? Gaps of a few hundred years (at the most) are justifiable from scripture, but gaps stretching back 50,000 to 200,000 years? Could the ark described in Genesis have been constructed by a Paleolithic or Mesolithic Noah using stone scraper and chopper tools (table 1)? Where Noah “fits,” according to Genesis, is in the Bronze Age (ca. 3200–1200 BC), where the technology was by then sophisticated enough for the construction of large boats and for the export and import of materials (such as wood for constructing the ark) to and from Southern Mesopotamia. Furthermore, since literary writing was not invented until about 2500–2000 BC (fig. 4),<sup>19</sup> these early dates imply that the Genesis stories had to have been transmitted orally for tens of thousands to hundreds of thousands of years. All of these stretches of credibility are insisted upon by progressive creationists in order to maintain Adam and Eve as the biological ancestors of the entire human race.

### 3. Evolutionary Creationist View

The evolutionary creationist view was expounded by Denis Lamoureux in his 2008 book *Evolutionary Creation: A Christian Approach to Evolution*. In this book, Lamoureux promotes evolution, but he also considers the people and events in the early chapters of Genesis (before Abraham) to be unhistorical, fictional, legendary, or archetypal. Specifically for Adam, Lamoureux has this to say:



# Article

## *Original Sin with Respect to Science, Origins, Historicity of Genesis, and Traditional Church Views*

First, Adam never actually existed ... Second, Adam never actually sinned. In fact, it is impossible for him to have sinned because he never existed. Consequently, sin did not enter the world on account of Adam ... Adam never existed and this fact has no impact whatsoever on the foundational beliefs of Christianity.<sup>20</sup>

One reason why Lamoureux and others take this view of scripture is that they consider aspects of the early Genesis stories to be purely fictional: for example, talking snakes and creating Eve from Adam's rib in the Adam and Eve story. However, in my book *A Worldview Approach to Science and Scripture*,<sup>21</sup> I disagree with this position and consider Adam to have been a historical person and the fictional aspects of the Genesis stories to be the result of the way the biblical authors/scribes wrote literary texts from their ancient religious worldview. Modern historians attempt to record "just the facts," but biblical history is colored by the worldview of the ancient biblical scribes, and that worldview must be stripped away to reveal the *real* history.<sup>22</sup>

A strict evolutionary creationist view that denies the historicity of Adam creates a number of serious theological questions that, in my judgment, *do* impact the foundational beliefs of Christianity. First, if the people of Genesis are not historical, then why does the Bible go to such great lengths to establish the genealogies of Genesis, Numbers, Chronicles, Ezra, Nehemiah, Matthew, and Luke? First Chronicles begins with *nine* chapters of "begots." Second, if these genealogies are not real, then where do the unhistorical people end and the historical people start? Do real people start with Abraham, as maintained by some evolutionary creationists, and if so, what lineage did he come from? Third, since the New Testament refers to the people and the events in the Old Testament as being historical, doesn't this affect the credibility of the entire Bible? If Lamoureux's above statement is true and Adam was not a historical person, then what becomes of the foundational doctrines of the "Fall," original sin, and Paul's entire theology of Christ as the new Adam and his dying to save us from sin?

### Historicity of the Genesis Text

The evolutionary creationist position that Adam was not a historical person makes impossible the Augustinian doctrine of original sin, so we will now examine the evidence for the historicity of the opening chapters of Genesis.

#### *A Worldview Approach to the Historicity of Genesis*

What is a worldview approach to scripture? "Worldview" is all aspects of a culture bound up into a different way of thinking about the world; it is a *mindset* that *stems from* a culture, not the culture itself, and that mindset can differ significantly between subgroups within a culture. The worldview approach is not a theological position like the three creationist views just discussed. It is an *approach* to the science-scripture debate that tries to interpret scripture with respect to *both* the scientific and biblical evidence, while also considering the worldview of the ancient authors/scribes who wrote the text from oral accounts.<sup>23</sup>

A worldview approach tries to resolve the conflict between science and scripture by proposing that the basic problem with compatibility involves understanding the prescientific worldview of the biblical authors. It is a mistake to try and impose our twenty-first-century scientific worldview on the ancient biblical text; this error is the main reason why there is so much confusion and contention in the science-scripture debate. Why should we expect these stories to reflect our modern scientific viewpoint when they were produced by a prescientific, preliterate culture? We should accept them as being from that *time and place* and from *their* viewpoint, with God interacting with, and accommodating the worldview of, this ancient people group.<sup>23</sup> Other authors—such as John Walton in his *Lost World* book series and Johnny Miller and John Soden in their book *In the Beginning ... We Misunderstood*,<sup>24</sup>—have taken a worldview approach from a theological perspective to apologetics, but since the main purpose of this article is to cover the science as it relates to original sin, such a perspective is not discussed in this article.

A worldview approach disagrees with all three of the above creationist views, and it also disagrees with the theological position that “we cannot continue to rely on a historical reading of a symbolic narrative.”<sup>25</sup> In contrast to this attitude, I would argue that these two factors (historical and symbolic) should *not* be considered as separate; rather, these factors must be combined in order to arrive at a *truly historic view of scripture*. Thus, a perfectly “literal” interpretation of the early Genesis stories combines historical events intertwined with the worldview of the biblical authors/scribes, and one must understand the worldview aspects in order to get to what the text meant to the people it was written for. If this is not done, the symbolism makes the text seem mythological and at odds with science and reason (*our* reasoning, not *theirs*). A worldview approach considers Adam and Eve and the Garden of Eden, Noah and the flood, and the patriarchs from Adam to Abraham to have been historical persons and events.

#### Were Adam and Eve Real Persons?

Why do many Christians and most non-Christians believe that Adam and Eve were fictional or mythological? Because if Adam and Eve were historical persons, then how does one explain the many fanciful aspects to the Garden of Eden story, such as Adam being formed from the “dust of the ground,” the creation of Eve from Adam’s rib, and a talking snake? This is where the concept of worldview comes in. In the case of Adam and Eve, the ancient Mesopotamian literary customs and motifs must be kept in mind because, until Abraham moved from Ur (in Mesopotamia) to Palestine, that is where the oral stories of creation and Adam and Eve originated.

The literary conventions of the ancient Mesopotamians included analogy, carefully woven into language, and the use of repetition, which included not only words but also numbers, phrases, and structural elements. Also, in the worldview of the Mesopotamians, language not only stated facts, but it could also establish them (such as God saying in Genesis 1, “Let there be light”; by this statement, in the minds of the ancients, light was created).<sup>27</sup> They also loved a play on words: for example, *adam* (generic humans) in Genesis 1 and *Adam* (a specific

human in Genesis 2). None of this play on words was gratuitous; it was the very basis of intellectual thought. And, while this type of thought, or worldview, is foreign to our way of thinking, it still needs to be considered because where the biblical authors/scribes were “coming from” is essential to the correct interpretation of Genesis.

Specific examples of using familiar phrases or puns include Adam being formed from the “dust of the ground,” which is a *poetic* figure of speech, one that always signifies mortality in the Old Testament<sup>28</sup> – that is, this was a way of asserting mortality rather than the description of an act. The creation of Eve from Adam’s rib comes from a Sumerian “play on words,” where the word for “rib” could for the ancients alternately mean “life,” and in Sumerian literature, the “lady of the rib” came to be identified with the “lady who makes live”<sup>29</sup>; that is, this story could be attributed to the Sumerians writing the original story from their literary worldview. Still another example is the serpent motif of Genesis 3. In ancient Near East writings, serpents played prominent roles as adversaries of both humans and gods in the Genesis text, and also in other ancient Near Eastern literature, such as in the Mesopotamian *Enuma Elish* myth and in the Egyptian pyramid texts.<sup>30</sup> The important point here is that while the Adam and Eve/Garden of Eden story could have involved real people residing in a real place, the writing of this story by the biblical authors was commensurate with the use of figurative images in narratives common to the ancient Near East. How else to describe the appearance of Satan in the Garden of Eden except by using the snake motif, since that was the appropriate imagery in the minds of these people? Thus, these stories actually *authenticate* the ancientness and historicity of the Genesis text.

#### Was Noah a Real Person?

From the 600-year-old age of Noah and from the supposed claim of a global flood by young-earth creationists, many biblical scholars have dismissed Noah as a historical person and the flood as a historical event. A worldview approach interprets Noah’s age to be numerological, rather than numerical, and the flood to have been a historical *local* flood in the

# Article

## Original Sin with Respect to Science, Origins, Historicity of Genesis, and Traditional Church Views

Mesopotamian hydrologic basin, rather than a global flood, because the geologic evidence precludes a universal interpretation.<sup>31</sup> However, if Noah was a real person, is there any evidence of his historicity? Remember that in the scientific evidence section, we talked about how ethnological studies have traced the linguistics and lineages of Noah's sons, Shem, Ham, and Japheth, to parts of the Near East (fig. 1). The fact that these studies are scientifically credible implies that Noah and his immediate descendants were *nonfictional*. With regard to lineage tracing, a present-day tribe linked to Noah is the Adites (box 1, People of 'Ad).<sup>32</sup> They claim to be descended from 'Ad, the great-great-grandson of Noah through the line of Shem (Shem-Aram-Uz-'Ad), and who, according to Islamic tradition, were the first (Semitic) inhabitants of the Dhofar region of southern Arabia and the legendary "lost city of Ubar." [These people still speak Shehri, an ancient dialect of the Semitic (meaning "from Shem") language. Thus the question can be asked: How could Noah have been a fictional person when he fathered generations of identifiable offspring, some of whom are still alive today?] All of this is striking confirmation of the Genesis account!

### Were the Patriarchs Real Persons?

The worldview approach considers all of the patriarchs from Adam to Abraham to have been historical people, as documented by the genealogies of the Old and New Testaments. Why such a pre-occupation with detailed descent records if it were not theologically important that Adam be genealogically related to Christ, the "second Adam"? If these patriarchal genealogies do comprise a historical record, then why do many Christians and non-Christians dismiss the patriarchs so readily? The main reason is that the patriarchal ages are of unbelievably long duration and this automatically makes the patriarchs suspect as historical persons. However, what these people are missing in their rejection of these patriarchal genealogical records is the dual numerological-numerical worldview of the biblical authors/scribes. The numbers dealing with patriarchal ages are numerological (sacred numbers); they are not numerical (real numbers),<sup>33</sup> and this tradition of exaggerated "long reigns" for gods and kings seems to have been a common religious tradition for the peoples of the ancient Near East.<sup>34</sup> They (the biblical authors/scribes plus the people they wrote for) knew that these

Box 1.

## "WE ARE THE PEOPLE OF 'AD"

“While investigating the well of the Oracle of 'Ad, we had visitors, tribesmen who drifted down from the mountains. Their bearing was elegant; their hair, done up in fine braids and tinted blue, had the fragrance of frankincense. Members of the Shahra tribe, they spoke in addition to Arabic, their own peculiar chirping, sing-song language, called by the early explorers 'the language of the birds.' They confirmed that indeed, the well was still known as a well of the People of 'Ad ... and one of their number, speaking in crisp, Cambridge-accented English, matter-of-factly told us, 'You know we are the people of 'Ad.'" (Nicholas Clapp, *The Road to*



*Ubar: Finding the Atlantis of the Sands*, p. 139.) Photo on <https://www.youtube.com/>, "Harun Yahya Perished Nations, The People of 'Ad Part 1."



numbers were exaggerated, but this did not concern them because their worldview included a dual concept of numbers. *We* have no such dual conception of numbers in our modern worldview, and so the exaggerated ages in Genesis make the patriarchs unbelievable to us. These symbolic numbers merely represented the character or accomplishments of those to whom they were attributed; for example, in the Sumerian King List, one king was said to have reigned for over 28,000 years. Thus, our *modern* rejection of Genesis numbers is simply a difference in worldview concerning the ancients' interpretation of numbers—which again attests to the historicity of the Genesis text.

In all of the historicity examples just discussed (Adam and Eve, Noah, and the patriarchs), the premise “we can't rely on a historical reading of a symbolic narrative” is based on being unaware of how the concept of worldview affects the understanding of Genesis, and/or on the false assumption that if stories have symbolism in them, then they must not be historic. I would argue that an interpretation of the narrative that takes into account the worldview of that day is more historical than one that dismisses the account as fiction, because it considers the *mindset* of the ancients who wrote the text, and *this in itself is a part of that history*. Or, to paraphrase Conrad Hyers: To faithfully interpret Genesis is to be faithful to what it really means as it was originally written, not to what people living in a later time assume or desire it to be.<sup>35</sup> [See buttress 2 of the next article by Roy Clouser.<sup>36</sup>]

## Struggling with the Doctrine of Original Sin

The biological transmission of original sin, along with Adam and Eve being the first parents of the human race, does seem to be one of the major science-scripture problems for Christians to resolve. Richard J. Mouw, in his chapter “Safe Spaces” in *How I Changed My Mind about Evolution*, made this comment:

I still haven't settled on a plausible answer to this question ... I want to hang on to what the apostle Paul says: that it's by one person that sin came into the world and it's by one person that

we have been rescued from that sinful condition ... but I'm struggling with it.<sup>37</sup>

And so is everyone else who is trying to reconcile this major stumbling block to their faith with the scientific evidence. Since it is the purpose of this article to try and reconcile science with scripture in the matter of original sin, we must now turn to the subject of the Augustinian doctrine of original sin, because that is where the task of reconciliation lies. Here I will cover only the aspects of Augustine's doctrine that apply to the science; for the theological and philosophical aspects, see the next article by Roy Clouser.

### *The Augustinian Doctrine of Original Sin*

The theological position that some in the western church follow today concerning original sin is called the “Augustinian doctrine” because it was formulated by Augustine (AD 354–430). Since then, original sin has been traditionally regarded as a depravity, or tendency to do evil, which was biologically transmitted to the entire human race as a consequence of Adam's Fall. After being made an official doctrine by the Roman Catholic Church at the Synod of Orange in AD 529,<sup>38</sup> and confirmed by the AD 1530 Lutheran Augsburg Confession,<sup>39</sup> this “biological transmission of original sin” theology still continues to be a doctrine that many churches teach.

This Augustinian position, more than any other, seems to be crucial to the science-scripture debate on original sin. It is one of the reasons why young-earth creationists adhere to a 6,000-year-old Earth and take a global (all-humanity-died) stance on Noah's flood. It is the main reason why progressive creationists, in order to comply with the scientific evidence, move the date of Adam and Eve back further and further from tens to hundreds of thousands of years into the Paleolithic, even though *both* scripture and the science of archeology place them in a Neolithic-Chalcolithic time-frame. It is also a primary reason why evolutionary creationists deem Adam-up-to-Abraham to be unhistorical persons, and why many non-Christians (especially scientists) reject the Bible entirely.

To solve the problem that the Augustinian doctrine of original sin poses with respect to the scientific

# Article

## *Original Sin with Respect to Science, Origins, Historicity of Genesis, and Traditional Church Views*

evidence, I again appeal to a worldview approach for a possible reconciliation. Intrinsic to the worldview approach is the basic concept that biblical exegesis is not a static process, but that it should be subject to an increased knowledge of science, history, and linguistics that needs to be reconciled with scripture.<sup>40</sup> This concept not only applies to our understanding of ancient cultures such as those of Genesis, but it also applies to theologians who have interpreted original sin over the centuries since Christ—from the early theologians of the church to theologians today; that is, *their* knowledge base must also be part of our judgment of their theology as well as the theology itself! Therefore, it is important to recall that the biological transmission of sin, and the idea that Adam and Eve were the first humans, was a *theology* constructed by Augustine, based on the knowledge base of *that* day (fifth century AD), whereas the Bible itself does not specifically say that Adam and Eve were the first humans; rather, it alludes to Adam and Eve *not* being the first humans.<sup>41</sup> We, in the modern world, have come to the “conclusion” that Adam and Eve could not possibly have been the first humans, only because we base our views on the DNA and other scientific evidence of *our* day.

### *Spiritual or Physical Death?*

Can an alternative view of original sin be made theologically compatible with both science and scripture? And is making Adam the first historical human an absolute necessity? From a worldview approach, and from the scientific and scriptural evidence, the only alternative that seems to make sense is that the “death” of Adam and Eve, as directly experienced after eating of “the fruit of the tree which is in the midst of the garden” (Gen. 3:2–4, KJV), was *spiritual*, not physical. An important clue to a spiritual interpretation is 1 Corinthians 15:22: “For as in Adam all die, so in Christ all will be made alive” (NIV). How are we made alive in Christ? We are “born again” — not physically, but spiritually. We are born again to eternal life. Adam, as a human, was “doomed to death” (the meaning of the Hebrew phrase in Gen. 2:17), but from the Garden of Eden onward, a whole new kind of death and life enters into the picture—spiritual death and eternal life. This same idea of a spiritual rather than physical inheritance is also

expressed in Galatians 3:7 and 3:19: “Know ye, therefore, that they which are of faith, the same are the children of Abraham ... and if ye be Christ’s, then are ye Abraham’s seed and heirs according to the promise” (KJV). Is scripture claiming that all believers are the biological (genetic) sons or offspring of Abraham? No, it is claiming that believers are the *spiritual* offspring of Abraham and therefore heirs to the promise made by God way back in Genesis.

### *The Origins Connection*

What connection, then, does a spiritual interpretation of original sin have with the science-scripture debate of origins and with the anthropology of *Homo sapiens*? If the transmission of sin from Adam has no biological restriction, then it puts *no time limit* on when Adam and Eve had to have lived—except for the time limit placed on it by the Old Testament, which alludes to other people having lived *alongside* Adam’s line (Gen. 2:14–17).<sup>42</sup> Furthermore, if almost the entire human race had populated planet Earth by ~5000 BC (fig. 1), then it implies that the Old Testament was never written to include the entire human race and thus Adam and Eve were the parents of only those in the *covenant* line of Adam leading to Christ. While contrary to many Old Testament scholars (both past and present), who have understood Genesis 1–11 as referring to the human race, this position is the *only* one that can be harmonized with the massive amount of anthropological and archeological evidence as it relates to scripture.

A *spiritual* interpretation of original sin also relates to pre-Adamite humans (table 1), and to the migration of humans around the world (fig. 1). In this view, the “spiritual nature” of humankind would have involved a *gradual* and *evolving* awakening of “religious consciousness” and ideas of morality—a long process of attaining the spiritual capacity and longing to seek and comprehend God. This spiritual awakening was universal to humankind with the geographical migration and expansion of the human race (fig. 1), so that by the time of Adam, *all* human groups had attained this religious consciousness and thus could be held accountable for sin.<sup>43</sup> Essentially, this process involves the idea that in the “fullness of [evolutionary] time,” God decided to interact with

the humans he created. It also involves the concept of progressive revelation, in that God did not reveal the knowledge of good and evil, atonement by the blood of animals, the Law, or the incarnate Christ as the ultimate atonement for sin, until all human groups were spiritually ready to receive these covenants. If we acknowledge a pre-Adamite status of “male and female,” then we must also acknowledge that these humans were created in God’s image, because such a relationship is stated in Genesis 1:26.

## Conclusion

The intent of this article is to present the solid science of anthropology and archeology to the modern church because it bears heavily on the church’s interpretation of the Augustinian doctrine of original sin. The science of anthropology confirms that, in the matter of origins, *Homo sapiens* extends back to at least 200,000 YBP, while the science of archeology and also scripture squarely place Adam and Eve in the Neolithic-Chalcolithic (~7000 YBP) and *not before*. Therefore, it is concluded that Adam and Eve could not have been the parents of the human race, but instead were the first parents in the genealogical line of the Old Testament that led to Christ in the New Testament. In other words, the Old Testament is Jewish covenantal history, *not* human history. This article also affirms the historicity of Genesis: Adam and Eve and the Garden of Eden, Noah and the flood, and the patriarchs from Adam to Abraham were real people and events, but the “symbolic” aspects of the Genesis text must be interpreted from the worldview of the ancient biblical authors/scribes because this symbolism is *part of real history*. †

## Notes

<sup>1</sup>Mark A. Noll, *The Scandal of the Evangelical Mind* (Grand Rapids, MI: Eerdmans, 1994), 232; and Dean E. Arnold, “Why Are There So Few Christian Anthropologists? Reflections on the Tensions between Christianity and Anthropology,” *Perspectives on Science and Christian Faith* 58, no. 4 (2006): 266–82, <https://www.asa3.org/ASA/PSCF/2006/PSCF12-06Arnold.pdf>.

<sup>2</sup>All tables and figures and box 1 are taken from *A Worldview Approach to Science and Scripture* © Copyright 2019 by Carol Hill. Published by Kregel Publications, Grand Rapids, MI. Used by permission of the publisher. All rights reserved.

<sup>3</sup>Ian McDougall, Francis H. Brown, and John G. Fleagle, “Stratigraphic Placement and Age of Modern Humans

from Kibish, Ethiopia,” *Nature* 433 (2005): 733–36, <https://www.nature.com/articles/nature03258>; and Kate Wong, “The Oldest *Homo sapiens*,” *Scientific American* 317, no. 3 (2017): 12–14.

<sup>4</sup>Richard E. Green et al., “A Draft Sequence of the Neandertal Genome,” *Science* 328, 5979 (2010): 710–22, <https://science.sciencemag.org/content/328/5979/710.full>; Bruce Bower, “Oldest Known Human DNA Analyzed,” *Science News* 186, no. 11 (2014): 8–9; Tina Hesman Saey, “Human DNA Found in Neandertal Bone,” *Science News* 189, no. 6 (2016): 6; and Guy S. Jacobs et al., “Multiple Deeply Divergent *Denisovan* Ancestries in Papuans,” *Cell* 177 (2019): 1010–21, [https://www.cell.com/cell/pdf/S0092-8674\(19\)30218-1.pdf](https://www.cell.com/cell/pdf/S0092-8674(19)30218-1.pdf).

<sup>5</sup>Jeffrey I. Rose, “New Light on Human Prehistory in the Arabo-Persian Gulf Oasis,” *Current Anthropology* 51, no. 6 (2010): 850–54, 864, <https://doi.org/10.1086/657397>; and Bruce Bower, “Stone Tools Hint at Earlier Human Exit from Africa,” *Science News* 179, no. 5 (2011): 5–6.

<sup>6</sup>Jean-Louis Huot, “The First Farmers at Oueili,” *Biblical Archaeologist* 55, no. 4 (1992): 188–95, <https://doi.org/10.2307/3210313>; and Richard J. Fischer, *Historical Genesis: From Adam to Abraham* (New York: University Press of America, 2008): 30–31, 35.

<sup>7</sup>James Mellaart, *The Neolithic of the Near East* (London, UK: Thames and Hudson, 1975), 29.

<sup>8</sup>Robert McC. Adams, *Heartland of Cities: Surveys of Ancient Settlement and Land Use on the Central Floodplain of the Euphrates* (Chicago, IL: University of Chicago Press, 1981), 60; Fekri A. Hassan and Steven W. Robinson, “High-Precision Radiocarbon Chronometry of Ancient Egypt, and Comparisons with Nubia, Palestine and Mesopotamia,” *Antiquity* 61, no. 231 (1987): 119–35, <https://www.cambridge.org/core/journals/antiquity/article/abs/highprecision-radiocarbon-chronometry-of-ancient-egypt-and-comparisons-with-nubia-palestine-and-mesopotamia/5C5ACFF5BFFF466D6FCFFC276FC1CD16>; and Carrie Hritz et al., “Mid-Holocene Dates for Organic-Rich Sediment, Palustrine Shell, and Charcoal from Southern Iraq,” *Radiocarbon* 54, no. 1 (2012): 65–79, <https://www.cambridge.org/core/journals/radiocarbon/article/midholocene-dates-for-organic-rich-sediment-palustrine-shell-and-charcoal-from-southern-iraq/DC96E229A1ADE3230E868D529DCEF6E1>. Hassan and Robinson dated the Jemdet Nasr/Early Dynasty 1 boundary at 2960 ± 167 cal BC (time of Noah’s flood?). Two occupation sites of Hritz et al. that are related to key biblical persons are (1) Eridu = 5837–5644 cal BC, base of mound (first city, according to cuneiform texts; possibility of abode of Adam & Eve?) and (2) Jemdet Nasr = 2917–2898 cal BC (“home town” of Noah). Absolute dates vary somewhat between different sources, but a rough estimate for the time when Adam and Eve lived is about 5500–5000 BC, and for Noah and the flood around 2900 BC.

<sup>9</sup>James H. Dickson, Klaus Oegg, and Linda L. Handley, “The Iceman Reconsidered,” *Scientific American* 288, no. 5 (2003): 70–79, <https://www.scientificamerican.com/article/the-iceman-reconsidered-2005-01/>; and Bruce Bower, “Ice-man has the World’s Oldest Tattoos,” *Science News* 189, no. 2 (2016): 5.

<sup>10</sup>Carol Hill, *A Worldview Approach to Science and Scripture* (Grand Rapids, MI: Kregel Publications, 2019), 62–63.

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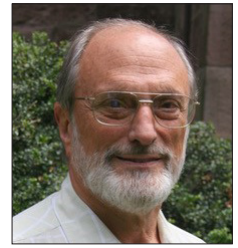


# Article

## Original Sin with Respect to Science, Origins, Historicity of Genesis, and Traditional Church Views

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- <sup>38</sup>The Canons of the Council of Orange (circa AD 529): Creeds and Confessions of the Church, <https://www.apuritansmind.com/creeds-and-confessions/the-canons-of-the-council-of-orange-circa-529-ad/>.
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- <sup>40</sup>Hill, *A Worldview Approach to Science and Scripture*, 12.
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Roy Clouser

# Three Theological Arguments in Support of Carol Hill's Reading of the Historicity of Genesis and Original Sin

Roy Clouser

*This article offers three theological buttresses for the immediately preceding article by Carol Hill. Information about and from Genesis and Romans is presented that I think will be new to most readers. Several of the most important points are drawn from Jewish sources which I think Catholic and Protestant commentators have overlooked to their detriment. Ignoring these sources has produced needless, grievous troubles for scripture interpretation – especially for Genesis.*

Keywords: *nephesh*, *ruach*, *neshamah*, documentary hypothesis, canonical reading of the Old Testament

The three buttresses constructed here will be textual and/or theological considerations in support of the preceding article by Carol Hill. Since she is confining herself to scientific and anthropological information, these buttresses are intended to show that her data are not in conflict with the text of Genesis or any other biblical source, or with any doctrine that has a biblical basis. They are, however, in contradiction with a number of traditional ideas about original sin and related arguments which are actually not biblical – Augustine's in particular.

Although I have said that the scriptures are not in conflict with the scientific data Hill presents, the point of my support will not be concordist. Rather, the support I offer will show that the text of Genesis has little, if anything, to do with the scientific data explained by Hill. In short, while Genesis and science do not need to be reconciled, Augustine and science cannot be.

The interpretation I take of early Genesis, and which forms the basis for what I say

here about its relation to scientific data, is based on an ancient Jewish interpretation of Genesis 1 and 2 as set out in a marvelous little book titled *The Lonely Man of Faith*, by Joseph Soloveitchik,<sup>1</sup> the leading Orthodox Jewish thinker of the twentieth century in North America. That discovery leads me to the following observation.

I find it inexcusable that Christian interpreters of Genesis have so thoroughly ignored Jewish commentators – especially the commentary of Orthodox Jews. After all, we share with them not only the worship of the one true God, but also a high regard for the written record of his dealings with humans. There is a long history of Christians slighting Jewish thought, and I think Christian interpretation has suffered because of it. Here's one quick example. I have known many Christians – myself included – who were troubled by the ages ascribed in Genesis to the outstanding figures in the early

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# Article

## *Three Theological Arguments in Support of Carol Hill's Reading of the Historicity of Genesis and Original Sin*

history of the covenant: Adam is 600, Methuselah is 969, and so on. These ages seemed to support the fundamentalist claim that the laws of nature were somehow radically different prior to the Fall.

I do not know exactly when it was first discovered that people of importance in the ancient Near East were ascribed an age that was symbolic of their character or accomplishments instead of their chronological age, but there is an article on that fact in the *Jewish Encyclopedia* for 1903.<sup>2</sup> Just think how many Christians could have been helped for over a century by knowing that! So when I began work on Genesis for a new book some years ago, I said to myself, "Well, let's see what the rabbis have said about it—they've had 1,000 years more than we've had to think about this stuff." That has led to a number of what I see as crucial insights into the story of Adam and Eve and into the Noah story, some of which appear in the three buttresses that follow.

### **Buttress 1:**

#### **Old Testament Support for the Claim That Adam and Eve Were Not the First Humans**

Not only does the text of Genesis avoid saying that Adam and Eve were the first humans, it also relates several details that are flatly inconsistent with the claim that they are the parents of the entire human race. One of them is that Cain, after being banished for murdering his brother, complains that "everyone who finds me will [try to] kill me" (Gen. 4:14). When God promises him protection, Cain moves to the land of Nod, marries, and has a family, and, later, he founds a city. All these items plainly presuppose the existence of other humans.

If the writers and/or editors of this story had believed that Adam, Eve, Cain, and Abel were the only four humans on the planet, they could not have dropped these details of Cain's story on their readers without explanation. The very fact that they saw no need for explaining such clear references to other people is evidence that they did not think that Adam and Eve's family were the only folk on Earth. So why did Saint Augustine persist in holding that Adam and Eve were the first humans ever?

Part of the answer to this is both shocking and dismaying. Augustine was convinced that all humans inherited their sinful nature from Adam because *the Latin text of Romans 5:12 that he used was faulty!* It read: "... death spread to all men *in whom* (Adam) all sinned." But the Greek actually says, "... death passed upon all men *because* all sinned."<sup>3</sup> Therefore, he accepted the doctrine that we are all guilty for what Adam did, or as the *McGuffey Reader* famously put it, "In Adam's Fall, we sinned all." For this to be true, Adam would have to be the ancestor of all humans. Thus, both Roman Catholic and many Protestant churches have followed Augustine in affirming the doctrine that all humans are descendants of Adam and are born with the guilt of Adam's sin staining their souls (original sin).

Augustine tells us in his autobiography that he tried to learn Greek but could never get the hang of it. Therefore, it is safe to surmise that he did not read that text in Greek. For that reason, the fault lies with the translator, not Augustine. Nevertheless, there was a good reason for him to be at least suspicious of what his Latin translation told him: namely, the fact that scripture says, in more than one place, that God never holds anyone responsible for the misdeeds of another person. The entire eighteenth chapter of Ezekiel is an example. Here are two short excerpts:

What do you mean by using this proverb concerning the land of Israel, saying, "The fathers have eaten sour grapes, but the children's teeth are set on edge"? As I live, declares the Lord, you are surely not going to use this proverb in Israel any more ... (vv. 2-3)

The person who sins will die. The son will not bear the punishment for the Father's iniquity, nor will the father bear the punishment for the son's iniquity; the righteousness of the righteous will be upon himself, and the wickedness of the wicked will be upon himself. (v. 20)

Jeremiah 31:29 makes the same point in virtually the same words.

No doubt Augustine thought his view was confirmed by the story of Noah's flood. But that, too, suffered from his inability to check his translation against the original language (he never learned Hebrew either).



The key to the Noah story is actually in Genesis 2:7. Here is how the KJV translates it:

And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul.

There are several important things about this text that are not easily apparent. The first is its location in the text. It follows a formula in verse 4 that begins: "These are the generations of the heavens and the earth ..." This formula occurs ten times in Genesis, and every other time it introduces a new story. So, there is no reason to think that it does not do so in Genesis 2:4. For that reason alone, we should at least suspect that verse 7 is not going to be another creation story. The formula also shows that the chapter break should have been after verse 3.<sup>4</sup>

The second is the term used for what God is said to breathe into Adam. If this were a second creation story, we would expect to be told that what God breathed into Adam was his soul (*nephesh*) or spirit (*ruach*). But instead the term is *neshamah*, a term used for God's inspiring of prophets. This point is what the Jewish interpretation I referred to earlier got exactly right, namely, that in Genesis 2:7, God is not imparting to Adam the breath of biological metabolism but the gift of God's own Spirit. So, the new story introduced by the formula in verse 4 ("These are the generations of ...") is not a repeat of creation, but is instead the introduction of the central theme, not only of Genesis but of all the rest of the Pentateuch (and the entire Bible, for that matter), namely, redemption. *God is here depicted as imparting his Spirit to Adam and redeeming him from death.* That is why the contrast drawn in Genesis 2:7 is important. The contrast is between Adam's original nature—where "dust of the ground" signifies mortality<sup>5</sup>—and what God now wants for his mortal creature, namely, everlasting life as a gift of redemption.

So, how does seeing that Genesis 2 is not a repeat account of creation, but an account of the beginning of redemption, help with understanding the Noah story? It is crucial to the Noah story because that story specifies that the objects of God's wrath are all those "in whom is *neshamah*"! So, the people being punished for their wickedness are not every

human on Earth other than Noah and his family, but only those who knew of God's grace, had been given God's covenant and Spirit, but then—owing to intermarriage with unbelievers (Gen. 6:1–4)—turned away from the truth that had been revealed to them, and became "exceedingly wicked."

### Conclusion

Genesis not only fails to say that Adam and Eve were the first humans, but it also asserts a number of things that are inconsistent with that idea. In addition, the right understanding of Genesis 2:7 yields guidance for how to read the Noah story, confirming the view that the flood was local because it targeted only covenant people who had become apostate.

### *Buttress 2:*

#### New Testament Support for Adam and Eve Not Being the First Humans, and for Their Having Been Created Neither Morally Perfect nor Immortal

In addition to the evidence from the Old Testament cited in Buttress 1, there is a New Testament basis for believing that Adam and Eve were not the first humans on Earth but, rather, the first humans in the history of redemption. That basis is in the crucial passage in Romans 5, in which Saint Paul compares Adam's covenantal failure with Christ's covenantal success:

Therefore, just as through one man sin entered the world and death through sin, and so death passed to all men because all sinned ... (Rom. 5:12)

At that point, Paul interrupts himself with a startling aside:

... for before the Law *sin was in the world* but was not imputed, for sin is not imputed when there is no Law ... (Rom. 5:12, 13, emphasis mine)

The first thing that we might suppose Paul to be referring to by "law" would be the law as contained in the Ten Commandments—the Torah. After all, Paul had been an orthodox rabbi who knew the Torah inside and out. But what he says here makes no sense whatsoever if he was referring to the Law of Moses. Was there really no sin held against anyone

## Article

### *Three Theological Arguments in Support of Carol Hill's Reading of the Historicity of Genesis and Original Sin*

prior to Moses receiving the Torah? Had not Adam's sin and Cain's sin been imputed to them? Clearly, the answer is yes. Recall, too, that the great flood that came upon Noah's contemporaries was punishment for sin that was held against them, just as the worship of false gods in Egypt was held against the Egyptians and punished by the ten plagues, each of which was aimed at humiliating an Egyptian pseudo-god. And the punishment for the Egyptian resistance to that lesson was the death of the firstborn in every household. Plainly, all of this was prior to the Law given on Mount Sinai.

So, what can Paul be referring to when he implies that there was a time when sin had already been "in the world" before any law had been given by God? Since Adam's sin was imputed to him, Paul can be referring only to the law given to Adam. Paul cannot possibly mean anything other than the very first commands given to humans, which were the mandates not to eat of the tree of the knowledge of good and evil, and to keep the garden and care for it (and perhaps other commandments not recorded in Genesis<sup>6</sup>). But, in that case, he is clearly implying that there existed humans other than Adam: humans who had lived before or were contemporary with Adam, but whose sin was not held against them because God had not yet made himself known, nor had yet revealed any law as part of a redemptive relationship with himself.<sup>7</sup> It is significant in this connection that Paul, in his preaching as recorded in Acts, twice refers to a time when God did not hold people responsible for their sin (Acts 14:16; 17:30).

Moreover, it seems clear that, in Romans 5, Paul intends to assert a strict parallel between sin and death. From what we learned in Genesis 2:7, we now know that Paul, in Romans 5:12, is telling us that with Adam's disobedience sin *re-entered* the world—this time in violation of God's law. It therefore follows that Paul means to convey that death is also *re-entering* the world. In context, this makes perfect sense, because God had made clear that Adam and Eve were given the gift of God's Spirit conditionally. They were on probation because God had warned them that the day they ate the forbidden fruit, they would be returned to mortality.<sup>8</sup>

Interestingly, the Eastern Church has always refused to call Adam's fall from grace the "original" sin. They speak instead of his disobedience as the "Ancestral Sin," the trespass that broke faith with God's gracious offer of redemption to the entire human race through Adam.<sup>9</sup> It was the first sin against God's first offer of grace, but it was not the origin of sin altogether.

One final point here about Augustine's interpretation. Because of his admiration for Plato, he took God's having pronounced all of creation "good" as meaning good in a platonic sense, rather than in the Jewish sense. For Plato, "good" meant a perfection: the maximal instance of a "great-making" property.<sup>10</sup> That is also how Augustine interpreted "good" as it applied to the first humans, leading him to insist that they were, originally, religiously and morally virtuous.<sup>11</sup> The Jewish use of "perfection," by contrast, always meant "complete." For example, when Jesus told his disciples to be "perfect as your Father in heaven is perfect" (Matt. 5:48), he was not telling them to be God—as would be meant if "perfect" were intended in Plato's sense. Rather, on the Jewish meaning of "perfect," Jesus would have meant that they should be as completely faithful to their end of the covenant as their heavenly Father is to his end of it.

This means that Augustine's assumption—that the creation being pronounced "good" requires that Adam and Eve were originally without sin—falls flat. Everything was good in the sense that it completed God's plan; the creation was exactly as God wished it to be. This understanding is supported by the way in which the Jewish translation of Genesis into Greek (the LXX) renders the Hebrew word "*tov*" (good). It is not translated by "*agathos*" (virtuous) but by "*kalos*," the term used to wish someone a good day. Moreover, this interpretation is explicitly endorsed by the Talmud, in which Adam is said to have been created with evil intent as well as good intent—a view that makes sense of how he could fall from grace.<sup>12</sup>

Finally, Genesis does not say that Adam and Eve were created with immortal souls. That idea is pure

Plato and purely the result of Augustine's reading Plato into Genesis.<sup>13</sup> What the text of Genesis does say is that humans were originally created "of the dust of the ground," an expression that always connotes mortality (for example, Job 14:19, 17:16; Pss. 22:15, 30:9, 103:14; Eccles. 3:20, 12:7; Isa. 26:19, and Dan. 12:2). The fact that humans were created mortal but are offered everlasting life as a covenantal gift from God was recognized by thinkers before Augustine, such as Theophilus of Antioch (d. 185).<sup>14</sup> After Augustine, this idea is generally replaced by the platonic idea of an immortal soul because of Augustine's great influence.

Given the corrective points made so far, the all-important text of Genesis 2:7 would be understood in this way:

And the Lord God [who had already] formed the man mortal, now breathed into his face [God's own] life-giving Spirit, and the man became a living [redeemed-from-death] soul.

This interpretation is strikingly supported by the way Jesus imparted the gift of the Holy Spirit to his disciples. In John 20:22, we find him deliberately re-enacting Genesis 2:7:

And when he had said this, he breathed on them and said, "Receive the Holy Spirit."

### Conclusion

Although God had given Adam his spirit and eternal life, those gifts were lost through disobedience. So when Paul says that "death reigned from Adam to Moses," he is referring to the fact that not only Adam but also every other covenant recipient after him failed to fulfill the covenant requirements so that death continued unabated. All that changed with Christ, the righteous Israelite and covenant hero, who defeated Satan's temptation, fulfilled every covenant requirement, died in place of sinners, and has redeemed all creation.

### *Buttress 3:*

#### Support for Taking Old Testament Covenant Celebrities as Real People

The extensive list of covenant celebrities recorded in Genesis 10-12 is no doubt modeled on the Sumerian king lists, and is presented with a view to memorial-

izing heroes of the covenant who lived faithful lives that perpetuated belief in the true God and passed it on to succeeding generations. The evident detail and care that went into preserving those lists does not give the impression that the people named in them were fictional characters.<sup>15</sup>

But there is a broader issue at stake here, one that has to do with the adoption of an interpretive slant. I will never forget the first day of my graduate course in Old Testament (OT) with Ernest Wright.<sup>16</sup> He opened with the observation that how a person interprets specific texts or stories in scripture is largely influenced by the view that person takes of the Bible as a whole. He then added that, in his view, the proper way to characterize the Bible as a whole is as a record of the *covenants* of God. To that I would add that the covenant record is to be read "canonically." That is the term used by Brevard Childs in his *Introduction to the Old Testament as Scripture*.<sup>17</sup> He described the interpretive slant in this way:

The reason for insisting on the final form of scripture lies in the peculiar relationship between text and people of God which is constitutive of the canon. The shape of the biblical text reflects a history of encounter between God and Israel ... the significance of the final form of the biblical text is that it alone bears witness to the full history of revelation ... (pp. 75-76)

By shaping Israel's traditions into the form of a normative scripture the biblical idiom no longer functions for the community of faith as a free-floating metaphor, but as the divine imperative and promise to a historically conditioned people of God whose legacy the Christian Church confesses to share. (p. 77)

It is this attitude, more than individual arguments and pieces of evidence, that leads me to accept the actors named in the biblical drama as real. Or, to put it more strictly, it leads me to accept their reality as the default position until and unless there are powerful reasons to the contrary. It is not *impossible* that a character who appears in a biblical story is the subject of a parable rather than a history. Serious scholars take Jesus's story about the rich man and the beggar in Luke 16 both ways, for example. But there are good reasons for thinking that that story is a parable, even if the reasons are not conclusive.



# Article

## *Three Theological Arguments in Support of Carol Hill's Reading of the Historicity of Genesis and Original Sin*

I say this not because there are no “pieces of evidence” for the reality of OT personages. Often there are.<sup>18</sup> And some of these individual evidences consist of the way in which New Testament writers assert, or take for granted, the reality of an OT character. That is stronger evidence, so far as I am concerned, than the fact that a character is regarded as suspect because his or her story is traced to a strand of documents not favored by some particular version of the documentarian hypothesis.<sup>19</sup>

The investigation of the source documents that contributed to the final form of scripture is an interesting project for its own sake, and it has, at times, led to a better understanding of the culture and circumstances of the time of their writing. This, in turn, has led to a clearer meaning of some difficult biblical texts. But from the canonical point of view, no discovery about the sources that contributed to the final text of scripture can possibly tell us anything that would justify us in accepting only one particular strand of the canon as inspired and discarding the rest. As the above quote from Childs makes clear, the compiling and editing of the scriptures was equally as inspired as the writing of the source materials—warts and all.<sup>20</sup>

From a broader theological perspective, however, I have another—an even more serious—reservation about that sort of use of the documentary approach. The assumption that the Bible we have is a conglomeration of texts, only one of which is inspired by God, is at odds with God's very purpose in revealing himself. So, in addition to Childs's reasons quoted above, I want to add the objection that accepting such a hypothesis would mean that God has not providentially overseen the collecting, editing, and transmission of a record of his interactions with his people so as to preserve it *in a form they can all access*.

On the assumption that only one strand of documents combined in scripture is truly the Word of God, then that Word is assumed to be something that is not open to all God's people as their guide for living in proper relation to him. Instead, its “discovery” is made to be a highly scholarly project carried on by specially trained experts who, with great difficulty

and residual uncertainty, must deduce the message of divine grace for the rest of the world.

Against that, I contend that, since the Bible we have is the Word that God's providence has passed on to us, we should honor it as exactly that. †

### Notes

<sup>1</sup>Joseph B. Soloveitchik, *The Lonely Man of Faith* (New York: Doubleday, 1992).

<sup>2</sup>Emil G. Hirsch et al., “Chronology,” in *The Jewish Encyclopedia*, ed. Isidore Singer and Cyrus Adler (New York: Funk and Wagnalls, 1903), 64–75, <https://www.jewishencyclopedia.com/articles/4373>.

<sup>3</sup>See Paul Blower's entry “Original Sin” in the *Encyclopedia of Early Christianity*, 2nd edition, ed. Everett Ferguson (New York: Garland Publications, 1997), 839–40. Because of this translation error, Augustine endorsed the idea that Adam and Eve were the ancestors of all humans. See St. Augustine, *City of God*, trans. Henry Bettenson (New York: Penguin Classics, 2004), 14.1.

<sup>4</sup>This is also confirmed by the way the Jewish evening home liturgy ends the reading at Rom. 2:3 and does not include v. 4. See Philip Birnbaum, ed., *Daily Prayer Book: Ha-Siddur Ha-Shalem* (New York: Hebrew Publishing, 1949), 273. The same chapter break occurs in the text as chanted in the annual and triannual cycles of the recitation of the Torah. See J. H. Hertz, ed., *The Pentateuch and Haftorahs*, 2nd ed. (London, UK: Soncino Press, 1969), 6.

<sup>5</sup>For example, Job 14:19, 17:16; Pss. 22:15 and 29, 30:9, 40:25, 103:14, 104:29; Eccles. 3:20, 12:7; Isa. 26:19; and Dan. 12:2.

<sup>6</sup>For example, although a divine command to bring offerings to God is not recorded in the Adam and Eve story, it seems there must have been such a command, since both Cain and Abel are described as doing it in Genesis 4.

<sup>7</sup>If you are wondering what Augustine did with this clear reference to humans before Adam, the answer is that he took it as a reference to angels! I find that proposal wildly implausible. It requires (1) that angels believed in false gods while being in God's presence, (2) that their belief in other gods was not imputed to them until God gave them a law, and (3) that they now remain subject to death because of Adam's probationary failure—all patent absurdities. Other Christian commentators seem to be satisfied to ride the coattails of Augustine's authority, even such luminaries as Martin Luther and Matthew Henry. By contrast, a long-standing Jewish tradition takes Adam and Eve as the first people in the history of redemption, rather than the first humans. See Soloveitchik, *The Lonely Man of Faith*, 22.

<sup>8</sup>There is a strong but unspecified implication in Genesis that had Adam and Eve been faithful to God's law for them, then their permanent redemption would have been somehow passed to all humans. This would not, however, require all people to descend biologically from Adam any more than all people must descend from Christ in order to benefit from his redemption of the world.

<sup>9</sup>See John S. Romanides, *The Ancestral Sin* (Ridgewood, NJ: Zephyr Publishing, 1998).

<sup>10</sup>The expression “great-making property” was coined by Alvin Plantinga to connote a property that makes its

possessor better to have it than not. Some examples are maximal goodness, maximal justice, maximal honesty, maximal knowledge, and maximal power. In theologies accepting this idea, God is then defined as the one who has all the perfections and only perfections. See Plantinga, *God, Freedom, and Evil* (New York: Harper & Row, 1974), 98.

<sup>11</sup>Augustine, *City of God*, 13.14; and 14.10, 11, 12.

<sup>12</sup>Soloveitchik cites *Berakot*, 61a and *Ketuvot*, 8a on this point. Soloveitchik, *The Lonely Man of Faith*, 10–11.

<sup>13</sup>Augustine, *City of God*, 13.10

<sup>14</sup>“Ad Autolychum” in *The Ante-Nicene Fathers*, vol. 2, ed. A. Roberts and J. Donaldson (Grand Rapids, MI: Eerdmans, 1989), 91. Interestingly, Augustine himself held the biblical view early on, only to give it up later. In *On the Literal Meaning of Genesis*, he says:

This immortality was given him (Adam) from the tree of life, not from his nature ... He was mortal, therefore, by the constitution of his natural body, and was immortal by the gift of his creator. (6.25)

But in his work *Soliloquia*, 2.24, he gives a proof of the immortality of the soul, even presenting it as an alternative to Plato’s proof in *Phaedo*, 102d–109c, and he affirms it also in *City of God*, 13.1. Apparently he never changed his mind as the proof reappears again (reworked) in *De Trinitate*, 13.12.

<sup>15</sup>The great ages ascribed to them do not warrant dismissing them as fictive persons. Recall the point made earlier that it was customary at that time to ascribe ages to important people that were symbolic of their character or achievements rather than reports of their real chronological age. For example, the Sumerian king list ascribes to King Eridu Alulim a reign of 28,800 years! See Hill, “Making Sense of the Numbers of Genesis.”

<sup>16</sup>George Ernest Wright was a distinguished archeologist and Professor of Old Testament at Harvard from 1958–1974.

<sup>17</sup>Brevard S. Childs, *Introduction to the Old Testament as Scripture* (Minneapolis, MN: Fortress Press, 2011).

<sup>18</sup>For example, the discovery that the covenant with Moses is in the form of a Suzerainty Treaty lent support to the dating of the account of the exodus and the subsequent conquest of Palestine, since Suzerainty treaties were in vogue only between 2000 and 1000 BCE. See George E. Mendenhall, *Law and Covenant in Israel and the Ancient Near East* (Pittsburgh, PA: Biblical Colloquium, 1955); and Meredith G. Kline, *Treaty of the Great King: The Covenant Structure of Deuteronomy: Studies and Commentary* (Grand Rapids, MI: Eerdmans, 1963).

<sup>19</sup>The documentary hypothesis of the Pentateuch was originated in the nineteenth century by Karl Heinrich Graf and Julius Wellhausen. It distinguishes sources mainly by the term they use for God (J, E, D, P). In this way it tries to discover the particular themes and interpretive slant of each source prior to its being compiled by later editors into the scriptures we now have.

<sup>20</sup>C.S. Lewis has given an excellent statement of what I mean by “warts and all”:

The scriptures proceed not by conversion of God’s word into literature but by the taking up of a literature to be the vehicle of God’s word ... [scripture] consists of the same sort of material as any other literature ... but all taken into the service of God ... On [scripture] I suppose a Divine pressure ... [nevertheless] the human

qualities of the raw materials show through. Naivety, error, contradiction, even (as in the cursing psalms) wickedness are not removed. The total result is not “the word of God” in the sense that every passage, in itself, gives impeccable science or history. It carries the word of God. (C. S. Lewis, *Reflections on the Psalms* [New York: Harcourt, Brace, and Co., 1958], 111–12, 116)

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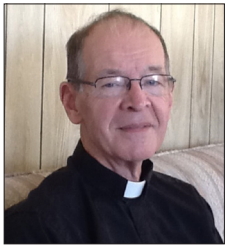
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George L. Murphy

## Article

# The Twofold Character of Original Sin in the Real World

George L. Murphy

*The topic of original sin in the context of theology-science discussions has, quite naturally, tended to focus on how this condition might have originated in view of scientific knowledge about early humanity. But that is only one aspect of the doctrine. What is really important for most people is the question of what original sin means today. Here that aspect of the doctrine is considered from a pastoral perspective first. Then I review and clarify what I have suggested in earlier publications about the origins of original sin.*

Keywords: Athanasius, Irenaeus, original righteousness, original sin originated, Reinhold Niebuhr, religiously modern humans, stalking horse

### The Two Aspects of "Original Sin"

Here I consider two aspects of the western church's traditional doctrine of original sin.<sup>1</sup> The first is the sinful condition in which each human life begins, *peccatum originale originatum*, "original sin as originated." The second is the origin of that condition at the beginning of the human race, *peccatum originale originans*, "original sin as originating."<sup>2</sup>

In the fifth century, disputes about those matters arose as a result of the teachings of the British monk Pelagius. He held that, in theory, a person could live in accord with God's will by his or her own effort, without the saving grace made available through the death and resurrection of Christ. Augustine, the bishop of Carthage, disagreed, saying that we can be put in a right relationship with God only by that saving grace, not by our own effort. The need for that grace, he said, was due to a sinful condition we were in apart from any actual sins we had

committed, a sin in which our lives originate. That is "original sin originated."

But why do people sin? Pelagius and Augustine went back to Adam, whom they both saw as a historical figure. For Pelagius, Adam set a bad example for us, but we do not have to follow it.<sup>3</sup> For Augustine, Adam's sin brought about a changed human condition, "original sin originating." It was an abrupt "fall" which changed not only the human condition but also the whole terrestrial creation. Whether or not that idea of a radical change brought about when humanity consisted of only a single primordial couple can be reconciled with modern evolutionary understandings of human origins, has been the subject of a great deal of debate.

The first aspect of original sin, however, is what matters for people's lives today and for proper proclamation of the gospel. Our tendency to think that we are pretty decent people and can lead God-pleasing lives if we really try, inclines many to a Pelagian or semi-Pelagian position. In contrast, Augustine's insistence that we are completely dependent upon God for our salvation can seem unattractive.

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There is obvious discord between Augustine's picture of an abrupt "fall" of an initially perfect human couple and the understanding of the condition of early humans that evolution gives us. Those who dislike Augustine's teaching, that our lives today begin in a sinful condition, can focus on that discord to the advantage of Pelagius (who also did not know about evolution). I have referred to that tactic in the past under the heading, "Darwin as a stalking horse for Pelagius?"<sup>4</sup> It is a fallacy because belief that Augustine was right about the present condition of humanity does not mean that we must accept his idea about how that condition got started.

### Original Sin as Originated

The articles concerning original sin in the historic confessions of the churches in which I have served refer to the sin of Adam, but their emphases are on the beginning of each human life in a sinful condition.<sup>5</sup> The eighteenth-century Reformed theologian Jonathan Edwards held an Augustinian view of original sin. Nevertheless, the first chapter of his defense of the doctrine is titled, "The Evidence of Original Sin from What Appears in Fact of the Sinfulness of Mankind."<sup>6</sup>

As a parish pastor, I usually have not given the formal doctrine of original sin a great deal of emphasis. A doctrinal statement does need to be presented in educational settings, and the concept is relevant at some points in worship. In the *Lutheran Book of Worship*, the order for baptism begins by acknowledging that "we are born children of a fallen humanity," and in the opening order for confession and forgiveness, "we confess that we are in bondage to sin and cannot free ourselves."<sup>7</sup> In preaching, I don't emphasize the doctrine of original sin for its own sake but address the reality and seriousness of sin in people's lives and in the world. That can be done without any need to talk about something that happened at the dawn of humanity. The law's demand and its condemnation of sin precede the promise of the gospel. In preaching on the story of Eve and Adam's sin in Genesis 3, I make the point that such disobedience to God is and always has been typical human behavior. It is not just a story of the first humans, but the story of all of us, centuries ago and today.

Sin is pictured as a universal human problem in the New Testament. "There is no distinction, since all have sinned and fall short of the glory of God" (Rom. 3:22b-23). And though Christ has reconciled us to God and we are justified by faith in him, though we are to consider ourselves "dead to sin and alive to God in Christ Jesus" (Rom. 6:11), Christians still must struggle with sin, as Paul describes in Romans 7:15-25.

Paul's statement that "all have sinned" is not limited to those who have reached a certain "age of accountability." Nor is there any explicit statement in scripture that infants are in a sinful condition. To say of them, as the Augsburg Confession does, that "from birth they are full of evil lust and inclination" is excessive. The continuation of that sentence, that they "cannot by nature possess true fear of God and true faith in God" is more to the point.<sup>8</sup> If a newborn infant can be said to have a god at all, it is the child's mother or father or whoever the primary caregiver is, not the One who got Israel out of Egypt, hung on the cross, and raised Jesus from the dead. The statement from some atheist that I saw years ago, "100% of all babies are born atheists" is not a telling criticism of Christianity, but a reaffirmation of the doctrine of original sin.

Preaching of God's law and its condemnation of sin precedes proclamation of what God has done to deal with sin through the life, death, and resurrection of Christ. Insistence that we are justified by faith alone means that we cannot put ourselves in a right relationship with God by our own effort or contribute "our share" to the work of Christ. Even being brought to faith is the work of the Holy Spirit, not something we achieve by ourselves. The fact that we are saved entirely by what God does, indicates that unaided humans are in a condition that makes them unable "to fear, love, and trust God above all things," as Luther stated the meaning of the First Commandment in the Small Catechism.<sup>9</sup>

That name of that state is "sin," which includes both our sin of origin and whatever specific sins we commit. "Before sin is an act," Paul Tillich wrote, "it is a state."<sup>10</sup> The problem is more fundamental than the fact that we think and do individual bad things. The

# Article

## *The Twofold Character of Original Sin in the Real World*

apostle Paul calls this state that of “the ungodly” in Romans 4:5 and 5:6, designating it as a condition of separation from God.

People sometimes object to this, saying, “I believe that people are basically good.” But this doctrine does not deny that. As sinners, we are still God’s creations and thus fundamentally good. (Augustine said that even the devil was created wholly good by God.<sup>11</sup>) While the Pelagian denial of original sin is a heresy, its diametric opposite, the idea that unsaved sinners are basically evil, is also a heresy, one akin to Manichaeism.<sup>12</sup>

Original sin is a necessary part of a systematic theology, but its practical significance for preaching and pastoral care is not great. The fundamental law-gospel message is, “You are a sinner and Christ is your savior.” Tracing a person’s sinful condition to the beginning of her or his life, let alone to the sin of some remote ancestor, is not likely to play a significant role in that person’s conversion or to provide any help to a person struggling with particular temptations.

### Original Sin as Originating

Given that our lives begin in a sinful state, it is natural to ask how that condition arose. If humans are part of that creation that God saw as “very good” in the beginning, how did we come to be in an “ungodly” state? How did we “go bad”?

The answer that Paul gives in Romans 5:12–24 is “Adam.” The story of the first man, which Paul, of course, knew from the Hebrew scriptures, tells how sin came into the world. We ought to note though that Paul’s attention on this passage is not focused primarily on Adam but on Christ. Karl Barth pointed to that fact when he titled his little book on Romans 5 not *Adam and Christ* but *Christ and Adam*.<sup>13</sup> It is Christ who shows us what genuine humanity is to be.

It is with questions about the origin of human sinfulness, of course, that our topic has become a significant part of science-theology discussions. The development of critical approaches to the study of scripture raised questions about the historical character of early Genesis, and then biological evolution

challenged the pictures of early humanity that we find in Genesis. The real issue that is being debated in this connection, however, is often not original sin but whether or not there was a “historical Adam.”

The traditional picture of human origins in western Christianity is incompatible with what we know about the evolution of humanity.<sup>14</sup> We owe that picture largely to Augustine. In “The City of God,” he poses the question, whether our “first parents ... before they sinned, experienced in their animal body such emotions as we shall not experience in the spiritual body when sin has been purged and finally abolished?” His answer is resoundingly negative.

For who that is affected by fear or grief can be called absolutely blessed? And what could those persons fear or suffer in such affluence of blessings, where neither death nor ill health was to be feared, and where nothing was wanting which a good will could desire, and nothing present which could interrupt man’s mental or bodily enjoyment? [They were, Augustine says,] agitated by no mental perturbations, and annoyed by no bodily discomforts.<sup>15</sup>

Besides being at variance with the picture of early humans that evolution gives, the Bible just does not tell us those things. Even less is there any basis for later speculations like Luther’s about the sharpness of Adam’s eyesight and his tremendous strength, or claims like that of the seventeenth-century English clergyman Robert South that “an Aristotle was but the rubbish of an Adam.”<sup>16</sup>

In the following discussion, we will be concerned with our earliest ancestors to whom God had conveyed some awareness of the divine nature and will, the first humans in a theological sense.<sup>17</sup> We can call them “religiously modern humans,” in analogy with the term “anatomically modern humans” that is commonly used. We need not assume, however, that “religiously modern human” equates to “anatomically modern human.” For the theological model of human development which I have suggested previously and will sketch here, we do not have to specify when they came into being, or how many individuals or groups of such individuals there may have been.<sup>18</sup> But while we may not be able to rule out completely the possibility that all present-day humans

have descended from a single male-female couple, population genetics now seems to make that highly unlikely.<sup>19</sup> There is little to be gained by continuing to insist on a “historical Adam.”

It is important to emphasize that the first religiously modern humans were, along with their primate relatives, products of evolution. Certainly God was acting through the evolutionary process, as God cooperates with created things in all that happens in the world.<sup>20</sup> We need not debate here whether or not God provided some special guidance, perhaps at the quantum level, so that intelligent creatures would have come about. But we do need to resist the suggestion that is sometimes made, that God intervened to, in effect, “clean up” a chosen male-female couple to become Adam and Eve. Such cleansing would simply get rid of what it would mean for these creatures to have come into being through the evolutionary process, something that we will consider later.

I begin with the picture of the first humans sketched by some of the Greek church fathers, a picture significantly different from the corresponding figures of Augustinian theology. Theophilus of Antioch thought that eating from the tree of knowledge had been forbidden because “Adam, being yet an infant in age, was on this account yet unable to receive knowledge worthily.”<sup>21</sup> In a similar vein, Irenaeus wrote, “The man was a young child, not yet having a perfect deliberation” and “It was necessary for him to reach full development by growing in this way.”<sup>22</sup> The Orthodox tradition has generally followed that line of thought, seeing the first humans as immature. As one modern Orthodox theologian puts it,

Orthodoxy, holding as it does a less exalted idea of man’s state before he fell, is also less severe than the West in its view of the consequences of the fall. Adam fell, not from a great height of knowledge and perfection, but from a state of undeveloped simplicity; hence he is not to be judged too harshly for his error.<sup>23</sup>

This picture of the first humans as immature is certainly better than the picture that the western tradition has often drawn. But scientific evidence strongly suggests that those first religiously modern humans were not simply two individuals who had to grow to maturity, but members of a species with

an evolutionary history. (Theophilus with “Adam” and Irenaeus with “the man” clearly had a single individual in mind.) Another of the Greek Fathers, Gregory of Nyssa, did develop what can be called an evolutionary picture of human development, but it is quite different from the modern picture of biological evolution.<sup>24</sup>

We can learn something about the behavior of our prehuman ancestors by studying our closest surviving primate relatives. While cooperation among members of a species is observed, there is also competition, as evolution via natural selection would lead us to expect. Studies of our primate relatives show us that deceit is sometimes practiced among them, sexual promiscuity is not uncommon, and violence, sometimes lethal, is observed.<sup>25</sup> There is no reason to think that the condition of our ancestors’ prehuman ancestors would not have been similar. Of course this raises questions about traditional ideas of what their “original righteousness” was.

Before being given any kind of awareness of God or any hint of the divine will for them, those early humans would not have been sinful, for “sin is not reckoned when there is no law” (Rom. 5:13). But things would be different when they had some knowledge, however dim, of the way God wanted them to live. They were not hardwired for sin, but having the genes of ancestors who through many generations had survived numerous threats from members of their own and other species, and who had succeeded in leaving offspring, would have left them with strong tendencies for some selfish behaviors.

Athanasius, another eastern theologian, did not picture the first humans as children. But neither did he speculate about their properties or abilities. He thought that they would have been subject to natural death, though not corruption. Having been made in God’s image and given a law and residence in God’s own garden, “if they kept the grace and remained good, they might still keep the life in paradise without sorrow or pain or care, besides having the promise of incorruption in heaven.”<sup>26</sup> They were, in a sense, at the beginning of a journey and could follow one of two ways—faithfulness and obedience, or not.



# Article

## *The Twofold Character of Original Sin in the Real World*

I have elaborated that idea in a model of human sin and divine salvation.<sup>27</sup>

Given their evolutionary history, Jesus's words about the narrow way that leads to life and the easy one that leads to destruction (Matt. 7:13) are appropriate here. It is not surprising that the earliest religiously modern humans took the easy way. In the words of Reinhold Niebuhr, sin would not have been "necessary," but "inevitable."<sup>28</sup> The "first sin" need not have been anything obviously earthshaking—Athanasius seems to have in view a gradual departure from blessedness rather than an abrupt fall. That is the way the story is told in the early chapters of Genesis—Eve and Adam's disobedience followed by Cain's murder of Abel, Lamech gloating about unlimited vengeance, and the general corruption that leads to the flood. Even after that, God reflects that "the inclination of the human heart is evil from youth" (Gen. 8:21).

There is no "gene for sin." However, those first humans had genomes formed by millennia of evolution which favored abilities and behaviors that were favorable for survival in what was sometimes a brutal environment. They were not abilities and behaviors that were intrinsically sinful, but they could be used in sinful ways. A drive to survive and pass on one's genes can easily get in the way of trusting in God above anything else.

So, in this model, humans wandered away from God and soon became lost. In human societies, there would also have been sinful influences from social environments. We know today how those who are born and grow up in a society with strong racial prejudices can absorb those prejudices. This is not just a matter of a child being affected by one or another "bad influence," but of absorbing sinful attitudes almost with the air that is breathed. The sinful state of humanity is a matter of both nature and nurture.

God, of course, does not give up on his creation. In the biblical story, God begins to bring humanity back into communion with the call of Abram in Genesis 12, and continues that call and formation of a faithful community with Moses and the prophets of Israel. Humanity has wandered away from God and

the people of Israel are often tempted to as well, but God persists. It is significant that the usual Hebrew word for "repent" is *shubh*, "return." "Yet even now, says the LORD, return to me with all your heart. ... Return to the LORD your God, for he is gracious and merciful, slow to anger and abounding in steadfast love" (Joel 2:12–13).

And finally, God comes in person, not only to issue a definitive call for repentance but to "draw all people to myself" (John 12:32) with the power of his cross and resurrection. Detailed discussion of atonement and salvation are topics for another time. I have treated them in some of the works listed in note 1.<sup>29</sup>

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### Notes

<sup>1</sup>For more detailed treatment of what follows, I refer here to previous writings of mine. George L. Murphy, *The Trademark of God: A Christian Course in Creation, Evolution, and Salvation* (Wilton, CT: Morehouse-Barlow, 1985), chap. 8; —, "Christology, Evolution, and the Cross," in *Perspectives on an Evolving Creation*, ed. Keith B. Miller (Grand Rapids, MI: Wm. B. Eerdmans, 2003), 370–89; —, "Roads to Paradise and Perdition: Christ, Evolution, and Original Sin," *Perspectives on Science and Christian Faith* 58, no. 2 (2006): 109; —, "Chiasmic Cosmology and Atonement," *Perspectives on Science and Christian Faith* 60, no. 4 (2008): 214; —, "Human Evolution in Theological Context," *The BioLogos Foundation*, 2010, [https://www.fliedner.es/media/modules/editor/cienciayfe/docs/biologos/murphy\\_scholarly\\_essay.pdf](https://www.fliedner.es/media/modules/editor/cienciayfe/docs/biologos/murphy_scholarly_essay.pdf); —, *Models of Atonement: Speaking about Salvation in a Scientific World* (Minneapolis, MN: Lutheran University Press, 2013); and —, "Evolution and the 'Original Sins,'" July 6, 2015, <https://biologos.org/series/atonement-and-evolution-a-biologos-conversation/articles/evolution-and-the-original-sins>.

<sup>2</sup>Tatha Wiley, *Original Sin: Origins, Developments, Contemporary Meanings* (New York: Paulist, 2002), 5.

<sup>3</sup>Though this cannot be our primary concern now, it would be helpful to devote some discussion to the inevitable distortion that has been produced by the common practice of focusing entirely on "Adam" in connection with original sin, with Eve being brought in to get the blame for the whole mess only after the theological work has been done.

<sup>4</sup>George L. Murphy, "Darwin as a Stalking Horse for Pelagius?," *Lutheran Alliance for Faith, Science and Technology*, March 26, 2012, <https://luthscitech.org/darwin-as-a-stalking-horse-for-pelagius/>.

<sup>5</sup>Article 2 of the Augsburg Confession in *The Book of Concord*, ed. Robert Kolb and Timothy J. Wengert (Minneapolis, MN: Fortress, 2000), 36–38; and Article IX of "Articles of Religion" in *The Book of Common Prayer* (New York: Church Publishing, 1986), 869.39.

<sup>6</sup>Jonathan Edwards, "The Great Christian Doctrine of Original Sin Defended," in *The Works of Jonathan Edwards*, vol. 3, ed. Clyde A. Holbrook (New Haven, CT: Yale University Press, 1970).

<sup>7</sup>Lutheran Book of Worship (Minneapolis, MN; Augsburg, 1979), 121 and 56.

<sup>8</sup>Kolb and Wengert, eds., *The Book of Concord*, 36–38.

<sup>9</sup>Ibid., 351.

<sup>10</sup>Paul Tillich, “You Are Accepted,” in *The Shaking of the Foundations* (New York: Charles Scribner’s Sons, 1948), 155.

<sup>11</sup>Phillip Cary, “Augustine on Evil,” <https://templeton.eastern.edu/sites/default/files/inline-files/Augustine-on-Evil-by-Dr-Phil-Cary-Dialogue.pdf>, 3–4.

<sup>12</sup>See, e.g., Article 1 of the Formula of Concord’s Solid Declaration, “Concerning Original Sin,” in *The Book of Concord*, ed. Kolb and Wengert, 531–42.

<sup>13</sup>Karl Barth, *Christ and Adam: Man and Humanity in Romans 5* (New York: Harper & Brothers, 1956).

<sup>14</sup>Murphy, “Roads to Paradise and Perdition;” and \_\_\_\_, *Models of Atonement*; and other references in Miller, *Perspectives on an Evolving Creation*.

<sup>15</sup>Augustine, “The City of God,” Book XIV, chapter 10, 271.

<sup>16</sup>Martin Luther, “Lectures on Genesis: Chapters 1–5,” in *Luther’s Works*, vol. 1 (St. Louis, MO: Concordia, 1958), 62; and A. S. Peake, *Christianity: Its Nature and Its Truth* (London, UK: Duckworth & Co., 1908), 116.

<sup>17</sup>Romans 1:19–20 is relevant here, though we shouldn’t think of those early humans as having a full understanding of God’s power and nature.

<sup>18</sup>See Murphy, “Roads to Paradise and Perdition;” \_\_\_\_, “Human Evolution in Theological Context;” and \_\_\_\_, *Models of Atonement*, chaps. III and IV.

<sup>19</sup>BioLogos Editorial Team, “Adam, Eve, and Human Population Genetics,” BioLogos.org, November 12, 2014, <https://biologos.org/articles/series/genetics-and-the-historical-adam-responses-to-popular-arguments/adam-eve-and-human-population-genetics>.

<sup>20</sup>George L. Murphy, “The Nuts and Bolts of Creation,” *Perspectives on Science and Christian Faith* 76, no. 1 (2018): 48.

<sup>21</sup>Theophilus of Antioch, “Theophilus to Autolyclus,” in *The Ante-Nicene Fathers II* (reprint, Grand Rapids, MI: Wm. B. Eerdmans, 1979), 47.

<sup>22</sup>St. Irenaeus of Lyons, *On the Apostolic Preaching* (Crestwood, NY: St. Vladimir’s Seminary, 1997), 47.

<sup>23</sup>Timothy Ware, *The Orthodox Church* (Baltimore, MD: Penguin, 1963), 228.

<sup>24</sup>Gregory of Nyssa, “On the Making of Man” in *The Nicene and Post-Nicene Fathers*, series 2, vol. 5 (reprint, Grand Rapids, MI: Wm. B. Eerdmans, 1979), 387–427; and George L. Murphy, *The Cosmos in the Light of the Cross* (Harrisburg, PA: Trinity Press International, 2003), 114–16.

<sup>25</sup>For example, Richard Leakey and Roger Lewin, *Origins Reconsidered* (New York: Doubleday, 1992), chap. 16; Carl Sagan and Ann Druyan, *Shadows of Forgotten Ancestors* (New York: Random House, 1992), chaps. 14 and 15; and Daryl P. Domning, “A New Interpretation of Original Sin,” in Dr. Daryl P. Domning and Dr. Joseph F. Wimmer, *Evolution and Original Sin: Accounting for Evil in the World*, <https://wasitheocon.org/wp-content/uploads/2012/10/EvolutionOriginalSin1-corrected.pdf>, 55–72.

<sup>26</sup>Athanasius, “On the Incarnation of the Word,” in *A Select Library of Nicene and Post-Nicene Fathers of the Christian Church*, 2nd series, vol. 4 (reprint, Grand Rapids, MI: Wm. B. Eerdmans, 1978), 37–39. See also p. lxxi of the *Prolegomena* by Archibald Robertson.

<sup>27</sup>Murphy, “Roads to Paradise and Perdition.”

<sup>28</sup>Reinhold Niebuhr, *The Nature and Destiny of Man*, vol. 1 (New York: Charles Scribner’s Sons, 1964), 242–43.

<sup>29</sup>See, in particular, Murphy, “Chiasmic Cosmology and Atonement;” \_\_\_\_, *Models of Atonement*; and \_\_\_\_, “Evolution and the ‘Original Sins.’”

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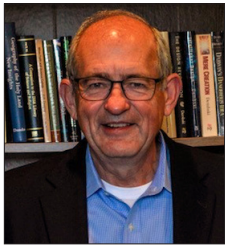
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Randy Isaac

## Essay Book Review

# The Significance of *The Mystery of Life's Origin*

Randy Isaac

*The Mystery of Life's Origin: The Continuing Controversy* by Charles B. Thaxton, Walter L. Bradley, Roger L. Olsen, James Tour, Stephen Meyer, Jonathan Wells, Guillermo Gonzalez, Brian Miller, and David Klinghoffer. Seattle, WA: Discovery Institute Press, 2020. 486 pages with index. Paperback; \$25.00. ISBN: 9781936599745.

In 1984, Charles Thaxton, Walter Bradley, and Roger Olsen wrote *The Mystery of Life's Origin: Reassessing Current Theories* (hereafter referred to as MLO-1) as a critique of the assumption that naturalistic processes for the abiotic development of life on Earth had been established. The book laid the foundation for the rise of the movement known as intelligent design (ID), championed by the Discovery Institute, though that term is not found in the book. In honor of the thirty-fifth anniversary of MLO-1, the Discovery Institute has published this new edition (hereafter referred to as MLO-2). It includes a reprint of MLO-1 with updates and five additional chapters.

The messages of both editions are clear:

1. *A natural origin of life on Earth has not been established.* The scientific community and the general public would all agree.
2. *A natural origin of life on Earth may never be established.* Most people, including researchers in the field of origin of life, would likely agree—though many would argue that its plausibility may be indicated.
3. *Textbooks often overstate the extent to which abiogenesis has been established.*

This may be anecdotally correct, but the authors do not show how widespread it is.

4. *It can reasonably be inferred that the best explanation is the existence of an intelligent designer who created life in the prebiotic world.* On this final point, the authors are in a minority in the scientific community. This reviewer agrees with the existence of the intelligent designer we worship as God the creator, but disagrees with the authors that it is a logical inference from the failure to find a scientific explanation of the origin of life.

While the purpose of MLO-1 is purportedly to present a purely scientific assessment of the status of research on the origin of life, MLO-2 reveals that the original idea for MLO-1 emerged from a desire for a Christian worldview perspective of such research. As will be discussed later in this review, the discussion by Thaxton in the MLO-1 epilogue and his update in a later edition (1997) clearly stated that the metaphysical implication was the existence of an intelligent designer. Furthermore, the purpose and motivation for MLO-2 is clearly stated to show the key role of MLO-1 as the foundation of the intelligent design movement and to add, not only some additional scientific research, but also a stronger statement on the argument for an intelligent designer. Therefore this review will focus primarily on the metaphysical

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implications of the scientific work and less on the science itself.

Before delving into the reason why their conclusion is rejected by most scientists, let us first consider the structure and the content of MLO-2. A short foreword by Robert Marks and John West sets the stage and rationale for this edition. They summarize the core message of MLO-1 as, "Current approaches to the origin of life were abysmal failures ... and the difficulty is fundamental" (p. 7).

David Klinghoffer provides a very informative twenty-three-page introduction titled "Introduction: Intelligent Design's Original Edition." He maps out the motivation and background of MLO-1, tracing its roots to the early 1970s.

... the idea for the book that became *The Mystery of Life's Origin* was first discussed among a group of friends and colleagues affiliated with Probe Ministries, operated by Jon Buell and his associate James Williams to advocate a Christian worldview ... In 1975, Buell was seeking an author for a rigorous book on evolution, and he proposed it to Bradley, then a professor at the Colorado School of Mines. (p. 15)

Jon Buell held a liberal arts and sciences degree in communication arts and worked for Campus Crusade for ten years, becoming a regional director before leaving in 1972 to found Probe Ministries. Walter Bradley, a materials scientist and not a biologist, preferred to focus more on the origin of life than on evolution. He solicited the collaboration of Roger Olsen, a graduate student in geochemistry at the Colorado School of Mines. Buell showed the first draft of their manuscript to physical chemist Charles Thaxton who had come from Boston, where he had been a post-doc in history of science and molecular biology, to Dallas to work for Buell. Thaxton was intrigued and joined as co-author, leading a major rewrite, and contributing several chapters on chemistry and the epilogue. Klinghoffer goes on to describe the reaction and impact of MLO-1 as a major inspiration for the leaders of ID.

Part 1 of MLO-2 is a reprint of the original twelve chapters from MLO-1 and two update chapters that were published in the 1997 Hungarian edition. MLO-1 has an intriguing foreword by Dean Kenyon. Kenyon had previously published his own naturalistic explanation of the origin of life but had changed

his mind by the time he read the manuscript for MLO-1 and agreed to write a complimentary foreword. There are eleven chapters devoted to scientific discussions of research in the origin of life, emphasizing the essential failure of all approaches but not discussing the implications. Only in chapter twelve, the epilogue, and in one of the update chapters (note that both of the update chapters were penned by Thaxton), is there a discussion of the metaphysical implications, which will be discussed later in this review.

Part 2 is titled "The State of the Debate" and comprises five chapters, each by a co-author of MLO-2. James Tour, arguably one of the best synthetic chemists in the world today, begins the section with his chapter that excoriates origin-of-life researchers for what he sees as a failed enterprise, while they nevertheless present their work as significant progress. He writes, "Scientists have no data to support molecular 'evolution' leading to life. The research community remains clueless" (p. 323).

Tour then explores in detail two fields of origin-of-life research, namely, chemical synthesis and molecular assembly. Citing nearly a dozen hurdles and challenges in each of these two fields, he scornfully derides the work, the researchers, the journals that publish their work, and the media who exaggerate and propagate the implications. He concludes that "the direction of origin-of-life research is suspect, and the petty dismissal of questioning is unhelpful to the field" (p. 347). He ends with this recommendation:

Therefore, I appeal to the research community and funding agencies to consider whether a moratorium on origin-of-life research is warranted. (p. 353)

Tour stops just short of claiming that a scientific explanation of the origin of life can never be found or that it is assuredly not naturalistic, as some of the other authors do. Nowhere does he allude to any metaphysical implications of the failings of this research, leaving it to other authors.

The next chapter, provided by Brian Miller, a physicist at the Discovery Institute, bears the title "Thermodynamic Challenges to the Origin of Life." Building on ideas suggested by Bradley in MLO-1, Miller considers the number of configurations that are possible for various arrangements of the

# Essay Book Review

## *The Significance of The Mystery of Life's Origin*

components of a rudimentary living organism. He then calculates the probability of a successful random assembly of all these components at one time to be so many orders of magnitude improbable that no one would rationally consider it possible. He is right, of course, and no one does. He asserts that the results would be the same if the assembly occurred in multiple steps rather than in one glorious shot. But his calculations fail to account for the Bayesian probabilities given the feedback and impact of natural selection at each step. He considers neither the influence of population effects nor the effect of a more generalized goal.<sup>1</sup> Miller concludes with this single paragraph on the metaphysical implications though he has not stated what constitutes signs and evidence of intelligence:

In summary, the formation of the original cell cannot plausibly be explained by any undirected process. In addition, its minimal requirements demonstrate unmistakable signs of intelligence ... In particular, cellular structures and operations demonstrate unmistakable evidence of foresight, coordination, and goal-directedness, which are telltale signs of intelligent agency. (pp. 368–69)

Guillermo Gonzalez, known for his 2004 book *The Privileged Planet*, contributes the most valuable chapter of the book in the sense of presenting the latest scientific results. In his chapter titled “What Astrobiology Teaches about the Origin of Life,” Gonzalez summarizes the discoveries in a multi-disciplinary field that began in the 1990s to address the origin of life. Just one of the examples he presents will indicate the value of this chapter:

Previously, the consensus among origin-of-life researchers had been that life began almost immediately after the end of the late heavy bombardment 3.8 billion years ago. This conclusion was based on the now largely discarded theory of the late heavy bombardment and discredited evidence for fossils near 3.8 billion years ago. Given what we now know, the best current evidence and modeling indicates a single origin of life sometime between ~4.4 and ~3.7 billion years ago. (p. 378)

This example shows how recent research has determined a much broader time frame for the origin of life than the 170 million years thought previously. Though he appears pessimistic for the prospect of determining the origin of life, he makes no mention

of what the metaphysical implications might be of such a failure. His account of the new insights gained in astrobiology indicate that, contra Tour, there is indeed significant value in origin-of-life research.

Chapter sixteen, “Textbooks Still Misrepresent the Origin of Life,” by Jonathan Wells, is another chapter of minimal value. He takes one example, the Miller-Urey experiment, from his 2002 book, *Icons of Evolution*, and delves deeply into what he considers its fatal flaws. This is a favorite whipping boy for the ID community, and Wells spares no detail or sympathy. He castigates the experiment for failing to solve the mystery of life's origin and the textbooks for saying that it does. In reality, while some textbooks do claim more than is warranted, the scientific community lauds the experiment, not for solving the true natural origins of nucleic and amino acids but for being the first to demonstrate that these acids can be generated by natural means. Therefore, the work is credited for influencing the direction of much fruitful research. Wells also leaves discussion of metaphysical implications to Thaxton and Meyer.

The grand finale of MLO-2 is chapter seventeen, “Evidence of Intelligent Design in the Origin of Life.” In this chapter, the longest by far at sixty-four pages, Stephen Meyer provides a synopsis, though with little new substantive insight, of the books and lectures in which he lays out his case for ID. At last we have a chapter that, along with Thaxton's epilogue and update, constitutes the only substantive discussion of the metaphysical implications of the failure to find a naturalistic explanation for the origin of life. We now turn to this topic.

When discussing the metaphysical implications of this work, they consider three arguments:

1. **The argument from ignorance**, also known as “the god of the gaps.” No one in the book advocates this argument. Indeed, both Thaxton and Meyer state in passing that this is not a valid argument and is not the message of the book. However, the casual reader of the book could be forgiven for assuming that it was. The vast majority of the book, namely, all the scientific sections, strongly emphasizes that no naturalistic explanation for the origin of life has been found and may not exist. The update by Thaxton examines seven scenarios for the origin of life and finds them all wanting. The inference drawn in Thaxton's

epilogue and update and in Meyer's chapter is that this failure leads to the inference that there exists an intelligent designer. An attentive reader, remembering these major points and missing the small details, and mindful of the intent of MLO-1 to provide a Christian perspective on the origin of life, would easily conclude that the message is the following: *since there is no naturalistic explanation of the origin of life, therefore the best explanation is an intelligent designer*. Thaxton merely says this is not a strong argument while Meyer states the argument cannot be from ignorance since a more positive argument is also provided, one which we will examine in this review shortly.

2. **The argument from analogy.** In his 1997 update, Thaxton presents the following argument from analogy. Since the genomic sequence and the genetic code are information of the kind that we know to require human input, therefore, by analogy, the origin of the genome required intelligent design. This argument recalls William Paley's original design hypothesis based on the analogy of a watchmaker, and inferred solely from the discovery of a watch found in the forest. Thaxton says that "were we to hike in the Black Hills of South Dakota and come upon granite cliffs bearing the likenesses of four United States Presidents, we would quickly identify Mount Rushmore as the work of artisans instead of a product of wind and erosion" (p. 312). But Thaxton goes on to acknowledge, correctly in this reviewer's opinion, that this argument is weak, and in his update, he moves on to the following very similar argument which he considers to be stronger.
3. **The argument from identical information,** also known as the argument from complex specified information (CSI). In this usage, "information" is a potentially meaningful sequence of elements; "complex" means too many elements and combinations to be ordered randomly into a meaningful sequence; and "specified" indicates a particular sequence that is meaningful or functional. Thaxton argues in his epilogue, "Why then doesn't the message sequence on the DNA molecule also constitute prima facie evidence for an intelligent source? After all, DNA information is not just analogous to a message sequence such as Morse code; it is such a message sequence" (p. 284).<sup>2</sup> Therefore, Thaxton says, the argument

from analogy is strengthened and the genetic code must have originated from an intelligent mind. Meyer picks up on this approach in his chapter, emphasizing that genomic information is *real* information, is complex, and, above all, is specified because the particular genomic sequence has the correct information for a functioning organism. He claims all known CSI in human-designed systems requires an intelligent agent and therefore so does biological CSI.

However, in the opinion of this reviewer, Thaxton and Meyer fail to consider the basic reason why CSI depends on an intelligent agent. They state that specificity requires intelligence, but they consider neither why it does, nor why such requirement would be universal. They have overlooked two aspects of specificity that, in the opinion of this reviewer, nullify their argument.

First of all, they miss a critical difference between the two types of CSI, namely, the way in which specificity is determined. All the systems cited by Thaxton and Meyer as the basis for claiming that CSI requires intelligence are determined to have specificity through symbolic or abstract relationships. Consider the following examples.

- a. How can we determine whether a 10-digit phone number is random or specified? It is clearly information and it is complex, but is it specified? We say it is specified when calling that phone number correctly connects two parties for an intentional conversation. This is a subjective, symbolic relationship that exists only in human intelligence.
- b. How can we determine whether a sequence of letters form a meaningful sequence? We say it is specified if the intended meaning can be decoded and understood by the recipient. Such decoding depends on the symbolic, abstract significance placed on those letters and their sequence through the understanding of the language in which the letters are written. These are abstract relationships that require intelligence.
- c. Does a machine or computer program or a construction project represent specified information? If it correctly reflects a blueprint or intention of a symbolic or abstract representation of an intention, then it does.



# Essay Book Review

## *The Significance of The Mystery of Life's Origin*

How can we understand whether a genomic sequence or the biomolecular assemblage in a living cell is specified? We can determine only whether the organism, in which the cell exists, survives and can reproduce. In sharp contrast to the previous examples, no symbolic or abstract connection is involved. In fact, there is no example of an intelligent agent ever providing an a priori complete genomic sequence that would assure specificity. The information is not encoded in an abstract code but in a code embodied in a biomolecular system. It is indeed a true code, but it can function only in its physical embodiment and not in a symbolic form. As humans, we represent and model this information symbolically, but its specificity can be determined only in nature in its physical form. No intelligence is required. Neither is it clear that it is even possible for an intelligent agent to make such a determination.

From these examples we can differentiate between two types of CSI. At the risk of expanding the catalog of acronyms, we might call one type CASI (complex abstract specified information) and the other CESI (complex embodied specified information). For CESI, the physical configuration *is* the information while in CASI the physical configuration *represents* the information in a non-unique form. In CESI, the code is executed solely through a physical series of biomolecular action while, in CASI, the code is interpreted symbolically. In CESI, the determination of specificity is physical and can be done in nature without an intelligent agent while, in CASI, the determination of specificity can be done only with an intelligence capable of abstract reasoning. Thaxton's claim that DNA is a message sequence is correct, but he misses the point that the method of determining the meaning is different.

The second error occurs in Meyer's claim that "indeed, experience affirms that functionally specified information routinely arises from the activity of intelligent agents" (p. 450). In other words, he asserts that all CSI requires an intelligent agent, and that this claim is based on our universal experience. But he overlooks the immense experience we observe in the biological realm during every reproductive event. Virtually every event results in a unique set of genomic information, most changes of which are inconsequential but many of which are not. There is no experience of any intelligent agent establishing a set of desired information according to which

the genome is modified. In other words, it is not sufficient to show that information is real, is complex, and is specified in order to infer the influence of an intelligent agent. It must also be shown that it is CASI in which the determination of specificity requires an intelligent agent. Virtually all human-designed systems do, whereas biological organisms do not and represent CESI. The primary argument for an intelligent designer from CSI therefore fails to be compelling.

Both MLO-1 and MLO-2 provide some useful scientific information about research in search of the origin of life, offering a pessimistic outlook. Thaxton writes,

We have seen the failure, perhaps the impotence, of presently known fundamental physical and chemical laws to explain the origin of biological structures. (p. 258)

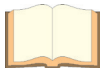
Sadly, both books fail to provide a coherent and credible discussion of any metaphysical implication of that failure. The initial motivation for MLO-1 was to provide a Christian worldview perspective on scientific research in the origin of life. It offers an explicit inference that the best explanation is an intelligent designer. MLO-2 emphasizes that connection but fails to provide a compelling argument for that inference. In the opinion of this reviewer, metaphysical inferences from scientific data are subjective. One scientist appreciates the complexity of life and sees God's hand at work, while another equally accomplished scientist sees a mindless process operating independently of God's action. Origin-of-life research offers no compelling apologetic either for or against a Creator. †

### Notes

<sup>1</sup>Randy Isaac, "Review of *Introduction to Evolutionary Informatics*," by Robert J. Marks II, William A. Dembski, and Winston Ewert in *Perspectives on Science and Christian Faith* 69, no. 2 (2017): 99-104; Robert J. Marks II, "Meeting Chaitin's Challenge: A Response to Randy Isaac's Review of *Introduction to Evolutionary Informatics*," *PSCF* 69, no. 2 (2017): 104-108; Randy Isaac, "Rejoinder," *PSCF* 69, no. 2 (2017): 108.

<sup>2</sup>Hubert P. Yockey, "Self Organization Origin of Life Scenarios and Information Theory," *Journal of Theoretical Biology* 91, no. 1 (1981): 13-31, [https://doi.org/10.1016/0022-5193\(81\)90370-2](https://doi.org/10.1016/0022-5193(81)90370-2).

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## BIBLICAL INTERPRETATION

**EARLY CHRISTIAN READINGS OF GENESIS ONE: Patristic Exegesis and Literal Interpretation** by Craig D. Allert. Downers Grove, IL: IVP Academic, 2018. 329 pages. Paperback; \$38.00. ISBN: 9780830852017.

This volume is part of the Biologos Books on Science and Christianity series. Craig Allert is an associate professor of religious studies at Trinity Western University in Langley, BC, Canada. He holds a PhD in historical theology from the University of Nottingham, and has authored a number of books and articles on the topics of inspiration, canon, and the authority of scripture.

Allert notes that the aim of this book is “to give a window into the strange new world of the church fathers and how they understood creation themes in Genesis 1” (p. 3). Allert’s purpose arises from what he sees as an irresponsible approach by some creation science advocates who proof-text and decontextualize the words of the church fathers to further their own theological agendas. For example, Duncan and Hall insist that the church fathers were consistent in seeing the days of Genesis 1 as six sequential (literal) twenty-four-hour days and that any other view is a relatively modern invention. Yet, a select reading of the fathers shows that there is some ambiguity in how a number of them understood the length of the days. Further, these church fathers generally approached the text from a nonliteral rather than a literal point of view.

While Allert mentions a number of church figures in his book, he places a particular emphasis on the person of Basil the Great. This is in response to creation science proponents who cite Basil as a literalist standing against those who use allegorical interpretive methods. By doing so, these scholars automatically support their own position while invalidating the witness of any church father whose interpretive method is different. But Allert pushes back on this view of Basil by asking two questions: “Is Basil actually an opponent of allegory?” and “Is the literal approach of the church fathers identical to the present interpretive method of the same label?”

Before engaging in the above questions, Allert begins by defining the church fathers and highlighting their relevance for present day Christianity. Then, in his second chapter, he surveys what he considers misinterpretations of some church fathers by several adherents of creation science. His following chapter outlines the historical nature of present literal inter-

pretive methods and contrasts this with Jesus’s and Paul’s lack of concern for human authorial intent in their methods. This gives license for the church fathers’ frequent use of spiritual or allegorical readings. It is in this chapter that Allert deconstructs the repeated assumption that there was a conflict between literal and allegorical schools of thought among the church fathers.

Chapter four brings us to Basil the Great and the questions concerning whether he was a literalist (as understood today) and whether he was truly against allegory. Allert shows that Basil’s anti-allegorical language was likely used in his *Hexameron* because his hearers were unable to discern error in heretical allegorical interpretations. Further, Allert shows that outside the *Hexameron*, Basil often used spiritual or allegorical methods of interpretation. Even in the *Hexameron*, Basil used methods that cannot be easily categorized as “literal.” For instance, the unstable, changeable nature of human beings was symbolized by the creation of the moon which is a body that is not always visible.

Chapters five through seven examine how some of the church fathers understood specific themes in the opening chapter of Genesis. Allert notes that *creatio ex nihilo* (creation out of nothing) arose as an interpretation of Genesis 1 because the church fathers saw creation from unformed matter as impinging on God’s “providence, sovereignty, and eternity” (p. 228). Allert next explains that the church fathers treated the days in Genesis 1 in a variety of ways. For example, Theophilus saw the stars on the fourth day as reflecting those who kept the law of God: bright stars were those imitating the prophets, secondary stars represented the righteous, and the planets and stars that “pass over” were those who wandered from God. On the topic of “In the beginning,” Allert delves into Augustine’s distinction between time and eternity. For Augustine, time was evasive and likely didn’t truly exist since it was always slipping away into the past.

Allert works hard to peel away the literalist label from Basil because such a description arises from a superficial reading of Basil’s method and a mistaken idea of what “literal” meant to the church fathers. Further, he objects to the use of Basil (and other church fathers) as mere “ammunition” in the creation/evolution wars (p. 14). For this reason, Allert focuses his final chapter (“On Being like Moses”) on Basil’s understanding of humanity made in the image of God. Allert begins by explaining that Basil wanted the hearers of Genesis 1 to understand that

## Book Reviews

its author (Moses) saw God face to face and that they should understand the text not in human ways (i.e., by literal interpretation) but by the Spirit (i.e., via spiritual and allegorical interpretation). Basil understood that the image of God referred to the inner self, the soul which could not be comprehended through the senses. That which could be understood through the senses, the body, was the mechanism by which the soul expressed itself. So, when the text referred to human beings ruling over the fish, it meant that human beings must use reason to control the passions of the flesh (i.e., body). In a similar, nonliteral, fashion, Basil understood image and likeness as different aspects of humanity. While image was connected to reason, “likeness” was built by the human choice to reign in those passions and (essentially) to “put on Christ” (p. 310). Similarly, Basil understood the commands to “multiply and grow” as the growth of both the body and the soul. Thus, Allert gives examples of Basil’s nonliteral interpretation and puts into question the whole idea that Basil was a literalist.

This is an academic book. It is mostly geared to students and scholars with some familiarity with the church fathers and historic methods of interpretation. The argumentation is thoughtful and flows well, including how Allert describes the early church fathers, recounts the misuse of the fathers by some creation-science adherents, and unpacks their interpretive methods, particularly as they saw Genesis 1. The book is quite effective in leading the reader into the world of the fathers and unfolding both their contexts and their wider thoughts on interpreting scripture. For those unfamiliar with the church fathers, Allert’s definition of who they were, the time frame in which they operated, and the criteria by which they were considered church fathers is all helpful. But even for those familiar with the fathers, Allert’s portrayal of them as people playing a critical role (alongside scripture) in the survival and maintenance of the orthodox faith might be surprising and convincing. He also cites their texts extensively in his effort to give context to their words. He admits that the choice of church fathers is selective due to the constraints of space.

The book provides an excellent assessment of the importance of the church fathers and an evaluation of their interpretive methods. It also calls into question the assumption that the modern category of literal interpretation parallels the literal analysis of the church fathers. As a side accomplishment, the book casts doubt on the often-mentioned conflict between literal and allegorical interpretive camps.

Most of all, it puts a serious dent in the argument that the church fathers interpreted scripture (and especially Genesis 1) in the same way as many proponents of creation science. The interpretation of Genesis 1 has become a litmus test of orthodoxy in a number of Christian circles; since the witness of the church fathers says something about what were normative or acceptable beliefs, any lack of care in using them in the creation/evolution debate will entrench positions on a topic that is already divisive.

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**THE BIBLE & ANCIENT SCIENCE: Principles of Interpretation** by Denis O. Lamoureux. Tullahoma, TN: McGahan Publishing, 2020. 218 pages. Paperback; \$15.99. ISBN: 9781951252052.

Simply stated, I believe the literary genre of Genesis 1–3 is an ancient account of origins. Notably, it is deeply rooted in ancient science. (p. 195)

Denis O. Lamoureux is Professor of Science and Religion at St. Joseph’s College at the University of Alberta. He possesses three earned doctorates (dentistry, theology, and biology) and tells of an intellectual and spiritual journey out of atheism, through fundamentalism, and to his current position. Consequently, if there was ever a model voice that displays the academic and personal experience necessary to speak formidably about the hermeneutical issues associated with Genesis 1–3 and the other creation texts of the Bible, it is Lamoureux.

The study begins with what seems like a simple question, “Is the Bible a book about science?” However, before the opening chapters are completed, the reader understands that the question is anything but simple. In fact, the difficulty of the conversation is poignantly displayed when he offers answers to his leading question from two giant figures within the evangelical tradition. Henry M. Morris answers in the affirmative, but Billy Graham answers negatively. Yet, to his credit, Lamoureux does not dwell on this disagreement. He quickly emphasizes that a proper answer to his question requires an entanglement with issues of hermeneutics, or principles of interpretation (p. 13). Consequently, the remainder of the book is a journey through the wild and woolly world of biblical hermeneutics on the way to answering the question of whether the Bible is a book about science.

Lamoureux guides the reader toward his answer by discussing twenty-two hermeneutical principles



that range from the mundane topics of “literalism,” “literary genre,” and “historical criticism” to the more complex, such as “cognitive competence,” “accommodation,” and “concordism.” Each chapter is devoted to one principle, and all the chapters are organized similarly. They discuss the principle and then specific applications to the creation texts. This approach produces manageable-sized chapters that can be pondered without a fear of being overwhelmed by complex arguments; however, presenting an argument by a series of propositional statements can obfuscate how each proposition interacts with the others and how they all cooperate. In Lamoureux’s defense, however, he does well to minimize any dissonance.

Ultimately, Lamoureux finds himself landing between Morris and Graham when answering his leading question. According to Lamoureux, the Bible contains science, but it’s ancient science. And that qualification makes all the difference. The biblical writers are indeed talking about the origins of the universe, but they are doing so in terms of an Iron Age worldview while using Iron Age concepts. Therefore, their “science” is incompatible with the scientific inquiry and discourse of today. This conviction implies that concordism neither does justice to the text and its message nor frames a useful conversation.

In pushing back against any simplistic appropriation of the Bible’s message upon the demands of modern scientific discourse, Lamoureux offers a very nuanced proposal. But at its heart is a respect for the ancient worldview of the biblical authors with all its frustrating peculiarities. For example, Lamoureux emphasizes how things such as the rhetoric and ahistorical symbolism of parables must be respected. Simple enough; however, Lamoureux also recognizes that ancient Israel perceived the universe through a three-tiered concept, a reality that finds itself alongside flat-earth theories in the hall of fame of modern-day cosmological ludicrousness. Similarly, ancient Israel’s botanical awareness was clearly ignorant of the data we have today. Therefore, Lamoureux’s discussions eventually bring the reader to a crossroad. How can a reader respect the Bible if it is invoking principles of, say, botany or any other field of science, in ways that run counter to contemporary scientific discourse? Is the reader confronted with the terrible situation in which they must support the Bible’s claims despite the contradictory scientific evidence? Are they forced to abandon any notion of inerrancy?

It is at this point that the integrity of Lamoureux’s argument reaches a critical point. His argument cannot work without certain hermeneutical principles. First, the principle of accommodation argues that God accommodates himself to humanity—through language, culture, concepts, etc.—in order to ensure effective communication. So, in the example of Israel’s botanical awareness, God is “using the botany-of-the-day” to ensure that the audience would understand the message. Similarly, this should also be applied to Israel’s three-tiered universe and other cosmological concepts. Second, the message-incident principle argues that the mode of communication is incidental to the core message. To be clear, “Incidental has the meaning of that which happens to be alongside and happening in connection with something important” (p. 46). Therefore, applied to the creation texts, ancient science is incidental but important to delivering spiritual truths (p. 47). Third, Lamoureux champions incarnational inspiration. According to Lamoureux, the incarnation, as understood in Jesus, becomes the analogy *par excellence* for understanding the nature of scripture. It is fully divine and fully human. The Bible, like Jesus, transcends time and history. And God’s perfect message comes through finite and imperfect humanity.

Many of Lamoureux’s arguments echo similar arguments made by biblical scholars in recent memory. For example, Kenton Sparks, in *God’s Word in Human Words: An Evangelical Appropriation of Critical Biblical Scholarship* (2008), emphasized accommodation in his attempt to balance a conviction that the Bible contains factual errors but is also inerrant. Peter Enns systematically argued for incarnational inspiration, as in *Inspiration and Incarnation: Evangelicals and the Problem of the Old Testament* (2005). John Walton and Brent Sandy display affinities to Lamoureux’s message-incident principle in their work *The Lost World of Scripture: Ancient Literary Culture and Biblical Authority* (2013). Consequently, the pitfalls that face these scholars face Lamoureux as well. If accommodation explains the scientific ignorance of the biblical writers, is inerrancy the best description of scripture? Or, because the incarnation is unique to the realities of Jesus, how appropriate is it to invoke it as an analogy for something else? At what point does it break down (cf. Ben Witherington, *The Living Word of God* [Waco: Baylor University Press, 2007], 35-49)?

I wholeheartedly agree with Lamoureux that it is paramount for the interpreter to dutifully consider the text on its own terms, particularly since I take seriously the notion that God used ancient Israel to

## Book Reviews

communicate his redemptive plan. Thus, the interpreter should yield to Israel's concepts, conventions, and philosophies on the way to understanding the message before they move to appropriation for theological discourse. Nevertheless, several elements in *The Bible and Ancient Science* could be fine tuned. These include Lamoureux's framing of the discussion of translating Genesis 1:1 (pp. 75–81) as a text-critical issue, when it is more of a translation problem. Lamoureux also presents a generic, almost flat, portrait of the classic criticisms of biblical studies (e.g., textual criticism, literary criticism, historical criticism) that does not support a nuanced understanding of their results for the creation texts.

A little more significant is Lamoureux's understanding of Paul's typological argument in Romans 5. He struggles with the possibility that Paul's argument appears historical in nature. He states,

As a consequence, Paul undoubtedly believed Adam was a historical person and that the events of Genesis 2–3 really happened. However, it must be emphasized that Paul's belief in the reality of Adam and the events in the Garden of Eden does not necessarily mean they are historical. (p. 175)

Thus, he is forced to wrestle with the implications of his argument as it confronts the semantics of the text. He may well have been influenced by Enns in how he tries to navigate this, but a difficult tension remains (Peter Enns, *The Evolution of Adam: What the Bible Does and Doesn't Say about Human Origins* [2012]). For Lamoureux, and Enns for that matter, it is difficult to advocate a framework-like typology which usually interprets historical figures in the context of history as, in this instance, functioning with a significant level of historical ignorance.

A deeper commitment to comparative investigations would also have enhanced Lamoureux's argument. He is certainly aware of non-Israelite texts and how they help us understand the concepts, conventions, and message of the biblical text, for he references them in his discussions of worldview and ancient conceptions of the universe. However, reading Genesis 1–2 in the shadow of texts such as the "Enuma Elish" and the "Memphite Theology" crystalizes the form and function of the genre as well as the Old Testament's theological emphases.

Nevertheless, overall Lamoureux gets far more right than wrong and this work is valuable. It makes potentially complicated concepts accessible and applies them to the very important debate about

what "inerrant" means when describing the nature of scripture.

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## HISTORY OF SCIENCE

**THE WATERS ABOVE THE FIRMAMENT: An Exemplary Case of Faith-Reason Conflict** by Dino Boccaletti. Cham, Switzerland: Springer, 2020. 136 pages. Hardcover; \$99.99. ISBN: 9783030441678. Paperback; \$69.99. ISBN: 9783030441685.

*The Waters Above the Firmament* is a fascinating tour through the exegetical history of an offbeat subject: the waters above the firmament. In both popular and scholarly conversations about science and religion, a few subjects tend to dominate the landscape, with the topic of origins dominating the conversation since Darwin's day. Interestingly, however, the "waters above the firmament" references have been largely overlooked, even though they bear on the cosmology and view of creation held by biblical authors. In this volume, physicist Dino Boccaletti takes readers through an in-depth tour of how these passages have been understood by Christian exegetes from the early centuries of the Christian era through the seventeenth century.

The driving question tackled by the exegetes is how to understand the following verses from the first chapter of the book of Genesis:

And God said, Let there be a firmament in the midst of the waters, and let it divide the waters from the waters. And God made the firmament, and divided the waters which were under the firmament from the waters which were above the firmament: and it was so. And God called the firmament Heaven. And the evening and the morning were the second day. (Gen. 1:6–8, KJV)

In the history of exegesis of this passage (and others that build on it, such as Psalm 148:4, "Praise him, ye heavens of heavens, and ye waters that be above the heavens"), many different theories about its meaning have been put forward. In our own day, those familiar with the young-earth creation (YEC) movement may have heard a bit of exegesis of this passage from a peculiarly YEC point of view. In their hands, it is sometimes understood to teach that the earth was surrounded by a canopy of water that made the whole world a paradise and reduced the harmful effects of the sun, enabling people to live the centuries-long lives described in Genesis. The canopy was

then collapsed to become the source of the waters that flooded the earth in the days of Noah.

Boccaletti does not address that claim. Instead, he presents a historical overview that marches chronologically through the works of classical, medieval, and early modern commentators, trying to interpret a claim that seems to be plainly contradictory to common sense: that there is a shell of water surrounding the earth, or maybe the whole cosmos. While there was no definitive scientific refutation of this view in either the classical or medieval world, its *prima facie* implausibility nevertheless led to a persistent apparent conflict between faith and reason that needed to be contended with if the Bible's authority was to remain intact. There is also the thorny question of uncovering the cosmology that gave rise to such a description, along with its background in extra-biblical writings.

Boccaletti describes the first few centuries of Christianity, during which there were primarily three approaches to understanding the passage in question. First, it could be allegorized so that the waters were representative of something else, such as exalted spiritual beings who worship God. The second approach was to accept something like an ancient Near Eastern belief that the earth is shaped like a flat disc, and add the literal claim that there is an aqueous shell above it. The third, and most difficult, was to try to reconcile Greek cosmology with the claim about the waters. Incorporating the Greek picture, which posited a spherical earth at the center of the cosmos, led to the most creative, and sometimes convoluted, interpretive schemes. For example, Boccaletti brings us into Augustine's discussion about a theory that the waters above the firmament are held in place by God in order to cool and slow down the movement of the outer planets, which would otherwise overheat owing to their great velocities. Thus the waters above the firmament might serve to temper the heat of the empyrean. While many exegetes in the first millennium would also endorse this view or a variation on it, some thinkers, such as John Scotus Eriugena, would deny that such waters existed at all. No consensus was reached during the Middle Ages about which of these approaches was superior.

Boccaletti describes the increasing pressure to abandon the geocentric model owing to sixteenth- and seventeenth-century astronomers such as Copernicus and Galileo, and how those theories in astronomy were received by interpreters of the Bible. For reasons unrelated to science, Protestant thinkers such as

Luther and Calvin began to consult sources outside the Latin interpretive tradition, most significantly the Hebrew text in which Genesis was originally written. Both men considered it vital to embrace the highest possible view of biblical authority, and inclined toward believing the waters were just that: waters, held in place in the heavenlies by a mysterious work of God. Allegories were rejected, as was the burgeoning heliocentrism of the day. Catholic interpreters of the period such as Benedictus Pererius and David Pareus also turned back to the Hebrew text, freeing themselves from the strictures of the Latin Vulgate of Jerome and its limitations about what *firmamentum* might mean. Thus they could posit that Moses's teaching in Hebrew, aimed at the everyman of his day, was consistent with the reasonable, common-sense claim that the waters above the firmament are just clouds, making the firmament the sky rather than the outer heavens.

Boccaletti does an excellent job of collecting the sources that address the passage in question. The book contains innumerable lengthy quotations that give context to the exegetes' perspectives, and he also provides helpful background to each thinker. There are over thirty interpreters presented in depth, scores more referred to, and abundant primary source materials. Boccaletti adds helpful commentary and interpretation of his own, including a nice comparison of the cosmology of Moses and the Greeks, guiding the reader through the development of interpretive movements and then situating them in their historical setting. In fact, if there is a complaint it might be that there is much more background than is needed to understand the various interpretations in question—but those who love history will revel in his thoroughness.

Despite Boccaletti's comprehensiveness and attention to detail, there were a few things a reader might expect to find that were not a part of this work. Billing itself as "An Exemplary Case of Faith-Reason Conflict," one might have anticipated more depth of analysis of the underlying methodological, epistemic, and exegetical issues. There were descriptions of some of those things, but they were not very well developed. Readers looking to get some new insights into those aspects of faith-reason conflicts—looking for a beefier treatment of theology and philosophy—will likely be disappointed. Along those lines, it is not at all clear what Boccaletti thinks we should take away from his careful study about faith-reason conflicts. What should we conclude? What are the lessons? He does not make it clear. The book is rich



## Book Reviews

with history and primary sources, but very light on insight about the nature of science-religion tensions and how to resolve them; those looking for a new angle on these perennial problems may need to look elsewhere. But for those who desire to immerse themselves in all the intriguing commentary about the waters above the firmament throughout the first seventeen centuries of Christian history, this book will be a real treat.

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**THE WAR THAT NEVER WAS: Evolution and Christian Theology** by Kenneth W. Kemp. Eugene, OR: Cascade Books, 2020. 234 pages. Paperback; \$28.00. ISBN: 9781532694981.

In *The War That Never Was*, Kenneth W. Kemp roundly rejects commonplace belief among contemporary writers that a state of “warfare” exists between modern science and religion. On the scientific side, Kemp focuses narrowly on prevailing theory in the modern “paleoetiological sciences” of origins in geology and biology—especially Darwinian evolutionary science. On the religious side, his argument is confined mainly to Christian theology as it engages this kind of science. Contrary to very strong contemporary currents of opinion on both sides, Kemp contends that there never really has been a “war” between these sciences and Christian theology, and that there is no such conflict between them now.

In the introductory chapter, Kemp explains that his thesis does not stand on acceptance of Stephen Jay Gould’s well-known evasive proposal that science and religion are “non-overlapping *magisteria*,” so that they simply *cannot* be in conflict. For (so Kemp) it is untrue that religion trades only in *values* (so Gould). The Christian religion, at least, stands on purported *facts*, too, such as the alleged occurrence of miracles. In Kemp’s view, Christian theology can and does overlap at some points with the concerns and inquiries of scientists. This means that deep conflict, or “war,” between this religion and secure science is possible in theory. He specifies precisely that the potential conflict is not between ontological naturalism and supernaturalism, as often believed, but is rather a potential “epistemic conflict” on matters of both methodology and substance. He seeks to show, however, that apparently deep conflicts that have erupted and become definitive evidence for the thesis of “warfare” are, despite the prominence of certain bellicose figures on both sides, a byproduct of an urgent need to revise old ideas in the face of disruptive new ones. Kemp portrays the history of such

public clashes as, more deeply, an ongoing effort of thinkers to adapt traditional religious articulations to new religious-relevant discoveries in science, and thereby to preserve “peace” between the two great sources of truth.

Aside from the opening chapter, Kemp’s defense of this thesis is historical rather than merely theoretical in the abstract. The main body of the book is a succinct yet impressively detailed and well-documented tour of historical episodes that supposedly exemplify the alleged “warfare.” Whether Kemp achieves his aim or not (readers’ opinions are bound to be mixed), it is safe to say that the discussion brings a fresh and forcefully defended perspective to these old and (so we may think) worn instances of apparent “war” between science and theology. I believe that this book is worth reading just for the historical accounts themselves, apart from the controversial conclusions that Kemp draws from them.

The selected episodes are unsurprising: developments in nascent pre-Darwinian geology that ignited flare-ups between this new science and traditional readings of Genesis 1-11; the fiery debate between Thomas Huxley and Samuel Wilberforce over Darwinian theses at Oxford in 1860; the famous Scopes Trial of 1925 and the anti-evolution campaign that followed afterwards; and finally, the intense curriculum debates over inclusion of creation science (young-earth science) and intelligent design theory that were recently adjudicated by American courts. All these incidents appear to prove that the thesis of inherent “warfare” is obviously true. Kemp seeks rigorously to show that it is false.

As for conflicts between geology and traditional readings of Genesis over the age of the earth, the length of the “days” of creation in Genesis 1, the story of Noah’s Flood, and the story of Adam and Eve and the Fall, Kemp shows in carefully documented fashion that a great many Christian thinkers—probably a majority in America and the United Kingdom—had minimal difficulty in finding ways to adjust their readings of Genesis to accommodate the creation story plausibly enough to the emerging science. He discusses the eventual agreement of geologists that a worldwide flood did not happen, but not alternative readings. Further, I do not think he deals adequately with the problem that geology creates for doctrines connected with belief in a world-ruinous Fall. This problem persists now in geology and is magnified by challenges that Darwinian science poses to traditional lapsarian theodicy.

Notably, Kemp also omits the positive role that discoveries of creation stories in the Ancient Near East played in helping scholars to make nonconcordist critical adaptations to geology that are more plausible (so I believe) than the ones Kemp cites—Day-Age theories, Gap theories, and the like. Newly found ability to read Genesis in its own historical and literary-theological terms, from the mid-nineteenth century onwards, has practically removed pressures that led to these somewhat strained solutions, and appeal to this approach, among all but a minority of conservative scholars, would have added considerable strength to Kemp's thesis.

Meanwhile, as for the famous debate between Huxley and Wilberforce, Kemp carefully and convincingly contends that neither Huxley nor Wilberforce can rightly be understood as generic representatives of their respective contemporary constituencies in science and religion. Numerous Darwinians were reticent to take the aggressively antireligious metaphysical stance that Huxley took. Likewise, numerous theologians found the anti-Darwinian posture of Wilberforce precipitous and premature at best. Despite difficulties (especially with the thesis of natural selection), many of them had begun to see promising ways of reconciling evolution with belief in divine purpose and design. Rather than "warfare," Kemp argues that this debate shows that new Darwinian ideas posed huge challenges to Christian thinkers in both religion and science. Anti-evolutionary bellicosity prevailed primarily among Protestant thinkers in decidedly conservative denominations, as it continues to do now. On the other side, anti-religious use of Darwinism came mainly from thinkers who were atheists for a variety of reasons. Kemp contends, however, that a quieter, larger grouping worked in service of "peace."

The same pattern (so Kemp) holds with the legendary Scopes Trial of 1925. Kemp provides a succinct yet factually detailed and insightful account (perhaps worth the price of the book for some readers), and in that context contends similarly that on William Jennings Bryan's side, the conflict was the product of mainly moral concerns born in part by theological mistakes on his part. Likewise, on Scopes's defense's side, hostility toward religion was the product of extreme overreach, most especially by the lead attorney, Clarence Darrow, whose atheistic dogmatism made his critique of religion "culpably imprecise." I recommend Kemp's incisive account of the trial for its own sake as riveting history, but I also encourage readers to carefully consider his conclusion that the

trial, monumentally famous as it is, "cannot provide any general insight into the relationship between science and Christian theology, or religion."

The final chapter will likely be of keen interest for its assessments of creation science and intelligent design theory offered as alternative sciences. As for the former, Kemp reiterates what other historians have documented: belief in a young earth had almost universally lost credibility among Christian thinkers in the West by around 1800 until its unexpected resurgence in America during the 1970s. Before then, its main advocates had been followers of Ellen White, the seminal prophetess of the Seventh-Day Adventist Church, whose prophecies about science found print in the writings of a scientifically untrained high school teacher named George McCready Price (1924); its horizon widened mainly in American churches via the efforts of Henry Morris, a hydraulic engineer, after 1960. Kemp strongly agrees with the decision of the courts: creation science is a version of religion, not science. Moreover (so Kemp), this articulation of Christianity can by no means serve as representative of historic or mainstream Christian approaches to science.

As for intelligent design, as defended mainly by William Dembski and Michael Behe, Kemp offers a fairly detailed analytical summary and critique of each presentation. He concludes that the approach is methodologically precipitous and premature in its appeal to "irreducible complexity" at cellular levels for an inference of design. And, at any rate, formulations of intelligent design should not be invoked as generally representing the Christian religion vis-à-vis science. Further, Kemp judges that both versions of creationism do more harm to the credibility of Christianity than to Darwinian science. The "war" they wage against key aspects of Darwinism cannot rightly be construed as at all typical of Christian theology on this science.

In conclusion, Kemp expresses hope that "peace" between modern paleoetiological science and Christian theology may prevail, as theorists on both sides resist "war" and persist as they have generally been doing for more than a century now in "the necessity of rethinking and adjusting to the frontier between science and theology." I strongly recommend this book to readers of this journal for its many strengths, including defense of its main thesis, and I share in the hope that his optimistic prediction proves true.

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# Book Reviews

**QUANTUM LEGACIES: Dispatches from an Uncertain World** by David Kaiser (with a Foreword by Alan Lightman). Chicago, IL: University of Chicago Press, 2020. 360 pages, 47 halftones. Hardcover; \$26.00. ISBN: 9780226698052.

The stories of real humans involved in the discovery of secrets of the quantum realm are highlighted by David Kaiser's book *Quantum Legacies: Dispatches from an Uncertain World*. Kaiser is both an accomplished theoretical physicist and a historian of science, holding a dual professorship at MIT. The book is a collection of his essays written for a popular audience knit into a theme of how discovery of quantum ideas has taken place in a changing world by intriguing personalities.

Scientific discovery never takes place in a vacuum, but rather is guided and spurred on by the very pressures experienced by its human discoverers, including personal family tragedies such as the suicide of Paul Dirac's brother and societal upheavals such as the Nazi takeover in Germany leading to World War II. Kaiser describes his own journey and how it was affected by the politics and pressures of the Cold War. Indeed, as a particle physicist who also grew up during the Cold War, I could relate to many of the dynamics described by Kaiser. He notes that funding for the Superconducting Super Collider project in the 1990s was canceled partly because the Cold War ended, and the US funding for "world prestige" projects was cut, in favor of more "world collaborative" projects, such as the International Space Station. Given that my own career trajectory was influenced by this decision, reading this book certainly caused some personal reflections.

The book is divided into four sections: Quanta, Calculating, Matter, and Cosmos. The essays in Quanta include the early years of quantum mechanics, highlighting the lives of Paul Dirac, the Briton who discovered the equation describing electrons; Erwin Schrödinger, the Austrian who used a half-dead, half-alive cat in a box to describe the bizarre idea of quantum mechanical superposition; and Bruno Pontecorvo, the Italian who applied Schrödinger's idea to the ghostly neutrino particle to predict its spontaneously changing identity. The interesting personal lives of these men and the historical context in which their scientific pursuits took place provide a dramatic reading. Indeed, the probabilistic aspects of the quantum mechanics they studied reflected the uncertainty of the world they lived in. The final essay in Quanta describes an experiment that Kaiser personally participated in, proving that

entangled photons obey the probabilistic predictions of quantum mechanics, and not deterministic laws proposed by Isaac Newton (1600s) through Albert Einstein (twentieth century). Enriching the story, Kaiser connects quasars from the remote edges of our visible universe to the Roque de los Muchachos Observatory on the Canary island of La Palma to show that the world of physics involves interesting physical settings.

Calculating is an interesting collection of essays on how national defense priorities from the end of World War II through the Cold War drove university physics enrollments, the development of atomic bombs and computers, and even the personal lives of the contributing physicists. For example, David Bohm, whose textbook *Quantum Theory* took great pains to explain its conceptual and philosophical foundations, was forced to flee the US to Brazil during the Communist purges. No updated editions of his textbook were published, a rather unusual history for an initially very popular textbook. Nearly all other textbooks on quantum mechanics emphasized its calculational properties, relegating subtle conceptual points to lie outside the domain of physics. Kaiser finds this rather unfortunate, since these very points are where several key questions in quantum theory remain unanswered. And this is what draws students to physics. Kaiser ends this discussion with an essay on Fritjof Capra's *The Tao of Physics*, a bestselling popular book on physics and Eastern philosophy, showing that the mystical elements of quantum theory are precisely what many people find so fascinating about it.

Matter is a collection of stories on the discovery of elementary particles with a focus on the Higgs particle. The Standard Model of elementary particles grew out of Murray Gell-Mann's idea from symmetry arguments that fundamental particles lie inside the neutrons and protons of the atomic nucleus. He gave them the name quarks. The quark model quickly became very successful at predicting the existence of other quark bound states. However, the theoretical model worked only if the quarks and all other particles in nature were massless. This quandary could be resolved, claimed several physicists including the Scotsman Peter Higgs, if there existed a field permeating all of space which caused particles to become massive. Higgs also predicted that this field would have its own associated particle. Since the Standard Model successfully met every other test, the search for the Higgs particle became the driving force behind new experimental designs, including the



Superconducting Super Collider project that was ultimately canceled in 1993. However, the Large Hadron Collider at CERN (the European Organization for Nuclear Research), located in Geneva, would be the project that successfully found the Higgs particle in 2012. Kaiser uses this as a bridge to his final set of essays on the cosmos, since the Higgs field itself leads naturally to an idea that explains the weakness of gravity compared to other fundamental forces, and how one might understand the earliest moments of the cosmos.

Cosmos is an appropriate final set of essays for Kaiser's book, since the quantum ideas prove to have profound implications for the entire history of the universe. This is also the most colorful set of essays from Kaiser, since he includes discussions on the search for extraterrestrial life, gravitation and black holes, the big bang theory, and even creation and evolution. The chapter, "The Other Evolution Wars," is particularly interesting in its descriptions of the interactions between science and religious faith. While Kaiser points out that some cosmologists, beginning with the Belgian priest Georges Lemaître, found a satisfying fit between their growing scientific view of an evolving cosmos and their theology, the situation soon and unfortunately changed to an acrimonious one with the advent of the modern creation science movement. Kaiser discusses the resurgent biblical literalism that denies an older cosmos and the big bang theory, and then briefly mentions "intelligent design." Unfortunately, Kaiser seems to lump the critics together rather haphazardly. Concerning his internet perusal of critiques from creationist web sites, he writes: "I found plenty of sites eager to sell the recent anti-big-bang books, along with DVDs such as *The Privileged Planet*, proffering 'evidence' of supernatural intelligent design" (pp. 248–49).

This statement implies that Kaiser assumes that the authors of *The Privileged Planet* are anti-big-bang adherents, which they are not. The issues of purpose, design, and intentionality are certainly at stake. It is noteworthy to me that the book by Peter Ward and Donald Brownlee (*Rare Earth*), and that by Guillermo Gonzales & Jay Richards (*The Privileged Planet*), are very similar in thrust, emphasizing aspects of planet Earth that appear rather unique in the cosmos, but because they diverge on the question of purpose, design, and intentionality, one is considered mainstream science (*Rare Earth*) and the other, creationist literature (*The Privileged Planet*). Although I personally do not promote apparent design in nature as an argument for supernatural design, I am saddened by

all the harsh critiques, whether it is leveled against those who hold that science is in support of faith or whether it is leveled against good science in order to protect doctrinal positions. There do not need to be combative relationships between scientists and Christians, but scientists such as Kaiser are very much aware that they exist.

Cosmos includes a chapter on the amazing developments in modern cosmology. Since I did a book review of Roger Penrose's *Fashion, Faith, and Fantasy in the New Physics of the Universe* [PSCF 69, no. 3 (2017): 187–89], I was happy to see a discussion of his Conformal Cyclical Cosmology (CCC). Theoretical physicists respect the contributions of Roger Penrose, given his and Stephen Hawking's contributions to our understanding of space-time from general relativity. But the elegant ideas offered by Penrose in his CCC appear to not withstand the exacting toll of precision data in modern cosmology, and we await further ideas that will.

The book wraps up with some recent noteworthy events: the discovery of gravitational waves in 2015 and the death of Stephen Hawking in 2018. While the former heralded a new age in modern multi-messenger astronomy, the latter has brought us to the end of an era in which one of the most brilliant minds took on the challenge of understanding the universe, overcoming incredible odds and challenges. Again, the experience of personal struggles of one person did not prevent great accomplishments in scientific thought, and, in fact, may have contributed to it. *Quantum Legacies* ends with a positive note. Overall, despite the sometimes-awkward collection of essays, the book is an enriching read.

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**PHYSICO-THEOLOGY: Religion and Science in Europe, 1650–1750** by Ann Blair and Kaspar von Greyerz, eds. Baltimore, MD: Johns Hopkins University Press, 2020. 274 pages, including bibliography and index. Hardcover; \$54.95. ISBN: 9781421438467.

What is physico-theology? Is it merely a peculiar term for what is more generally known as natural theology? Physico-theology makes its clearest first appearances in John Ray's *Wisdom of God Manifested in the Works of Creation* (1691), *Miscellaneous Discourses* (1692), and *Three Physico-Theological Discourses* (1713). It also appears in William Derham's *Physico-Theology* (1713) and *Astro-Theology* (1715). Historically, these works set the standard for what the authors of Blair

## Book Reviews

and Greyerz's edited collection of papers include within "physico-theology." Using these titles as a guide makes it possible to judge that, while Walter Charleton's earlier book *The Darkness of Atheism Dispelled by the Light of Nature: A Physico-Theological Treatise* (1652) uses the expression, it is not found consistently within the genre; many other books that do not employ the technical term still belong within the tradition. If Ray had any predecessor, it is likely Robert Boyle, as Katherine Calloway argues from Boyle's *Disquisition about Final Causes* (1688). Her emphasis on this book, rather than Boyle's other earlier "physico-" titled books, is appropriate because it emphasizes not only the teleological aspect of physico-theology, but more importantly the empirical drive.

It is a small oversight in this collection that there was no chapter devoted entirely to Boyle, given how well he fits within the physico-theological genre. Henry More's *Antidote against Atheism* (1653) is frequently discussed in the collection as a possible forerunner of physico-theology. Calloway even shows that Ray follows him in the order of his arguments. However, she is right to say that More's Platonism is antithetical to the empirical impulse of physico-theological writers. Peter Harrison sets the term physico-theology etymologically in the company of similar words such as "physico-medical," "astro-theology," and "insecto-theology," all current through the period examined. These novel terms signal disciplinary boundary crossing where "physico-" is the catch-all for the many specialized "theologies" from nature. They explore the liminal zone of the questions of creation, generation, and eschatology in their most developed forms of those theologies.

Kaspar von Greyerz explains that by 1728 physico-theology was now firmly established, as evidenced by the editorial work of Johann Fabricius in his translation of Derham's *Astro-Theology*. Added to the translation was a bibliography of related works that Fabricius used to establish physico-theology within an older and more robust pedigree. In numerous new editions up until 1765, he increased this bibliography to seventy-five pages. Fabricius can include so many related works because he had a broader notion of physico-theology that reinforced "recognition of, as well as love and respect for, the creator." This seems to be a continuation of the theme in the German context as shown by Kathleen Crowther in the work of Jakob Horst, a seventeenth-century German Lutheran.

So, is there a difference between physico-theology and natural theology? Scott Mandelbrote suggests that while both are concerned with divine design and purpose, physico-theology tends to emphasize special providence or care. Several of the contributors to this volume also emphasize the apologetic role this played either against the bare mechanism that was attributed to Descartes or atheism more generally. Rienk Vermij holds that physico-theology was more about nature, whereas natural theology about theology, supported, in part, by the fact that it was primarily natural philosophers and naturalists who wrote on the subject, not theologians. In his examination of two physicians who wrote on physico-theology, the Dutch Bernard Nieuwentijt and the German Johann Jakob Scheuchzer, Vermij argues that physico-theology seeks to inform the interpretation of nature through the Bible. In contrast, in natural theology, it is nature informing one's knowledge of God.

In reality, many writers in the physico-theology genre are skeptical of the possibility of natural theology. Some of the most insightful chapters in this book were those in which theology was understood as a motivation and foundation for studying nature. Anne-Charlott Trepp noted that the Lutheran ubiquity of Christ in the sacrament of the Lord's Supper was no less a ubiquity of Christ in nature, grounding the possibility of physico-theology. Further, the Pietist emphasis on experience in religious life was conducive to empirical study.

For, as God revealed himself through the materialized word in every individual creature, individual things immanent to the world, even the lowest in nature's hierarchy, gained a new dignity and transcendence not least in their bodily presence and materiality. (p. 133)

Martine Pécharman's treatment of Blaise Pascal's rejection of natural theology shows that the Jansenist Pascal proved more Calvinist than many of the English authors innate to the physico-theological project. Pécharman reveals how the early editors of Pascal's *Pensées* obscured both his skepticism about the sinful human's ability to rightly read the divine in nature, and also obscured Pascal's remark that the creation was insufficient to bring one to salvation. Instead, as Pascal said, nature alone will lead one to atheism or deism. This is, in fact, what happened not long after, as John Brooke notes, among the English Latitudinarians. Noël-Antoine Pluche, another Jansenist, also avoids teleological arguments, as Nicolas Brucker explains. Pluche's survey work, *The Spectacle of Nature*, was aimed at an elite French

audience. “The question is rather how to know more about Creation, and therefore how to better revere the Creator” (p. 189). This theme of wonder leading to reverence permeates all physico-theological writers.

Physico-theology, even when not named as such, was also an active part of defenses against the early stages of biblical criticism (e.g., Spinoza and La Peyrère). Eric Jorink describes the detailed work of the Dutch author Willem Goeree, who used math and engineering to reconstruct a plausible Noah’s Ark. Jorink briefly mentions Kircher’s earlier attempt, but it would have been interesting to compare the two authors on that subject: a Dutch Calvinist and a German Jesuit. Did physico-theology join them or divide them? Antonio Vallisneri, a naturalist at the University of Padua, struggled to reconcile fossils, geological formations, and the Flood. Brendan Dooley shows that, at least in Vallisneri’s work, physico-theology was not always, even if predominantly, adulatory toward divine providence. Vallisneri was comfortable with unresolved questions of fossils and the Flood.

John Brooke, in his chapter “Was Physico-Theology Bad Theology and Bad Science?,” succumbs to the presentism he seeks to undermine with that provocative title. Regarding “bad science,” he judges that while the proponents of physico-theology were all leaders in their fields, they were unduly “anthropocentric” in their reading of nature. Yet, when he comes to answer the question of “bad theology,” he says it is a question that cannot be answered, since it is contingent on one’s theological stripe. Why, one may ask, did he not rate science by the same standard, admitting his own scientific prejudice against the “anthropocentrism” of divine design, as if it somehow reduced the quality of the science? Despite this bias, Brooke adds an important theological insight in that design arguments that highlight divine care tend to pass too quickly over sin and natural evil. Pascal, as noted above, was an exception to this rule.

Brian Ogilvie, looking at several authors doing “insecto-theology,” does not see the design theme as anthropocentrism, but rather that the attention of physico-theologians to function and design in insect morphology and behavior fostered genuine contributions to the field. Aesthetic values can be as much a part of what one brings to and takes away from physico-theology. Simona Boscani Leoni shows this happening as the perception of the Swiss Alps went from jagged and ugly to praiseworthy—a physico-theology of mountains moving in parallel with that

trajectory. A deeper look into a connection between physico-theology of the mountains and Albrecht von Haller’s poem *Die Alpen* (1732) would have been interesting here, especially given Haller’s Swiss Calvinism and active role in questions of natural philosophy and religion. In botany, as “form” comes to serve the interests of beauty more than function, physico-theology can become unnecessary, as Jonathan Sheehan shows in an investigation of studies of flowers during this time.

This volume presents the subject with excellent variety, yet editorially holds together well, serving as an introduction to the intellectual phenomenon of physico-theology. Chapters sometimes overlap in their discussion of key works of the period, but this happily serves to connect them together. Like the disciplinary boundary crossing which is physico-theology, this collection of papers, handling authors mostly writing in the period 1690–1740—neither really “Scientific Revolution” or “Enlightenment” in our usual historical categories—gives insight into a generation that might otherwise be undervalued because it does not easily fit into either. It is a liminal zone where interesting natural experiments can happen.

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**SCIENCE, RELIGION, AND THE PROTESTANT TRADITION: Retracing the Origins of Conflict** by James C. Ungureanu. Pittsburgh, PA: University of Pittsburgh Press, 2019. x + 358 pages. Hardcover; \$50.00. ISBN: 9780822945819.

Mythical understandings about historical intersections of Christianity and science have a long history, and persist in our own day. Two American writers are usually cited as the architects of the mythology of inevitable warfare between science and religion: John William Draper (1811–1882) and Andrew Dickson White (1832–1919). Draper was a medical doctor, chemist, and historian. White was an academic (like Draper), a professional historian, and first president of the nonsectarian Cornell University. Ungureanu’s objective is to show how Draper and White have been (mis)interpreted and (mis)used by secular critics of Christianity, liberal theists, and historians alike.

Ungureanu opens by critiquing conflict historians as misreading White and Draper. The conflict narrative emerged from arguments *within* Protestantism from the sixteenth through nineteenth centuries, and, as taken up by Draper and White, was intended *not* to annihilate religion but to *reconcile* religion



## Book Reviews

with science. Consequently, the two were not the anti-religious originators of science-versus-religion historiography. Rather, the “warfare thesis” began among sixteenth- and seventeenth-century Protestant historians and theologians attacking both Roman Catholics and each other. By the early nineteenth century, the purpose of conflict polemics was not to crush religion in the name of science but to clear intellectual space for *preserving* a “purified” and “rational” religion *reconciled* to science. Widespread beliefs held by liberal Protestant men of science included “progressive” development or evolution in history and nature as found, for example, in books by Lamarck in France and Robert Chambers in Britain. For Draper, English chemist and Unitarian minister Joseph Priestley (1733–1804) was a model of faith without the burden of orthodoxy.

So conflict rhetoric arose not, as we’ve been taught before, in post-Darwinian controversies, but in contending narratives within generations of earlier Protestant reformers who substituted personal judgment for ecclesial authority. Victorian scientific naturalists and popularizers often rejected Christian theological beliefs in the name of a “natural” undogmatic “religion” (which could slip into varieties of Unitarianism, deism, agnosticism, or pantheism). In effect, the conflict was not between science and religion, but between orthodox Christian faith and progressive or heterodox Christian faith—a conflict between how each saw the relationship between Christian faith and science. Draper, White, and their allies still saw themselves as theists, even Protestant Christians, though as liberal theists calling for a “New Reformation.” Given past and present anti-Christian interpretations of these conflict historians with actual religious aims, this is ironic to say the least.

Ungureanu’s thesis shouldn’t be surprising. In the Introduction to his *History of the Warfare*, White had written:

My conviction is that Science, though it has evidently conquered Dogmatic Theology based on biblical texts and ancient modes of thought, will go hand in hand with Religion ... [i.e.] “a Power in the universe, not ourselves, which makes for righteousness” [quoting without attribution Matthew Arnold, who had actually written of an “eternal power”].

As science advanced, so would religion: “the love of God and of our neighbor will steadily grow stronger and stronger” throughout the world. After praising Micah and the Epistle of James, White looked forward “above all” to the growing practice

of “the precepts and ideals of the blessed Founder of Christianity himself” (vol. 1, p. xii). Ungureanu quotes White that the “most mistaken of all mistaken ideas” is the “conviction that religion and science are enemies” (p. 71).

This echoed both Draper’s belief that “true” religion was consistent with science, and T.H. Huxley’s 1859 lecture in which he affirmed that the so-called “antagonism of science and religion” was the “most mischievous” of “miserable superstitions.” Indeed, Huxley affirmed that, “true science and true religion are twin-sisters” (p. 191).

Chapter 1 locates Draper in his biographical, religious, and intellectual contexts: for example, the common belief in immutable natural laws; the “new” Protestant historiography expressed in the work of such scientists as Charles Lyell and William Whewell; and various species of evolutionism. Comte de Buffon, Jean Baptiste Lamarck, John Herschel, Thomas Dick, Robert Chambers, and Darwin are some of the many writers whose work Draper used.

Chapter 2 examines White’s intellectual development including his quest for “pure and undefiled” religion. He studied Merle d’Aubigné’s history of the Reformation (White’s personal library on the subject ran to thirty thousand items) and German scholars such as Lessing and Schleiermacher who cast doubt on biblical revelation and theological doctrines, in favor of a “true religion” based on “feeling” and an only-human Jesus. As he worked out his history of religion and science, White also absorbed the liberal theologies of William Ellery Channing, Horace Bushnell, Henry Ward Beecher, and Lyman Abbott, among others.

The resulting histories by Draper and White were providential, progressive, and presentist: providential in that God still “governed” (without interfering in) nature and human history; progressive, even teleological, in that faith was being purified while science grew ever closer to Truth; and presentist in that the superior knowledge of the present could judge the inferiority of the past, without considering historical context.

Chapters 3 and 4 situate Draper and White in wider historiographic/polemical Anglo-American contexts, from the sixteenth-century Reformation to the late nineteenth century. Protestant attacks on Roman Catholic moral and theological corruption were adapted to nineteenth-century histories of religion and science, with science as the solvent that cleansed

“true religion” of its irrational accretions. Ungureanu reviews other well-known Christian writers, including Edward Hitchcock, Asa Gray, Joseph Le Conte, and Minot Judson Savage, who sought to accommodate their religious beliefs to evolutionary theories and historical-critical approaches to the Bible.

Chapter 5 offers a fascinating portrait of Edward Livingston Youmans—the American editor with prominent publisher D. Appleton and *Popular Science Monthly*—and his role in promoting the conflict-reconciliation historiography of Draper and White and the scientific naturalism of Huxley, Herbert Spencer, and John Tyndall.

In chapter 6 and “Conclusions,” Ungureanu surveys critics of Draper’s and White’s work, although he neglects some important Roman Catholic responses. He also carefully analyzes the “liberal Protestant” and “progressive” writers who praised and popularized the Draper-White perspectives. Ungureanu is excellent at showing how later writers—atheists, secularists, and freethinkers—not only blurred distinctions between “religion” and “theology” but also appropriated historical conflict narratives as ideological weapons against any form of Christian belief, indeed any form of religion whatsoever. Ultimately, Ungureanu concludes, the conflict-thesis-leading-to-reconciliation narrative failed. The histories of Draper and White were widely, but wrongly, seen as emphatically demonstrating the triumph of science over theology and religious faith, rather than showing the compatibility of science with a refined and redefined Christianity, as was their actual intention.

Draper’s *History of the Conflict*, from the ancients to the moderns, suggested an impressive historical reading program, as did his publication of *A History of the Intellectual Development of Europe* (rev. ed., 2 vols., 1875 [1863]). But one looks in vain for footnotes and bibliographies to support his controversial claims. White’s two-volume study, however, landed with full scholarly apparatus, including copious footnotes documenting his vivid accounts of science conquering theological belief across the centuries. What Ungureanu doesn’t discuss is how shoddy White’s scholarship could be: he cherry-picked and misread his primary and secondary sources. His citations were not always accurate, and his accounts were sometimes pure fiction. Despite Ungureanu’s recovery of German sources behind White’s understanding of history and religion, he does not cite Otto Zöckler’s *Geschichte der Beziehungen zwischen Theologie und Naturwissenschaft* (2 vols., 1877–1879), which, as Bernard Ramm noted in *The Christian View*

of *Science and Scripture* (1954), served as “a corrective” to White’s history.

Ungureanu certainly knows, and refers to some of, the primary sources in the large literature of natural theology. I think he underplays the roles of Victorian natural theologies and theologies of nature in reflecting, mediating, criticizing, and rejecting conflict narratives. Ungureanu seems to assume readers’ familiarity with the classic warfare historians. He could have provided more flavor and content by reproducing some of Draper’s and White’s melodramatic and misleading examples of good scientists supposedly conquering bad theologians. (One of my favorite overwrought quotations is from White, vol. 1, p. 70: “Darwin’s *Origin of Species* had come into the theological world like a plough into an ant-hill. Everywhere those thus rudely awakened ... swarmed forth angry and confused.”)

Ungureanu’s is relevant history. Nineteenth-century myth-laden histories of the “warfare between Christianity and science” provide the intellectual framework for influential twenty-first century “scientific” atheists who have built houses on sand, on misunderstandings of the long, complex and continuing relations between faith/practice/theology and the sciences.

This is fine scholarship, dense, detailed, and documented—with thirty-seven pages of endnotes and a select bibliography of fifty pages. It is also well written, with frequent pauses to review arguments and conclusions, and persuasive. Required reading for historians, this work should also interest non-specialists curious about the complex origins of the infamous conflict thesis, its ideological uses, and the value of the history of religion for historians of science.

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## PHILOSOPHY AND ETHICS

**SCIENCE AND FAITH: Student Questions Explored** by Hannah Eagleson, ed. Peabody, MA: Hendrickson Publishers, 2019. 116 pages. Paperback; \$14.95. ISBN: 9781683072362.

Despite the many introductory books on science and religion that have been published in recent years, *Science & Faith: Student Questions Explored* is a worthwhile addition to the library of educators and clergy who help young adults think more critically about

## Book Reviews

the relationship between science and their faith. The book's utility comes from its modesty. Rather than trying to give all possible ways for resolving perceived science and religion conflicts, it is designed to start conversations in a small group setting. Each chapter raises a brief topic (some chapters are only three pages) and then presents discussion questions that were chosen by leaders of InterVarsity's Emerging Scholars network. The 116-page book comprises sixteen chapters, with the first half dealing with general questions that promote good conversations about science and faith, the next three describing possible positions on origins, and the last five dealing with questions raised by the history and philosophy of science.

One reason the book works is that it does not have a detached academic style. The authors of the chapters are people of faith, who model the important insight that trust in Jesus does not require intellectual certainty about the complicated questions at the interface of science and Christianity. Some essays speak movingly about how faith carried them through the inevitable struggles of a scientific education. The book handles controversies about creation and evolution irenically, listing options for Christians to locate themselves along the continuum. For groups in which one may not know the faith background of participants, *Science & Faith* should be uncontroversial.

The modest ambitions of the book lead to weaknesses, which leaders should know in case they want to supplement it with other material. While the book helps to get students talking, some arguments require a certain level of information before one makes an informed decision. The brief chapters on the evolution controversy have students identify their own position, but these chapters give no indications of the evidence that scholars use to support their positions. Perhaps these chapters would be most helpful for those who have already taken college science courses.

The book does not take a consistent view on whether Christians should trust the consensus of scientific experts. The philosopher Jim Stump argues, rightly in my view, that "if you accept a view that is contrary to the vast majority of experts, there is a higher burden of proof for you." A few chapters later, the historian James Ungureanu endorses the view (of James K. A. Smith) that science is not a neutral describer of the way things are, but a contending worldview. This means Christians should expect tensions and conflicts between their faith and science since scien-

tific conclusions have been influenced by scientific naturalism. Ironically, Royce Francis argues that we should promote scientific literacy among believers by having them learn science while also saying that science is "socially constructed" rather than producing objective knowledge. Some students might walk away from these chapters confused or more dismissive of science; this is not the intended purpose of the book. Having a seasoned moderator (ideally someone with a scientific background) leading students through the book would thus be important.

One last weakness is that the book places a strong emphasis on reading scripture devotionally, as one might expect given its evangelical focus. However, it does not give guidance on how to read the Bible in a more sophisticated manner with respect to either scientific or theological matters. In my experience, one of the biggest obstacles to a constructive conversation about science and faith are unrealistic expectations about scientific content in the Bible. If one reads the Bible out of context, one can read all sorts of modern scientific theories into the Bible. At least one chapter (it devoted three to the history of science) on principles of biblical interpretation would have been appropriate.

Having noted these weaknesses, I plan to use parts of the book in the future. It does a good job capturing the questions students have when first thinking about the relationship of science and Christianity.

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**SCIENCE AND THE GOOD: The Tragic Quest for the Foundations of Morality** by James Davison Hunter and Paul Nedelisky. New Haven, CT and London, UK: Yale University Press and Templeton Press, 2018. 289 pages. Paperback; \$18.00. ISBN: 9780300251821.

*Science and the Good* is a one-volume education on the historical quest to furnish a scientific explanation of morality. It seems that the human person and morality do not comfortably fit within the model of scientific explanation. The authors chronicle the many ways in which the "new moral scientists" either overreach in interpreting the results of their experimental findings or fail to clearly define whether their experimental results have merely descriptive force (tell us what is the case) or indicate something prescriptive (tell us how we *should* live). Their narrative shows that what had begun around the 1600s as a quest to secure a scientific foundation for morality has, today, ended not only with the abandonment of



the original project, but with a denial of the existence of morality altogether. The authors call the current state of the “abandoned” and “redirected” quest, “moral nihilism.”

The book is well written, and though they engage us with complex concepts and connections, Hunter and Nedelisky prove to be good teachers, helping us along the way with copious examples from the primary sources. It is a pleasure to read because so much can be learned from it. Though their criticisms are multipronged, I shall limit myself to a discussion of one central chapter and a few telling examples to illustrate their basic contention that science is the wrong tool for furnishing an adequate account of morality.

In chapter three, the authors consider three ideas that have become central to the project of the new moral scientists: Hume’s sentimentalism, Bentham’s utilitarianism, and Darwin’s evolution by natural selection. They also mention “one lingering and deeply disturbing worry” about the avenues these three charted which were later adopted by the new moral scientists.

Hume’s sentimentalism rejects the notion that reason can motivate us to moral action or that reason plays any role in the discernment of the good, as Aristotle held. Good and bad are rooted in the pleasure or pain we feel when considering certain actions or displays of character. Feelings of pleasure and pain are tethered to what Hume calls “sympathy,” the fact that others will be similarly affected by contemplating or viewing the same action or display of character. Bentham sought to formulate an intuitive, quantitative principle for all of morality, his “greatest happiness principle,” in which happiness is equated with whatever promotes pleasure or prevents pain. Bentham prided himself on his democratic approach, making no distinction between what pleasures are to be pursued and what pains are to be avoided (pp. 56–57). He was a reformer and redirected the focus of morality onto *action* rather than the less measurable *character*. With his principle of utility he sought to make ethics empirical and quantifiable. Lastly, Darwin’s theory of evolution explained the existence of certain social emotions as what would promote the survival and reproductive success of the species: feelings of loyalty to those of one’s tribe or sensitivity to the praise or blame of others. Natural selection, a biological mechanism, could now be enlisted as furnishing a scientific explanation for various evolved human emotions and behaviors.

So, what are their “worries?” Science is adept at explaining the quantifiable, but morality does not fit comfortably into this box. The authors agree that certain brain states may be the necessary condition for morality, but morality is not reducible to brain states. Morality has something to do with pleasure and pain, but science is incapable of telling us “that some things were prohibited or compulsory regardless of how much pleasure might result or pain avoided by doing otherwise” (p. 56). Natural selection can explain the inchoate glimmerings of human morality in the social emotions but is incapable of explaining motivation in the moral life. If morality, they argue, is rooted in the first-person perspective of human beings, then the third-person perspective of the sciences cannot get us there for it is trying to explain subjects by way of objects. Hume is the crucial figure here and his position is that the third-person perspective is true, and it alone can give us access to what is real; the first-person perspective is illusory. Hume’s skepticism coupled with a Darwinian explanation of ethics as tracking for survival, not the good, puts us on a trajectory toward the “moral nihilism” of the current scene.

Neuroscientist and philosopher Patricia Churchland is one of those who seem to believe that morality is reducible to talk of brain states. She appears, at first, to be interested in discussing the nature of morality from a common sense, first-person perspective when she asks, “What is it to be fair? How do we know what to count as fair?” (p. 144). But, in pursuing her answer she appeals to “the neural platform for moral behavior” (p. 144), or “values rooted in the circuitry for caring” (p. 145). Like Hume, Churchland assumes that the first-person perspective has little to offer in the way of furnishing a genuine account of morality. She assumes the third-person perspective and hopes to get to the good (fairness) by talking at length and, no doubt, accurately about the architecture and neurochemistry of the human brain. The authors contend that the answer to Churchland’s question does not lie in a description of physical constituents.

Primatologist Frans de Waal of the Yerkes National Primate Research Center at Emory University finds inspiration in Hume’s focus on the emotions and social sympathy and, in combination with Darwin’s interest in the emotions, views the emotional life of primates as “the key link in [the] project of showing how human morality evolved ...” (p. 124). For de Waal, as for many evolutionary psychologists, the central thing that needs explaining is altruism, and so he views the ability to feel sympathy and empathy

## Book Reviews

for another as “the centerpiece of human morality” (p. 124). But as the authors point out with a telling example, acts of kindness based upon feelings of sympathy for another are inadequate to explain the complex nature of the ethical lives of humans. If I feel sympathy for a neighbor who cannot pay her rent and out of emotional empathy for her anxiety and shame decide to pay it for her, such an act may be morally laudable. But now suppose my neighbor is a heroin dealer and my empathy for her plight leads me to pay her rent anyway. Surely, now our empathy is getting in the way of doing the right thing; and even though we felt these moral emotions, paying her rent does not qualify as morally right since she is endangering her own life and that of the entire neighborhood.

In a different but related point, the explanatory gap between biological altruism and fully human altruism is brought out when the authors consider the position of biologist David Sloan Wilson. Like Churchland above, Wilson makes a promising start when he defines altruism as “a concern for the welfare of others as an end in itself” (p. 148). But, in his discussion he dismisses the relevance of motivation when defining the nature of altruism on the grounds that it is incapable of empirical measurement and it is “not right to privilege altruism as a psychological motive when other equivalent motives exist” (p. 149). The difference between external, behavioristic altruism and altruism motivated by genuine concern for the other is insignificant, says Wilson, just the difference between being “paid in cash or by check” (p. 149). The authors are not impressed with this clever but spurious analogy:

Do you only care that your spouse acts as though she loves you? That she says complimentary things to you, that she appears to enjoy conversation with you ... appears to be sexually attracted to you, and remembers your birthday? What if you discovered that she does all of these things without feeling anything for you—or worse, she does all these things while secretly detesting you? Would Wilson claim that this is just a “cash or check” situation—just so long as she’s doing all the observable things she would do if she really did love you, then the underlying motives, intentions, and desires are irrelevant? (pp. 149–50)

For Hunter and Nedelisky, the new moral scientists have become “moral nihilists” precisely because morality and the good life are not suited to the methods or measurements of science, especially in their program of reductive materialism. The book fruitfully engages the sciences and humanities, and readers will come away with a healthy apprecia-

tion of the limits of science and its methodology in explaining the meaning of the moral life.

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**THE TERRITORIES OF HUMAN REASON: Science and Theology in an Age of Multiple Rationalities** by Alister E. McGrath. Oxford, UK: Oxford University Press, 2019. ix + 288 pages. Hardcover; \$35.95. ISBN: 9780198813101.

In *The Territories of Human Reason*, Alister McGrath argues against the dated “conflict” and “independence” models of science and religion by carefully cultivating a sophisticated integrative model which affirms an ontological unity of existence, complemented with an epistemological plurality of knowledge discourses that inquire into the nature of that existence. The book comes in two parts: Part 1 (chapters 1–3) provides an overview of the concept of rationality, carefully delineating how rationality is expressed in “distinct, yet occasionally overlapping and competing, epistemic territories and communities” (p. 3). This fact secures the distinct autonomy of science and theology. Part 2 (chapters 4–8) moves on to the process of critical engagement between science and religion.

Since both natural science and religion are vast topics, McGrath narrows his focus to the relationship between the physical and biological sciences on the one hand, and specifically Christian theology on the other (with a particular focus on theology since the late-nineteenth century). He seeks to adopt an empirical approach to the subject which eschews reductionism while grappling with the complexity and integrity of each field in its respective domain. In this way, he seeks to pursue what he calls a colligation, that is, “an ‘act of thought’ that brings together a number of empirical facts by ‘superintending’ upon them a way of thinking which united the facts” (p. 211). The end goal is a true consilience between respective fields, though not the kind proposed by E.O. Wilson which is a bottom-up scientific imperialism. The goal, rather, is an integration in which respective fields grow into one another in mutual understanding and illumination, rather like the merging sections of a jigsaw puzzle (my image).

For McGrath, rationality emerges as natural human cognitive processes interact with the overarching metanarrative through which one thinks, while engaging with the specific dataset available to oneself informed by one’s community and tradition (p. 25). It should be kept in mind that plurality exists

within the disciplines: thus, there is no single scientific method, but rather multiple methods, each specific to its domain of inquiry. For example, some modes of scientific inquiry depend on repetition or prediction as an essential heuristic, while others (e.g., particular historical scientific investigation) are concerned with the best explanation for unique and unrepeatable past events (e.g., the origin of the universe).

Given the complexity and richness with which reason is expressed, McGrath argues that we should think in terms of a multiplicity of distinct rationalities. The challenge arises when we mistake culturally contingent forms of reasoning for the intellectually necessary (p. 46). That, of course, embodies the seductive error of the Enlightenment which has emerged time and again, as in logical positivism of the mid-twentieth century and the new atheism of our own day.

McGrath also identifies levels of explanation and the symbiotic relationship between both bottom-up and top-down mechanisms (p. 66), which need to be synthesized into a unified picture of reality. When it comes to imaging what that looks like, McGrath invokes the illustration of five biologists offering five different explanations of a frog jumping into a pond: from the physiologist to the evolutionary biologist, each offers a unique insight and the challenge is to bring them all into a seamless account of reality (p. 59).

As noted above, McGrath is committed to an ontological unity of reality, one that maintains a critical realist orientation, not least because “the success of science would be a miracle if our theories were not at least (approximately) true” (p. 107). That said, the fact that we can advance in understanding objective reality from our particular situatedness is no basis for triumphalism, for a healthy grasp of these multiple, perspectival rationalities should remain open to mystery. McGrath devotes chapter 7 to a careful articulation of the concept of mystery—both that which is temporary and that which may be intrinsic—that conditions all our enquiries, whether in science or theology.

In the middle chapters, McGrath explores several topics, including the nature of theories as complex explanatory frameworks with particular virtues such as objectivity, simplicity, beauty, and prediction (chap. 4); the relationship between causality and unification as two aspects of explanation (chap. 5); and the primary tools of inquiry and argument, including

deduction, induction, and abduction (chap. 6). The book concludes with the above-mentioned chapter on mystery (chap. 7) and a concluding chapter on consilience with an interesting parallel exploration of how natural science might relate first to socialism and then to Christian theology.

From the perspective of this reviewer, there are some lacuna in the book, and while some may seem nit-picky, others are perhaps more substantive. While McGrath’s discussion of mystery engages in passing with the mysterianism of atheist Colin McGinn, there is no engagement with some of the important recent work among Christian philosophers such as James Anderson’s work on paradox, J. C. Beall on nonclassical logic and dialetheism (true contradictions), or the sizable literature on skeptical theism. It is also unfortunate that there is a general absence of analytic theology in McGrath’s discussion. While I recognize that one cannot cover every recent school of thought in a prolegomenal survey of this type, the absence is most notable when McGrath discusses deductive, inductive, and abductive models of reasoning in theology, at which point he focuses on arguments drawn from theism simpliciter (e.g., the Kalam cosmological argument). This seems to me a lost opportunity, as recent analytic theology is yielding a harvest of sophisticated deductive, inductive, and abductive arguments which are not limited to mere theism but also distinctively Christian doctrines such as incarnation, atonement, and Eucharist.

Perhaps more notable is the absence of any mention of intelligent design theory. While I recognize that for many the cultural associations of intelligent design with conservative Christian hermeneutics and courthouse shenanigans have constituted a poison pill for further discussion, the basic question of whether (or under what conditions) natural science may appeal to intelligent/agent causal explanations is a critical one which is right on the vanguard of fruitful scientific and theological interaction. It seems to me that the movement deserves at least a mention, even if a critical one.

In my view, the most significant challenge to McGrath’s project is another point which receives insufficient attention in the book, and that is the unique plurality that characterizes contemporary theology. Theology is fractured not only into multiple competing models (e.g., neoclassical, process, and open models of God) but also into fundamental disagreements on the function of doctrine (e.g., post-liberalism, metaphorical theology, analytic theology). McGrath clearly privileges a realist orientation in



# Book Reviews

theology, but it would be interesting to hear more on the specific challenges that theology faces in addressing this fracturing, perhaps in an exploration with the similar debates over models and methods that characterize modern science.

While those may be taken as criticisms, they are admittedly modest. For the most part, I found *The Territories of Human Reason* to offer a rich and eminently helpful survey of the land. McGrath's realist orientation combined with his commitment to multiple situated rationalities strikes just the right balance between the Scylla of Enlightenment reason and the Charybdis of postmodern skepticism. *The Territories of Human Reason* would make an excellent (and surprisingly affordable) textbook for a course in science and theology, prolegomena/fundamental theology, or philosophy of religion.

Reviewed by Randal Rauser, Taylor Seminary, Edmonton, AB T6J 4T3.



## PSYCHOLOGY AND NEUROSCIENCE

**ENHANCING CHRISTIAN LIFE: How Extended Cognition Augments Religious Community** by Brad D. Strawn and Warren S. Brown. Downers Grove, IL: IVP Academic, 2020. 176 pages, including title pages, acknowledgments, and indexes. Paperback; \$21.00. ISBN: 9780830852819.

"I'd like to supersize it" is not a statement I usually utter without guilt and some consternation. However, in *Enhancing Christian Life: How Extended Cognition Augments Religious Community*, Strawn and Brown present an argument that makes me question whether I say it enough—in the right contexts—and whether I live in a way that makes it so.

Strawn, a clinical psychologist, and Brown, an experimental neuropsychologist, wrote this book for individuals invested in deepening Christian lives. Across ten chapters, they develop an evidence-based argument in support of their assertion that "No one is Christian (or "spiritual") entirely on their own" (p. 12). Writing in response to the focus on single persons (e.g., individual spiritual experience) at the forefront of many Western evangelical churches, Strawn and Brown argue that such a prioritization of these internal, private experiences produces no more than a "puny" Christian faith and life.

The text is divided into three parts, guiding the reader through evidence about what persons are like (section 1), how persons function in the world

(section 2), and what this knowledge of persons—what we are like and how we function—means for the church and Christian life (section 3).

Section 1 explores how different views about human persons influence behavior and religious practice. Strawn and Brown contextualize the modern priority of internal, private, and emotional spirituality within the philosophical and historical framework of soul-body dualism. Following Owen Thomas,<sup>1</sup> Strawn and Brown propose that Christian spirituality and spiritual formation should be decentered away from personal piety and the "inner world of a person" (p. 33) and recentered on "the reign of God" and "how one lives one's actual life in the body (the outer)" (p. 33). This perspective, expounded in section 2, lays the groundwork for the implications of understanding persons as embodied, embedded, and extended.

Section 2 begins with the premise that relinquishing Cartesian dualism does not automatically solve the problem of prioritizing internal experiences or its consequences (i.e., salvation of souls as primary; activities related to physical, economic, and social needs are pursued secondarily, if at all). Indeed, some materialist views of persons have replaced Cartesian dualism with a Cartesian materialism wherein the brain, like an encapsulated and isolated computer, functions like a (relabelled) soul. Strawn and Brown reject this notion as well, as it reinforces the idea that there is some "inner reality (whether a soul or a brain) that is the real person" (p. 42).

Pointing to embodied cognition as a robust alternative to Cartesian dualism and materialism, Strawn and Brown note,

Embodied cognition argues that the processes of thinking actually involve the entire body—that is, what we refer to as our "mind" is grounded in interactions between the brain and the body, and is not solely dependent on brain processes. (p. 45)

This profoundly integrated sense of a whole person should also be understood as "fundamentally relational ... A self is a body whose actions are embedded in, and contextualized by, a community" (p. 56). Taken on its own, this view of human persons has important implications for religious practice and community. Yet, Strawn and Brown further the discussion by exploring how embodied and embedded individuals engage in the world in ways that surpass physiological boundaries; that is, humans are capable of extension—*supersizing*—beyond their embodied and embedded capabilities.

Strawn and Brown explore extended cognition in two chapters (chapters 4 and 5), arguing that human beings have brains flexible enough to incorporate objects external to their bodies into their mental processes in ways that extend and enhance their capacities. Take, for example, an expert carpenter who wields a hammer like an extension of her own arm. Extended cognition suggests that this is not just a simile describing the carpenter's expertise with a hammer. Instead, the hammer functions as an extension of her own arm; extensive practice and engagement with the hammer has reshaped her representation of herself, a reshaping that allows her to wield the hammer effortlessly and effectively. This reshaping—this extension of her cognition—is evident behaviorally and neurologically. The important conclusion is that tools can extend human thinking. "Compared to what is possible through extension, the nonextended mind is less potent, diminished, and relatively puny" (p. 71); extending minds to include tools "supersizes" and significantly enhances cognition beyond the capacity of the material and embedded body alone.

In moving toward an argument about religious community, Strawn and Brown apply the logic and evidence for cognitive extension to social relationships. It is not just tools that can supersize human thinking; other people can (and do). Discussion about collaborative projects (e.g., in science), marriage, family, cultural practices, and psychotherapy all illustrate the fundamental principle that "...our minds include and incorporate what emerges from our interactions with others. Incorporation of other minds constitutes supersizing of our mental life beyond our capacities as solo thinkers" (p. 88).

Section three links these ideas to address the question, *why is Christian community important?* Strawn and Brown contend that church was never meant to be a place where individual spiritual people come together. Instead, they persuasively argue that the church is a place where "*reciprocal extension ... and spiritual enhancements ... make Christian life richer, both individually and collectively*" (p. 94), surpassing what could have been possible by a single Christian alone.

Importantly, just as the expert carpenter had to practice extending her cognition to incorporate the hammer and just as collaborative projects do not always go well, enhancement of Christian life through extension is not automatic. It is a process that involves reorienting the purpose and practice of engagement in religious community and personal devotional practices.

I found Strawn and Brown's description of a church community that was soft coupled—extended and connected in a way that something new beyond the capacity of the individual emerges—to be profound and challenging. When applied to corporate practices of prayer, scripture reading, worship, communion, and preaching, the ideas underlying extended cognition require a reevaluation of practice and, in many ways, a head-on confrontation of culturally Western notions of independence. Moreover, taking seriously the idea of extended cognition in religious communities requires that we ask ourselves difficult questions about our personal religious practices: "Is this practice ultimately about God and others or primarily about me?" (p. 126). Personal religious disciplines acquire new meaning and significance when understood through an extended cognition framework.

The book concludes with a brief discussion on the mental institutions ("wikis") that inform praxis along with practical ideas for churches to create spaces for supersizing Christian life through the repeated practice and extension of individuals' cognition. In aiming to develop "a new understanding of Christian life that includes what is beyond our individual selves" (p. 139), Strawn and Brown have written a text that will, at minimum, challenge readers to ask important questions about Christian life—personal and corporate. For example, as I read this text, I reflected on the putative notion of young people leaving the church and asked: *without this deeply embodied, embedded, and extended community, does leaving really change anything? Were these young people ever in what was meant to be the church in the first place?* Readers, with their own experiences and backgrounds, should similarly find this text thought-provoking. And, importantly, I believe this text offers a critical response to the fierce Western independence of self and spirituality that permeates many Christian lives.

#### Note

<sup>1</sup>Owen C. Thomas, "Interiority and Christian Spirituality," *The Journal of Religion* 80, no. 1 (2000): 41–60.

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## TECHNOLOGY

**JACQUES ELLUL: A Companion to His Major Works** by Jacob E. Van Vleet and Jacob Marques Rollison. Eugene, OR: Cascade Books, 2020. 187 pages. Paperback; \$25.00. ISBN: 9781625649140.

Jacques Ellul stands as a towering figure in this discourse on theology, politics, violence, and technology.

## Book Reviews

Ellul was a professor of history and sociology of institutions at the University of Bordeaux in France, but he is most known in the English-speaking world as a technological critic and lay theologian. Over the course of his life, he wrote over fifty books and over one thousand essays on topics ranging from cultural critique to biblical exegesis. In his early life, Ellul was influenced by the French personalist movement, especially by his friend Bernard Charbonneau, and played a role in the French Resistance during World War II. As an academic, thinker, and commentator he considered his three main intellectual influences to be—perhaps a strange mixture—Karl Marx, Søren Kierkegaard, and Karl Barth. Throughout his life, he was a committed member of the Reformed Church in France although, in significant ways, his thought diverged from both historic Calvinism and varieties of modern, liberal Protestantism.

In *Jacques Ellul: A Companion to His Major Works*, Jacob E. Van Vleet and Jacob Marques Rollison take readers through succinct, well-ordered summaries of eleven of Ellul's most important works, including a one-chapter summary of his theological ethics. Both scholars are well versed in Ellul's corpus. Van Vleet, a professor of philosophy at Diablo Valley College in California, has already published at least two books on Ellul. Rollison, an independent scholar in Strasbourg, France, has published on Ellul and edited some of his work. The authors divide their book into two main sections: the first, reviewing Ellul's theological works; and the second, his sociological works. They borrow from Ellul the image of train tracks, "separate but parallel, moving toward the same goal," to describe the relationship between theology and sociology in his body of work (p. 2). The two disciplines have different frameworks and methodologies, but the authors argue that examining both in a "dialectical" way is necessary to understanding the heart of Ellul's thought.

In the first five chapters, the authors review what they consider to be Ellul's most important theological works. Chapter 1 reviews the book *Presence in the Modern World*, published originally in French in 1948; in English in 1951. That book introduces the main concerns of Ellul's project: a critical analysis of society and an approach to Christian engagement with society through the category of "presence." Cautious, for theological reasons, about creating explicit ethical systems, Ellul instead gives readers a general commentary on how to "live in the world, but not of the world"—a world marked by an idolatrous concern for efficiency, quantification, and

bureaucratic control. Chapter 2 does a good job summarizing the book *Violence: Reflections from a Christian Perspective*, first published in 1969. Critiquing both uncritical acceptance of violence and traditional just-war theory, Ellul outlines instead his own defense of Christian nonviolence. In chapter 3, the authors review Ellul's masterful work *The Meaning of the City*. This book is an extended meditation on the theme of the city in the Bible as both a symbol of human sin and hubris, and a symbol of hope. Jerusalem, in particular, becomes a sign of God's willingness to meet humanity on our own terrain.

Chapter 4 deals with the book that Ellul considered to be his greatest theological work, *Hope in Time of Abandonment*. The book puts forward the thesis that, while God "perhaps ... still speaks to the heart of [an individual]," he no longer speaks or is present at the level of society's institutions or its history (p. 47). In the context of God's marked absence, Christians are called to a peculiar practice of hope marked by perseverance, prayer, and a disciplined, fearless realism. Chapter 5 explores Ellul's commentary on the book of Revelation published in English as *Apocalypse: The Book of Revelation* in 1978. The book follows some sort of personal religious transformation for Ellul, and in it, he boldly proclaims his hope for universal salvation. Against interpretations of Revelation that see the book as a promise that evil people will be judged and defeated, he sees in it instead a promise that God will be victorious over evil powers—the spiritual systems and sociological forces that rule our lives.

Chapter 6 ends the theological section of the book. Unlike the chapters before and after, this chapter does not look at a single book but instead looks at Ellul's theological ethics. The authors admit that, while Ellul wrote both theology and biblical commentaries, none of these were his specialty. "It is most correct," they argue, "to view Ellul as a theological ethicist (rather than a theologian)" (p. 70). His theological ethics are marked by a refusal (most explicitly in his book *The Ethics of Freedom*) to set up any kind of moral system, universal solutions, or rules for Christians. He writes, "We can only put the problems as clearly as possible and then, having given the believer all the weapons that theology and piety can offer, say to him: 'Now it is up to you'" (p. 69). Van Vleet and Rollison do not explore the historical or theological circumstances that led Ellul to such a unique approach to Christian ethics. If I were to hazard a guess, it seems that this particular approach was influenced by Kierkegaard's existentialism and Barth's theology of revelation. Such an atypical vision for Christian ethics, to my



mind, deserves more contextual explanation than Van Vleet and Rollison afford it.

The next six chapters deal with Ellul's sociological writings, in particular, on the topics of technology, politics, and communications. Chapter 7 deals with the book *The Technological Society*, arguably his most famous work. Van Vleet and Rollison argue that in this book Ellul does for twentieth-century technology what Karl Marx did for nineteenth-century capitalism—namely, identify the key systemic forces that shape our lives. While much of *The Technological Society* deals with Ellul's analysis of "technique" as an all-encompassing cultural phenomenon, a more intriguing dimension of his analysis is his application of "the sacred" as a sociological concept to our relationship with technology. Humans cannot live without the sacred and, in our supposedly post-religious world, we have transferred religious feelings and behaviors onto technology itself. Chapter eight deals with one particular facet of the technological society, mass media. Ellul's book *Propaganda: The Formation of Man's Attitudes* was first published in 1965 and looks at how the powers-that-be use mass media to fashion public opinion and manipulate human behavior. After analyzing the social and psychological effects of mass media and propaganda, Ellul suggests that it is imperative for human beings to "wake up" to this reality as the first and most important step in resisting it.

In chapter 9, the authors review the book *The Political Illusion*, also published in 1965. In that book, Ellul condemns the expansion of the state, the increased politicization of everyday life, and society's self-defeating political illusions. Once again, he counsels a kind of existentialist resistance, encouraging individuals to "question clichés" and (implicitly) suggesting the impossibility of any kind of collective, systemic reform. Chapter 10 builds on this political critique with a review of the book *Autopsy of Revolution*. In *Autopsy*, Ellul questions the continued hope among some for a revolution that will solve our political and economic problems. Tracing the history of the concept of revolution from before and after 1789, he specifically critiques the Marxist conception of revolution as no longer viable, particularly pointing out how modern hopes for revolution tend to "absorb all the religious emotions" that have nowhere else to go in a secular society. In chapter 11, Ellul's critical analysis of both technology and politics is brought together in the book *The New Demons*. Once again drawing upon the concept of "the sacred," Ellul argues that our collective religious inclinations have not dis-

appeared but have focused themselves instead on science, technology, and politics. While none of these things are bad in themselves, they have become idols in need of spiritual dethroning. The final chapter in this volume deals with the book *The Humiliation of the Word*. That book begins with a discussion about the different functions of both hearing and seeing in human perception. An ideal society would balance hearing and seeing, the word and image, but, in our society, the image dominates. Cataloguing the negative effects of this imbalance, Ellul urges us to revive an appreciation for the word. The word, he argues, brings qualities of discussion, paradox, and mystery—qualities we desperately need as individuals and as a society.

Overall *Jacques Ellul: A Companion to His Major Works* fulfills its promise of providing short, readable summaries of Ellul's most important works. Van Vleet and Rollison are to be commended for their discerning choice of eleven books that represent well both the sociological and theological dimensions of his corpus. Furthermore, they competently identify and trace core themes that appear book after book so that readers gain an impression of Ellul's overall thought and how his discrete ideas form parts of a coherent whole. The only book that seemed conspicuously absent from the volume is the book *Anarchy and Christianity* (although it is referenced on occasion). This seemed a regrettable omission given the importance of Ellul's anarchism for both his faith and his politics.

When introducing a major thinker and their body of thought, the choice of framework is critical. In this volume, Van Vleet and Rollison chose to present Ellul's work as a collection of sociological and theological writings, with each book contextualized (for the most part) in reference to his other writings. For some readers, this might make an excellent choice, but others may find it unsatisfying for their purposes. For example, I came to the book as someone widely read in political theology, strategic nonviolence, and the appropriate technology tradition (Schumacher, Illich, and others). With every chapter I was left with an unsatisfied desire to understand Ellul in reference to these larger traditions. How do Ellul's thoughts on violence connect to other Christian reflections on violence (Niebuhr, Yoder, etc.) or broader conceptions of strategic nonviolence (Gandhi, Sharp, Chenoweth, etc.)? How does his critique of the technological society compare and contrast to Ivan Illich's vision in *Tools for Conviviality* or E.F. Schumacher's work on appropriate technology?

# Book Reviews

On the whole, I found this book to be an accessible, useful introduction to the work of Jacques Ellul. That being said, an introductory chapter situating Ellul's thoughts within the larger intellectual traditions would have been helpful.

*Reviewed by Isaiah Ritzmann, Community Educator, The Working Centre in Kitchener, ON N2G 1V6.*

## THEOLOGY

**ECOTHEOLOGY: A Christian Conversation** by Kiara A. Jorgenson and Alan G. Padgett, eds. Grand Rapids, MI: Eerdmans, 2020. xx + 228 pages. Paperback; \$24.99. ISBN: 9780802874412.

Have you ever wondered how theologians develop responses to new and emerging issues at the interface between faith and science? *Ecotheology: A Christian Conversation* gives readers a front-row seat to that process, recording interactions among four contemporary theologians on the question of how human beings ought to relate to the nonhuman creation. The question is timely, contentious, and exceedingly important. At one time, human domination (dominion) over the nonhuman creation was the most widespread paradigm for that relationship. In the 1980s, Christian environmental stewardship emerged as a corrective to dominion/domination. In recent years, attempts to move beyond stewardship have taken shape. Like many theological questions, a singular and definitive answer is elusive. But the importance of the question is not in doubt. Human exploitation of the nonhuman creation has eroded ecosystems, decimated species, and changed the climate in ways that should cause remorse, bring about repentance, and cause dramatic change. We need to find a new way forward.

Unsurprisingly, the authors in *Ecotheology* don't provide a single answer. Rather, their goal is to "assist individuals and communities to develop their own ecotheology and to explore the spiritual and theological dimensions of cultivating a greater love of the world" (p. 13). In this review, we summarize and assess each theologian's contribution, and we provide some overall thoughts about the *Ecotheology* project. The structure of our review echoes the structure of the book.

Chapters 1 and 2 (reviewed by Matt Heun)

*Ecotheology* begins with Richard Bauckham's essay "Being Human in the Community of Creation," which contains one of the strongest and most effective takedowns yet of the "dominion as domination"

narrative. Short and concise, he argues (a) that God's predominant characteristic is love (goodness, compassion, justice, kindness) and (b) that "human dominion over other living creatures will reflect God's rule by showing these same qualities" (p. 30). Continuing, Bauckham argues convincingly that although stewardship has been a valuable paradigm, it ill-advisedly places humans above the nonhuman creation in a vertical power relationship. Instead, he favors the "community of creation" in which human beings live in "conscious mutuality with other creatures" (p. 21). These moves by Bauckham are both helpful and important. Rightly understanding our relationship to the nonhuman creation is essential if we are to honor its inherent value rather than focus on its value to us.

My quibbles with chapter 1 are few. First, Bauckham's focus on other "creatures" leaves one wondering about the nonhuman, noncreatures that also inhabit our planet. Does the community of creation extend to air and water? to coal deposits and lakeshore pebbles? Second, Bauckham occasionally slips into stewardship language, despite wanting to move beyond it. Indeed, his re-reading of Genesis includes "God ... entrusting to our care ... something of priceless value" (p. 25). Bauckham struggles, as we all do, to match our diction to our (eco)theology.

*Ecotheology* continues with Cynthia Moe-Lobeda's "Love Incarnate: Hope and Moral-Spiritual Power for Climate Justice." She exposes the "paradox of the [high-consuming] human," in which the good things of everyday life depend upon fossil fuels and the globalized economy in ways that cause "death and destruction due to climate change and the exploitation of people and their lands" (p. 69). She rightly identifies our consumptive patterns of life to be an externalization of Paul's lament, "I do not do the good I want, but the evil I do not want is what I do" (Romans 7:15b). Moe-Lobeda claims that agape love is the antidote to our moral inertia, and she offers eight helpful guideposts for ways to live in agape love.

My only critique is that she could have done more to highlight the challenges to living according to her guideposts. It will be much harder than "calling down ... the [climate justice] music that already exists" (p. 94).

Response from Dave Warners

Matt's praise for Bauckham's dismissal of the stewardship-as-dominion paradigm is spot on. I also agree with his point that Bauckham's "Community

of Creation” is a helpful alternative concept with the caveat that “community” should be understood more as “ecosystem,” including nonliving elements of creation. I thought Matt would comment on Bauckham’s emphasis on order in creation; evolutionarily and ecologically, creation can be a messy place, and too much emphasis on order conjures up unhelpful perceptions from the days of Natural Theology. In reviewing “Love Incarnate: Hope and Moral-Spiritual Power for Climate Justice,” Matt rightly commends Moe-Lobeda’s emphasis on love. Love sacrifices for the sake of the other, and a human-creation relationship marked by love is a worthy aspiration. A regret I had with this chapter is its nearly single-minded focus on climate change. While climate change is the pressing issue of our time, it is certainly not our exclusive ecological/eco-theological challenge.

### Chapters 3 and 4 (reviewed by Dave Warners)

Steven Bouma-Prediger’s “The Character of Earth-Keeping” does two important things. He starts by deftly detailing the limitations of the stewardship paradigm, offering “earthkeeping” as an improvement. He then pivots to a discussion on virtue ethics and their applicability to the practice of earthkeeping. I especially appreciated Steve’s focus on two of the virtues: wonder and humility. His ideas for how these virtues can be used to embody a more appropriate posture and practice of creation care are refreshing. Extending virtues into the realm of creation care is an important contribution by Bouma-Prediger both here and in his other writings. But in light of the strong encouragement for readers to cultivate these virtues, it would have been helpful to offer suggestions for how such cultivation can be achieved. Additionally, the author emphasizes that human beings are unique among all God’s creatures, which may be important for avoiding biocentric accusations. But given the many problems our species has introduced and continues to promulgate, a sobering reality check of our creatureliness, limitations, and finitude might be needed more.

In “The Unfinished Sacrament of Creation: Christian Faith and the Promise of Nature,” John Haught takes a long view of planetary well-being. He contends that an eschatological awareness should infiltrate and inform ecotheology. Haught advocates for recognizing that the world we are caring for is an emerging creation, moving from its inception toward a God-ordained end point. His emphasis that creation is in the process of coming into being is a strength of this chapter. And yet, besides encouraging Christians to

become aware of the unfolding character of creation, the reader is left wondering what should be done differently in light of this new awareness. Haught points out that our species is a remarkably recent newcomer to this ongoing creational unfolding. Given our evolutionarily recent arrival, combined with the dramatic impact we are imposing, more direction for how and why human influence ought to be exerted would have been helpful. For example, when we recognize that God has been in relationship with nonhuman creation all along, we must admit our relationship with God is of much shorter duration. This realization ought to evoke a deep respect for those other relationships, and deep regret when our selfish actions compromise or terminate them. Although practical implications of the perspectival shift Haught advocates are not provided, he lays ample groundwork for rich dialogue on the creation care actions such an awareness ought to inspire.

### Response from Matt Heun

Dave is right to appreciate both pieces of Bouma-Prediger’s chapter, earthkeeping and eco-virtues. But the author could have done more to link the concept of earthkeeping to eco-virtues. I was left wondering how earthkeeping (vs. stewardship) leads to better (or different) eco-virtue formation. As Dave says, Haught’s long view of creation is a helpful reminder that newcomer status should affect our relationship with the nonhuman creation. But should Haught have been the first chapter instead of the last? He opens a space to discuss how the relationship between human beings and the nonhuman creation should evolve, space that could have been filled by the ideas of Bauckham (the community of creation), Moe-Lobeda (working within and against systems for their reform), and Bouma-Prediger (earthkeeping and personal ethics).

If you enjoy the structure and tone of this review, you will also enjoy the format of *Ecotheology*. On the positive side, it is economical; readers experience four voices in one book and read responses to each chapter from the other co-authors.

However, if you wish that we reviewers had better coordinated our thoughts before writing this review, you will wish the same of the book. *Ecotheology* is less the conversation promised by its subtitle and more a conference session with presenters and respondents, appropriate for an audience of theologians. An alternative project would have assembled the same theologians in a collaborative writing process, allowing authors to incorporate coauthor feedback



## Book Reviews

into revised chapters before publication. The result would have been a more polished and more insightful collection of ecotheological contributions.

That said, the *Ecotheology* project is largely successful in meeting its stated goal of assisting individuals and communities to develop their own ecotheology. The chapters were great conversation starters for us. Although the book could have been sharpened by deeper dialogue and collaboration among the authors and editors, the essays and responses in *Ecotheology* will stimulate good conversations among other readers, too!

*Reviewed by David Paul Warners, Biology Department, and Matthew Kuperus Heun, Engineering Department, Calvin University, Grand Rapids, MI 49546.*

**TO THINK CHRISTIANLY: A History of L'Abri, Regent College, and the Christian Study Center Movement** by Charles E. Cotherman. Downers Grove, IL: IVP Academic, 2020. 320 pages. Hardcover; \$35.00. ISBN: 9780830852826.

How do Christians studying at secular universities, where religion is either ignored or attacked, achieve an integral Christian perspective on their areas of study and future careers? Charles Cotherman presents a first-rate history of one way that Christians have sought to answer this question, namely, in establishing Christian study centers on or adjacent to university campuses.

The Christian study center movement (CSCM) in North America arose to teach and guide Christians in how to think and behave Christianly in all areas and professions of life, by drawing upon the insights of biblical and theological studies. Cotherman defines such a study center as “a local Christian community dedicated to spiritual, intellectual and relational flourishing via the cultivation of deep spirituality, intellectual and artistic engagement, and cultivation of hospitable presence” (p. 8). He rightly contends that the roots of the CSCM movement are found in two institutions: L'Abri Fellowship in Switzerland (founded 1955) and Regent College in Vancouver (founded 1968). In Part 1, Innovation, he presents the history of these two institutions.

In chapter one, Cotherman gives an account of the birth and development of L'Abri under the leadership of Francis and Edith Schaeffer. As missionaries to an increasingly secular Europe, their encounter with its culture, art, and philosophical ideas led Francis to contextualize the gospel—as an evangelical Presbyterian minister rooted in the Reformed faith—in an intel-

lectually honest fashion to people influenced by this culture. L'Abri's ministry was so effective because of two other equally important features: the practice of a deep spirituality amidst the rhythms of everyday life, and the practice of relationships in a hospitable community, both of which Francis and Edith were instrumental in shaping. As more people visited L'Abri and were helped in their faith or accepted the gospel, it became known in the wider evangelical Christian world. This gave rise to branches of L'Abri being established in other nations, and to Christians seeking to establish communities on university campuses that embodied L'Abri's intellectual, spiritual, and relational strengths.

In chapter two, Cotherman presents the history of the rise of Regent College and its progress toward financial and academic stability at the University of British Columbia in Vancouver. The first principal, James Houston, played a key role in attracting good faculty and in shaping the curriculum to educate lay-people in the Christian worldview for their secular careers. It provided students with a strong sense of community and vital spirituality. Regent also sought to be a witness to and partner with the university by purchasing property on the campus and by obtaining university affiliation. With the decline in enrollment for lay theological education in the 1970s, Regent survived by offering the MDiv degree (1978), attracting new students preparing for pastoral ministry. When other attempts at establishing Christian colleges and Christian study centers were initiated at other universities, Houston served to encourage and guide such ventures by drawing upon Regent's experience.

Inspired by the vision and community of L'Abri and by the success of Regent College, Christians ministering at other university campuses sought to establish “evangelical living and learning centers” on or near the campuses of state universities (p. 91). Part 2, Replication, gives an account of three such CSCM ventures: (1) the C.S. Lewis Institute (initially at the University of Maryland, later in downtown Washington, DC); (2) New College, Berkeley; and (3) the Center for Christian Study at the University of Virginia, Charlottesville. Cotherman also includes in this section a chapter on the history and progress of Ligonier Ministries under the leadership and teaching gifts of R.C. Sproul (initially in Pennsylvania, then in Orlando, Florida). Although originally modelled after L'Abri as a lay-teaching retreat center in a rural setting, Ligonier's move to Orlando marked a shift to a ministry focused on Sproul's teaching gifts in (Reformed) theological education that

concentrated on video and print materials. The history of Ligonier is clearly the outlier here. Perhaps Cotherman includes it because it began as a retreat center for students, but it gradually became focused on general lay theological education, especially after its move to Orlando.

The three Christian university learning centers all began with grand visions of providing university-level education to aid students, studying at the large universities, in formulating a worldview to enable them to integrate their Christian faith with their academic and professional education. Although these three sought to become free-standing colleges with high-quality faculty, to teach courses during the academic year, and in summer study institutes, the challenges of raising funds, attracting full-time faculty, and finding permanent facilities resulted in all of them having to scale back their plans. The Lewis Institute turned its attention to relational learning, eventually establishing regional centers in eighteen cities; New College, Berkeley, became an affiliate, nondegree granting institution of the Graduate Theological Union, being the evangelical voice there; and the Center for Christian Study shifted its focus to being an inviting and hospitable place for study, formation, and relationships in its building on the edge of the campus. All three found that replicating a Regent College was a much more difficult project than they had originally thought.

Cotherman notes that all four attempts of the CSCM, in the late 1980s and early 1990s, ran into the new reality: American Christians were not willing to take a year off their careers to study for a nonaccredited diploma. Students were more interested in getting degrees that had financial payoffs. The most successful venture was the Center for Christian Study, which used the building it purchased as a hub for various Christian ministries at the university, and as a center for hospitality to Christian and non-Christian students. The Charlottesville Center became a catalyst for the formation of the Consortium of Christian Study Centers across North America. This included not only the three university centers mentioned above, but also numerous others that had arisen on university campuses. Many of the centers became convinced that “the path forward was more a matter of faithful presence through deeply rooted, engaged and hospitable relationships and institutions than it was about the apologetics or cultural bluster that had defined some aspects of the movement in its early days” (p. 252).

Cotherman’s concluding chapter notes that the CSCM has largely focused on ministries of faithful presence and generous hospitality, with the goal of holistic flourishing at the universities that they serve. Such flourishing includes helping Christian students to cultivate the ability to think Christianly about current issues and their vocations as they engage the pluralistic ideologies, cultural practices, and neopagan practices on university campuses. Cotherman rightly observes that, while both L’Abri and Regent College inspired many to establish such centers, it was Regent that had played the prominent role as a model for those aiming to guide students and to interact with modern secular universities. L’Abri was focused around the unique community that the Schaeffers created and the giftedness of Francis and Edith, but L’Abri failed to interact with the wider academic world. In striving to be a Christian presence on campus, Regent was the appropriate model for the CSCM.

The details of the historical accounts in the book serve to remind the reader that, while grandiose visions and goals drove many in the movement, their reduced aspirations led to the CSCM being better suited to effective witnessing, appropriate educating, and faithful service to students and laypeople today. Any who would start such a Christian study center or who wonder how an existing one can survive should read this book and learn the lessons from the history of the ventures presented. Humility in one’s plans and small beginnings are appropriate for any such ministry to avoid the mistakes of the centers presented.

While Cotherman touches on the rising antagonism to Christianity and Christians on university campuses, he fails to provide significant treatment of this new challenge that the CSCM faces. I think we can imply from this fine book that, as the CSCM movement adapted to the new realities in the latter part of the twentieth century, it can also adapt to the intensified attacks on the Christian faith in the twenty-first century. While the challenges ahead are great for Christian university ministries, Christian witness has the resources of the word of God, the wisdom of the Spirit, and the motivation of the gospel which continue to guide biblical discipleship and faithful witness. This historical survey by Cotherman can serve as an encouragement to campus ministry for our increasingly secularized western culture.

*Reviewed by Guenther (“Gene”) Haas, Professor Emeritus, Religion and Theology Department, Redeemer University, Ancaster, ON L9K 1J4.*

# Book Reviews

**RETRIEVING AUGUSTINE'S DOCTRINE OF CREATION: Ancient Wisdom for Current Controversy** by Gavin Ortlund. Downers Grove, IL: IVP Academic, 2020. 264 pages. Paperback; \$30.00. ISBN: 9780830853243.

With a long career (of some 40 years) and even longer paper trail (approximately 94 books with all but one surviving, between 4,000–10,000 sermons with approximately 950 available still, and nearly 300 letters extant), Augustine holds a central position as one of the most influential of theologians. He is quoted often—and too often as an authoritative proof text for one's favored position. Yet he is not often well understood. Enigmatic and difficult to parse at times, he inhabited a different world than our own. He even inhabited a different world than his own contemporaries, offering innovative and profound challenges that many could not comprehend. This was clearly the case when his great and arduous work, *The City of God*, was appropriated by Charlemagne's court in the eighth century to defend the creation of the Holy Roman Empire. Augustine's counterintuitive position and his difficult and drawn-out argument made it difficult for them to comprehend how that work not only did not support their position, it profoundly challenged its very foundations.

In some ways, Augustine's reflections on Genesis 1–3 present a similar challenge. Arguably, they are even more difficult to understand and the potential for misunderstanding is indeed high. Augustine's doctrines of creation evolves over his forty-year career and is found in five works (or major sections of works) dedicated to the subject, with numerous comments critical to unravelling his views found in diverse other works (including sermons, rarely read). Translating Augustine is not just a linguistic activity, it is a wholesale, conceptual challenge. Yet as much as he is employed and has had major impact, it is a necessity!

Gavin Ortlund has commendably thrown himself into this challenge and provided a work that is, in many ways, admirable and important. We ought to split his work into two parts, which the table of contents does not make adequately clear. The first chapter, quite long, serves as a prolegomenon attempting a synthetic overview of Augustine's cosmology. Readers here should note that cosmology is a term that one finds regularly in discussions of ancient and medieval approaches to the cosmos, but the term does not signify its current meaning. Cosmology for ancients was a theological and philosophical activity which reasoned through the underlying metaphysics, driving and defining the cosmos. The

subsequent chapters, two to five, focus rather on the book's main aim: offering lessons on impact and import for current concerns, as a form of "retrieval" per the title. The distinction between these two sections, that is, chapter 1 and chapters 2–5, is critical, though. For while I found multiple challenges and difficulties with the first section of the work, I would not want that to pre-empt the reader from looking closer as I have virtually nothing but commendation and praise for the major portion of the book, which I will address further down.

Chapter 1 seeks to outline Augustine's cosmology, which is complex, diffused, develops and alters over time, deeply embedded in the philosophical concerns and scientific views of his day without always self-evidently manifesting the views (for example, Stoic physics) and, as noted above, located across a vast corpus of writing and preaching. This is an ambitious task, and perhaps one that no single chapter can meet adequately. I suspect that Ortlund experienced distress over the magnitude of this challenge. However, the way in which he seeks to meet it belies a problem with the work. Who is it written for, the specialist or the student? If the latter, then why does this initial chapter use highly technical language and ideas that will not be readily accessible to those not trained in ancient metaphysics? Yet it is also not apparently written for the specialist, since it leaves out or fails to adequately emphasize core ideas that a specialist would expect to find. Specialists might also be frustrated by how his synthetic treatment relies in places on the work of other commentators and translators and, as a result, evinces some key misunderstandings. These include, for example, tying Augustine's doctrine of deification to immutability, misunderstanding some of the nuances of Augustine's Latin (such as *temeritas* on p. 88), depending on the translator's interpretive work (for example, presenting Augustine as naming the tree of knowledge of good and evil an apple tree, whereas the Latin is the generic "fruit tree"; it became an apple tree later in Medieval Europe), not sufficiently addressing ontology and privation—central to Augustine's theology—and thereby not appropriately addressing the building blocks of his cosmology, and not always accounting for forty years of personal development as if works from early in Augustine's career could readily be read beside those from late in his life, without sufficiently acknowledging Augustine's growth and development.

Yet, despite its technical shortcomings, the chapter also reads more like a doctoral dissertation written



for a narrow committee of specialists, focused on minutiae and using untranslated terms (such as *logos spermatikos*) that only scholars would value and easily grasp. For a work written apparently as an undergraduate textbook and for informed lay readers, it presents highly technical topics and uses scholarly traditions which make it harder for the nontechnically trained reader to easily approach the subject (such as using the Latin titles of Augustine's works in the footnotes). It lacks tools that would help students: there is no bibliography of works cited or a list of Augustine's relevant works or a substantial index (the brief index does not do his work justice, causing me to think, after an initial cursory glance, that he failed to address key issues which he does, in fact, address). Ortlund clearly wants to make Augustine accessible, but I fear this initial chapter, navigating between technical approaches and synthetic overview, in combination with these other weaknesses, does not readily accomplish that goal.

In addressing questions of concern to modern readers throughout chapters 2–5, however, Ortlund hits his stride. These address valuable, appropriate matters critical to numerous communities: Augustine's (surprising) model of humility on how one interprets Genesis 1–3 (in chap. 2 of the book); Augustine's hermeneutical management of the introductory chapters of Genesis (in chap. 3); the epic challenge of animal death and predation (in chap. 4); and the truly knotty problem of a historic Adam and Eve (in chap. 5). All offer depth, thoughtful engagement, and enrichment and are critical companions to the discussions that preoccupy readers of this journal and dominate many pulpits, church pews, classrooms, youth groups, and the like. The section is capped off with a conclusion which I found to be winsome and profound. It reiterates the key lessons Ortlund finds: the wonder at sheer createdness; humility concerning the doctrine of creation encouraging irenic behavior; acknowledging the complexity involved in interpreting the opening chapters of Genesis; the existence of different, rational intuitions about key matters which we should ourselves note, including the example here of animal death; resisting a tendency to choose in absolute terms between history and symbol, and thereby allowing for ambiguity and incompleteness (the opening of Genesis does not seek to answer every question we wish to pose). While I have noted concerns about the first chapter adequately making Augustine accessible in this book, Ortlund has certainly succeeded at demonstrating topics for which Augustine's thought and model is applicable and important.

Meanwhile, it is also critical that one attempt to translate Augustine's thought for modern readers. Ortlund reminds us of the import of bringing an author as influential and seemingly familiar—but really rather distant and difficult—as Augustine to a modern audience and, moreover, doing so without falling into the trap of simply appropriating the audience's ideas. By engaging Augustine's core set of ideas with integrity and appropriate attention to context, Ortlund helps identify and clarify Augustine's contemporary significance.

*Reviewed by Stanley P. Rosenberg, Executive Director, SCIO/Wycliffe Hall, Oxford, UK, and VP Research and Scholarship, Council for Christian Colleges & Universities, Washington, DC. †*

## Letters

### A Development Date to Consider for Ensoulment

I read your editorial in the June issue of *Perspectives on Science and Christian Faith* ("Part II: Evangelicals, Neural Organoids, and Chimeras," *PSCF* 73, no. 2 [2021]: 65). Nice article.

I'm forwarding to you a link, <https://www.vcrmed.com/fertility-treatment/monozygotic-twins/>, that shows data summarized by an organization located not far from you in Virginia. The bullet points in the link explain the timeline after fertilization for splitting of the embryo to form different types of monozygotic twins at different days. It is science-based and agrees with what I know from other sources.

As monozygotic twins age and live their adult lives, there is never any doubt that each individual twin is a separate person and presumably possesses their own soul, which had to be added after the embryo split. So, clearly ensoulment of the human embryo must not occur during the first week or so *after* the joining of the sperm and egg. At least that is the most straightforward interpretation.

This several days' delay in ensoulment would seem to make contraception (preventing uterine implantation, for example) and morning after pills immune to the criticism that those techniques are killing an ensouled embryo.

James Magner, MD  
ASA Member  
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## Author Response

Yes, there are many points of development that are argued as to when we should start to recognize the presence of a fellow human being. Magner has cited the line enforced, for example, by the government of the United Kingdom. If it is not yet biologically settled whether there are one, or two, or more souls present, then no one soul is present.

Caveat emptor, the usual theological response to this argument from those who advocate the full presence of a soul from the meeting of the egg and sperm, is that God knows the future and assigns the proper number of souls to the initially single embryo, for the number of physical individuals who will eventually result.

James C. Peterson  
Editor-in-Chief, *PSCF*

## Did God Guide Our Evolution? It from Bit?

The question of how to reconcile events in our spacetime with God acting in his creation is a very difficult and profound one (J. B. Stump, "Did God Guide Our Evolution?," *PSCF* 72, no. 1 [2020]: 15–24). In the attempt to uphold both the science of evolution and Christian theology, J. B. Stump makes two claims:

- C1. Evolution is the best scientific explanation for the origin of *Homo sapiens*.
- C2. God intentionally created human beings in God's image.<sup>1</sup>

Stump reconciles these claims by viewing the same situation with scientific or theological glasses, a sort of cognitive dualism. Even though Stump did not use the term complementarity, introduced in quantum physics by Niels Bohr, nonetheless in response letters, Randy Isaac associates the notion of cognitive dualism with complementarity.<sup>2</sup> Isaac actually considers God as working through the random mutations inherent in evolution as a way to reconcile Stump's two claims. On the other hand, Chris Barrigar emphasizes that his three strategies for reconciling science and theology does not lead to deism.<sup>3</sup> Stump retorts that his position is not exactly the same as complementarity as implied by Isaac and that he actually does not reject the three strategies of Barrigar but rather that Barrigar's account is sophisticated and subtle, and definitely worth further consideration.<sup>4</sup>

More recently, Peter J. Bussey argues that Creation took place in three stages of inclusive cognitive

dualism: physical with the Big Bang, mental, and spiritual—in concordance with the biblical notion of body/mind/spirit—with the Big Bang containing the seeds of life.<sup>4</sup>

A strict evolutionist claim would consider only Bussey's physical stage in explaining all that exists, disregarding the mental and spiritual stages as arising actually from the physical. On the other hand, a strict theological claim would consider the account in Genesis 1:1–26, which may have actually been an inspiration for the theory of evolution, to give a temporal account of creation from the simple to the complex. The apex of creation is life in unfallen or Paradisaal Man via the breath of God. Therefore, according to Christian theology, the present state of all that there is, including modern man, would be a consequence of the Fall of Man.

How then to reconcile these two disparate claims? J. A. Wheeler is one of the staunchest advocates of the idea that information is more fundamental than anything else in physics, an idea summarized by his slogan "it from bit."<sup>6</sup> Wheeler claims that existence is an information-theoretic entity. However, the notion of existence is not in the realm of physics but in that of metaphysics and theology,<sup>7</sup> which notion Wheeler contests with his Four No's and Five Clues. Accordingly, a strict scientific depiction of all that exists is thus untenable.

The presence of God in our spacetime is in the person of Jesus, God Incarnate, that is, the self-existing Word, which also upholds all things by the word of his power: that is, he created *ex nihilo* and sustains the existence of his creation.

The study of man on Earth is a historical science akin to forensic science and is best conducted with the truth of scripture in mind. Surely, this approach is quite consistent with Bussey's argument since the presence of God is needed in our spacetime to create not only life and mind but also human beings in God's image.

### Notes

<sup>1</sup>J. B. Stump, "Did God Guide Our Evolution?," *Perspectives on Science and Christian Faith* 72, no. 1 (2020): 16.

<sup>2</sup>Randy Isaac, "Does Complementarity Explain Anything?," *Perspectives on Science and Christian Faith* 72, no. 2 (2020): 126.

<sup>3</sup>Chris Barrigar, "The Agape/Probability Proposal Is Not Deist," *Perspectives on Science and Christian Faith* 72, no. 2 (2020): 126–27.

<sup>4</sup>J. B. Stump, "Response to Randy Isaac and Chris Barrigar," *Perspectives on Science and Christian Faith* 72, no. 2 (2020): 127–28.

<sup>5</sup>Peter J. Bussey, “How Might God Have Guided Evolution? Scientific and Theological Viewpoints,” *Perspectives on Science and Christian Faith* 73, no. 2 (2021): 91–99.

<sup>6</sup>John A. Wheeler, “Information, Physics, Quantum: The Search for Links,” in *Proceedings III International Symposium on Foundations of Quantum Mechanics* (Tokyo: 1989), 354–68, <https://philpapers.org/archive/WHEIPQ.pdf>; and John Archibald Wheeler, *Information, Physics, Quantum: The Search for Links*—PhilPapers [Index].

<sup>7</sup>Moorad Alexanian, “Theistic Science: The Metaphysics of Science,” *Perspectives on Science and Christian Faith* 59, no. 1 (2007): 85–86.

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### Failure to Engage the Problem of Life’s Origin

The discussion of “simplicity” versus “complexity” in abiogenesis seems to me to be the wrong question, and fails to engage the problem of life’s origin in a specific way (Emily Boring, J. B. Stump, and Stephen Freeland, “Rethinking Abiogenesis: Part I, Continuity of Life through Time,” *PSCF* 72, no. 1 [2020]: 25–36; and Emily Boring, Randy Isaac, and Stephen Freeland, “Rethinking Abiogenesis: Part II, Life as a Simplification of the Nonliving Universe,” *PSCF* 73, no. 2 [2021]: 100–113). For one thing, the two terms are ambiguous, and were not defined sufficiently to allow a definite conclusion.

More importantly, the article glossed over the unique feature that makes life possible, namely, its ability to reproduce something after its kind. To accomplish this (in anything less trivial than crystals) required the emergence of a novel level of being, that is, a genetic code that is “gratuitous,” decoupled from chemistry. The operon model with allosteric enzymes that was discovered by Monod, Jacob, and Lwoff (Nobel Prize 1965) is, after DNA, the “second secret of life.” All of life exhibits this feature, and as such it perhaps should be included in the definition of life.

Freeland’s persistent emphasis on continuity in abiogenesis ignores such decoupling and discontinuous system-level features of life. I wonder why, since it is widely emphasized in the classic literature on emergence, such as in Michael Polanyi’s article on “Life’s Irreducible Structure” (*Science* 160, no. 3834 [1968]: 1308–1312) and Philip Anderson’s essay “More Is Different” (*Science* 177, no. 4047 [1972]: 393–96). I too wrote about this decoupling feature in an article on its application to information technology. The design

of the internet, for instance, includes the idea of an information “packet” that contains external routing codes and an internal message. The content of the message is irrelevant—decoupled or “gratuitous” with respect to the routing of the packet (Paul T. Arveson, “Gratuity in Nature and Technology,” *Journal of the Washington Academy of Sciences* 85, no. 4 [1998]: 281–89).

The discovery of novel ontological levels in nature has, I believe, useful applications for ASA members, as a refutation of reductionism and as an awareness of category distinctions that we commonly encounter in science and faith discussions.

Paul Arveson  
ASA Fellow

### “Rethinking Abiogenesis Part II” Authors Respond

We thank Arveson for raising some key points of discussion. While we do not formally define “simplicity” or “complexity,” we do identify specific features of life that present lower diversity and less randomness than the universe at large. Our intent is not to declare biological complexity wrongheaded, but rather to suggest that other views are possible and worthy of deeper consideration. However, Arveson’s main focus is the underlying point of both our papers (Emily Boring, J. B. Stump, and Stephen Freeland, “Rethinking Abiogenesis: Part I, Continuity of Life through Time,” *PSCF* 72, no. 1 [2020]: 25–35; and Emily Boring, Randy Isaac, and Stephen Freeland, “Rethinking Abiogenesis: Part II, Life as a Simplification of the Nonliving Universe,” *PSCF* 73, no. 2 [2021]: 100–113), which he accurately summarizes as the following challenge: Does any clear, objectively defined state of (bio)chemistry distinguish nonliving chemistry from living biology?

We agree that life may be distinguished clearly from nonlife from the perspective with which we perceive the world today. In particular, the Central Dogma of Molecular Biology<sup>1</sup> reflects five mid-twentieth-century Nobel prizes which collectively define the material (molecular) basis for all known life:<sup>2</sup> nucleic acid genes specify protein catalysts which synthesize nucleic acid genes. Collectively, these components establish what Arveson calls “the unique feature that makes life possible, namely, its ability to reproduce something after its kind.” Indeed, Arveson refers to a sixth Nobel prize from the same time period—Monod and colleagues’ discovery of operons, regulatory



# Letters

networks among genes of related function,<sup>3</sup> a construct within the central dogma—as being “*after DNA, the ‘second secret of life’*” (alluding to Crick’s declaration that the structure of DNA is, by itself, the secret of life).<sup>4</sup> These mighty figures of science were focused on the profound insight that life as we know it can be defined in terms of a simple, universal basis. With this focus, a view of life forms which resonates with themes of system-level thinking and emergent properties, characterizing the philosophical essays of Polanyi and Anderson. It is no coincidence to us that their essays arrived as the central dogma was becoming established.

Where we respectfully diverge from these ideas is whether, decades later, the central dogma can be reasonably considered a minimum threshold for life, and thus an objective definition of where life begins. We suggest that both the material basis of this definition (the molecular components of the central dogma) and the decoupled, gratuitous features they produce are clearly outcomes of biological evolution, not preconditions for biological evolution.

To make this assertion, our articles summarize some of the subsequent research that informs prior states from which the central dogma evolved. We point to examples of such work (including a seventh Nobel prize that eroded the functional roles assigned to different biopolymers within the central dogma<sup>5</sup>) and examples of chemical evolution which, we suggest, may collectively account for the evolution of the central dogma in increments (including the decoupled gratuity we now see). For example, a leading theory for the origin of the genetic code builds exactly from the principle that today’s decoupled system evolved from direct chemical affinities between amino acids and RNA sequences.<sup>6</sup> Together, such findings cause us to question whether any objective demarcation separates evolving, living systems from evolving chemical systems. Our conclusion is that a perspective of life’s continuity with the nonliving universe may provide a more helpful view of abiogenesis for both science and theology.

Where we must rightfully concede is the diminishing scientific detail that currently describes biologies increasingly far removed from (prior to) the central dogma. A world without DNA is well supported at this point, and likewise, a world of fewer than twenty genetically encoded amino acids. Ribozymes (RNA enzymes) are an empirical fact, although an RNA world without proteins remains actively researched and debated as a stage in evolutionary history. A world of pre-RNA fragments interacting

within pre-lipid membranes may be cautiously inferred but, even then, a significant gap, populated somewhat sparsely by theory and mathematical models,<sup>7</sup> separates this “proto-living system” from such well-described, simple, and intuitively nonliving self-replicators as crystals and fire. Perhaps then our central idea is helpfully summarized as the suggestion that this gap is where we anticipate the most interesting, near-term progress as an emerging challenge to an established, classical view. So long as it is understood as such, then we are proud to make our suggestion so within *PSCF*. †

## Notes

<sup>1</sup>Francis H. C. Crick, “Central Dogma of Molecular Biology,” *Nature* 227 (1970): 561–63.

<sup>2</sup>George Wells Beadle, Edward Lawrie Tatum, and Joshua Lederberg, The Nobel Prize in Physiology or Medicine 1958, <https://www.nobelprize.org/prizes/medicine/1958/summary/>; Francis Harry Compton Crick, James Dewey Watson, and Maurice Hugh Frederick Wilkins, The Nobel Prize in Physiology or Medicine 1962, <https://www.nobelprize.org/prizes/medicine/1962/summary/>; Robert W. Holley, Har Gobind Khorana, and Marshall W. Nirenberg, The Nobel Prize in Physiology or Medicine 1968, <https://www.nobelprize.org/prizes/medicine/1968/summary/>; Max Delbrück, Alfred D. Hershey, and Salvador E. Luria, The Nobel Prize in Physiology or Medicine 1969, <https://www.nobelprize.org/prizes/medicine/1969/summary/>; Christian B. Anfinsen, Stanford Moore, and William H. Stein, The Nobel Prize in Chemistry 1972, <https://www.nobelprize.org/prizes/chemistry/1972/summary/>.

<sup>3</sup>François Jacob, André Lwoff, and Jacques Monod, The Nobel Prize in Physiology or Medicine 1965, <https://www.nobelprize.org/prizes/medicine/1965/summary/>.

<sup>4</sup>Howard Markel, “The Day Scientists Discovered the ‘Secret of Life,’” PBS NewsHour (February 28, 2013), <https://www.pbs.org/newshour/health/the-pub-where-the-secret-of-life-was-first-announced>.

<sup>5</sup>Sidney Altman and Thomas R. Cech, The Nobel Prize in Chemistry 1989, <https://www.nobelprize.org/prizes/chemistry/1989/summary/>.

<sup>6</sup>Michael Yarus, “Evolution of the Standard Genetic Code,” *Journal of Molecular Evolution* 89, no. 1–2 (2021): 19–44.

<sup>7</sup>Zhen Peng et al., “An Ecological Framework for the Analysis of Prebiotic Chemical Reaction Networks,” *Journal of Theoretical Biology* 507 (2020): 110451.

Emily Boring, Randy Isaac, and Stephen Freeland  
ASA Member, ASA Fellow, and ASA Fellow

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## American Scientific Affiliation

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## Canadian Scientific & Christian Affiliation

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A closely affiliated organization, the Canadian Scientific and Christian Affiliation, was formed in 1973 with a distinctively Canadian orientation. The CSCA and the ASA share publications (*Perspectives on Science and Christian Faith* and the *God and Nature* magazine). The CSCA subscribes to the same statement of faith as the ASA, and has the same general structure; however, it has its own governing body with a separate annual meeting in Canada.

Canadian Scientific and Christian Affiliation, PO Box 63082, University Plaza, Dundas, ON L9H 4H0. Website: [www.csc.ca](http://www.csc.ca).

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**Editorial**

- Jacob’s Stick Trick and NOMA 129 James C. Peterson

**Articles**

- Original Sin with Respect to Science, Origins,  
Historicity of Genesis, and Traditional Church Views 131 Carol A. Hill
- Three Theological Arguments in Support of Carol Hill’s  
Reading of the Historicity of Genesis and Original Sin 145 Roy Clouser
- The Twofold Character of Original Sin  
in the Real World 152 George L. Murphy
- The Significance of *The Mystery of Life’s Origin* 158 Randy Isaac

**Book Reviews**

- Early Christian Readings of Genesis One:  
Patristic Exegesis and Literal Interpretation* 163 Craig D. Allert
- The Bible & Ancient Science: Principles of Interpretation* 164 Denis O. Lamoureux
- The Waters above the Firmament: An Exemplary Case  
of Faith-Reason Conflict* 166 Dino Boccaletti
- The War That Never Was: Evolution and Christian Theology* 168 Kenneth W. Kemp
- Quantum Legacies: Dispatches from an Uncertain World* 170 David Kaiser
- Physico-Theology: Religion and Science in Europe, 1650–1750* 171 Ann Blair and  
Kaspar von Greyerz, eds.
- Science, Religion, and the Protestant Tradition: Retracing the Origins of Conflict* 173 James C. Ungureanu
- Science and Faith: Student Questions Explored* 175 Hannah Eagleson, ed.
- Science and the Good: The Tragic Quest for the Foundations of Morality* 176 James Davison Hunter and  
Paul Nedelisky
- The Territories of Human Reason: Science and Theology  
in an Age of Multiple Rationalities* 178 Alister E. McGrath
- Enhancing Christian Life: How Extended Cognition Augments Religious Community* 180 Brad D. Strawn and  
Warren S. Brown
- Jacques Ellul: A Companion to His Major Works* 181 Jacob E. Van Vleet and  
Jacob Marques Rollison
- Ecotheology: A Christian Conversation* 184 Kiara A. Jorgenson and  
Alan G. Padgett, eds.
- To Think Christianly: A History of L’Abri, Regent College,  
and the Christian Study Center Movement* 186 Charles E. Cotherman
- Retrieving Augustine’s Doctrine of Creation: Ancient Wisdom for Current Controversy* 188 Gavin Ortlund

**Letters**

- A Development Date to Consider for Ensoulment 189 James Magner, MD
- Author Response 190 James C. Peterson
- Did God Guide Our Evolution? It from Bit? 190 Moorad Alexanian
- Failure to Engage the Problem of Life’s Origin 191 Paul Arveson
- “Rethinking Abiogenesis Part II” Authors Respond 191 Emily Boring, Randy Isaac, and  
Stephen Freeland