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Haec Credimus

For in six days the Lord made heaven and earth, the sea, and all that in them is, and rested on the seventh. —Exodus 20:11

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Rightly “Dividing” the Word about Peleg: Was Earth’s unusual “division” during Peleg’s lifetime a linguistic event or a geological event?

James J. S. Johnson*

“By these were the isles of the
Gentiles divided (נִפְרְדּוּ) in their
lands; every one after his tongue,
after their families, in their
nations.”—Genesis 10:5

“And unto Eber were born two
sons: the name of one was
Peleg; for in his days was the
earth divided (נִפְלְגָה); and his
brother’s name was Joktan.”
—Genesis 10:25

“These are the families of
the sons of Noah after their
generations, in their nations:
and by these were the nations
divided (נִפְרְדּוּ) in the earth
after the flood.”—Genesis 10:32

Abstract

The Noah-to-Abraham portion of the Messianic lineage includes a man named “Peleg,” whom Scripture reports was so named because “in his days was the earth divided” (Genesis 10:25). Some have suggested that Earth was “divided,” during Peleg’s lifetime, in the sense that humanity was divided linguistically as a result of the Tower of Babel event. Others have suggested that the term “divided” (in Genesis 10:25) refers to the splitting apart of the continents, assuming that continental splittings occurred after the Flood. However, neither of these views are based upon a comprehensive philological investigation of the Hebrew vocabulary involved, which suggests that post-Flood weather patterns were then producing extraordinary riverization, with results so geomorphologically dramatic that the genealogy of Genesis 10 was worth interrupting to mention this side-note. Besides addressing the question of what Peleg’s name means, this study illustrates how Hebrew philology studies can be used, in some contexts, to clarify details of Genesis history.

Introductory Statement of the Question

Is the “division” of languages, noted in both Genesis 10:5 and Genesis 10:32, the same as the “division” of the earth,

noted in Genesis 10:25, for which Peleg was named? (And, if not, then what is the difference between those two “divisions”?)

If the “division” Peleg was named for was a *linguistic* event, namely the miracle of languages that God injected at the Tower of Babel, Peleg’s genealogical position provides us with a chronological context clue about *when* Babel occurred. Because recent analysis has

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clarified the chronological relevance of Genesis genealogy data (Johnson 2008), a linguistic “division” interpretation would sharpen the focus of biblical history’s timeframe for the post-Flood demographic migrations following the Tower of Babel miracle.

However, if the “division” Peleg was named for was a *geologic* event (such as a geographic barriers-produced “division” of the Earth’s continental land-masses, due to rising water levels following the post-Flood Ice Age), the geologic (i.e., geography-altering) “division” interpretation would sharpen the focus of creation science’s understanding of post-Flood geologic history, with serious ramifications for interpreting the geologic record from a young-earth perspective.

Either interpretation provides insights for, and invites future research about, the global history-shaping events on Earth that occurred shortly “after the Flood.”

Lastly, alternative explanations of what that could have been (geologically speaking) are identified and analyzed, from a young-earth creationist perspective.

The question this paper focuses on has been previously addressed by the founder of the biblical creation revival movement, Dr. Henry M. Morris, as follows:

Peleg—or rather, the event associated with his name—is of more interest [than his brother Joktan] today. “In his days was the earth divided.” Evidently this was a most memorable event, and Eber named his son in commemoration of it. The name *Peleg* means division. ... The big question concerns the meaning of the indicated division of the earth. The most obvious interpretation of this verse is that the division was the division of the peoples at the Tower of Babel, as discussed in Genesis 11. It is significant that some such division is mentioned here in Genesis

10:5 (“By these were the isles of the Gentiles divided in their lands; every one after his tongue, after their families, in their nations”) and Genesis 10:32 (“...by these were the nations divided in the earth after the flood.”)...These [other two] verses seem clearly to refer to a linguistic and geographic division [i.e., a language-driven demographic separation], rather than to an actual splitting of the continents. This is especially clear in verse 5, where the division is specifically “after his tongue.” [emphasis added] ... It is true that the word used for “divided” (Hebrew *palag*) in the verse associated with Peleg (10:25) is different from the word for “divided” (Hebrew *parad*) in verses 5 and 32, and this may possibly mean that two different types of division are in view....

If it is ever actually proved that the earth once was a single land mass that somehow split apart, with the segments gradually drifting away to form the present continents, then indeed this verse might be understood to refer to such an event. At present, the question of continental drift is still open among scientists; and creationist scientists have pointed to a number of unresolved physical difficulties with the whole idea. In any case, it is not at all necessary to postulate continental drifting in order to account for the populations now found in remote parts of the globe. Migrations undoubtedly took place across the former land bridges at the Bering Strait and the Malaysian Strait, when the sea level was much lower than it is now, during the centuries following the Flood when much of the earth’s water was frozen in the great continental ice sheets of the Glacial Epoch. Furthermore, early [post-diluvian] man knew how to construct seagoing vessels (their ancestors had, after all, constructed the Ark!) and could easily have trav-

eled from continent to continent by water, as much evidence from antiquity in fact indicates he did. It is just possible, however, that the great store of energy beneath the earth’s crust, much of which was released when the “fountains of the great deep” were “broken up” at the time of the Flood, provided the tremendous force needed to move continents apart, and that a further release of this energy took place in connection with the Tower of Babel (Morris, 1991).

So, recognizing that God directed Moses to employ two different Hebrew verbs, *palag* and *parad*, does that difference really make a difference? Or, are these two verbs merely synonyms used to concur in describing the same *linguistic-turned demographic* history? Or, to restate the question, does the difference between these two Hebrew verbs demonstrate an authorial intent to describe two different episodes in post-Flood history?

To investigate this puzzle, with the help of Old Testament Hebrew philology (Johnson, 2010), a review of two Hebrew verbs (and their etymological kin) is in order.

“Divided” in Genesis 10:25

The Hebrew Verb *PALAG*

What does the word “divided” mean in Genesis 10:25? The root verb is *palag*. Some form of the Hebrew verb *palag* appears in the Old Testament, in 4 instances (Wigram 1874), as follows:

- Genesis 10:25 — (*niphal* perfect: “was divided”)
- 1 Chronicles 1:19 — (*niphal* perfect: “was divided”)
- Job 38:25 — (*piél* perfect: “hath divided”)
- Psalm 55:9(10) — (*piél* imperative: “divide[!]”)

Of special importance, 1 Chronicles 1:19 uses the same Hebrew verb, *palag*,

to describe whatever it was that occurred during Peleg's lifetime, i.e., whatever it was that Peleg was named for. The text of 1 Chronicles 1:19 says:

And unto Eber were born two sons:
the name of the one was Peleg;
because in his days the earth was di-
vided [niphlegah]; and his brother's
name was Joktan.

This is the same, verbatim, as the text of Genesis 10:25. The subject of the *palag* verb is "the earth" (*ha'arets*), which is feminine. The "division" which occurred in Peleg's lifetime was a division that was imposed upon the earth, i.e., the earth was the passive recipient to the action of "dividing" that occurred.

The Hebrew Nouns **PELEG**, **PELAGGAH**, & **PELÜGGAH**

The masculine noun derived from *palag*, which has the same consonantal spelling as the verb *palag* (but is represented with different vowel pointing, to show the different pronunciation), is *peleg*, which appears 10 times in the Old Testament (Wigram, 1874), and is routinely translated as "river":

- Job 29:6—(masculine plural noun construct: "rivers of")
- Psalm 1:3—(masculine plural noun construct: "rivers of")
- Psalm 46:4(5)—(masculine plural noun with masculine suffix: "streams thereof")
- Psalm 65:9(10)—(masculine singular noun construct: "river")
- Psalm 119:136—(masculine plural noun construct: "rivers of")
- Proverbs 5:16—(masculine plural noun construct: "rivers of")
- Proverbs 21:1—(masculine plural noun construct: "rivers of")
- Isaiah 30:25—(masculine plural noun absolute: "rivers")
- Isaiah 32:2—(masculine plural noun construct: "rivers of")
- Lamentations 3:48—(masculine plural noun construct: "rivers of")

The feminine nouns derived from *palag*, which has the same consonantal

spelling as the verb *palag*, plus a soft "h," are *pelaggah* and *pelüggah* (both spelled consonantly as פלגה). These Hebrew nouns in aggregate appear four times in the Old Testament (Wigram, 1874), and are routinely translated either as "division" or "river":

- Judges 5:15—(feminine plural noun construct: "divisions of")
- Judges 5:16—(feminine plural noun construct: "divisions of")
- Job 20:17—(feminine plural noun absolute: "rivers")
- 2 Chronicles 35:5—(feminine plural noun construct: "divisions of")

Aramaic Counterparts to **PALAG & PELEG**

Also, of etymological relevance, derivatives of the related Aramaic verb *pelag* appear in the Old Testament in two instances, namely:

- Daniel 2:41—(*peal* passive feminine singular participle: "divided")
- Daniel 7:25—(*peal* participle: "a dividing")

The Aramaic feminine noun derived from the Aramaic verb *pelag*, which has the same consonantal spelling as the verb, plus a soft "h," appears as a plural once (in the Ezra 6:18), and is translated there as "divisions".

Initial Observation: **PELEG** Usually Means "River"

One immediate observation, from the above philological investigation, is apparent: *peleg*, the masculine noun derived the root verb *palag*, basically means "river." Thus, the most basic idea of *palag* and *peleg* is that of a "river." And land that is "divided" by such a watercourse could be called "riven," just as a "creek" flows through a "crack" in the land, and a "brook" flows through a "break" in the land.

Also, as this paper will later emphasize, the concept of a *peleg* ("river") is not limited to artificial watercourses, such as drainage ditches or irrigation canals. Job 38:25–27 refers to how God

provides for the rain-driven hydrology of the wilderness, by "dividing" a channel for the water to flow through, in order to provide needed water for wilderness vegetarian.

Who hath divided [*pilêg*] a watercourse [*te'alah*] for the overflowing of waters, or a way for the lightning of thunder, to cause it to rain on the earth, where no man is; on the wilderness, wherein there is no man, to satisfy the desolate and waste ground; and to cause the bud of the tender herb [i.e., vegetation sproutings] to spring forth?

In other words, *palag* is a Hebrew verb that is used to describe the formation of river-flow drainage systems in the earth, including "wild" and "desolate" places (as noted in Job 38:25–27) where no humans live!

"Divided" in Genesis 10:5 and in Genesis 10:32

What is the meaning of "divided" as that word appears in both Genesis 10:5 and in Genesis 10:32? The basic root verb is פָּרַד (transliterated as *parad*). Some form of the verb *parad* appears in the Old Testament, in 26 instances (Wigram 1874), as follows:

- Genesis 2:10—(*niphal* imperfect singular: "was parted")
- Genesis 10:5—(*niphal* perfect plural: "were divided")
- Genesis 10:32—(*niphal* perfect plural: "were divided")
- Genesis 13:9—(*niphal* imperative: "separate thyself")
- Genesis 13:11—(*niphal* imperfect plural, with : "separated themselves")
- Genesis 13:14—(*niphal* infinitive singular: "was separated")
- Genesis 25:23—(*niphal* imperfect: "shall be separated")
- Genesis 30:40—(*hiphil* perfect singular: "did separate")
- Deuteronomy 32:8 (*hiphil* infinitive singular: "when He separated")
- Judges 4:11—(*niphal* participle

- singular: “had separated himself”)
- Ruth 1:17 — (*hiphil* imperfect: “part”)
- 2 Samuel 1:23 — (*niphal* perfect plural: “were divided”)
- 2 Kings 2:11 — (*hiphil* imperfect, with ʾ: “and parted”)
- Nehemiah 4:19(13) — (*niphal* participle plural: “are separated”)
- Esther 3:8 — (*pual* participle, with ʾ: “and dispersed”)
- Job 4:11 — (*hithpaël* imperfect plural: “are scattered abroad”)
- Job 41:17(9) — (*hithpaël* imperfect plural: “be sundered”)
- Psalm 22:14(15) — (*hithpaël* perfect, with ʾ: “and are out of joint” or “sundered”)
- Psalm 92:9(10) — (*hithpaël* imperfect plural: “shall be scattered”)
- Proverbs 16:28 — (*hiphil* participle: “separateth”)
- Proverbs 17:9 — (*hiphil* participle: “separateth”)
- Proverbs 18:1 — (*niphal* participle singular: “having separated himself”)
- Proverbs 18:18 — (*hiphil* imperfect: “parteth”)
- Proverbs 19:4 — (*niphal* imperfect: “is separated”)
- Ezekiel 1:1 — (*qal* [“paül”] participle: “were stretched”)
- Hosea 4:14 — (*piël* imperfect plural: “are separated”)

Of these instances of the verb *parad*, the one that requires immediate attention is Deuteronomy 32:8, because it describes the same “division” (or “separation”) of mankind that is denoted in Genesis 10:5 and 10:32, i.e., the division of the human race, demographically speaking, as a consequence of the linguistic fragmentation of people due to God’s reaction to the Tower of Babel’s humanistic rebellion (under Nimrod). The text of Deuteronomy 32:8 says:

When the Most High divided [literally, “in the Most High’s having caused to have inheritance”] to the nations [*goyim*] their inheritance, **when He separated** [a form of *pārad*] the sons of

Adam, He set the bounds of the people [‘*ammim*, “peoples”] according to the number of the children of Israel.

The form of *parad* in Deuteronomy 32:8 begins with a context-indicating prepositional prefix (*be*), followed by a *hiphil* (active causative) infinitive form of *parad*, followed by a third person singular masculine pronoun suffix (meaning “of him,” i.e., of Adam, whose “sons” represent him in human history). Of special importance, the information in the verse indicates that God separated mankind into “nations” (*goyim*), who are also called “peoples” (*ammim*), with the established demographics of that new set of anthropological subdivisions to be somehow linked to the “number” of the “sons” (*benê*—i.e., direct descendants) of Israel. (Oddly, the Septuagint Greek translation erroneously says “God” in Deuteronomy 32:8, where it should say “Israel.”) This demographic “division” of mankind appears to be the same demographic division noted in Genesis 10:5 and 10:32.

In Deuteronomy 32:8, Moses describes the divine action from the perspective of its cause, God’s action, because God actively “caused” (using a *hiphil* verb form) division to be imposed upon the descendants of Adam.

However, in Genesis 10:5 and 10:32, Moses describes God’s action using *niphal* perfect verbs, emphasizing the passive role of the people-groups who became “divided” by language barriers, thus highlighting the received effect of God’s action upon all of those people-groups who are indicated in that part of Genesis chapter 10’s “Table of Nations.”

Further Critique of the “Traditional” View

The “linguistic explanation” is probably the most popular explanation given for the meaning of Genesis 10:25, as Dr. John D. Morris noted in 1993:

The traditional interpretation relates Peleg’s day to the division of

language/family groups at the Tower of Babel. Comparing the lineage of Shem, which includes Peleg, to the lineage of Ham, which includes Nimrod, leader of the rebellion at Babel, we find it likely that Peleg was born soon after the dispersion (assuming the genealogies are complete). Thus it would have been reasonable for his father Eber to name a son in commemoration of this miraculous event (Morris, 1993).

Dr. David M. Fouts has more recently (i.e., in 1998) reminded us that the “linguistic explanation” is still the “traditional” view, within his very informative discussion of possible explanations of Genesis 10:25’s meaning:

Division of tongues/genealogies.

The traditional understanding of Gen[esis] 10:25 has been that the etiological notice appearing with Peleg’s name (“for in his days the earth was divided [*niplegāh*]”) is a literary foreshadowing of the division of languages in the account of the tower of Babel (chap. 11) and/or that it also may serve to demonstrate a division of Eber’s line into the ancestors of Abraham on the one hand and the builders of Babylon on the other. Those who support a traditional view include Keil and Delitzsch, Morris and Whitcomb, G. C. Aalders, H. C. Leupold, Allen Ross, John Sailhamer, Victor Hamilton, Richard T. White and Jewish sources (Fouts, 1998).

For example, Allen Ross promotes the “traditional” view via his Genesis commentary within the Old Testament volume of the *Bible Knowledge Commentary*, a valuable work from present and former faculty of Dallas Theological Seminary (Ross, 1985).

One of the problems, however—at least for those who hold a commitment to an inerrantist “every-jot-and-tittle” Bibliology—is the difference between the Hebrew verbs used for the post-Babel language-driven demographic “division”

of the earth by the new people-groups (as illustrated by Genesis 10:5 and 10:32), and the Hebrew verbs used to describe whatever happened “in the days” of Peleg (as illustrated by Genesis 10:25 and 1 Chronicles 1:19). To re-quote Dr. Fouts:

Since 10:5, 10:20 and 10:31 provide summaries of the lineages of Japheth, Ham and Shem that foreshadow the events of Genesis 11, with 10:5, 32 properly using *parad* for that separation, what then is the purpose of 10:25 with its particular use of both the nominal *peleg* and verbal *palag*? If it also refers to the division of languages in the time of Peleg, what purpose is served by its redundant insertion here? (Fouts, 1988)

Review of Some “Geological Event” Perspectives

This paper is not alone in concluding that the “division” Peleg was named for was a geological (as opposed to a linguistic) matter.

However, the bulk of “geological explanation” proponents have offered “continental drift” as the geological explanation, which is a geological explanation the current author is reluctant to adopt. But it does indicate, at the very least, that some analysts have been dissatisfied with a “linguistic explanation” for Peleg’s naming:

Continental drift. Recently attempts have been made by certain young-earth creationists to see in Gen 10:25 a reference to the drift between the continents. Proponents include Donald Gray Barnhouse and Bernard Northrup. To argue in this manner involves concentrating on the basic meaning of the root *plg* and its derivations in other languages, particularly Greek.

The noun *peleg* occurs ten times in Scripture, and each time watercourses (canals, tears, etc.) or rivers are in view (Job 29:6; Pss 1:3;

46:5[6]; 65:9[10]; 119:136; Prov 5:16; 21:1; Isa 30:25; 32:2; Lam 3:48). The noun *pelagga* in Job 20:17 also refers to rivers. One might see in this usage a division of land by water.

Northrup traces the development of the root *plg* from its Semitic cognates to its derivations. He concludes that the emphasis in Greek refers to dividing land masses by larger bodies of water, such as seas or oceans. Therefore the reference in Gen 10:25 must be to the division of the earth by large bodies of water and as such must be a reference to continental drift.

Though one may certainly commend Northrup for his intriguing proposal, one must also question his reasoning with respect to how the usage of a given word in classical Greek can determine the usage of a similar word in Pentateuchal Hebrew—unless, of course, one accepts the documentary hypothesis. Even so, the traditionally understood dates for J (ca. 850 BC) and E (ca. 750) are probably still too early to be influenced by classical Greek (ca. 700–300). While one might argue successfully that the root *plg* in classical Greek may have derived from Semitic, one may not then impose the Greek gloss on the chronologically older basis for the alleged derivation. My colleague Gary Schnittjer says of Northrup’s reasoning that “only someone straining to prove a particular theological position would argue that way.”

Northrup also argues that *‘ereš* in Gen 10:25 must be understood as referring to the “earth” rather than a given “land.” To be sure, *‘ereš* means “earth” often in Genesis and elsewhere in Scripture. But the fact remains that it is most often used in the Pentateuch to refer to the land of promise as a specific geographical region. Otherwise context will

aid in determining its usage, such as in Gen 10:10; 11:2 (“the land of Shinar”).

One would also think that for such a dramatic event as continental drift to occur in the days of an individual would be as cataclysmic as Noah’s flood and would warrant similar space in Scripture due to its earthshaking importance (Fouts, 1998).

Professor Fouts, like the present author, is unpersuaded that the “continental drift” theory fits Peleg’s historic naming. Fouts proposes another explanation, which he sponsors un-dogmatically, focusing on the watercourse-related contexts of biblical verses that use a form of the Hebrew verb *palag*:

Canalization. A third view that may be developed here is that the notice of the division of the earth in the days of Peleg may instead be an incidental reference to the widespread canalization of the land of Mesopotamia. This view recognizes the semantic field of the word but limits its meaning to canals or smaller streams of water, following its primary usage in the OT. Furthermore it has cognates in both Akkadian (*palgu*) and Ugaritic (*plg*), both of which mean “canal.” Though the idea came to me after studying the issues involved, it was published already by John Skinner and was more recently suggested as a possibility by Victor Hamilton.

Can *peleg* assume the meaning of “canal” or “watercourse”? There seem to be some OT contexts that would accept this rendering. Initially one thinks of Job 38:25, a creation context in which it is stated that God makes a watercourse for the flood, synonymously parallel to a way for the thunderbolt. Could this then be akin to a drainage ditch? Proverbs 21:1 refers to God turning the king’s heart as one turns “channels” of water. How may water best be chan-

neled if not by irrigation canals? In Deut. 11:10 reference is made to watering gardens with the foot. The ancient Egyptians may have had foot pumps that were used in connection with irrigation canals. In Isa 32:2 *peleg* may refer to an irrigation ditch or canal in that normally dry places are watered by oases rather than naturally occurring living streams. The meaning “canal” for Akkadian *palgu* and Ugaritic *plg* both might argue for that meaning at least in some of the Hebrew occurrences.

In context the land of Genesis 10–11 seems to indicate the land of Shinar or Mesopotamia (10:10; 11:2) rather than the earth as a whole or Palestine in particular. Hence *ereš* here will either refer to humanity or to the land of Shinar itself with certain exceptions: In the summaries of 10:5, 20, 31 are proleptic references to “lands” that I think look forward to the obviously worldwide dispersion indicated in 11:8–9.

Since 10:5, 10:20 and 10:31 provide summaries of the lineages of Japheth, Ham and Shem that foreshadow the events of Genesis 11, with 10:5, 32 properly using *parad* for that separation, what then is the purpose of 10:25 with its particular use of both the nominal *peleg* and verbal *palag*? If it also refers to the division of languages in the time of Peleg, what purpose is served by its redundant insertion here?

Also, of what significance is the nominal idea of a watercourse within the name Peleg itself? The verse in question may seem instead to offer an incidental statement of the widespread development of the renowned canal system of Mesopotamia. Peleg was named such (“canal”) because in his days the land was *divided by watercourses* (“canalized”) (Fouts, 1998).

But would localized canalization be important enough, in God’s writing the

Bible through Moses, to be included in an otherwise straight-forward genealogy record? No.

The *manmade* canals of Mesopotamia, whatever the record therefore may be, may have impressed many humans during biblical times, just as *manmade* pyramid-building would impress those who visit the pyramids of Egypt or of Mesoamerica.

But was God that impressed, to the point He would have chosen to have an allusion to such regional canalization to be inserted as an unusual detail appended to Peleg’s listing in Genesis chapter 10’s “Table of Nations”? Unlikely.

Recall that God chose not to record the names of the royal pharaohs of Egypt (whom many humans thought were very important). Yet God chose to record the names of the midwives (Shiphrah and Puah, named in Exodus 1:15) who resisted the infanticide decree of a pharaoh (whose name we still argue about, because God chose not to record it in Scripture).

Many whom “the world” recognizes as “big people” are discounted as “little” by God, Who evaluates people by His own standards. Also, many whom “the world deems as “little people” God has graciously chosen to recognize as being “great.” Likewise, the Moabite Stone recalls the northern kingdom of Israel as “the Land of Omri,” but what do we learn of King Omri in Scripture? Very little. Omri is probably best known to Bible readers as the father of wicked King Ahab and the father-in-law to wicked Queen Jezebel, illustrating how the content of Scripture is unlikely to match what humans deem “important.”

However, as this paper will show later, the concept of “canalization” is very close to what this paper will ultimately suggest as the preferable explanation for *how* the earth “was divided,” historically, “in the days of Peleg.”

Meanwhile, “canalization” is not the only geological (or geographic) explanation, besides “continental drift” theory,

available to explain what Genesis 10:25 alludes to. Dr. John D. Morris, in 1993, considered the following geology-oriented explanations, including his succinct analysis for why “continental drift” is *not* an attractive explanation:

There have been many treatments of the verse [i.e., Genesis 10:25]. One suggests that “divided” implies “surveyed” as in divided into [cartographic] grids. Could the early post-Flood inhabitants have explored and mapped the new earth, so radically different from the pre-Flood earth? There *are* ancient maps and traditions of far-away continents.

Another deals with the possibility of continental separation. Geologists have marshaled much evidence that the continents were once together.

But while continental separation is well supported, it is still unproven, and very likely unprovable. Many competing concepts have been proposed in the geologic literature, and serious difficulties remain, the weightiest of which is the lack of a sufficient mechanism to move the continents. In fact, the most viable concepts are coming from young-earth creationists, employing the overall Flood scenario as the mechanism and timing for the separation. At least the destruction of the earth’s surface at the time of the Flood has the potential to move continents!

But any scheme of rapid separation would itself cause havoc on the earth. If the Atlantic Ocean opened up rapidly, the destructive tsunamis, earthquakes, and volcanoes would make life impossible on earth.

For this reason, I am convinced that Genesis 10:25 should not be understood to imply that “In the days of Peleg the Atlantic Ocean opened up.” This would have caused devastation comparable to Noah’s Flood, and the Bible has no mention of it. If the continents separated, they did so *during* Noah’s Flood. ... One

“separator” did occur sometime after the dispersion. The Ice Age, which followed the Flood, would have caused sea level to be an estimated 600 feet lower than today, since such a great volume of water was trapped as ice on the continents. Such a lowering of today’s seas would reconnect the continents once again. The connected continents would have aided in both animal and human migration following both the Flood and the dispersion, as commanded by God (**Genesis 8:17; 11:4,8,9**). Then the ending of the Ice Age and the melting of the ice sheets would cause sea level to rise, covering the land bridges and “dividing” the continents after migration had occurred. Perhaps this is what happened “in the days of Peleg.” (Morris, 1993)

More about post-Ice Age changes will follow. But first additional attention will be given to the critical importance of looking for catastrophist explanations.

Review of Some Catastrophist Geology Concepts

Catastrophes Explain Many of Earth’s Landscapes

Earth history is dominated by *catastrophist geology*, including its *river systems*. This important clarification has been emphasized by creationist geoscientists such as Dr. Steve Austin:

The most popular theories for the origin of the form of the earth’s surface features suppose that they have been sculptured during vast time periods by erosive processes similar in rate, scale and intensity to modern processes. The theory that dominates modern geomorphology was formulated nearly a hundred years ago by William Morris Davis, a Harvard geologist. He supposed that landscapes did not develop haphazardly, but evolved through a series of stages as the stream drainage slowly

eroded channels upslope and as valleys were progressively widened and deepened. According to Davis, the “youthful” stage of landscape evolution immediately follows uplift and is characterized by poor drainage, and narrow, V-shaped valleys between flat and wide interstream divides. After a few millions of years of erosion, the maximum relief “mature” stage would be achieved with well-integrated stream drainage, and deep, wide valleys, between narrow and rounded interstream divides. Finally, if erosion continued unchecked, the landscape could enter the “old age” stage where the surface becomes a poorly drained “peneplain” with streams of low gradient meandering over extensive flood plains at elevations just above sea level. ... The basic issue crucial to assessment of the merits of evolutionary theories for the origin of landscapes is *whether the landforms we observe today have had any permanence*. According to Davisian theory (and other, similar theories), the entire land surface has changed its form slowly and continuously over long periods of time. Davis, for example, supposed that the angle of a slope would decrease as an uplifted area was slowly eroded with the landform changing shape until a low-relief plain near sea level was produced. In short, Davis’ view is that landscapes are transient features having no permanence: they have *evolved*. All features of the earth’s surface are viewed by the Davisian system as being at various stages along a continuum of change.

An alternate idea is the *non-evolutionary* or what might be called the catastrophist theory for the origin of landscapes. Instead of being the products of long continued processes operating at essentially modern rate, scale and intensity, landscapes could be remnants formed by *catastrophic* processes which acted at significantly

increased rate, scale and intensity above what we observe today. The ancient processes which formed the landscape would be discordant with modern processes acting on that landscape; no continuum of change and no stages of evolution would exist. Modern erosion processes would be viewed as entirely *destroying* an ancient landscape, not *transforming* it from one equilibrium stage to another. Such a landscape would contain *relict* landforms, surface features which were created by erosional or depositional processes no longer acting. Relict features on the earth’s surface would make the landscape appear as a “museum,” and such features, in contrast to the Davisian system, would have a great degree of *permanence*.

It is not well appreciated, but nevertheless true: *evolution of landscapes has simply been assumed, not proved*. The non-evolutionary or catastrophist theory has largely been spurned or ignored by the majority of geomorphologists, as the catastrophists were supposedly refuted more than a hundred years ago. Now with the recent rebirth of interest in catastrophism as an important element of geomorphology the alternate landscape theory needs to be considered.

Elevated Paleoplains

According to evolutionary theories for the origin of landscapes, elevated plains should be rapidly incised by erosion and bear a well-developed drainage system in only a few millions of years. *Elevated*, low relief land surfaces, therefore, should be evidence of the “youthful” stage of landscape evolution, while *low-lying*, low relief surfaces (“peneplains”) might indicate the “old age” stage. C.R. Twidale, a physical geographer from Australia, argues that remnants of old paleosurfaces of low relief (what he calls “paleoplains”) con-

stitute an important part of many contemporary landscapes in various parts of the world. Some of these elevated paleoplains are assigned “Jurassic” or even “Triassic” ages (approximately 200 million years in the evolutionary-uniformitarian estimates of age). Examples of elevated paleoplains include the enormous Gondwana Surface of southern Africa (a large part of which has been assigned a “Cretaceous” age) and various paleoplains of central and western Australia (some of which has been assigned probable “Triassic” age). L.C. King believes that these paleoplains were formed by erosion due to sheet flooding of the surface (the “pediplain” idea). Today they are being destroyed by downcutting erosion in stream channels.

What is amazing is that these plains have survived without major stream channel erosion. Twidale says, “The survival of these paleoforms is in some degree an embarrassment to all the commonly accepted models of landscape development.” He notes that the Davisian theory offers “no theoretical possibility for the survival of paleoforms,” and marvels at the “ample time for the very ancient features preserved in the present landscape to have been eradicated several times over.”

Underfit Streams

Evolutionary theories for the origin of landscapes assume near constancy of discharge of streams and a steady rate of erosion as a landscape evolved. It is with interest that we look at stream and river valleys for evidence of ancient water flow rates. Studies by G.H. Dury on modern stream channels and river valleys prove that many are too large for the streams that they contain. He argues that most modern streams at some point on their channel are “underfit.” Dury speaks of the “continent-wide distribution of underfit streams.”

Using channel meander characteristics, Dury concludes that streams frequently had 20 to 60 times their present discharge.

H.F. Garner calls our attention to examples from all continents of dry channels associated with underfit streams which once carried surges of flood waters. Evidence is found in relict channel labyrinths along the Mississippi River in eastern Missouri, in the central Sahara south of Tibesti, in the sculptured terrain of Wright Dry Valley, Antarctica, and in the scabland of eastern Washington State. The anastomosing channels of eastern Washington are now believed to have formed by floods which more or less simultaneously inundated 10,000 square miles with water to a depth of as much as 400 feet. The enormous dry channels, giant waterfall scars and colossal boulder and gravel bars of eastern Washington are relict landforms not forming by extant processes along the present Columbia River.

Submarine Canyons and Deep-Sea Valleys

Evolutionary theorists for the origin of landscapes also suppose that ocean floor topography evolved. The continental slope around the submerged margins of all the continents is often cut by incisions, ravines and valleys, the most spectacular of which are *submarine canyons*. Like their counterparts on land, submarine canyons usually have dendritic pattern, steep walls, sinuous valley, and V-shaped cross-section. Some submarine canyons are associated with the mouths of large rivers (e.g., the Congo, Columbia, Hudson and Rhone rivers), and serve as conduits for transport of terrigenous sediments from continents to the deep ocean basin. Most canyons, however, are not associated with the mouths of modern rivers, and some are not

even on the continental margin, but occur around islands. The Great Bahama Canyon in the Bahamas appears to be the world’s deepest canyon (depth 14,000 feet, width 40 nautical miles, length 125 nautical miles) being more than twice the size of the Grand Canyon!

Even more amazing are the *deep-sea valleys* found on the floors of all the major oceans. These can be traced across thousands of miles of deep-sea floor and are known to contain sediment as coarse as gravel moved unimaginable distances from presumed continental sources.

The Origin of submarine canyons and deep-sea valleys has long-puzzled marine geologists. What process or processes could erode such canyons and valleys so far below sea level? F.P. Shepard, who has studied submarine canyons and valleys for more than 50 years, can make few definite statements about their origin. His book leaves the origin of submarine canyons and valleys a major unsolved mystery. Turbidity currents, episodic, aqueous gravity flows on the sea floor, may explain the major mode of sediment transport, and possibly some canyon erosion, but such phenomena would be required on an extremely catastrophic scale to explain the gravel in deep-sea valleys so far from continents. The data indicate that most submarine canyons and deep-sea valleys are relicts, formed at earlier times, not evolving on a daily basis.

Conclusion

The data of geology directly challenge the theory that the earth’s landscapes slowly evolved to their present configuration.

Instead, a catastrophic view for the origin of landscapes seems most reasonable. Could the landforms of earth include many features related to widespread flooding and glaciation? Such an interpretation

seems most natural. Steady evolution? — No! Catastrophe? — Yes! (Austin, 1983)

One reason for quoting Dr. Austin's article is to emphasize that biblical creationist thinking about the first few centuries that immediately followed the Genesis Flood must be considered within *catastrophist* Flood-consistent geology concepts—because gradualistic *uniformitarian* concepts guarantee geological analysis errors.

River Systems Show Earlier Waterflow Dynamics

Secondly, Dr. Austin's above-quoted article reminds us of the fast-and-powerful dramatic forces that have helped to shape Earth's historic geology. Some of the ancient world's geologic history is recorded in the physical shapes of riverbeds and river-plains that appear to be permanently carved into the earth as geological documentation of past riverine action.

For example, Dr. Austin (citing G. H. Dury) alluded to the recognized relationship between a meandering river's wavelength and the intensity of that river's historic discharge, when that meandering pattern was formed on a river's banks. That river-flow relationship is described by Michael Oard as follows:

Dury has worked, for years, on relating meander wavelength to river discharge for both present and past rivers. In general, discharge rate increases with the square of the average meander wavelength (Dury, 1976, pp. 222–224; Williams, 1988, pp. 328–330). Dury has found that the average palomeander in the United States is five times the meander of the current underfit stream or river (Baker, 1983, p. 120). Near the ice front in Wisconsin, the meanders are ten times larger. This implies an average discharge 25 times greater than the present value, and discharge values near the face of the

melting ice sheets 100 times greater than present stream-flow in the area. Dury (1976) later modified these estimates with more data, and a better meander geometry—discharge relationship. The revised values came out to 18 and 66 times, in place of 25 and 100 times. He (Dury, 1976) also found consistent relationships between meander wavelength, bed width, drainage area, and several other variables. Dury attributes the much higher discharges of paleorivers to higher precipitation during the ice age, and to melting of the ice sheets. The above figures for past river discharge are difficult for most uniformitarian scientists to accept (Oard, 1990).

It is important to note that riverine systems of immensely greater water-flow and intensity must themselves have a sufficiently *powerful* cause, as well as a sufficiently large *quantity* of water-mass, such as the mass of highly-energized water one faces from a hurricane (e.g., Katrina).

Underfit river-canyon systems or river-plain systems like the Mississippi River Valley, the Grand Canyon, the Nile River, and the Amazon River are *not* morphologically caused by “peaceful” streams uniformitarianistically eroding land over eons of time. Rather, a huge amount of water, moving with a huge amount of energy, at a huge speed, can produce huge changes in a hurry.

Catastrophic Waterflows Can Produce Cavitation

One cause of catastrophic geomorphology change is the process of super-powered erosion called *cavitation*, an awesome action that ripped apart concrete and bedrock at Glen Canyon Dam during 1983. (Partial vacuums can be formed, at minute levels during high-speed waterflow, providing a ripping force that literally tears apart bedrock.)

Dr. Steven Austin described this waterflow-caused cavitation as ripping

through 3-foot-thick, steel-reinforced concrete as well as red sandstone bedrock, in an amazing snowmelt runoff-triggered waterflow, at waterflow rates that approached 148,000 cubic feet *per second*, at the Glen Canyon Dam on the Colorado River just above Grand Canyon (Austin, 1994).

A lot of water, a lot of energy, a lot of speed, producing catastrophic change in a hurry! This cataclysmic reality, which includes the unprecedented violence of the draining floodwaters, has been further analyzed by Dr. Tim Clarey's diluvian megasequence-linked research (Clarey, 2015; Clarey, 2017; Johnson, 2018).

Hypercanes Cause Catastrophic Rainfalls and Surges

Another cause of catastrophic geomorphology change is a *hurricane*, such as Hurricane Katrina. But imagine a *super-hurricane* that moves three or four times faster than “normal hurricanes” that we moderns have observed in our lifetimes. Such hypercanes are likely to cause four times as much physical damage, compared to that of a “normal hurricane” (Vardiman, 2003), while dumping more than 10 times as much rainfall, as they hurl themselves much farther inland than do hurricanes of our era, meanwhile sustaining their furious tempestuousness much longer over land (before they eventually fizzle out) than do normal hurricanes. The relative destructiveness of a hurricane is estimated according to this formula: kinetic energy is equal to one-half of the mass, times the velocity squared. Thus, if you double the wind speed, you quadruple the kinetic energy and therefore also the kinetic energy-caused damage. This estimate is realistic because the damage of a hurricane is fairly proportional to the amount of kinetic energy the hurricane has (Vardiman, 2003).

Such super-hurricanes are called “hypercanes” and they can produce catastrophic geomorphology change

that we can only imagine. About such hypercanes Dr. Larry Vardiman writes:

If the geologic processes of the Genesis Flood were as catastrophic as biblical and scientific evidence suggests, the oceans would have been strongly heated by the release of magma from the mantle and the conversion of geologic work to heat. During and following the Flood, tremendous quantities of heat and water vapor would have been released into the atmosphere from the oceans. Local weather and global climate would have been dramatically altered for many years.

Kerry Emanuel of the Massachusetts Institute of Technology suggests that hurricanes would intensify beyond normally observed intensities today if they existed over unusually warm water for extended periods of time. He calls these hurricanes, which could have horizontal winds exceeding 300 mph, hypercanes. They can be simulated in numerical mesoscale meteorology models when the sea-surface temperature is increased to temperatures warmer than about 30°C.

This paper will explore the rate of development and intensity to which such hurricanes can reach when sea-surface temperatures are warmer than typically observed today. The amplification of Florence, a weak hurricane which formed in the Gulf of Mexico and moved northward toward New Orleans in 1988, is simulated by artificially setting the sea-surface temperature over a large area of the Gulf to 45°C, about 15°C warmer than the warmest waters in the tropics. The simulated hypercane immediately formed deep convection, dramatically increased its rate of rotation, quadrupled its vertical and horizontal winds, and increased its precipitation rate by a factor of about ten over that of the actual hurricane.

It will be shown that warmer sea-surface temperatures likely during and following the Genesis Flood for many years would have produced hypercanes with great destructive power which could have continued the devastation over continental areas. Extreme precipitation events on the tropical continents for several hundred years after the Flood may have eroded large areas of unconsolidated sediments. In mid-latitude, polar, and high mountainous regions hypercanes probably would have contributed significantly to the accumulation of snow and ice during the “ice age.”

It is recommended that simulations of hypercanes over the open ocean and for cooler sea-surface temperatures be conducted and the size to which they grow be identified. It is further recommended that the impact of heavy precipitation, winds, and storm surges be studied on the erosion of unconsolidated land masses near continental boundaries. Also, the contribution of hypercanes to the formation of ice sheets and glaciers during the ice age should be explored (Vardiman, 2003).

Thankfully, the kind of hypercanes that would have been *not-so-unusual* in the first couple of centuries following the Flood are *not* likely to ever become frequent in our present world situation. Says Dr. Vardiman:

In *Hypercane* Florence [computerized extrapolation-based simulations] with a simulated sea-surface temperature of 45°C many variables increased dramatically compared to the actual values observed in [the historically real] Hurricane Florence [of 1988]. The horizontal wind speeds quadrupled to over 200 m/s, the vertical wind speeds increased to over 50 m/s, the vorticity increased by a factor of over four, the blowoff covered an extreme area over the Gulf of Mexico, and precipitation

rates increased by a factor of ten over those observed in Hurricane Florence, to over 10 inches/hour. Warm sea-surface temperature can intensify hurricanes to hypercane categories in [< 18] hours.

The size and intensity of such hypercanes would be devastating if they occurred today. They don't occur because the sea-surface temperature never reaches 45°C, rarely exceeding 30°C, which is the threshold for major hurricane development used by hurricane forecasters (Dunn & Miler, 1964, p. 129)... (Vardiman, 2003).

As a “soon-after-the-Flood” weather-pattern scenario, hypercanes can explain a serious dynamic for changing Earth's geomorphology, not locally, but globally:

For every doubling of wind speed, the damage is quadrupled. Most damage and loss of life from hurricanes is actually caused by the storm surge, a buildup in water depth as a hurricane sweeps water toward a coastline. The flooding of coastlines by surges 20–30 feet deep from typical hurricanes could be increased many times over by hypercanes which would be many times larger and more intense.

It seems likely that the presence of large regions of warm sea-surface temperature during and immediately following the Genesis Flood would have caused many hypercanes to have occurred over the oceans and to have made landfall on the eastern side of continents in the subtropics [e.g., the Mid-eastern lands would be overreached by Indian Ocean-born hypercanes]. These hypercanes have probably been particularly frequent and intense above mid-ocean ridges where significant quantities of heat would have been released. When these hypercanes made landfall, they would have dumped massive quantities of rain on as yet unconsolidated sediments and produced

incredible amounts of erosion. Storm surges would be devastating to the coastal boundaries. The most likely location for hypercane landfalls and such erosion would have been on the eastern edges of continents between about 10° and 40° latitude [the so-called “10–40 window”]....

It has been suggested that once a “lava crust” has been formed on the mid-ocean ridges, heat flow from the magma to the water would decrease rapidly, preventing the formation of warm sea-surface temperatures and reducing the likelihood of hypercanes. The reduction of heat flow and the subsequent formation of hypercanes would have occurred at some point [soon] after the Flood. We obviously don’t have the formation of hypercanes today, although there is some evidence for periodic releases of significant quantities of heat along the mid-ocean ridges, particularly in the southern Pacific. However, during the Flood and for some time following it, the extrusion of magma onto the ocean floor would have been so rapid that a “lava crust” would have been continually cracked and pushed aside as new magma was released. In fact, I anticipate that the opposite problem [i.e., opposite of the problem of rapid cooling] may have been likely. The amount of heat released from mountains of magma hundreds of miles wide, thousands of miles long, and thousands of feet high being extruded rapidly during the year of the Flood and for possibly hundreds of years thereafter, would have likely produced so much heating that I fear the oceans would have reached the boiling point at places and burst into steam geysers. The possibility of this catastrophic scenario has been suggested by [John] Baumgardner (2003) in these proceedings (Vardiman, 2003).

Catastrophic Mudflows Can Produce River-Channels

Now, consider one more agent of catastrophic geomorphology change: mudflow, such as the mudflow illustrated in the aftermath of Mount St Helens’ eruption during 1980 (and again soon thereafter).

A mudslide is a powerful flooding action in which the surging water becomes powerfully mixed with the earth (i.e., mostly soil) in its pathway. The power of a catastrophically energized mudslide can carve a river channel in a hurry:

Rapid Erosion

Erosion during volcanic eruptions at Mount St. Helens was accomplished by scour from steam blast, landslide, water waves, hot pumice ash flows (pyroclastic flows), and mudflows. Since the eruptions, the erosion process has been dominated by sheet flooding and channelized flow of water, with occasional mudflows. About 23 square miles of the North Fork of the Toutle River Valley was obstructed by two-thirds cubic mile of landslide and pyroclastic debris, which has been rapidly eroded since 1980. Jetting steam from buried water and ice under hot pumice reamed steam explosion pits with associated mass-wasting processes at the margins of pits, producing rills and gullies over 125 feet deep. Photographic documentation assembled by ICR scientists demonstrates that very pronounced rills and gullies had formed at the margins of steam explosion pits before May 23—less than five days after the pumice was deposited. The rills and gullies resemble badlands topography, which geologists have usually assumed required many hundreds or even thousands of years to form.

Mudflows from Mount St. Helens were responsible for the most significant erosion. A mudflow on March 19, 1982, eroded a canyon system up to 140 feet deep in the

headwaters of the North Fork of the Toutle River Valley, establishing the new dendritic [i.e., with a branched-out appearance, somewhat like a tree trunk that branches outwardly] pattern of drainage. As ICR scientists surveyed this new terrain, they began to contemplate the processes which may have formed the Grand Canyon of the Colorado River. The little “Grand Canyon of the Toutle River” is a one-fortieth scale model of the real Grand Canyon. The small creeks which flow through the headwaters of the Toutle River today might seem, by present appearances, to have carved these canyons very slowly over a long time period, except for the fact that the erosion was observed to have occurred rapidly [i.e., in a few days, not years or centuries or millennia]! Geologists should learn that, since the long-time scale they have been trained to assign to landform development would lead to obvious error on Mount St. Helens, it also may be useless or misleading elsewhere (Austin, 1986).

In short, mudflows, if catastrophically energized, can cut through solid rock to produce a river channel/canyon system geomorphologically analogous to Grand Canyon, using a lot of water (mixed with soil, in the form of mud), a lot of power, a lot of speed, in only a very little time.

For review, consider the following (above-discussed) five catastrophist geology concepts, all of which will now be briefly mentioned in the next section, where a (relatively) new explanation of Genesis 10:25 is proposed.

- Catastrophes Explain Much of the Earth’s Landscapes
- River Systems Show Earlier Water-flow Dynamics
- Catastrophic Waterflows Can Produce Cavitation
- Hypercanes Cause Catastrophic Rainfalls and Surges

- Catastrophic Mudflows Can Produce River-Channels

This proposal, via an earlier version of this paper, was first presented by this author, in writing (and orally), to the Creation Research Society, on July 10, 2009 (in Lancaster, South Carolina), buttressed by oral concurrence from Dr. John Morris.

Analytical Conclusions

Two more important clues from Scripture need be mentioned. First, as noted above, Peleg was born about 100 years after the Flood. An earlier paper by Thomas D. Ice and James J. S. Johnson, “Using Scriptural data to Calculate a Range-Qualified Chronology from Adam to Abraham, with Comments on Why the ‘Open’-or-‘Closed’ Genealogy Question is Chronometrically Irrelevant” (Ice and Johnson, 2002; Johnson, 2008), shows that there is no good theological reason for trying to stretch the inerrant timeframe information that is quantified, in Scripture, regarding event-to-event timeframes (that allow measurement of time from the Flood to the birth of Peleg). Thus, with confidence we can measure the birth of Peleg as occurring 100 years after the Flood, plus or minus no more than five years.

Under current creationist thinking about the post-Flood Ice Age, Peleg’s birth would have occurred centuries *before* the Ice Age “melted down.” Therefore, whatever dramatic geologic phenomena was occurring when Peleg was being named “Peleg” must have occurred about 100 years after the Flood, i.e., at the beginning of the post-Flood Ice Age.

Second, another strange clue is presented by the numerical data in Scripture: the lifespans of the patriarchs drastically drop at when the Messianic lineage reaches Peleg’s generation—why? (What geo-ecological change happened during Peleg’s lifetime that somehow

irreversibly shortened everyone’s lives thereafter?)

First, we find here a sudden drop in the life-span of the patriarchs that is unparalleled in the entire genealogy. Until the time of Eber, no postdiluvian patriarch is said to have lived less than 433 years. But now [i.e., with Peleg], without any explanation [i.e., except the cryptic allusion to the earth being “divided” in Peleg’s “days”], the life-span drops to 239 years and never exceeds that number again! This represents a permanent drop in life-span of 45%, as opposed to the 23% drop from Shem to Eber (Whitcomb and Morris 1998).

So, what was the major change that occurred in Peleg’s lifetime, that correlates to drastically reduced lifespan, and is it related (or not) to the earth being “divided” in his “days”? Would the weather events of Peleg’s “days” have accompanied a non-cyclical climate change (Vardiman 2003), so drastic that human bodies accelerated their aging (and thus their dying processes)? Those kinds of questions are outside the scope of this present paper, thankfully!

Yet, that very historicity of the reduced life-spans, especially as “spiked” in Peleg’s generation, is itself another striking reminder that a *catastrophist* understanding of Earth history is needed, in order to analyze and to understand the times and conditions immediately after the Flood—because a uniformitarian approach will guarantee error every time!

If the worldwide “division” (that Peleg was named for) was *geologic*, as opposed to *linguistic*, what was it? Or, realistically speaking, what could it have been?

It is now suggested that Peleg’s generation witnessed the earth, at the global level (especially in light of Job 38:25–27), being “riverized” (a literal approach to translating the Hebrew verb *palag*)—i.e., being hydro-dynamically carved into major riverine systems. These river sys-

tems were huge, and they were cause by huge extremes in weather—hypercanes, catastrophic mudflows, and furious water-flows that ripped through bedrock via cavitation dynamics.

For an *a fortiori* analogy, try to imagine the memorable impact of a record-breaking blizzard if you have lived through one. Now imagine that the weather events that were occurring about 100 years after the Flood make such blizzards looks like (relatively) “small potatoes.” The extreme weather that followed the earth’s post-Flood adjustments was spectacular (and terrifying) enough, based on this paper’s assumptions and analysis, so it is quite likely that a man like Eber might name one of his sons (like Peleg) for the amazing “riverization” that was being formed, all over the earth (especially the earth known to Eber), during the “days” of Peleg’s infancy.

To an eyewitness of these meteorological and geomorphological upheavals, these catastrophically formed major river systems would then (likely) have included abruptly-formed and hugely-proportioned river valleys, river plains, and river canyons, many with dendrite river-mouth patterns, and many with vast dimensions as far as the eye can see. All these systems were produced by extreme weather events and weather patterns that we can only imagine—e.g., with the help of Dr. Larry Vardiman’s computer simulations and descriptions of hypercanes and recent memories of the Glen Canyon Dam cavitation. Another recent example is the mudflows at Mount St. Helens, which carved a miniature version of the Grand Canyon through solid rock in a matter of days after the Mount St. Helens volcanic eruption (and steam-blast).

These catastrophic river systems, especially if a few happened to be quickly and powerfully formed nearby, would be as memorable as a close encounter with a lightning bolt, or a first viewing of the Aurora Borealis, or surviving a

serious earthquake, or a record-breaking blizzard.

At least the above “Peleg model” provides a possible scenario—that fits the available Scriptural data (and attempts to do so with the most literal reading of Genesis 10:25)—for why Eber, who may have been an amazed eyewitness of such catastrophist “riverization” events, might decide to memorialize such important life experiences (as biblical patriarchs were known to do) by naming one of his sons “River.”

What does this study show about Peleg’s name, and how is this study relevant to those of us who research creation science (and creation history)?

The Noah-to-Abraham portion of the Messianic lineage includes a man named “Peleg,” whom Scripture reports was so named because “in his days was the earth divided” (Genesis 10:25). Although some have suggested that Earth was “divided,” during Peleg’s lifetime, linguistically, as a result of the Tower of Babel event—while others have suggested that the term “divided” (in Genesis 10:25) refers to the splitting apart of the continents—neither of these views are based upon a comprehensive philological investigation of the Hebrew vocabulary involved. As the foregoing concordance-based Hebrew word studies show, the name “Peleg” simply means “river.” In conjunction with other aspects of post-Flood research (especially creation science studies of Earth’s geologic and meteorological processes), this Hebrew philology study points to post-Flood weather patterns as then producing extraordinary riverization, with results so geomorphologically dramatic that the genealogy of Genesis 10 was

worth interrupting just to mention this side note (of why Peleg was so named).

Also, besides addressing the question of what Peleg’s name means, this study illustrates how Hebrew philology studies can be used, in some contexts, to clarify details of Genesis history (Johnson, 2010).

May the God Who riverized the earth’s waterflow channels, even in the wilderness “wherein there is no man” (Job 38:26), be blessed through His Son (Peleg’s greatest Descendant), as we study, appreciate, and declare “the works of the LORD” (Psalm 118:17).

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No Evidence for Bone Evolution

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Abstract

The evidence for bone evolution from some nonbone substance was reviewed, concluding that all of the bone evolution proposals have been falsified. In the words of one researcher, bone magically appeared in life and left no trace of its evolution, even though bone and teeth are one of the materials that have the best record of preservation of all biomaterial in the fossil record. Bone is one of the most complex organs in the body and, if it evolved, there would be clear evidence of its evolution. The evolution theories proposed to explain bone evolution were also examined in some detail, showing they were all very problematic.

Introduction

The evolution of body organs (such as the lungs, heart and liver) is problematic because, except for the inside of some dinosaur bones, soft tissues are very rarely preserved in the fossil record. Due to a lack of fossil evidence, the primary details of organ evolution can be studied only by comparing a wide variety of living animals, and then by assuming modern animal examples represent their ancient ancestors. This is less of a problem in studying the evolution of bones because bones and teeth are, by far, the best-preserved materials in the fossil record, and millions of well-preserved examples exist in museums and private collections. All past attempts to explain

bone evolution, such as the aspidin theory, have been rejected, in this case by synchrotron tomography, leaving no plausible theory of bone evolution from some simpler tissue (Keating, et al., 2018, pp. 1501–1506).

The origin of bone is a critical event in evolution because it is “the key innovation underpinning the evolution of the vertebrate skeleton,” and thus of the evolution of all higher-level vertebrates (Keating, et al., 2018, p. 1501). Bone was also considered one of the most important steps in evolution because, if it did not occur, birds, reptiles, mammals, amphibians, or primates would not exist (Switek, 2019, p. 32). The bone skeleton is called “the fantastic framework” by

Professor Goldbert, adding that bone was built with the strength of an oak, yet can bend with a sapling’s ease. It shelters the organs, supports the body and, bound by muscle, bestows the grace of movement. A relic that long outlives the flesh, bone nonetheless meets the moment’s needs. Ever building and breaking down, this dynamic tissue forms in proportion to the task at hand. The bones of a ballerina’s feet, a sculptor’s hands or a bricklayer’s arms gain mass and shape in response to the stresses their varied pursuits impose (Goldbert, 1986, p. 7).

This poetic description does not begin to describe the wonder of bone that produces the skeleton supporting life.

Skeletal Tissue Types

Four skeletal tissue types exist (bone, teeth enamel, dentine, and cartilage), all which preserve well in the fossil

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record. Yet, the fossil record provides no evidence for the evolution of any of these tissues. Because their origin is unconstrained by the fossil record, speculation substitutes for data and, consequently, speculation abounds, creating controversy (Wagner and Aspenberg, 2011, p. 393). Furthermore, even though, “primitive fossilized vertebral skeletons are scarce and ... their remains often contain tissues that are difficult to classify,” this finding has not stopped speculation, especially that which is contrary to what little evidence exists (Wagner and Aspenberg, 2011).

Connective Tissue

The major structural components of the vertebrate body are bone, muscle, and cartilage. Cartilage is a critical connective tissue widely employed in both vertebrates and invertebrates. Its major function is to provide support and, because cartilage is less rigid than bone, allowing some flexibility. Cartilage is more stable than an organism’s muscle structure, and cartilage connective tissue traits are halfway between bone and muscle. Cartilage is utilized in body locations where both support and structure are required, but also some flexibility. The many kinds of cartilage include *hyaline*, used in joints; *fibrocartilage*, employed in high impact locations, e.g., meniscus of the knee and between vertebrae; and *elastic cartilage*, used in the ear pinna, the tip of the nose, and in between the spinal column vertebrae.

The existing evidence does not support the evolution of bone from some type of non-bone including cartilage. Biologists “have long remained puzzled by an attribute of bone that sets the vertebrate skeleton apart from the calcareous skeletons of virtually all other metazoans: the hard, inorganic component or ‘ground substance’ of bone ... calcium phosphate.... In contrast, the mineral or hard fraction of almost all

calcareous invertebrate skeletons ... is primarily calcium carbonate” (Ruben and Bennett, 1987, p. 1187).

Evolutionists expect that, due to environmental constraints, vertebrate bone would use calcium carbonate as the ground substance, which is similar to that used in invertebrate organisms from which they are postulated to have evolved. In contrast to this expectation, little evidence exists that present marine concentration of phosphate has changed much since the first appearance of vertebrates (Ruben and Bennett, 1987, p. 1188). These authors note a variety of explanations have been offered for this major problem of bone evolution, “but none of these is particularly compelling” (Ruben and Bennett, 1987, p. 1187).

Bones: A Very Different Structural System than Other Connective Tissue

Bone employs a very different structural design than all other connective tissue types. The bone referred to in this review covers skeletal support bones and excludes the hyoid and ear bones. Furthermore, although some differences in vertebrate bones exist, such as between a bird’s light bones and most mammal bones, bone design is close to identical for all vertebrates (Jantzen, 2014, p. 161).

The origin of the vertebrate posterior axial and appendicular skeletons are derived from mesoderm tissue (Knight and Schilling, 2013; Harland, 1994). The cranial bones develop from a cell type called the neural crest (Smith and Hall, 1993, pp. 400–401). The neural crest cell emerges from the developing neural tube, and then migrates elsewhere, causing a “remarkable series of transformations” that produce the cranial skeleton (Toshiyuki, et al., 2005; Bronner and LeDouarin, 2012). The neural crest multipotent cell type transiently forms in the developing vertebrate embryo. These cells extensively migrate in the embryo and, besides bone, give rise to

cell lineages as diverse as melanocytes, smooth muscle, craniofacial cartilage, peripheral and enteric neurons, and glia neurons (Bronner and LeDouarin, 2012).

The neural crest is a critical factor in producing not only skeletal structure, but also many features in our skin and sensory organs that are unique to vertebrates. It is responsible for the distinctive human vertebrate head and neck. Furthermore, extensive comparisons of this “vertebrate innovation,” and the gene regulatory network underlying neural crest formation, find it is “highly conserved, even to the base of vertebrates” (Bronner and LeDouarin, 2012). In other words, in contrast to evolutionary expectations, the neural crest cell system formation is virtually identical in the most primitive vertebrate to the highest primate.

Although amphioxys are considered the most primitive chordate, they lack bones (Bonnan, 2016, p. 36). Contending for the so-called “origin” of the vertebrate framework is the cartilaginous skeleton, such as exists in hagfish and lamprey (both animals regarded as the most primitive living vertebrates). Fish, however, exist in two main types: cartilaginous, such as Chondrichthyes, and bony fish or Osteichthyes, such as the Actinopterygii and Sarcopterygii. As described by Professor Keating, et al., “Living vertebrates are divided into those that possess a fully formed and fully mineralized skeleton (gnathostomes) versus those that possess only unmineralized cartilaginous rudiments (cyclostomes)” (Keating, et al., 2015). No intermediate predicted by evolution has been discovered. In answer to the question, “What is the first creature that had bones?,” Groenewald answered that nobody knows the answer,

but scientists have hypothesized how it happened. Bone is specific to vertebrates; thus the best bet is that bone arrived somewhere in the evolution of the vertebrates. Bone

probably first appeared as an external protective layer of cartilage and mineralized plates as can be seen in ostracoderms.... That is a bit of a mystery, but we know it happened. There are a lot of theories.... It was an important development in vertebrates. However, there is no definitive species or organism that can be described as the first boner. But scientists agree that bone [first] developed in a fish-like chordate, which gave rise to bony fish and later amphibians (Groenewald, 2017, p. 12).

Evolutionists postulate the key to the evolution of bone is the link between these two similar fishes because cartilaginous fish have a skeleton made up entirely of cartilage, and bone fish have a skeleton made up entirely of fully-developed bones. Although other differences exist, such cartilaginous fish have exposed gills lacking protection, and bony fish have a membrane that covers gill slits. The development from a complete lack of a bone structure to a complete bony skeleton, and nothing to bridge the two dichotomous designs, is a central problem for evolution.

Professor Bonnan, in his leading textbook on bone, mentions evolution 146 times, and every example is how one type of bone, such as a limb bone, supposedly evolved into another bone design in another kind of animal. He never mentions how the pre-bone cartilaginous animal evolved into the bone design, which is the real issue (Bonnan, 2016, pp. 36–39).

The Contrast Between Cartilage and Bone

Although cartilage in the fetus is replaced by bone, a process directed by genetics that occurs throughout our lives, is the evolutionary origin of bone from cartilage? Most evolutionists have rejected cartilage as the origin of bone due to the level of complexity of bone

structures as compared to cartilage. Bone is a hard, connective tissue produced by osteoblasts, while cartilage is a soft, pliable connective tissue produced by chondroblast cells. Cartilage is an avascular isogenous (Latin “of equal origin”) cluster of chondrocytes formed by the cell division of a single progenitor cell. In contrast, bone is vascular, not isogenic, formed by the division of many millions of progenitor cells. The many other differences between cartilage and bone are reviewed in Table 1, which illustrates the chasm between these two very different tissue types, creating major problems for the cartilage-to-bone evolution theory.

One difference is that, although bone contains some cartilage called type I, it is different than connective tissue cartilage, called type II (Currey, 2006, p. 174). Bone is also very different than dentin, which is used to construct present-day fish scales. Another difference is, in contrast to bone, once cartilage is laid down, it is fixed and not remodeled as bone is (Currey, 2006, pp. 191–193).

The Origin of Cartilage in the Body

Even the evolutionary origin of cartilage itself is debated: “Theories of the evolutionary origin(s) of cartilage abound. Most start from the premise that cartilage is exclusively a vertebrate tissue” (Hall, 2015, p. 74). Hall adds that the basic structural elements of matrix molecules in skeleton bones “are conserved with surprising fidelity,” meaning the fossil record documents stasis, not evolution (Hall, 2015, p. 99). And an analysis of these matrix structures tells us these structures are identical to those existing today.

The Just-so Story of Bone Evolution

Evolutionist Ken Kardong noted that bone is found only in vertebrates. Why

it should make an evolutionary debut in vertebrates and not in some other animal group is unknown. One just-so theory holds that bone arose first, not as a supportive tissue, but rather as the stored form of calcium or phosphate and later evolved to serve a support role (Kardong, 2012, p. 186).

From the extensive paleontological evidence, it was long “surmised that the vertebrates were most likely descended from amphioxus-like forms with a notochord. These were followed by jawless creatures with a cartilage-like endoskeleton, reminiscent of the modern hagfish or lamprey” (Wagner and Aspenberg, 2011, p. 393). The next major step postulated in bone evolution was the evolution of mineralized skeletal parts, which was “a major evolutionary leap and led directly to the rise of the vertebrate lineage” (Wagner and Aspenberg, 2011, pp. 393–394). Before bone existed, most structural support must have been achieved by hydrostatic pressure in water and/or hydrostatic structures, such as the notochord existing in primitive chordates. Bone also offered much more surface area for muscle attachment, and could support much larger, heavier organisms and, most importantly, terrestrial life.

Cartilage Evolves into Bone and the Fossil Record

One major problem with the once widely-accepted view that bone evolved from cartilage, aside from the contrast between the two theories noted above, is the fossil record. Because both bone and cartilage are abundant in the fossil record, if this transition occurred, evidence of bone evolution should be plentiful. Yet no evidence exists in the fossil record for the critical transition from cartilage to bone. The fossil record evidence is very clear: “Much information is available on the structure of skeletal tissues from extinct vertebrates. An examination of these skeletal tissues,

Table 1. Cartilage in contrast to bone chart.

Bones	Cartilage
Bones are rigid, non-flexible, tough and only eight percent water.	Cartilage is flexible, soft-elastic tissue and over seventy percent water.
Bones grow in both directions (bidirectional).	Cartilage grows in one direction only (unidirectional).
Haversian system and Volkmann's canals are used.	Haversian system and Volkmann's canals are absent.
Bone marrow, contains hematopoietic tissue from which all blood cells are derived.	Bone marrow is absent.
Lacunae possess canaliculi and each lacuna consist of only one cell, an osteocyte.	Lacunae do not possess canaliculi, and each lacuna has two to three chondrocytes.
Bones are active participants in the regulation of blood supply.	Does not produce blood supply except in perichondrium.
Bone matrix consists of a protein called ossein, and both organic and inorganic tissues occur in lamellae and are vascular. Contains deposits of calcium salts, largely calcium phosphate.	Matrix consists of an organic protein called chondrin. The matrix is a homogenous mass without lamellae. Lacks calcium salts.
Bones cells are Osteocytes.	Cartilage cells are Chondrocytes.
Bone is hard due to phosphate deposition and carbonates of calcium in matrix.	Cartilage is soft, except the calcified cartilage, and its matrix is made up of proteins and sugars.
Bone is responsible for the formation of the skeletal system, which gives shape to the body.	Structural cartilage is found only in ears, nose, larynx and trachea.

Adapted from <https://biodifferences.com/difference-between-bones-and-cartilage.html>

even in the earliest chordates, indicates homology with skeletal creatures in present day vertebrates” (Hall, 2015, p. 99). In other words, the study of skeletal tissues from extinct vertebrates has not revealed evidence for bone evolution from cartilage or anything else.

In short, bone is “one of the most fantastic building materials that evolution has *accidentally* spit out” (Switek, 2019, p. 6; emphasis added). The basic vertebrate bone design has three major components: a fibrous matrix, a nutritive supply, and bone-making osteocytes, for all of which evolutionary evidence should exist if bone evolved from cartilage (Wake, 1979, p. 166). Once bone

evolved in the evolutionary scenario, Switek then provides a lot of very hypothetical just-so scenarios to explain how it evolved to become the core support structure of modern vertebrates. One example is that bone evolved from crude fish jaws to more-evolved fish, mostly because their new, stronger jaws facilitated consuming other fish.

The Aspidin Theory

One theory that attempted to answer the problem of bone evolution postulated aspidin as the material from which bone evolved (Switek, 2019, p.44). How this occurred, and even the basic details,

were never provided. This theory, first developed in 1930, proposed that bone evolved from aspidin, also called aspidine, a bonelike material lacking spaces for bone cells (Gross, 1930). Aspidin was considered the most primitive bone-like tissue known (Halstead, 1963, p. 46). Since aspidin is assumed to have preceded the “first incontrovertible evidence of bone in the fossil record by about 100 million [Darwinian] years,” and because aspidin is effectively preserved as bone, “until definite evidence to the contrary is produced, it seems reasonable to take aspidin as the most primitive calcified tissue, rather than bone” (Halstead, 1963, p. 46). As late

as 1974, Halstead wrote: “All the recent work on aspidin points to this tissue being a primitive type of bone...this tissue shows a gradual evolution from a substance that is close to dentine to one that is more allied to bone” (Halstead, 1974, p. 63).

Halstead theorized that a few cells became trapped during calcification which, after millions of years, may have evolved into bone cells (Halstead, 1963, p. 47). Some collagen, or other fibers in aspidin which produce the same basic arrangement, occurs “in modern dentine, and supports the idea that dentine could have been derived from an aspidin-like tissue at an early stage of evolution” (Halstead, 1963, p. 47). Halstead then speculated that aspidin “almost certainly possessed cells with the same role as osteoblasts, osteocytes and osteoclasts, with the gradual organization of its collagen fibrils into alternate layers, and with its ability to remodel, aspidin must surely be considered as a primitive type of bone, or as the precursor of true bone” (Halstead, 1963, p. 46). Evolutionist Philippe Janvier observed that heated debates existed on this subject for some time, with “detailed arguments for and against each theory” (for a review see Orvig, 1989) (Janvier, 2002, p. 276).

The Aspidin Theory of Bone Origins Refuted

After Halstead’s paper was published in *Nature*, the nature of aspidin has been “mired by debate over interpretation of the most primitive bone-like tissue... aspidin. ...[which] has variously been interpreted as cellular bone, acellular bone, dentine or an intermediate of dentine and bone” (Keating, et al., 2018, p. 1501). The crux of the controversy is what is in the “unmineralized spaces pervading the aspidin matrix, which have alternatively been interpreted as having housed cells, cell processes or Sharpey’s fibers.”

To research aspidin, Keating and his co-workers used synchrotron X-ray tomographic microscopy revealing the space’s morphology was “incompatible with interpretations that they represent voids left by cells or cell processes. Instead, these spaces represent intrinsic collagen fiber bundles that form a scaffold about which mineral was deposited” (Keating, et al., 2018, p. 1501). As a result of this study, the hypothesis that aspidin is a type of cellular bone, dentine, or transitional tissue has been rejected.

These researchers concluded that the “spaces represent intrinsic collagen fiber bundles that form a scaffold about which mineral was deposited.... We reject hypotheses that it is a type of dentine, cellular bone or transitional tissue” (Keating, et al., 2018, p. 1501). They concluded that the “full repertoire of skeletal tissue types was established before the divergence of the earliest known skeletonizing vertebrates, indicating that the corresponding cell types evolved rapidly following the divergence of cyclostomes and gnathostomes” (Keating, et al., 2018, p. 1501). In short, aspidin was not the precursor of “acellular bone, dentine and enameloid [which] were al-

ready established before the divergence of the known skeletonizing vertebrate clades” (Keating, et al., 2018, p. 1502). In other words, aspidin is not evidence of a transitional form between non-bone and bone, but rather of structures that are part of modern skeletal tissue.

The Sudden Appearance of Skeletal Tissue Theory

The lack of evidence for bone evolution is now explained by some to be due to a form of punctuated evolution; it occurred so rapidly that no evidence exists in the fossil record for the evolution of acellular bone, dentine, and enameloid. These tissue types appear simultaneously in the fossil record “without any pre-cursor,” an event Keating and his co-workers call “punctuated appearance.”

One event that is an attempt to explain the relatively-sudden appearance of skeletal tissue is that “many of the key genes responsible for the synthesis of collagenous tissues emerged through duplication associated with whole-genome duplication (WGD) events early in vertebrate evolution, and redundant copies were subsequently co-opted for biomin-

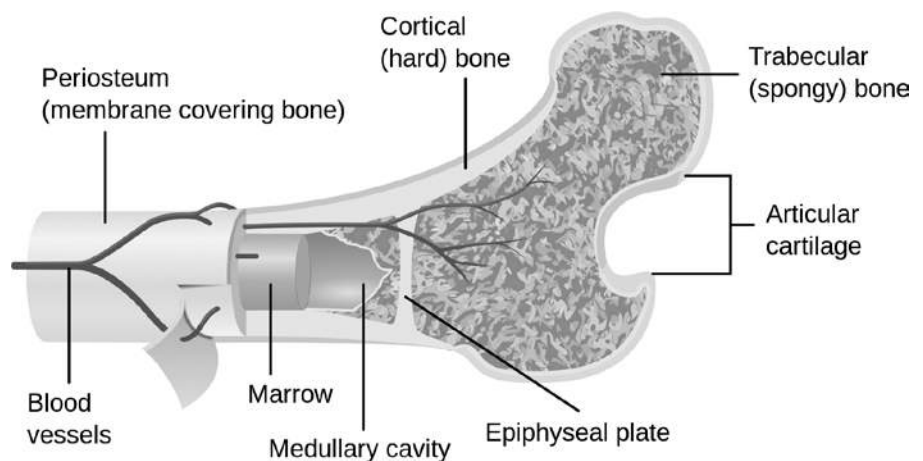


Figure 1. Cross section of a human bone. From Wiki Commons.

eralization” (Keating, et al., 2018, p. 1502). This research acknowledges that no evidence exists for bone evolution.

The Origin of Bone Design

Bone is a complex structure, actually an organ, that is far more complex than cartilage. Most all vertebrates, and only vertebrates, have a support framework constructed out of bone. As Alexander wrote, few creations “display the perfect unity of form and function found in the vertebrate skeleton. Ingeniously designed ... bones are marvels of engineering, their material and construction are the ideal compromise between strength and lightness, their shapes precisely suited to the tasks required of them, their forms by turns bizarre, utilitarian, and lovely.” (Alexander, 1994, book jacket). Alexander attempts to argue that the wonder of bones was designed by evolution even though no evidence exists to support this view. He adds that the

word ‘design’ may suggest a Creator figuring out the best way to build a snake. I do not know whether there is a Creator (the scientific methods... are incapable of deciding the question) and I have a very different concept of the design of skeletons. This is design by evolution, a powerful and apparently inevitable process that molds the structures of animals to suit their way of life” (Alexander, 1994, p. 14).

Alexander’s evolutionary explanation of the incredible design of bone is that bone is a result of millions of mutations winnowed out by natural selection. This view fails compared with the creation view that the origin of bone is a result of intelligent design. Another scientist added,

Bone is a marvel, an adaptable and resilient building material ... It gives our bodies their shapes and the ability to move. It grows and changes with us, an undeniable document of who we are and how we lived.

Arguably, no other part of the human anatomy has such rich scientific and cultural significance, both brimming with life and a potent symbol of death (Black, 2019).

As an evolutionist, Black adds to the origin of this marvel of design, that everything

about the bones inside us, from their arrangement to their microscopic structure, is a testament to the way evolution mixes blind chance with the winnowing edge of natural selection. By mixing and matching old parts, forced along only by what’s useful in any given moment, what’s old becomes something new.

The vertebrate skeleton bone was designed using calcium phosphate, and not calcium carbonate, because calcium phosphate is more stable in the presence of lactic acid resulting from intense bursts of muscle activity. Consequently, a skeleton of calcium would afford some mechanical protection, but one of calcium phosphate in particular (but not of calcium carbonate) would make bone matrix more stable. It would also reduce the physiological disadvantages bone dissolution otherwise might create for an animal that depended on bursts of activity (Kardong, 2012, p. 186).

The Anatomy of Bone

Discussions of the basic parts of bones illustrates the contrast between bones and cartilage. In the embryo and fetus, cartilage gives shape to the skeletal system which is replaced by the bone system as the body develops. The 206 bones include compact bone, the heaviest and hardest bone type. Strength is critical to support both the body and muscles that enable it to walk, run, and jump. Although only about 15 percent of the adult body weight is bone, ounce for ounce, bone is stronger than steel. One cubic inch of bone can withstand

the weight of nearly five standard pickup trucks. It requires about 4,000 newtons of force to break a healthy adult human femur. Designs such as the Warren Truss are used to greatly increase bone strength, yet minimize weight.

About 80% of the bone in the human body is compact bone by volume. Compact bone makes up the outer bone layer and helps to protect the fragile structures inside. A layer of dense irregular connective tissue called the periosteum surrounds the bone.

Bone strength is partly due to the use of a composite design similar to the rebar-concrete design. The rebar consists of hydroxyapatite and salts, such as Ca, PO₄, OH, CO₃, Na, and Mg, and the concrete is organic matter, mostly collagen. Cartilage is also the framework used to build the bone framework during early development.

Each bone cell must be supplied with sufficient oxygen, nutrients, and a means for the effective removal of toxins and waste products. The hollow channel located in the osteon center that runs parallel to the bone length, called the Haversian canals, generally contains several capillaries to supply blood and nerve fibers to the bone. Haversian canals are formed when individual lamellae produce concentric rings around larger longitudinal canals by the bone tissue (See Figure 2).

Compact bone contains small arteries that permeate throughout the bone. The Volkmann canals supply oxygen, minerals, and nutrients for bone health and growth. They also surround nerve cells located throughout the bone and communicate with osteocytes in the spaces within the dense bone matrix, called lacunae, that contain living bone cells. The lacunae run through small channels called *canaliculi*. This unique arrangement is conducive to the storage of mineral salt deposits, including calcium, that give bone tissue its enormous level of strength. The minerals stored in bone, including calcium, can be moved

to compensate for deficiencies elsewhere, such as during pregnancy when the baby's needs are put first by the body.

Because bones are living tissue, their structure must constantly be renewed and repaired. To achieve this, osteoclasts are involved in the maintenance of bone by reabsorption of bone tissue, and osteoblasts replace old bone with new bone. Bone, like most of the rest of the body, is constantly being turned over so it is totally replaced about every 10 years. This time span increases as we grow older, which facilitates aging. The bone matrix tissue contains both an organic component (mostly collagen) and an inorganic component (mostly the various salts listed above). Bone growth occurs at each end of the bone in an area located between the epiphysis (the end of the bone) and diaphysis (the middle of the bone/shaft of the bone). This outline briefly illustrates the basic complexities of bone.

The Evolution from Fish to Tetrapods

Another major gap in the fossil record is between fish and tetrapods. The central transition issue is from a fish skeleton to a tetrapod skeleton. The "fish-to-tetrapod transition is one of the

fundamental problems in evolutionary biology" as well as "one of the prominent events in vertebrate evolution" (Wood and Nakamura, 2018, p. 1). Furthermore, the "invasion of the land from the water necessitated the evolution of the novel structures in skeletons, musculatures, innervations, visceral organs, and respiratory systems in order to adapt to a terrestrial life" (Wood and Nakamura, 2018, p. 1).

The vertebrate skeletal system is of "paramount importance for analyses in evolutionary biology" (Hirasawa and Kuratani, 2015, p. 1). In short, another major gap exists that Wood and Nakamura call "the fin-to-limb conundrum." Jennifer Clack, an authority of the fish-to-amphibian transition theory, stated, "The question of where tetrapods evolved is even more difficult to answer than that of when" (Clack, 2012, p. 128). And Michael Denton added after a century and a half of research, "the gap between the tetrapod limb and the fin remains" (Denton, 2016, p. 159).

Genetic Research

Evolutionists have recently looked to genetics to solve the gaps noted above with the goal of attempting to fill them. So far, these attempts have been

very disappointing because, although historical

continuities of skeletal elements as step-wise morphological changes along a phylogenic lineage are inferable from detailed comparative analyses.... Within these continuities, discontinuities of genetic and developmental bases arise in which morphologically homologous bones are produced through different developmental processes (Hirasawa and Kuratani, 2015, p. 1).

Newer research on bone evolution focuses on the possible evolution of the several scores of genes necessary to produce the many proteins required to manufacture and maintain bones. For example, current research on bone evolution indicates "a close relationship between bone, dentine, and enamel in terms of a mineralized-tissue continuum in which contemporary dental tissues have evolved from an ancestral continuum through lineage-specific modifications" (Wagner and Aspenberg, 2011, p. 393). Recent searches for the molecular origins of skeletal development have focused on the RUNX family of genes, which regulate the major structures and biochemistry involved in skeletogenesis. As indicated by the finding that RUNX2-deficient mice lack bone development, these genes are crucial for skeletogenesis. Several other newly-discovered gene networks are also believed to be central to understanding skeletal development (Wagner and Aspenberg, 2011, p. 393). In short, many genes are known to be required to produce and maintain bone, and the origin of these genes must be accounted for to explain bone evolution. This, though, is the subject for another paper (Karsenty, 1999).

Compact Bone and Spongy (Cancellous) Bone

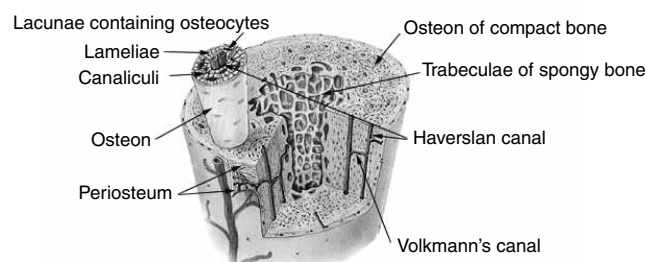


Figure 2. Section of a human bone showing the Haversian canal. From Wiki Commons.

Summary and Conclusions

Due to a complete lack of empirical evidence, the various theories of bone evolution from non-bone are based largely on speculation. Consequently,

as has occurred, any proposed theories are easily modified as new discoveries are made. As Wagner and Aspenberg note, “Bones may not have evolved, but theories of bone evolution certainly have.” Thus, they write, if their article on bone evolution was “written a decade ago, it would have been considerably different” from one written today, due to the many attempts to explain bone evolution based on speculation and just-so stories (Wagner and Aspenberg, 2011, p. 393).

The fact is, only paleontology studies offer the “possibility of gaining some insight into the ancient processes that led to [a] mineralized skeleton.” But, after almost two centuries of looking, no evidence has been forthcoming that provides meaningful help in supporting any existing theory of the evolution of bone from some pre-bone structure. The fossil record offers no evidence of transition, for example, from cartilage to bone, even though teeth and bones are, by far, the best preserved material in the fossil record. The finding of soft tissue, including blood cells and collagen, in dinosaur bone could help to elucidate this issue (Armitage, and Anderson, 2013; Lindgren, et al., 2011).

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Is the Alboran Basin, Western Mediterranean, an Impact Crater?

Part II: Dynamics

Michael J. Oard*

Abstract

Modern models of the Alboran Sea Basin all assume standard plate tectonics. The area lies at the boundary between the African and European plates, converging since the Cretaceous. This boundary is not clearly seen; it is suggested that northwest Africa is being subducted beneath the Eurasian plate. All of these models have problems, so a Flood scenario is presented that proposes that the Alboran Sea Basin and its surrounding mountains are the result of an impact, based on our knowledge of the area and impact dynamics.

Introduction

In Part I, I described the kinematics of the unique and puzzling Alboran Sea Basin and surrounding mountains, based on structural geology, crustal lithology, and geophysical observations. The most puzzling features are thrust zones radiating from this extensional subsiding basin, especially given the location at a convergent boundary.

Nevertheless, geologists have proposed plate tectonic models of the region that assume that the African and

Eurasian plates have been converging for the past 90 million years, destroying the “Tethys Ocean” (Timoulali et al., 2014). GPS measurements show NW-SE movement of about 5 mm/yr (Cunha et al., 2012).

No Clear Plate Boundary in Western Mediterranean

One problem is the absence of a clear plate boundary in the Alboran Sea. At present, the boundary is thought to be

in northern Africa, from south of the Rif Mountains eastward into northern Algeria, Tunisia, and then into Sicily along the southern edge of north-dipping thrust faults (Morales et al., 1999; Platt et al., 2013; Vernant et al., 2010) (Figure 1). Although the African plate is supposedly being subducted beneath Europe, it is perplexing because thick, light continental crust is diving beneath thin, dense oceanic crust of the Algerian Sea Basin. It is estimated that nearly 400 km of African crust has been subducted over the past 35 million years (Faccenna et al., 2004). Although earlier plate tectonic models generally precluded the subduction of continental crust beneath oceanic crust (it was once thought

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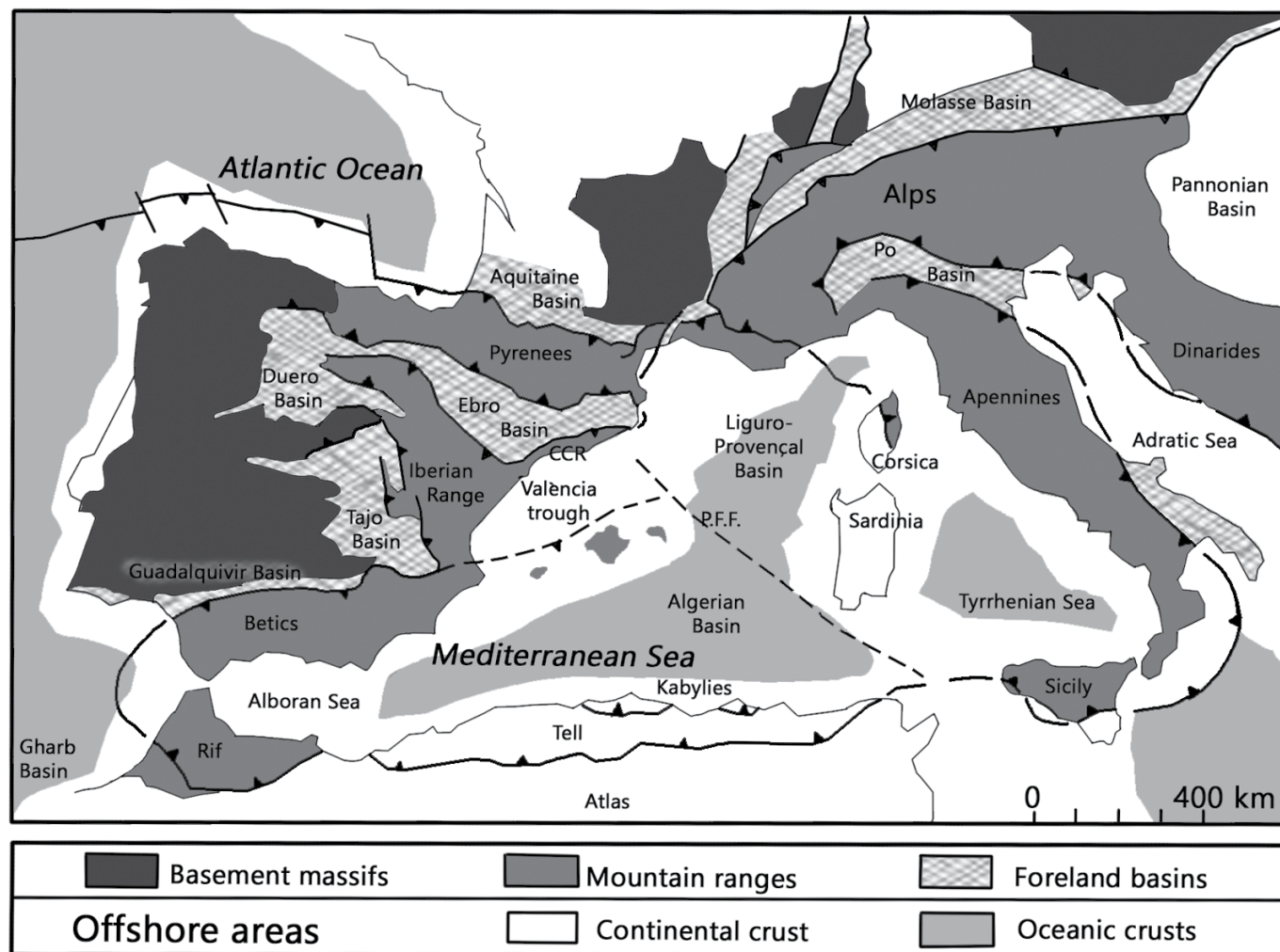


Figure 1. Map of the western Mediterranean Sea and southwest Europe showing thrust zones (triangles point to upper plate). (Copyright Vergés and Fernández, 2012, p. 146, and modified by Mrs. Melanie Richard. Used in accordance with federal copyright [fair use doctrine] law. Usage by CRSQ does not imply endorsement of copyright holder.) African/Europe plate boundary is assumed to be the thrust south of the Rif and Tell Mountains.

impossible), more recent models have been *forced* to accommodate it, in order to explain the perplexing existence of ultra-high-pressure minerals (UHP) such as coesite and microdiamonds in many places (Oard, 2006; Ruiz-Cruz and de Galdeano, 2013), including the mountains surrounding the Alboran Sea.

These problems are not necessarily shared by Catastrophic Plate Tectonics (CPT), since other unique processes of the Flood allow non-uniformitarian explanations. CPT proposes a major spreading of both Africa and Europe

away from the Americas (Baumgardner, 2003) but does not specially address features of the Mediterranean Basin. Uniformitarian explanations are both published and more tightly constrained by their framework, and advocates of CPT have no need to accept and speed up the establishment plate tectonics ideas.

Complicated GPS Motions

All models must explain the complex GPS data from the region. In addition

to an apparent NW-SE convergence of 5 mm/yr, detailed GPS readings appear anomalous (Vernant et al., 2010). For example, the Rif Mountains of northwest Africa show an apparent south motion of 5 mm/yr with respect to the rest of Africa (Figure 2). The Betic Mountains of Iberia show movement W/NW of 1–2 mm/yr with respect to Eurasia, slower and in a direction different from expected convergence. In answer, geologists have proposed two microplates moving west at 2–6 mm/yr with respect to Africa and Iberia (Gutscher et al., 2012), although

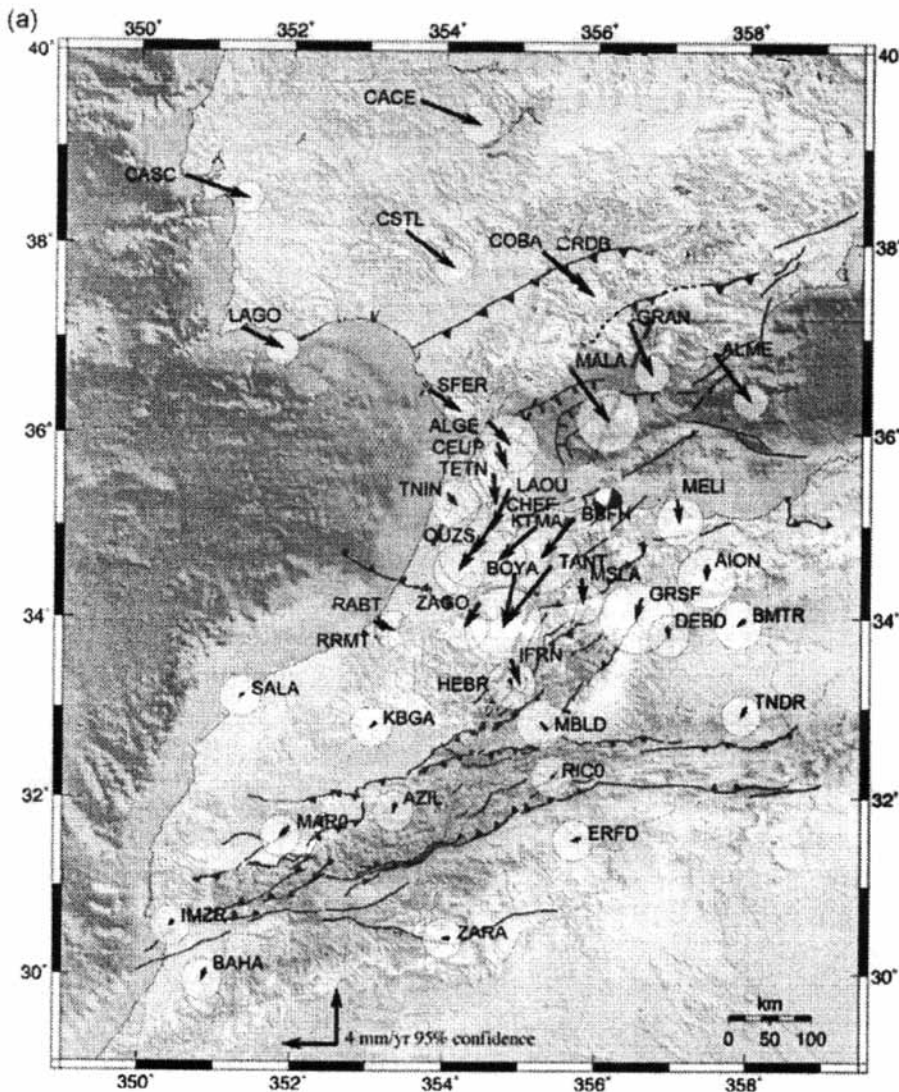


Figure 2. GPS measurements of southern Spain and northwest Africa. (Copyright 2010 from Vernant et al., 2010, p. 125, and modified by Mrs. Melanie Richard. Used in accordance with federal copyright [fair use doctrine] law. Usage by CRSQ does not imply endorsement of copyright holder.) Note anomalous southward motion of about 5 mm/yr in the Rif Mountains.

others suggest a slower rate. But this still cannot explain the southward movement of the Rif Mountains.

Variable and Controversial Hypotheses

Most plate tectonic scenarios are controversial. It is difficult to reconcile plate tectonics and standard orogenic models (Platt et al., 2013), but secular

scientists have proposed four major models (Figure 3). Of these, three are less popular.

(1) As the upper mantle grew denser and sank, hot asthenospheric rock upwelled and then moved laterally beneath the Alboran Sea in a process called delamination (Figure 3a) (Timoulali et al., 2014). A variant would have a subducting slab break off in the mantle (Figure 3b) (Vernant et al., 2010), driv-

ing asthenospheric rock up and out. If delamination occurred, there should be evidence of mantle flow inward to the area vacated by the sinking upper mantle or tectonic slab, which should show up as seismic anisotropy (Vernant et al., 2010).

The anisotropy of mineral axes can cause seismic waves to travel faster along one axis. Some minerals, like olivine (thought to be a major component of the mantle), are elongated, and if the crystals have been systematically orientated by flow, the mineral exhibits fast and slow directions detectable on seismographs. Anisotropy can also be caused by preferential fracturing, but at depth should not be present. The depth of anisotropy can be difficult to locate, but it probably is in the upper mantle where olivine is the predominant mineral.

“Fast” seismic anisotropy in the Alboran region parallels the Gibraltar Arc, curving with it (Figure 4) (Buontempo et al., 2008). Anisotropy in the Betic and Rif Mountains is thought to represent mantle flow toward the east. There is no such inward anisotropic flow. Some (Mancilla et al., 2015) see this as evidence against delamination; others do not (Timoulali et al., 2014).

(2) Another model proposes that African/Eurasian plate convergence built high mountains in the area. Then these high “Alboran Mountains” collapsed, by the same mechanism seen at the Tibetan Plateau, where edge thinning by normal faulting led to thrusting toward the Himalayas. This provided potential energy that drove gravitational spreading along the thrust arc (Platt and Vissers, 1989). Then the upper mantle sank, causing upwelling of the asthenosphere (Figure 3c) and the concomitant sinking of the Alboran Basin. Though a better theory to explain the basin, there is no evidence of such a mountain range. If such mountains sank, one would expect a thick crust, while the crust is thin with mantle uplift. Thus, there is little excitement for this model today.

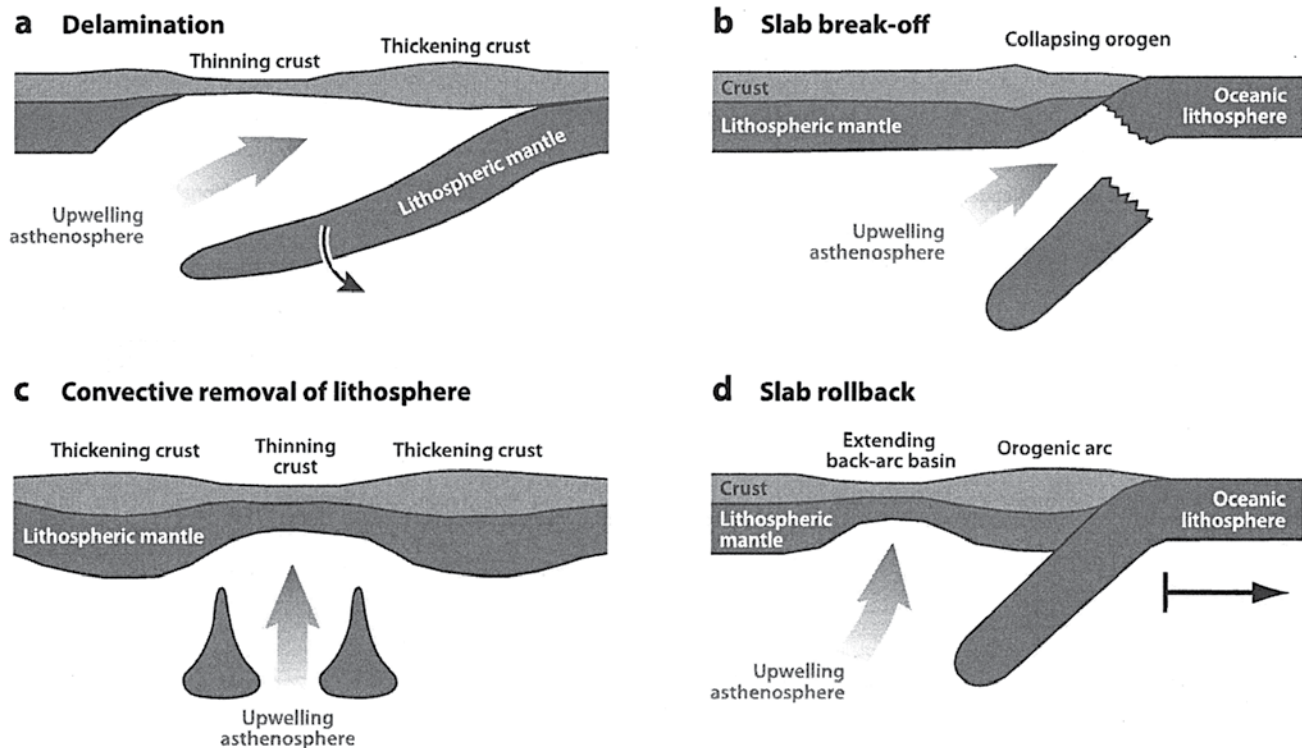


Figure 3. The four main models attempting to explain the unique structural geology of the Alboran Sea Basin and surrounding areas. (Copyright 2013 from Pratt et al., 2013, p. 318. Used in accordance with federal copyright [fair use doctrine] law. Usage by CRSQ does not imply endorsement of copyright holder.).

Most Accept Slab Rollback

The most popular model is the slab rollback model of Gutscher et al. (2012) (Figure 3d). They believe that the plate boundary was located near the southern European coast, 30–35 million years ago (Figure 5), and consisted of a trench, a forearc, and a volcanic island arc (Figure 6). This subducting plate boundary rapidly “rolled back” in the western and central Mediterranean (Figure 5) to its current supposed location (Figure 1). The eastern portion rolled more east to southeast, forming the Tyrrhenian Sea Basin, Apennine Mountains, and the Calabrian Arc, while the western boundary rolled back at first southwest, and then more westward to today’s outer boundary of the external zone (Figures 5 and 7) (Do Couto et al., 2016). Dur-

ing rollback, the upper plate extended, forming an unexpected backarc basin at a convergent plate boundary (Figure 3d).

The rollback mechanism relies on gravity pulling a subducting slab toward the Earth’s center. Since the slab sinks at an angle, the slab pull force includes a vertical (F_g) and horizontal component (F_h) (Figure 8). Rollback requires the horizontal component. A major problem with this model is mantle displacement, since the slab pull force is weak:

However, in order to allow the slab to move back, the slab retreat needs that also the mantle of the footwall [descending plate] of the slab moves away in the direction of the slab retreat.... However the slab pull has not the energy to push back eastward [for western Pacific subduction

zones] the whole section of mantle located east of the slab in order to allow the slab rollback (Doglioni et al., 2007, p. 156, brackets added).

Thus, rollback requires backward movement of the trench, forearc, and volcanic island arc. There is little, if any, evidence that it has actually occurred. It is based on “backarc” extension (Taylor, 1995), but its proposed action at a convergent plate boundary only adds to the complexity. Both numerical and laboratory models have been attempted, but remain simplistic. Modeled solutions offer little confidence:

It remains unclear what controls the different styles of backarc and forearc deformation observed on Earth and what drives such deformation. Thus far, numerous conceptual models

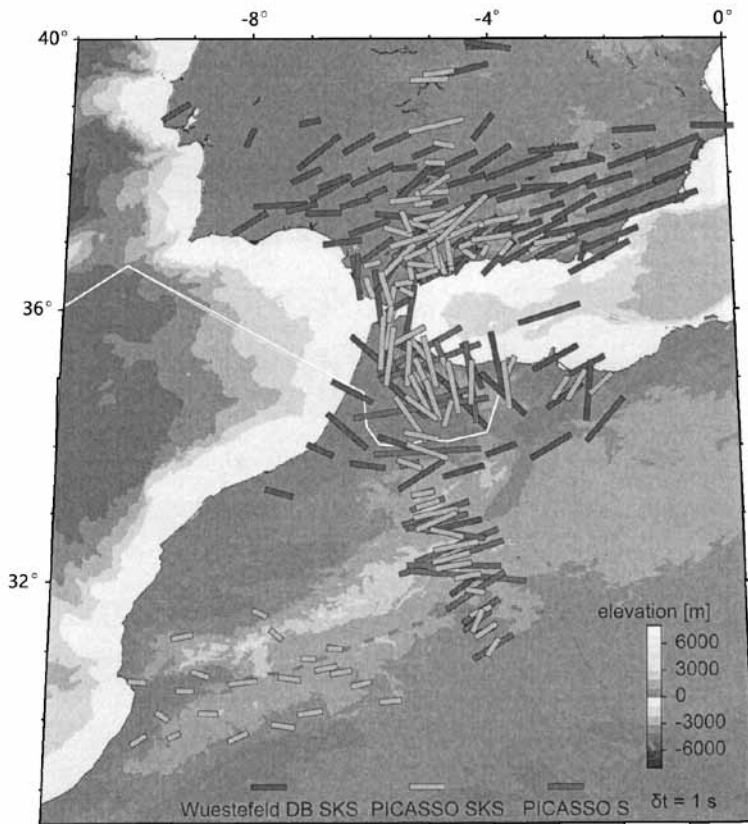


Figure 4. Seismic anisotropy of southern Spain and northwest Africa. (Copyright 2013 from Miller et al., 2013, p. 239. Used in accordance with federal copyright [fair use doctrine] law. Usage by CRSQ does not imply endorsement of copyright holder.) The long axis in the lines show the direction of mantle flow. The light and dark lines are from different methods, which sometimes show different directions in the Rif and Betic Mountains. Bathymetry of the western Gulf of Cadiz show a rapid increase in depth.

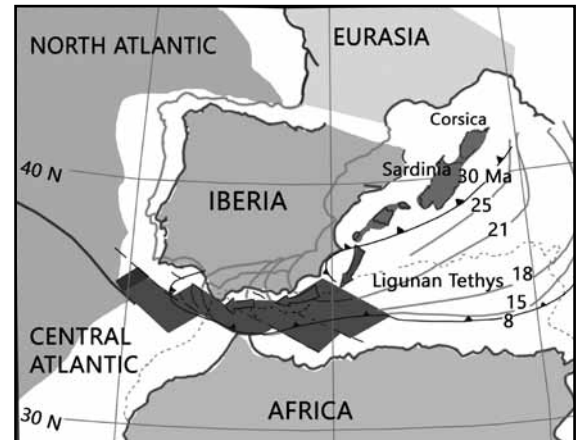


Figure 5. One model for the rollback of the plate boundary near the shore of the northwest Mediterranean Sea at about 30 million years toward the east, south, and west to its position at 8 million years. (Copyright 2012 from Vergés and Fernández, 2012, p. 165, and modified by Mrs. Melanie Richard. Used in accordance with federal copyright [fair use doctrine] law. Usage by CRSQ does not imply endorsement of copyright holder.) The current location is shown in Figure 1.

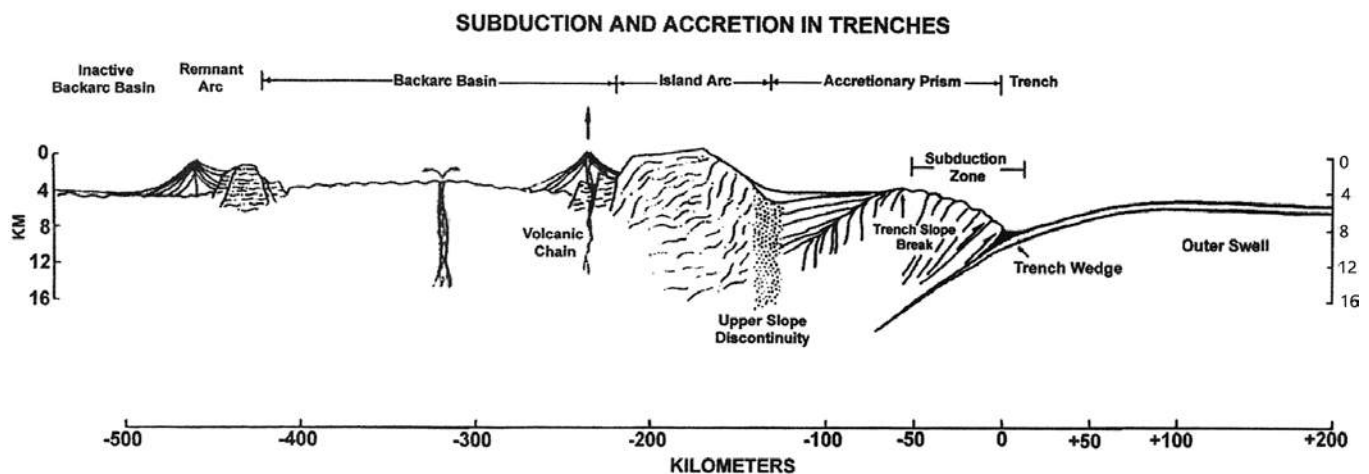


Figure 6. A classic subduction zone/island arc/backarc basin according to plate tectonics (from Oard, 2000). Vertical exaggeration is 5:1.

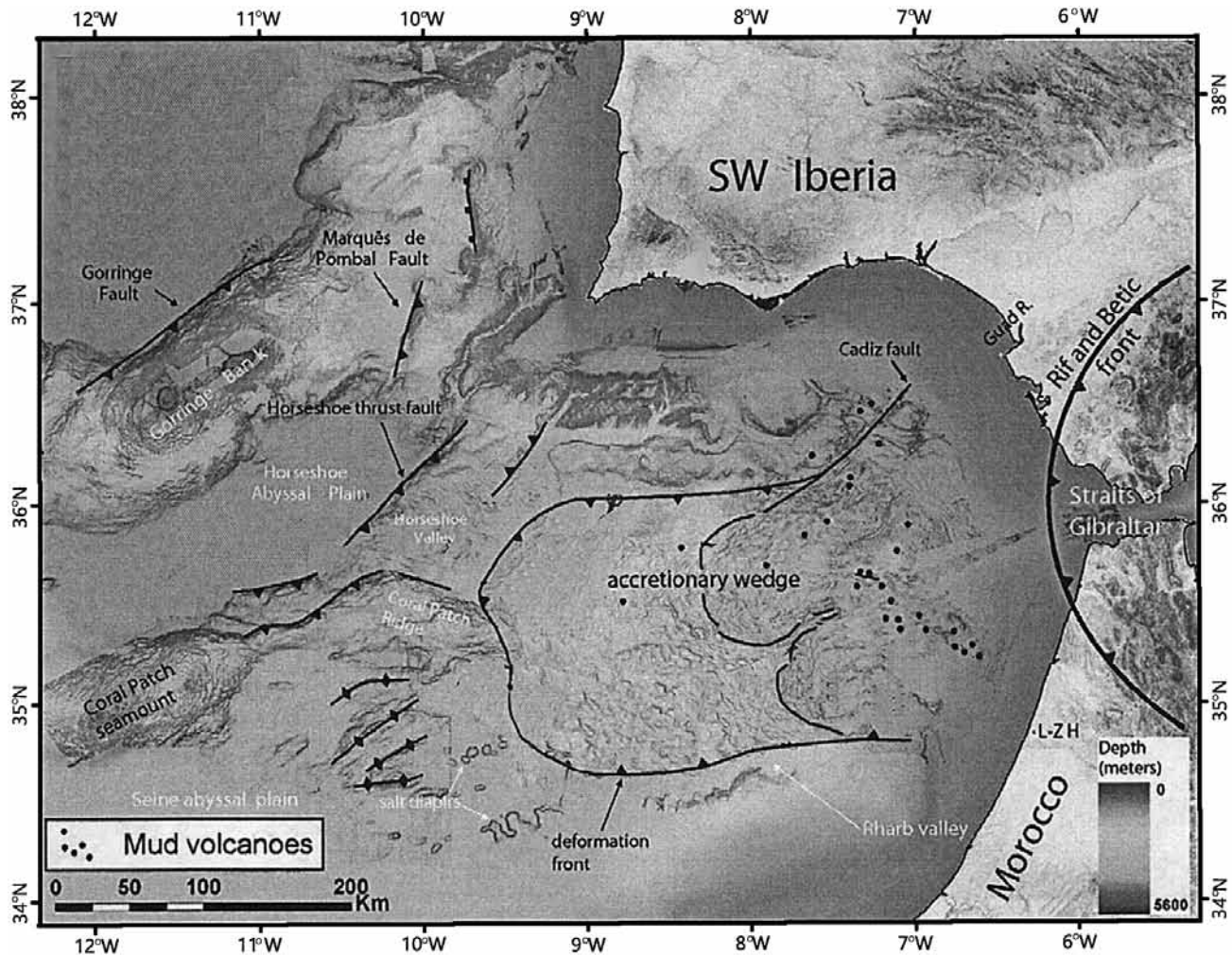


Figure 7. The boundary of the external zone with gravity sliding down into the deep ocean western Gulf of Cadiz. (Copyright 2012 from Gutscher et al., 2012, p. 78, and modified by Mrs. Melanie Richard. Used in accordance with federal copyright [fair use doctrine] law. Usage by CRSQ does not imply endorsement of copyright holder.)

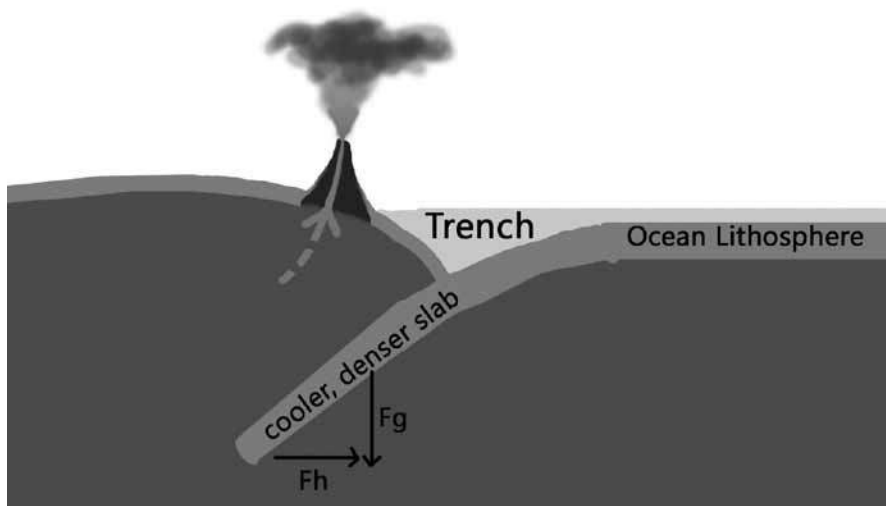


Figure 8 (left). Horizontal and vertical components of the slab pull force. It is F_h that is supposed to cause slab rollback (also called trench or subduction rollback.) Drawn by Mrs. Melanie Richard.

have been proposed to explain overriding plate deformation at subduction zones, and different physical parameters have been put forward that might control it... (Meyer and Schellart, 2013, p. 775).

Meyer and Schellart (2013) of course believe that their model elucidates the process of slab rollback.

Rollback at the Alboran Basin varies with the particular model. The amount of estimated rollback ranges from 200 to 600 km (Medaouri et al., 2014). Vergés and Fernández (2012) propose 800 km! In all the models, during the later stages of rollback, a backarc basin formed in the Alboran Sea as the trench, forearc, and volcanic island arc entered the Gulf of Cadiz. Some models have the Alboran extensional basin forming in situ while others favor its initiation several hundred km east, with the basin itself rolling back to its current location (Vergés and Fernández, 2012). If this process occurred, there should be evidence of volcanism all along the path, as well as evidence of a trench, forearc, and volcanic arc in the Gulf of Cadiz. There should also be strong evidence for east-west shearing along the northern and southern boundaries of the westward moving subduction zone, and there is none.

However, none of these features exist in the Gulf of Cadiz, although some researchers theorize a subduction zone based on exposed mantle rocks at the surface (Duarte et al., 2013). Some claim the Gulf of Cadiz imbricate wedge is a forearc accretionary prism (Gutscher et al., 2012). Accretionary prisms supposedly form when dense oceanic lithosphere dives under a less dense plate, and ocean sediments are scraped off, or “obducted” onto the lighter crust, with underthrusts dipping toward the upper plate. In this case, the edge of thrusting should be located in the western Gulf of Cadiz, and it is not. Another problem with the rollback theory is the absence of any discernable connection between

the Gulf of Cadiz and the high-velocity slab 60 to 600 km beneath the central Alboran Sea, presumed to be a subducted slab (Figure 9) (Palomeras et al., 2014).

In the 1990s, some interpreted the Gulf of Cadiz stacked thrusts as a giant gravity slide with westward-moving thrusts, and some still do (Platt et al., 2013). Iribarren et al. (2007, p. 97) noted: “We interpret the Gulf of Cadiz Imbricate Wedge as a west-migrating thick thrust system that build up in a relatively short time.” This pattern would fit in with the outward thrusting of the external zones of the Betic and Rif Mountains. Debris flows also initiated giant submarine slides that extended down into the deep ocean.

The rollback model remains controversial (Grevemeyer et al., 2015), and some think it happened in the past, but

then ceased (Grevemeyer et al., 2009; Mattei et al., 2007). The theory arose to explain *extensional* backarc basins at *convergent* plate boundaries. The dynamics are questionable and there is no consensus on the driving mechanism for long distance trench retreat (Doglioni et al., 2007; Medaouri et al., 2014). Moreover, faulting expected in southern Spain and North Africa from rollback has not been found (Medaouri et al., 2014).

Contrary to Geophysics

Regional geophysical data does not clearly support any model (Dündar et al., 2011; Vernant et al., 2010), and thus, plate tectonics has not been able to adequately explain the region: “The region provides examples of a range of tectonic

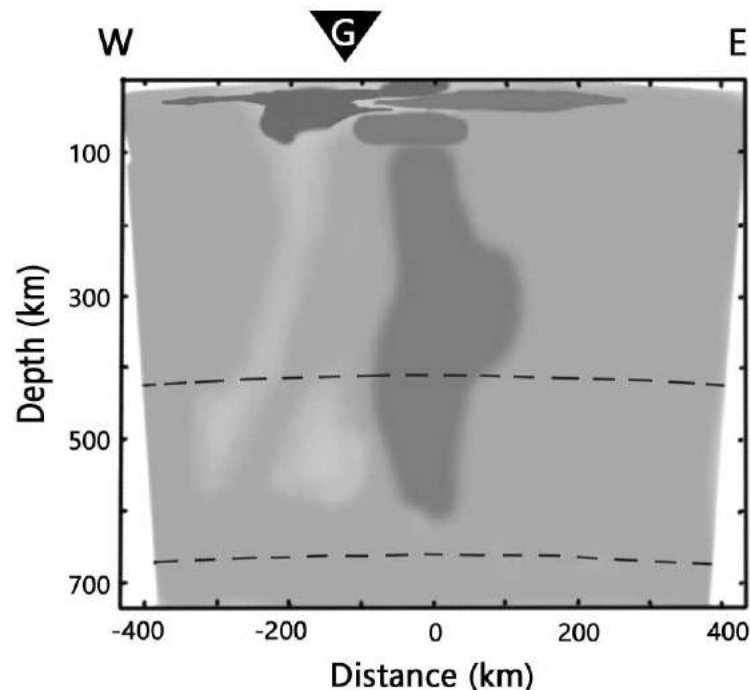


Figure 9. A west-east vertical tomographic image through the Alboran Basin showing the vertical slab of high seismic velocity that starts near 60 km deep and extends to about 650 km. (Copyright 2013 from Bezada et al., 2013, p. 55, and modified by Mrs. Melanie Richard. Used in accordance with federal copyright [fair use doctrine] law. Usage by CRSQ does not imply endorsement of copyright holder.) “G” is the location of the Strait of Gibraltar.

processes that are not predictable from the rules of rigid-plate tectonics” (Platt et al., 2013, p. 313).

The primary problem is the absence of a subduction zone on seismic images, particularly penetrating the 410–660 km transition zone between the upper and lower mantle, and the lack of a resulting explanation for the deep earthquakes below Granada. Most scientists see the Alboran Sea Basin as a backarc basin. However, some think the WAB could be a forearc basin (Do Couto et al., 2016) within an accretionary prism that filled. If so, a trench should be east of the western Alboran Basin and the Gibraltar area should be a volcanic arc, both untrue.

Discussion

So, the Alboran Sea basin shows thin continental crust, radiating thrust sheets, thick sediments, and an internal zone of metamorphic crust with mantle rocks. Many oversimplified and speculative models have been proposed (Medaouri et al., 2014). None have been able to link a subduction zone to the deep earthquakes (Casado et al., 2001; Cunha et al., 2012), which is why various models show subduction zones dipping in *all directions* (Gutscher et al., 2002; Vergés and Fernández 2012). No model, even the currently-popular rollback model, predominates: “Several models have been suggested to explain the different tectonic features in this region, but a generally agreed model does not exist yet” (Dündar et al., 2011, p. 1,019). There are still a lot of unknowns (Moudnib et al., 2015), but the structure of the region is becoming clear.

Possible Flood Interpretation

How might this area be caused by the Flood? According to the uniformitarian timescale, basin formation, thrusting, and sedimentation occurred, in the Miocene (Torre et al., 2000). The tectonics and sedimentation were too great

to occur after the Flood (Oard, 2014). It follows that the Flood/post-Flood boundary in this region must be in the very late Cenozoic, well after the Miocene, assuming the geological column (Oard, 2014).

Basin subsidence and surrounding uplift, prior to extensive erosion and sedimentation, suggests that the basin began to form near the Zenithic Phase or the Abative Phase of the Retreating Stage of the Flood (Oard, 2008; 2013a; Walker, 1994). This rests largely on the formation of planation surfaces on the tops of the mountains in southern Spain (Farines et al., 2015), which are typical of the Sheet Flow or Abative Phase.

The Alboran Sea Basin and the surrounding mountains show several broad-scale features that are consistent with a large meteorite or comet impact after most sediments (Precambrian, Paleozoic, and Mesozoic) were laid down. Such an impact would have provided the powerful *force* needed to sustain thrusting outward from the basin. The area from which the thrusts pushed up and out could be the center of the crater, now the Alboran Sea Basin. The pre-impact sediments would have resulted from the Inundatory Stage of the first 150 days (Oard and Reed, 2017). The timing of an impact well into the Flood during the Abative Phase would explain the survival of the distinct semi-circular shape and geology around and within the basin. However, there is no other evidence to be observed. Earlier impacts would have been obscured by subsequent tectonics, volcanism, erosion, and deposition.

Features of Impacts

Although many features of impacts are understood, many are not (Melosh, 2013; Oard, 2013b). During impact, a transient, bowl-shaped crater forms within seconds. A rim is formed by the outward and upward push of the sides of the crater (Figure 10), and the crater is quickly modified by sliding and slump-

ing of the inner rim into the crater, expanding the basin diameter by 1.5–2 times while decreasing its depth (Figure 11). With large impacts, the center of the crater usually rebounds, forming a central uplift or central peak ring complex (Melosh, 2013). Rock within the central uplift acts like a fluid (Wünnemann and Ivanov, 2003), oscillating up or down before “freezing” in place. Craters greater than 300 km in diameter can end up with flat floors (Melosh, 2013). From start to finish, the formation of the crater would take less than an hour.

If the central uplift freezes in an up position, a gravity high results from the uplift of denser mantle material, similar to the mascons on the Moon (Wieczorek and Phillips, 1999). The Moho, the boundary between the crust and the mantle, is also elevated. Low gravity usually surrounds the gravity high. If the center falls back, the crater is filled with lighter shattered rock from the impact, sediments, or volcanic rocks, and the center will show a gravity low. Therefore, it is likely a central gravity anomaly, whether high or low, will exist (Searls et al., 2006).

Another feature is thinned crust at the impact. The seismic velocities sometimes measure a high density for this remaining crust, but that is because this crust would be the higher density lower crust after the impact blasted away the upper crust. In addition, impacts fracture rock deep beneath the crater, possibly explaining the low seismic velocity at 15 to 60 km depth. After the crater rim is thrust outward, it will be eroded in subsequent Flood processes, which would make the thrusts more defined with intervening valleys or basins. These valleys and those intermontane valleys and basins formed when extension occurred with rim collapse would fill with sediments.

After one hour, impact craters start to relax, and the bottom of the crater slowly rebounds over time. This process depends on a number of variables, such

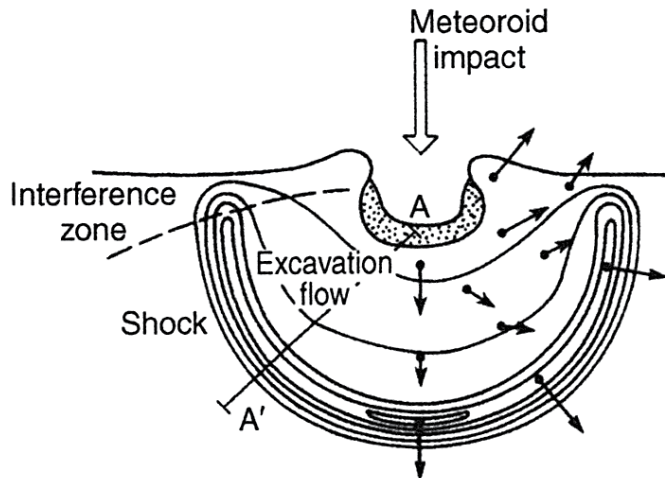


Figure 10. The excavation stage of an impact showing the strong lateral and upward force exerted on the sides of the forming crater. (Copyright 2013 from Melosh, 2013, p. 236. Used in accordance with federal copyright [fair use doctrine] law. Usage by CRSQ does not imply endorsement of copyright holder.) If post-impacting erosion is superimposed on the image, the rim area would be mountainous with multiple thrust sheets, as seen in the Betic and Rif Mountains.

as the temperature of the surrounding rock, whether the center is a gravity high or gravity low, the viscosity of the mantle, the size of the crater, whether there was a phase change in the mantle rocks, etc. (Robuchon et al., 2011).

Suggested Impact Scenario for the Alboran Basin and Surrounding Mountains

If an impact occurred in the Alboran Sea during the Flood, its effects would have been significant and left some evidence. It would have caused thrusting of the Betic and Rif mountains, even as the thinned crust would have formed the subsiding basin. Residual motion continues; the Rif Mountains are still moving south away from the Alboran Basin by continued thrusting (Figure 2).

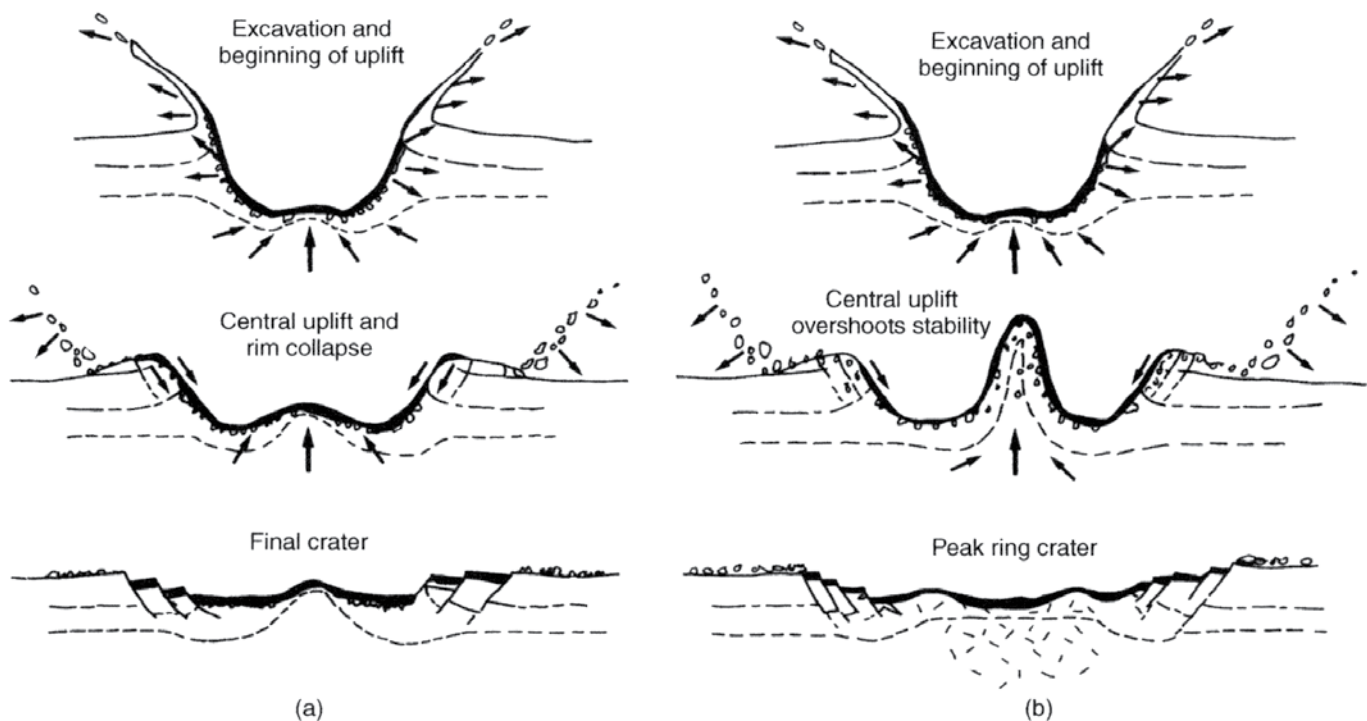


Figure 11. The formation of a complex impact crater which results in either a central peak (a) for small complex craters or a peak ring (b) for large complex craters. (Copyright 2013 from Melosh, 2013, p. 240. Used in accordance with federal copyright [fair use doctrine] law. Usage by CRSQ does not imply endorsement of copyright holder.) Notice that the rock is first pushed outward during the formation of the transient crater and then the sides of the rim slump back into crater.

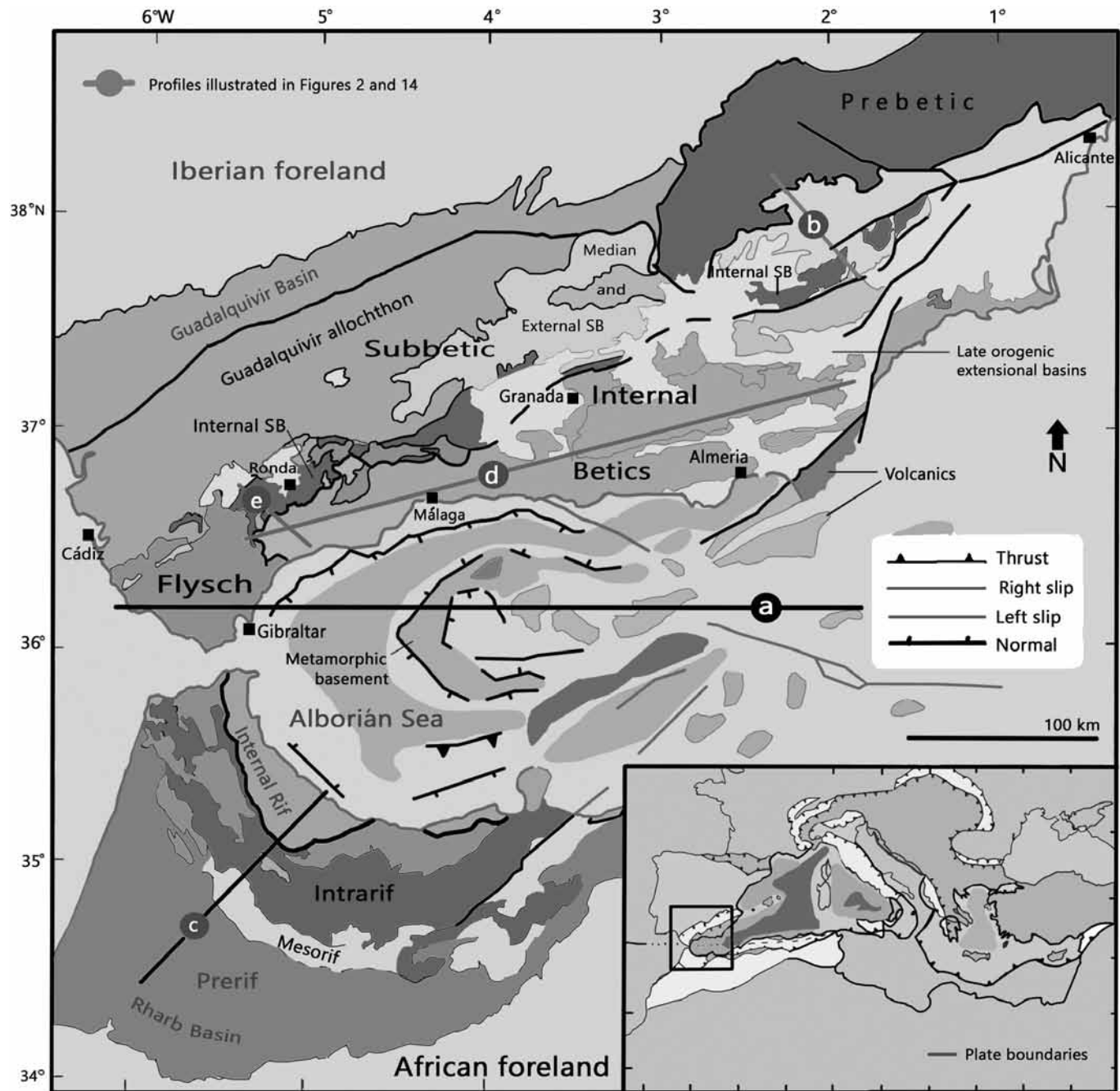


Figure 12. Tectonic map of the area showing circular metamorphic basement arc that could represent the central peak ring uplift of a large complex crater about 200 km in diameter. (Copyright 2013 from Platt et al., 2013, p. 316. Used in accordance with federal copyright [fair use doctrine] law. Usage by CRSQ does not imply endorsement of copyright holder.)

If the Alboran Basin is an impact crater, the Gibraltar arc suggests a diameter of about 200 km. It would represent a large complex crater with a

peak ring complex in the center (Oard, 2013b). The center of this impact likely is the raised circular area bounded by normal faults just east of the western

Alboran Basin (Figure 12), so that the South and North Alboran Basin could be part of the annulus of the crater. The arcuate shape of the Alboran Basin may

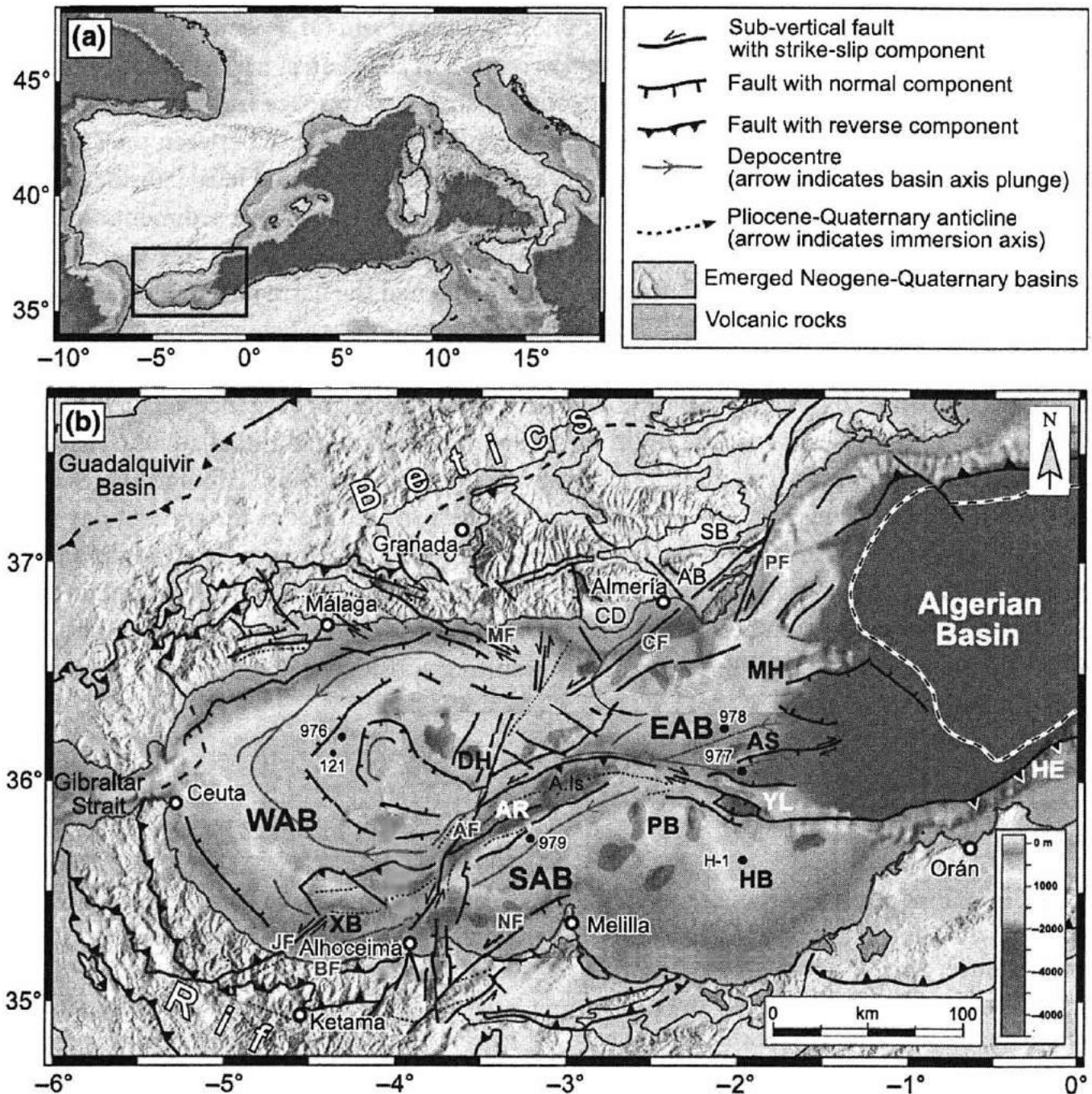


Figure 13. A larger tectonic map of the western Mediterranean Sea showing the deep Algerian Basin. (Copyright 2013 from Martinez-Garcia et al., 2013, p. 362, and modified by Mrs. Melanie Richard. Used in accordance with federal copyright [fair use doctrine] law. Usage by CRSQ does not imply endorsement of copyright holder.)

reflect the outer annulus of this raised peak ring complex.

In this proposed scenario, part of the internal zones should have sunk back

toward the Alboran Basin, resulting in extension and low-angle normal faults seen just off shore and inland (Martinez-Garcia et al., 2013). The metamorphic

rocks of the internal zone and the Alboran Sea are exhumed from the middle to lower crust and were thrust out along the edge of the Alboran Sea before sliding

back toward the basin during extension, although these have alternative explanations as well. Other metamorphic rocks were uplifted in the center of the basin during crater rebound. All these events would have formed very rapidly. It appears that an impact could partially explain the anomalous structure and tectonics of this basin.

In this case, the eastern Gulf of Cadiz would be part of the western external zone, thrust westward, resulting in a thick stack of thrust sheets and contributing to the debris flows that slid down the steep continental slope. Iribarren et al (2007) believe the formation of the Gulf of Cadiz imbricate wedge was rapid. Crespo-Blanc (2008) believes the structures of the thrusts, especially the eddy-like features in the external zone and flysch, indicate *one* event. In both cases, an impact would explain these features.

The thin crust and shallow Moho at the Alboran Basin accounts for the gravity high; the surrounding mountains show low gravity. The high heat flow in the Alboran Basin is probably caused by the hot mantle near the surface. High seismic velocity in the remaining crust (Palomeras et al., 2014) may be the result of the destruction of the upper crust, leaving high-density lower crust and intrusive rocks. A low-velocity zones exists below the western Alboran Basin from 15 to 60 km (Palomeras et al., 2014), which could have been caused by fracturing of the upper mantle. Beneath it, from 60–650 km is a high velocity zone, but its association with any impact is unknown. It certainly is not a subduction zone.

Admittedly, the impact hypothesis has evidence in the form of arc-shaped overthrusting from a subsided basin with thin crust and high heat flow. Most of the features often associated with an impact, such as shocked quartz, iridium, tektites, shatter cones, rock breccia, etc. have not been identified. French and Koeberl (2010) suggest that the only positive evidence for impacts is shatter

cones and planar deformation features (PDFs) in quartz or other crystals (Oard, 2013). However, they admit that these features would not be common. Recognizing shatter cones in the field is quite difficult, and PDFs would be found only near the center of impact. They would be absent in the annular zone because the impact pressures decrease rapidly from the point of impact outward:

The extreme pressure and temperature conditions of shock metamorphism, and the resulting diagnostic shock-deformation effects, are produced only within a relatively small volume of target rock near the impact point” (French and Koeberl, 2010, p. 142).

Moreover, it is difficult to find planar deformation features in a marine environment. Thus, these criteria are way too stringent, especially considering a Genesis Flood environment. Besides, the researchers have not looked for such ephemeral features, as far as I know.

Was There Another Impact in the Algerian Sea Basin?

Contrary to the impact model, there is no thrust zone arc east of the Alboran Sea (Figure 12). However, it may have been destroyed by a later, strong impact in the Algerian Sea Basin (Figure 13). The intersection of the two impact outer zones may explain the chaotic boundary zone seen today between the Algerian and Alboran Basins. The volcanic Alboran Ridge would be a later uplift after the impact.

Several features of the Algerian Sea suggest also an impact may have occurred. Outward thrusts occur north, along the northern edge of the Balearic Promontory, and south, in northern Algeria, the Maghrebides (Maillard and Mauffret, 2013). The forcing of the eastern Betic Mountain first north and then back towards the south is also consistent with an impact east of the Algerian Basin. A positive gravity anomaly, high

heat flow, and thin crust are also present in the Algerian Basin. But here again, there is no evidence of any iridium, glass beads, or shocked quartz to verify such an impact.

Late Flood Modification

After the presumed impact(s), the uplifted mountains that were overthrust outward were eroded by the Retreating Stage Flood currents forming planation surfaces and pediments (Farines et al., 2015), filled intermontane valleys and basins with over 2 km of sediments, and then eroded those valleys and basins during the Channelized or Dispersive Phase. The pediments would have formed later by channelized erosion down the intermontane valleys and basins (Oard, 2004). Undeformed sediments in the West Alboran Basin can possibly be explained by the backfilling of an impact crater by its associated debris.

Conclusion and Implications

Many features of the Alboran Sea and the surrounding mountains are poorly explained by uniformitarian theories, but may be consistent with an impact event large enough to form a central peak ring complex. Specifically, the extensional tectonic features found at a convergent boundary require an unusual explanation. The thinned crust; crustal fracturing; gravity anomaly distribution; metamorphic and mantle rocks in the interior zones; and arcuate, thrust outward external zones can all be explained by the impact mechanism. The drawback to this explanation is the lack of impact-related artifacts in the Alboran Basin and surrounding areas.

Planation surfaces and pediments, valley and basin fill, and subsequent erosion all combine to place the timing of the impact in the early Retreating Stage of the Flood, the Abative Phase. Features inconsistent with an Alboran impact

may be explained by a subsequent impact to the east, in the Algerian Sea, as well as by late Flood modification.

The broad-scale features of the area are consistent with an impact. If all these unusual tectonic and geophysical features were not caused by an impact, then the origin of these features may be difficult to explain by another Flood mechanism. If the Alboran Basin was caused by an impact, then it is possible that other arc-shaped features in the Mediterranean region were also caused by impacts.

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Extensive Messianic Prophecy Corruptions and Flood-Related Chronology Errors Disqualify the Septuagint (LXX) as a Reliable Source for Creationist Research

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Abstract

There has recently been an interest in the creation science community to promote what is today called the Septuagint (LXX), a controversial Greek translation of the Old Testament that also contains the noncanonical Apocrypha. The recent reason for doing so, it appears, is that the LXX can be used as a justification for an expanded biblical history, both before and after the Flood. Ironically, the LXX reports erroneous chronology data that, if true, would require Methuselah to have survived the Flood (in addition to the 8 historical survivors) by about 14 years—and no LXX advocate has offered a forensically reliable remedy to this error. Meanwhile, as complicated chronological/genealogical arguments have waged back and forth between proponents and opponents, the “elephant in the room” is the pervasive textual corruption that clearly exists in what is today called the LXX, which renders it a forensically unreliable text-source. Contrary to claims that the LXX closely follows the Masoretic Hebrew outside of a few chronological differences, the LXX (in its variant forms) often differs significantly from the providentially preserved Hebrew text of the Old Testament. Our analysis of key Messianic prophecies in the LXX, compared to the Hebrew, reveals a disturbing trend of textual corruption. This preliminary study will show that five pivotal Old Testament Messianic prophecies have been severely altered in the LXX, so as to remove their otherwise clear prophetic connection to the New Testament mission and divinity of the Lord Jesus Christ. We propose that these LXX corruptions were introduced during the late 1st Century AD (at the earliest), with further corruptions being added in later centuries, most likely by Messiah-rejecting Jews and/or by Scripture-altering pseudo-Christian Alexandrian scribes.

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Introduction

The Septuagint (LXX), in the forms now available to us, is a Greek and often loose and inaccurate (compared to the Hebrew Masoretic Text) translation of the Old Testament Scriptures. The LXX also contains the noncanonical apocryphal writings sprinkled throughout. The Roman Catholic church has been one of the largest advocates of the LXX over the years because the Apocryphal books can be used as proof-texts for promoting prayers for the dead, purgatory, prayers to deceased saints and/or angels, earning merits toward salvation through alms and indulgences, and other extra-biblical doctrines that conservative Protestants have traditionally rejected (Daniels, 2017).

However, many ecumenical evangelicals have been promoting the LXX in recent years, as well as a small and fairly recent contingent of young earth creationists (Sexton, 2015; Smith, 2018, replying to Cosner and Carter, 2018). In so doing, many of these individuals conveniently omit the embarrassing fact that the LXX contains the Apocryphal writings which are central to the Counter-Reformation agenda (Daniels, 2017).

Other LXX advocates, like S. Douglas Woodward (Woodward, 2018, 2019), assert a bolder agenda to “reboot the Bible,” promoting the Septuagint, claiming it is superior to the Protestant Bible’s preserved Hebrew text. This idea purports that the LXX is needed to back-translate and rehabilitatively “restore” portions of the Old Testament text, and to thus harmonize the Genesis chronology data with ancient Egyptian and Mesopotamian chronologies, as if doing that would somehow improve the credibility of Genesis and of the Bible itself. Woodward also advocates the Apocrypha books, as if they should be added to those belonging to the Protestant Bible.

Various legends that surround the original creation of the LXX, none of which completely agree with each

other, place it as being translated by Alexandrian Jews about 280 BC (Daniels, 2017). However, recent research has shown that none of these alleged ancient accounts and documents that purport a BC Septuagint exhibits any credibility when compared to the historical and logistical facts surrounding their provenance claims (Daniels, 2017).

In fact, a thorough historical analysis of ancient documents indicates that what we call the Septuagint was most likely first written during the first century AD (after some of the New Testament books were written, such that some LXX texts contain quotations from New Testament books—not vice versa) and then periodically modified in multiple versions thereafter (Daniels, 2017). This freehanded editing, generation after generation, is one of the reasons why the spurious Septuagint-based codices of Vaticanus, Alexandrinus, and Sinaiticus vary significantly from one another (Daniels, 2017).

Many assume that no Dead Sea scrolls contained any fragments of any New Testament books, yet that assumption is now upset by findings of New Testament fragments in caves that were closed prior to the Roman army’s destruction of Jerusalem and Judea in AD 68–70 (Cooper, 2017). In other words, if New Testament books were written and circulated *before* the time when our oldest LXX fragments originated, the LXX editors had the opportunity to insert New Testament quotes into their LXX copies, facilitating back-dated plagiarism to mask textual corruption—especially such efforts aimed at sabotaging Messianic prophecy. This problem is known in forensic science circles as the “recent fabrication” problem (Johnson, 2012).

At present, there are basically two different versions of the LXX available to modern readers. Lancelot Brenton compiled one version in 1851 primarily from Codex Vaticanus with supplemental text taken from Codex Alexandrinus

where Vaticanus was lacking sections (Brenton, 1851). Brenton’s LXX with English translation is readily available as a modern work by Hendrickson Publishers and also on a web site where it is conveniently compared to the KJV Bible, whose Old Testament writings are based on the Masoretic Hebrew text (Brenton, 1986; Marsh, 2012). The other key modern version is the Rahlfs-Hanhart Septuaginta from 2007 that is a slightly updated version of the original 1935 edition (Rahlfs, 2007). This LXX version is a blending of three different codices: Alexandrinus, Vaticanus, and Sinaiticus.

All of the codices that these two LXX versions are based on were developed no less than three centuries after the time of Christ, not before (Daniels, 2017). Forensically speaking, this is very important for evaluating the reliability (versus unreliability) of the LXX as a textual transmission source in contrast to the Masoretic scribe-transmitted Hebrew Bible (Johnson, 2012).

The relevance of this problematic provenance is critical to the preliminary analysis herein, because most creationists (e.g., Cosner and Carter, 2018; Smith, 2018; Sexton, 2015), who have written about the LXX, have uncritically assumed that what we today call the Septuagint is a Greek text that can be forensically traced to “before-Christ” documents—yet no such “before-Christ” documents exist (Daniels, 2017). There is no biblical promise that God would preserve the verbal text of any particular Scripture *translation*, as opposed to God having promised to preserve His original words as given (i.e., in the Old Testament, as to every “jot” and “tittle”), when God committed His prophetic “oracles” unto the Jews (Romans 3:2). The “let’s-get-back-to-the-Bible” Protestant Reformation champions (Wycliffe, Luther, Calvin, Knox, etc.) were peerless Bible scholars that trusted the Masoretic Text, not the LXX-Apocrypha codices given by Rome.

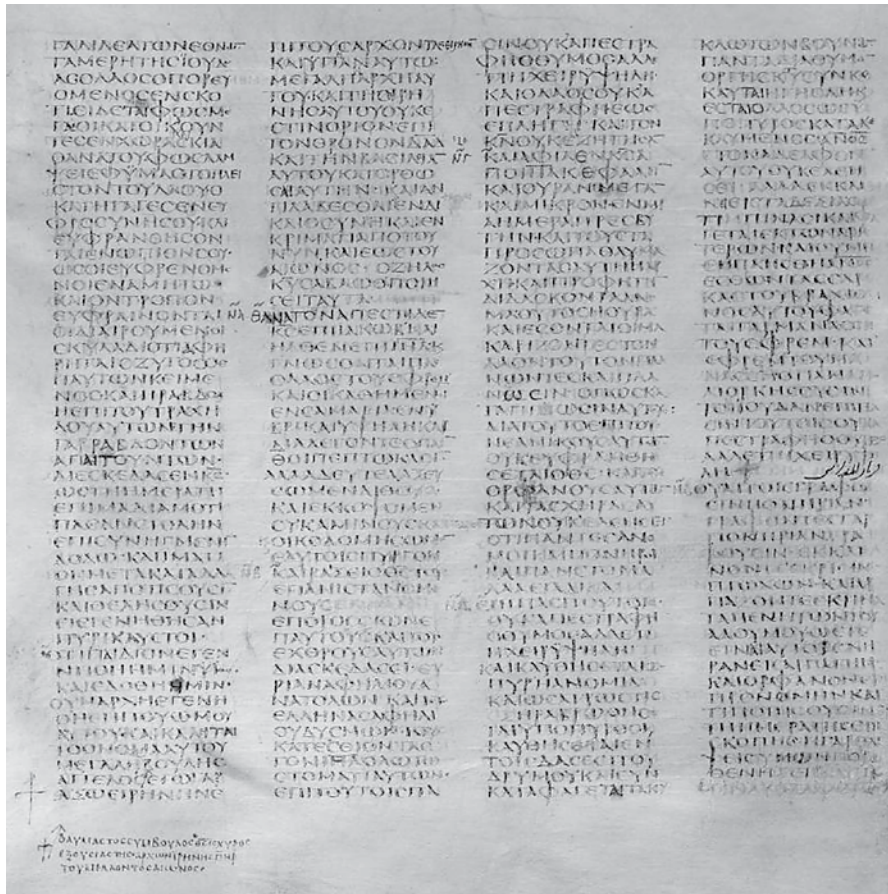


Figure 1. An image from Sinaiticus Isaiah Chapter 9.

The main sales pitch for the promotion of the LXX in the creation science community, is the idea that it gives a more accurate and lengthened (i.e., expanded) historical chronology in Genesis chapters 5 and 11 (Sexton, 2015; Smith, 2018). Although not formally published in recent creationist literature, personal communications with members of the creation science community suggest that some would favor an expanded LXX-based chronology. This would justify adding up to 1600 years of extra time for numerous hypothetical post-Flood local catastrophes and rapid animal diversification (beyond-breedability “speciations”).

These ideas are based on the assumption of a premature Cretaceous-Paleogene post-Flood boundary in the sedimentary rock record to explain the fossils and sediments of the Paleogene and Neogene of the Cenozoic.

For example, it is believed by some that terrestrial walking “proto-whales” left Noah’s Ark and then rapidly evolved (aka “hyper-evolution”) into marine whales, because whales are not found in the fossil-rock record before the Paleogene (Wise, 2009). And somehow, other animals (including many mammals), also making their first rock-record appearance in the Cenozoic, would also “benefit” from this “extra time,” as they

quickly diversified from Ark ancestors in some sort of rapid saltational hyper-evolution (Wise, 2017). The major problem with this overall idea is that whale fossils have been found across the entirety of Europe and the coastal margins of nearly every major continental land mass, negating their supposed burial in localized post-Flood catastrophes (Tomkins and Clarey, 2019).

In addition, many first appearances of plants and animals appear in Cenozoic sediments (Pimiento et al., 2017; Tomkins, 2018; Tomkins and Clarey, 2018a, 2019b). Besides the obvious paleontological data, Clarey’s extensive mapping of global megasequences clearly shows that Flood depositional processes were occurring on a massive scale through the entire Cenozoic system known as the Tejas megasequence (Clarey, 2017; Clarey and Werner, 2017). Thus, both geology and paleontology evidences debunk the notion of an early Flood boundary and hence the supposed necessity of both hyper-evolution and imaginary numerous and global post-Flood catastrophes.

Not only is the LXX being promoted among creationists for a lengthened chronology, but the spurious idea that Masoretic scribes tampered with the Old Testament chronologies to remove the possibility of Jesus Christ being the Messiah has also been put forth, as well, to justify the preferential use of the LXX (Smith, 2018). If any nefarious Jew or Gentile Bible corrupter was seeking to alter Scripture in order to push the Lord Jesus Christ out of the equation, would they not have tampered with Messianic prophecies, rather than supposedly shrinking complicated chronologies and genealogies? Indeed, Messianic prophecies are the chief means of apologetically authenticating the Messiah and His redemptive mission, and thus authenticating the Gospel of Christ. Notice that I Corinthians 15:3–4 twice qualifies the redemptive work of Christ as being “according to the [Old Testament] Scriptures.” And the Ethiopian eunuch

was evangelized by Isaiah 52:13–53:12, not some debatable chronology.

In this research and report, we show that rather than the MT being altered, it is the Greek translation of the LXX that provides a contrived corruption of at least five key Old Testament Scriptures wherein the alterations remove the prophetic connection to the New Testament mission and divinity of the Lord Jesus Christ. And we also show how basic flood-related chronology errors further disqualify the LXX as a reliable source for creationist research.

Methods

Key Messianic prophecies were selected from the list provided of “Prophecies Fulfilled at the First Coming of Christ” in the Henry Morris Study Bible (Morris II, 2012) on page 2123. A comparison of the LXX and MT was first done through the side-by-side English translation of Lancelot Brenton’s 1851 version (Brenton, 1986) versus the King James Version (aka Authorized Version of AD 1611), using a publicly available online resource (Marsh, 2012). For the original Hebrew text of the Old Testament books, we have used the Biblia Hebraica Stuttgartensia BHS 5 (BHS), including its textual comparison apparatus. Regarding the Greek texts of the variant forms of what is today called the “Septuagint” or “LXX,” we have used Lancelot Brenton’s 1851 Greek text (Brenton, 1986) and Rahlfs-Hanhart Septuaginta (Rahlfs, 2007). Also, chronology data relevant to the life of Methuselah, as it correlates to the timeframe of the global Flood, was analyzed using passages within Genesis chapters six through nine.

Genesis 3:15: Protoevangelium Corruption

LXX

And I will put enmity between thee and the woman and between thy seed and her

seed, he shall watch against thy head, and thou shalt watch against his heel.

MT

And I will put enmity between thee and the woman, and between thy seed and her seed; it shall bruise thy head, and thou shalt bruise his heel.

The obvious discrepancy between these two translations is the word “watch” versus “bruise.” In the LXX, “watch” corresponds to the Greek verb, “τηρέω” (tēreō) which is used to mean “keep, watch, or guard.” The inflected form of the first use of the verb in this passage is τηρήσει (future, active, indicative, 3rd person, singular) while the second instance is τηρήσεις (future, active, indicative, 2nd person, singular).

In Genesis 3:15, twice, the MT uses Qal imperfect forms of the verb שׁוּב, translated “bruise” in our English Bible. The Hebrew word “bruise” (שׁוּב) is used in two other places in the MT in a fashion that indicates severely inflicting injury or covering an individual with darkness (negative connotation). Job 9:17 says, “For He breaketh (שׁוּב) me with a tempest, and multiplieth my wounds without cause” and Psalm 139:11 says, “If I say, Surely the darkness shall cover (שׁוּב) me; even the night shall be light about me.”

Excluding the Apocrypha, the Greek verb τηρέω (tēreō) is used 14 times in the LXX. Eleven times it is translated as “keep,” “watch,” or “look” and its English gloss imparts the standard Greek meaning and usage of the term. In no instance is it ever used to give the impression of bruising or inflicting harm. Thus, the authors of the LXX translation in Genesis 3:15 were consistent with this same usage of tēreō throughout the rest of the LXX. The Greek translators could easily have chosen the verb συντρίβω (syntribō) or θραύω (thrauō), both of which have been translated as “bruise” in the New Testament and indicate the action of bruising, wounding, or destruction. The Greek verb that is translated “bruise” in Romans 16:20 is

συντρίψει, a form of the verb συντρίβω (syntribō). Moreover, it is noteworthy that Romans 16:20 (“And the God of peace shall bruise Satan under your feet shortly”) links to the content of Genesis 3:15 only if the MT text is relied upon, as opposed to the very different meaning given in the LXX version of Genesis 3:15.

There is a clear discrepancy and even an opposite meaning between tēreō in the LXX and שׁוּב in the MT. The LXX usage means to “keep/keepeth,” “watch out for,” or “be on guard against” while the use of “bruise” means to “strongly injure or afflict.” Clearly, the enemies of God, and Satan himself, would be actively watching out for, keeping, and guarding against the fulfillment of this prophecy—but to no avail as we are told in I Corinthians 2:8, “for had they known it, they would not have crucified the Lord of glory.” We shall also briefly look at the importance of the phrases “bruise thy head” and “bruise His Heel” each in turn, thus showing their scriptural relevance and illustrating why their corruption in the LXX should not be lightly regarded.

In stating “bruise thy head,” we know that Satan inflicted a wound on the woman’s Seed (Jesus Christ) at Calvary, but Christ in turn inflicted a mortal wound upon the Serpent (crushing his head) in His atoning death, burial, and resurrection. The first part of this key biblical prophecy was realized at Calvary and the fulness of it will culminate when the triumphant Lord Jesus Christ casts Satan into the lake of fire (Revelation 20:10).

In stating, “bruise his heel,” Henry Morris II, noted, “This primeval prophecy made such a profound impression on Adam’s descendants that it was incorporated, with varying degrees of distortion and embellishment, in all the legends, mythologies and astrologies of the ancients, filled as they are with tales of mighty heroes engaged in life-and-death struggles with dragons and other

monsters. Mankind, from the earliest ages, has recorded its hope that someday a Savior would come who would destroy the devil and reconcile man to God" (Morris, 2012).

Numbers 24:17 LXX Corruption of Christ's Authority

LXX

I will point to him, but not now; I bless him, but he draws not near: a star shall rise out of Jacob, a man shall spring out of Israel; and shall crush the princes of Moab, and shall spoil all the sons of Seth.

MT

I shall see him, but not now: I shall behold him, but not nigh: there shall come a Star out of Jacob, and a Sceptre shall rise out of Israel, and shall smite the corners of Moab, and destroy all the children of Sheth.

Multiple key words in this prophecy are different between the LXX and the MT. First let us list them in the MT/KJV. They are "see" (רָאָה *rā'â*), "behold" (שָׁרָא *šûr*), and "Sceptre" (שֵׁבֶט *šēbet*). These Hebrew words are all accurately rendered in the KJV's English translation. In contrast, the Greek choice of words in the LXX clouds, lowers, and degrades the Messianic impact of the text. This is done by removing the kingship aspect of the prophecy, by virtue of omitting the mention of the "scepter" that belongs to this future champion of Israel. It is noteworthy that the same Hebrew noun "Sceptre" appears in a prior Messianic prophecy in Genesis 49:10, which indicates that the tribe of Judah would be the authoritative/royal tribe in Israel.

The obvious Greek verbs that should have been chosen for "see" (*rā'â*) should have been either ὁράω (*horaō*) or βλέπω (*blepō*). The Greek verb that was actually used was δείξω (*deixō*) followed by the personal pronoun αὐτῷ (*dative*, singular, masculine/neuter). The phrase

literally means "I will show him." Not only is the Greek translation corrupted, but the English translation of the Greek is corrupted as well. The clear meaning of the Hebrew text is that the Messiah emphatically will be seen, not merely just pointed to or shown.

The corruption of the second phrase in the MT of "I shall behold him" is altered to "I bless him." The Greek verb used is "μακαρίζω" (*makarizō*) which literally means to bless, not behold. The obvious potential choices for a Greek translation for "behold" are rather abundant, yet none were chosen by the LXX translators. Greek words for "behold" are θεάομαι (*theaomai*), and θεωρέω (*theōreō*). Alternatively, even ὁράω or βλέπω could have been used. The clear choice to avoid anything with the meaning of "behold," despite the abundant options available, showing that the prophecy was beheld and fulfilled, is obvious and disturbing.

The third phrase, "a Sceptre shall rise out of Israel" clearly means that a noble rod/staff of correction, rule, and authority would arise out of Israel, not merely just "a man" as stated in the LXX. In fact, the Greek noun used in the LXX is ἄνθρωπος (*anthrōpos*); a generic noun typically used to describe a basic human or humankind. In fact, there was not even a modifying adjective to indicate that it was any special type of person other than just an ordinary human. In fact, an even more specific noun for a man/male, ἀνὴρ (*anēr*), was not used, much less any noun coming close to "sceptre" (*šēbet*) which literally means an authoritative rod for ruling and correction.

In this LXX verse, the first two phrases that were corrupted muddle the fact stressed in two affirming statements used for emphasis in the MT, that we will for a surety see the Messiah appear and behold Him. The last phrase in this LXX passage portrays the subject of the prophecy as some ambiguous human not as the Messiah, Ruler, and King.

Isaiah 9:6 LXX Corruption of Christ's Deity

LXX

For a child is born to us, and a son is given to us, whose government is upon his shoulder: and his name is called the Messenger of great counsel: for I will bring peace upon the princes, and health to him.

MT (numbered as 9:5)

For unto us a child is born, unto us a son is given: and the government shall be upon his shoulder: and his name shall be called Wonderful, Counsellor, The mighty God, The everlasting Father, The Prince of Peace.

As truly human, Jesus was "born" on Earth; as truly God, Christ was "given" to the world. The phrase "mighty God" corresponds to the MT's אֵל גִּבּוֹר (*Êl gibbôr*), an obvious indication of the Messiah's deity, yet this indication of incarnate deity is deleted in the LXX's Greek rendering of this verse. Likewise, the phrase "everlasting father" or "father of eternity" (*abi-'ad*) has no Greek counterpart in the LXX version of this verse.

The corruption and completely absurd altering of the prophetic text in this LXX passage involves a blatant demeaning of the deity of the Lord Jesus Christ who is not merely just a "Messenger of great counsel" as stated in LXX. The Lord Jesus Christ is "The mighty God, The everlasting Father, The Prince of Peace." These descriptive words for the divinity of the Lord Jesus Christ have been blatantly omitted in the LXX. Since all of the words for these omitted phrases in the LXX are clearly present in the Hebrew text, there is no need for any detailed exegesis regarding this corruption.

Hosea 11:1 LXX Corruption of Matthew 2:15's Fulfillment

LXX

Early in the morning were they cast off, the king of Israel has been cast off: for

Israel is a child, and I loved him, and out of Egypt have I called his children.
MT

When Israel was a child, then I loved him, and called my son out of Egypt.

The beginning of 11:1 in the LXX contains words taken from 10:15 and moved over to the next chapter. Of the printed editions we had access to, only in Septuaginta it is in 10:15. In Brenton and the Orthodox text, it is moved to 11:1.

However, the main point is that there is a clear corruption of the prophecy in the difference between “out of Egypt have I called *his children*” in the LXX compared to “called *my son* out of Egypt” in the MT. An exegesis of both the Greek and Hebrew validate the corruption readily apparent in the English. There is no genuine dispute, however, that the New Testament confirms and verifies the MT on this Messianic prophecy, because Matthew 2:15 explicitly recognizes the MT wording as a Messianic prophecy fulfilled in Jesu Christ’s migration to Egypt: “And was there until the death of Herod: that it might be fulfilled which was spoken of the Lord by the prophet, saying, ‘Out of Egypt have I called my Son.’”

The Hebrew word for “son” (which is singular, not plural) in this verse in the MT is בֶּן (bēn). This prophecy was literally fulfilled by Jesus Christ, as indicated in Matthew 2:13–21, in which Joseph was warned in a dream to flee to Egypt to avoid Herod’s plot to kill the Lord and then when Herod had died, Joseph was again informed in a dream to bring his family back to Israel such that this prophecy in Hosea might be fulfilled as stated, “Out of Egypt have I called my Son” (Matthew 2:15).

The key phrase in Greek from this passage in the LXX is, “ἐξ Αἰγύπτου μετεκάλεσα τὰ τέκνα αὐτοῦ” which is correctly represented in Brenton’s English translation. The definite article and neuter noun “τὰ τέκνα” (accusative, plural) followed by the personal

proun form “αὐτοῦ” (genitive, masculine, singular) clearly mean “his children” not “my son.” Had it been accurately translated into Greek from the Hebrew, it would have read, “τὸν υἱόν μου” with “son” (υἱόν) being in the accusative, singular and “my” (μου) being in the first person, genitive, singular. Given the high specificity of Koinē Greek in conveying this type of information, this corruption is a clear perversion of the Hebrew text and completely corrupts this important and highly precise prophecy.

In regard to the history of how this LXX corruption came about, only Origen could have altered or approved of the change in the text to *ta tekna autou*. Aquila (125 AD), Symmachus and Theodotion (both ca. 175 AD) all had it right, saying some form of *huios mou* (my son). So the one who changed it, or the only one not to change it back, if it had said “his children” from the 1st century AD, was Origen’s column of the Hexapla. Aquila reads “τὸν υἱόν μου.” Symmachus put “υἱός μου” and Theodotion wrote “υἱόν μου,” without the definite article. None of these Alexandrian Jewish translators chose words that violated the Hebrew as Origen’s words startlingly did. Both the Alexandrinus and the Vaticanus followed Origen (Hosea was removed from Sinaiticus), not the Hebrew. An examination of the source texts puts the blame for passing on this error squarely on Origen’s shoulders.

Zechariah 12:10 LXX Corruption of John 19:37’s Fulfillment

LXX

And I will pour upon the house of David, and upon the inhabitants of Jerusalem, the spirit of grace and compassion: and they shall look upon me, because they have mocked me, and they shall make lamentation for him, as for a beloved friend, and they shall grieve intensely, as for a firstborn son.

MT

And I will pour upon the house of David, and upon the inhabitants of Jerusalem, the spirit of grace and of supplications: and they shall look upon me whom they have pierced, and they shall mourn for him, as one mourneth for his only son, and shall be in bitterness for him, as one that is in bitterness for his firstborn.

The fulfillment of this MT Scripture in the New Testament is recorded in John 19:37 that states, “And again another scripture saith, ‘They shall look on him whom they pierced.’” This verse is widely regarded as a prophecy in which the Jews will look upon the returning Lord Jesus, the Messiah as the one whom their ancestors had rejected and pierced (Hebrew: פָּקַד) during his crucifixion. The obvious corruption of this prophecy is clearly evident by the complete omission of the phrase, “whom they have pierced” (with the LXX replacing that phrase with “because they have mocked me”). The LXX’s verb “mock” (κατωρχήσαντο) is nothing close to the Greek New Testament’s verb “pierced” (εξεκεντησαν). The literal piercing of the Lord Jesus at Calvary was originally prophesied in Psalm 22:16, which states, “they pierced my hands and my feet.” It was fulfilled at the cross and prophetically affirmed in John’s (19:37) gospel account of the crucifixion, which states, “And again another scripture saith, They shall look on him whom they pierced” (εξεκεντησαν).

In Revelation 1:7, we have a similar Messianic prophetic verse to Zechariah 12:10, “Behold, he cometh with clouds; and every eye shall see him, and they also which pierced him: and all kindreds of the earth shall wail because of him.” The usage of the verb to pierce, “ἐκκεντέω” (ekkenteō) that was used in Revelation 1:7 and John 19:37, is entirely missing in the LXX.

Once again, the blame for either writing or passing this error on, can be placed squarely upon Origen’s shoulders.

Only he has κατωρχήσαντο. Aquila and Theodotion both put ἐξεκεντησαν, and Symmachus used ἐπεξεκεντησαν. Alexandrinus, Vaticanus, and Sinaiticus all have Origen's corrupt reading.

Flood-Related Chronology Corruption

An amazing problem with the LXX, skipping the partial years regarding birthdays and gestations, is that its math requires Methuselah to survive the Flood by more than a dozen years (Johnson, 2008). Genesis 5:25–26, in the Hebrew MT, tells that Methuselah fathered Lamech when Methuselah was 187 years old, and that Methuselah lived 782 years thereafter (i.e., till Methuselah died).

Lamech was 182 years old when he fathered Noah (Genesis 5:28–29). Since Methuselah lived 782 years after Lamech was born, Methuselah lived 600 years after Noah was born (because $782 - 182 = 600$). Noah was in his 600th year of age when the Flood commenced (Genesis 7:11). Therefore, the Hebrew MT reports Methuselah dying the year when the Flood hit (Johnson, 2008).

Genesis 5:25–26, in the Greek LXX, tells that Methuselah fathered Lamech when Methuselah was 167 [ἑκατὸν καὶ ἐξήκοντα ἑπτὰ] years old, and that Methuselah lived years 802 [ὀκτακόσια δύο] thereafter (i.e., till Methuselah died). Genesis 5:27 then says that Methuselah's total lifespan was 969 years ($167 + 802 = 969$).

LXX says that Lamech is 188 [ἑκατὸν ὀγδοήκοντα ὀκτὼ] years old when Noah is fathered (Genesis 5:28–29). Since LXX says Methuselah lived 802 [ὀκτακόσια δύο] years after Lamech was born, so Methuselah would have lived 614 years after Noah was born (because $802 - 188 = 614$). LXX says that Noah was in his 600th year of age when the Flood hit (Genesis 7:11); therefore, such that Methuselah would have died 14 years after the Flood started. The obvious and embarrassing problem for the

LXX translation is that Methuselah cannot have survived the Flood, according to Genesis 6–9 and 1 Peter 3:20 (“eight souls were saved by water”).

Discussion

A recent movement within the creation science community to push a highly-questionable Greek translation of the Old Testament that contains the non-canonical apocryphal writings favorable to the Counter-Reformation agenda is examined by textual analysis of five key Messianic prophecies. In comparing these five prophecies between the LXX and the MT, we find that they have been completely corrupted in the LXX, effectively removing their prophetic connection to the New Testament mission and divinity (and Gospel) of the Lord Jesus Christ.

Our findings are completely contradictory to the unsupported claim of the LXX promoters that post-AD Jews seeking to quench the spread of Christianity altered the chronologies in Genesis in the Hebrew Bible to de-authenticate Jesus as the Messiah. Rather than altering complicated chronologies of interest to an isolated Jewish audience in the Hebrew text, which very few Greek-speaking Christian Gentiles could even understand, would it not make more sense for unbelieving Jews and/or Gentile apostates, conspiring against Christ, to produce a corrupt and deceptive Greek text like the LXX for a much wider audience? The impact on the early church and thereafter would be considerably greater given that Koinê Greek was the international language of the era. In such a case, not only would foundational Messianic prophecies have been corrupted as they are in the LXX, but heretical folk tales such as the writings of the Apocrypha were also added throughout the text, masquerading as “additional” scripture, further polluting the text of the Old Testament and allowing for unbiblical doctrines.

It is also noteworthy that the case for the LXX is also largely based on an assumed BC text which has now been shown to be a highly unreliable assumption, fraught with provenance problems that fail forensic science standards of scrutiny (Daniels, 2017). At this point, it appears the LXX is nothing more than a compilation and synthesis of post-AD corrupt Greek OT translations, in many places sloppily translated (like a paraphrase), and in some theologically sensitive places, mistranslated on purpose. We propose that the Messianic prophecy corruptions were done by either ill-meaning Jews seeking to de-authenticate Jesus as Messiah or gnostic pseudo-Christians seeking to downplay Christ's divinity (e.g. Origen of Alexandria).

It is possible that the different versions of the LXX can serve as important aids in learning and studying the vocabulary and grammar of the Koinê Greek language of the New Testament era. However, given the blatant textual error of the LXX, along with its non-canonical and unbiblical apocryphal writings, we strongly recommend that it be abandoned as a reliable source of chronological information for the creation science community. At the very least, it is inferior to the preserved Hebrew Scriptures that we know as the Masoretic Text. It is the carefully transmitted and providentially preserved Hebrew text (MT) that should be used as the authoritative text for creationist research and for Old Testament Bible study in general.

Furthermore, creationists should also consider how the LXX demonstrates a clashing with the biblical account of the global Flood, by virtue of the texts suggesting that Methuselah survived the Flood! This glaring problem has been noted by some LXX advocates, but none have offered a forensically reliable remedy to this error. Meanwhile, as complicated and distractive chronological/genealogical arguments have waged

back and forth between proponents and opponents, the “elephant in the room” is the pervasive textual corruption that clearly exists in what is today called the LXX, such as has been demonstrated in key Messianic prophecies in the present paper.

What's at Stake?—Not Just an Academic Controversy

Besides the importance of Scripture in creation science research related to origins, created kinds, flood geology, etc., biblical data is particularly relevant to creationists for two more reasons: (1) it affects the biblical doctrine of Scripture's preservation (which involves both miraculous inspiration and providential transmission) and (2) it reflects or hinders the biblical doctrine of Scripture's inerrancy which involves respecting the authority of Scriptural content, as well as its accuracy in all historical and scientific facts, as well as Messianic prophecies—especially those the New Testament verifies.

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“Missing” Ice Age Forests: Evidence for the Flood?

Jake Hebert*

Abstract

Uniformitarian scientists have long been puzzled by an apparent dearth of trees, even in unglaciated areas, during the supposed 2.6 million years of the Pleistocene Epoch. Thick forests can take centuries to grow, and creation scientists estimate that the most likely duration of the post-Flood Ice Age was 700 years. Since the Genesis Flood killed every living tree in the pre-Flood world, and since thick forests normally take centuries to grow, this general absence of Ice Age trees could be evidence for the Creation Ice Age model. On the other hand, it may also present a challenge to the Creation model, as abundant precipitation early in the Ice Age would seem to favor rapid tree growth. Evidence for an absence of mature Ice Age forests seems especially strong in Europe and North America.

Introduction

When Noah and his family got off the Ark, vegetation, including at least some trees (Genesis 8:7–12), had begun to sprout. Nevertheless, trees would be essentially non-existent in the immediate post-Flood world. It is generally thought that a forest planted by humans takes about 100 years to mature. Akira Miyawaki, 2006 Blue Planet Award winner, has become famous for developing a method that dramatically accelerates this process by a factor of 10. However, according to the theory of “potential natural vegetation” which underlies his method, a naturally-occurring forest

takes much longer to mature (Shubhendhu, 2015):

If a piece of land is free from human intervention, a forest will naturally self-seed and take over that land within a period of around 600 to 1,000 years, with the species that would be native and robust, and that would require no maintenance.

I have not been able to find additional confirmation of this figure, but if it is indeed accurate, then it has implications for the post-Flood Ice Age. This number is especially interesting in light of Oard’s estimate that the Ice Age, which began immediately after the

Flood, lasted around 700 years (Oard, 1990, pp. 199–210). If naturally occurring thick forests take at least 600 years to grow, thick forests might have been non-existent or scarce during much of the post-Flood Ice Age. In that light, the comment made by British geologist J. K. Charlesworth (Charlesworth, 1957, cited in Oard, 1990, p. 41) is intriguing:

Evidence has been found which suggests that the ice in places advanced over standing and probably living forests in which the annual rings show a marked decrease in the rate of growth only during the last twelve years before death occurred. *Nevertheless, the ice may generally have invaded a barren, timberless, and storm-swept country. ... The rarity of vegetation in the drift suggests that the preglacial material was carried beyond the limits of glaciation [emphasis mine].*

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Early in the Ice Age, thick forests would have been non-existent—not because trees were “carried beyond the limits of glaciation,” but because living trees had all been destroyed in the Flood, and those that sprouted after the Flood had not yet had time to reach maturity. Oard briefly referenced this 1957 statement by Charlesworth in his 1990 monograph, but did not elaborate on it much. Given that this 1957 reference is very dated, I felt it worthwhile to see if more recent research had confirmed Charlesworth’s statement. As it turns out, secular scientists are convinced that Ice Age trees were scarce in Europe, North America, and northern Asia.

This paper’s referee pointed out that mild winters, cool summers, and abundant vegetation would have enabled forests to grow more quickly during the Ice Age, so this issue may not be as simple as it first seems. On the one hand, it seems that abundant precipitation early in the Ice Age (Oard, 1990) would cause trees to grow up fairly quickly everywhere. Indeed, large trees have been found in growth position in far north Siberian permafrost (Oard, 2006, p. 141). On the other hand, secular researchers have repeatedly noted a dearth of Ice Age forests, even *outside* glaciated areas. Of course, what constitutes a “thick” forest may be “in the eye of the beholder.” Even with abundant precipitation, it could be that forests in unglaciated areas did not grow as thick in the few centuries of the post-Flood Ice Age as uniformitarians had expected. After all, their model of Earth history affords them many thousands of years for forest growth. So it may be that Ice Age forests did indeed exist outside the glaciated areas, but uniformitarian scientists were surprised that they were not as large, thick, or abundant as they had expected.

I encountered this subject in the course of my Ice Age research. Admittedly, I am not a geologist or paleontologist, so I am not really qualified to discuss Ice Age forests or paleobotany. However,

I am bringing this to the attention of the creation community in the hope that more qualified creation researchers can perhaps look more deeply into this issue, in case it turns out to be significant evidence for the Creation Ice Age model.

Estimating the Sizes of Ancient Forests

Most paleo-estimates of Quaternary tree coverage are based on fossil pollen. Two writers (Birks and Tinner, 2016) described why analysis of fossil pollen is so important:

As we cannot directly observe the forests of the past, to answer these questions [about European forests in the Quaternary] we need to reconstruct past forests indirectly using the fossil record. This involves the study of seeds, fruits, leaves, wood, and charcoal (macrofossils)¹ and of microscopic pollen grains, spores, cells (e.g. stomata), and charred particles (microfossils) preserved in lake, bog, alluvial, and other sediments where organic material can be preserved.² Pollen analysis as a tool for vegetation reconstruction—invented in 1916 by the Swedish geologist Lennart von Post—was and still is the dominant technique in the [study of the] Quaternary period, especially the last 15 000 years of the late-Quaternary. [footnotes in original]

There are at least four difficulties confronting attempts to reconstruct past forests using pollen analysis (Birks, 2011, slide 48). One of these is the difficulty of correctly interpreting sites with low pollen values, as such low values could be the result of either long distance transport or a nearby, scattered population. Also, some trees cease pollen production when exposed to colder temperatures. Likewise, low atmospheric concentrations of atmospheric carbon dioxide can also reduce pollen production. Finally, a lack of continuous sites can be a problem

as well. Hence paleo-reconstructions are somewhat uncertain. Even so, the reconstructions discussed here are broadly consistent with a largely treeless landscape during the Post-Flood Ice Age.

Uniformitarians generally attribute the decrease in tree cover to colder Ice Age temperatures that began during the Pliocene Epoch and continued into the Pleistocene (Polly, 1994):

Accompanying the general cooling trend of the Pliocene was, as already mentioned, an increased aridity. This led to a number of noteworthy changes in the environment. The Mediterranean Sea dried up completely and remained plains and grasslands for the next several million years. *Another environmental change was the replacement of many forests by grasslands.* [emphasis mine]

A popular-level website (Anonymous, 2014) concurs:

The global cooling that occurred during the Pliocene may have spurred on *the disappearance of forests* and the spread of grasslands and savannas [emphasis mine].

There is some limited evidence of a dearth of Ice Age trees in Australia, Africa, and South America (Colinvaux et al., 1997; Anonymous, 2007; Mayle et al., 2009; Monroe, 2016; Piñeiro et al., 2017), but probably not enough to warrant any firm conclusions. At present, not much can be said about Antarctica, as information about possible post-Flood but pre-glaciation trees on that continent seems hard to come by. Of course, given the difficulty of doing geological fieldwork in Antarctica, this is hardly surprising. This paper focuses mainly on Europe, northern Asia, and North America.

Europe and Northern Asia

Birks (Birks, 2011, slide 29) had this to say in a PowerPoint presentation for a Ph.D. course:

Forest vegetation of N America and Europe has no history longer than 10 k yr (at best).

We shall return to the North American tree cover shortly. In any case, the history of trees in Europe is relatively short. This is quite odd given the truly vast time allowed by the uniformitarian model of Earth history. Of course, creationists would argue that even this 10,000-year figure is greatly inflated, which is not surprising given the uniformitarian tendency to “stretch” a single Ice Age into roughly 50 Pleistocene ice ages supposedly occurring over a period of 2.6 million years (Walker and Lowe, 2007).

Researchers (Huntley et al., 2013) had this to say about trees in Europe and northern Asia during the last glacial:

Whereas fossil evidence indicates *extensive treeless vegetation* and diverse grazing megafauna in Europe and northern Asia during the last glacial, experiments combining vegetation models and climate models have to-date simulated widespread persistence of trees. [emphasis mine]

Of course, creation scientists argue that the most recent “glacial” interval or ice age was in actuality the only Ice Age. Note that secular climate models’ prediction (actually a *retrodiction*) of widespread Ice Age trees in Europe and Northern Asia is contradicted by the geological field evidence. Ice Age trees were apparently rare in those locations. A popular level article describing this research said (Peel, 2013):

Previous computer simulations of vegetation during the last ice age had suggested that trees may have persisted in ice-free areas of Europe and northern Asia. But, curiously, there has never been any sign of trees in fossils from the region.

However, Oard has pointed out that there is evidence of trees in northern Asia. For instance, large trees have been found in growth position in far north Siberian permafrost (Oard, 2006, p. 141).

Furthermore, due to abundant precipitation, mild winters, and cool summers, Oard *expects* abundant vegetation during the early part of the Ice Age (Oard, 2015). I am not sure of the answer to this apparent contradiction, but again, it may involve different creation and uniformitarian expectations regarding the extent of Ice Age flora.

The abstract of a 2016 paper (Kaplan et al., 2016) has this to say about the absence of European Ice Age trees:

Reconstructions of the vegetation of Europe during the Last Glacial Maximum (LGM) are an enigma. Pollen-based analyses have suggested that Europe was largely covered by steppe and tundra, and forests persisted only in small refugia. Climate-vegetation model simulations on the other hand have consistently suggested that broad areas of Europe would have been suitable for forest, even in the depths of the last glaciation.

Kaplan et al. went on to state:

Although climate change was an important driver of landscape change during the LGM, paleoclimate alone cannot not [*sic*] provide sufficient explanation for the large-scale open nature of LGM landscapes. While the openness of the LGM landscape itself may be debated—our tree-cover reconstruction (Fig 1) and a number of previous studies [3, 24, 29–31] confirm the notion that Europe at the LGM was probably not a homogenous, vast open steppe, but rather characterized by a patchy mosaic of forest and non-forest vegetation—*no GCM simulation results in a modeled vegetation of Europe that is even remotely treeless* (S1 Fig). [emphasis mine]

In other words, global climate computer simulations have consistently failed to account for the lack of European trees at Last Glacial Maximum, even in unglaciated areas. The authors attempted to attribute this dearth of trees to ignition of wildfires by early humans.

A book on Cenozoic mammals (Rafferty, 2011, p. 194) notes:

In the temperate zones of central Europe and the United States where deciduous forests exist today, vegetation was open and most closely resembled the northern tundra, with grasses, herbs, and few trees during glacial intervals. Farther south, a broad region of boreal [coniferous] forests with varying proportions of spruce and pine or a combination of both extended almost to the Mediterranean in Europe and northern Louisiana in North America.

So forests seem to have been rare in at least parts of central Europe during the Ice Age. The above statement also mentions North America, which we now discuss.

North America

As noted above, secular researchers have also concluded that dense forests were generally absent from much of North America during the Last Glacial Maximum (Anonymous, NASA Earth Observatory, no date given):

By comparing modern forests and the pollen records they leave behind to pollen records from thousands of years ago, [Margaret] Davis [an ecologist at the University of Minnesota] has created a picture of ancient forests. Her meticulous studies of North America’s fossil pollen record show that although trees associated with modern forests existed many thousands of years ago, forests as we know them today—dense, continuous stands of trees whose branches form a closed canopy overhead—were likely very rare at the last glacial maximum.

Another researcher (Williams, 2002) has confirmed Davis’ findings:

[North American] [t]ree cover densities during the last glacial maximum were low relative to present, and have increased since.

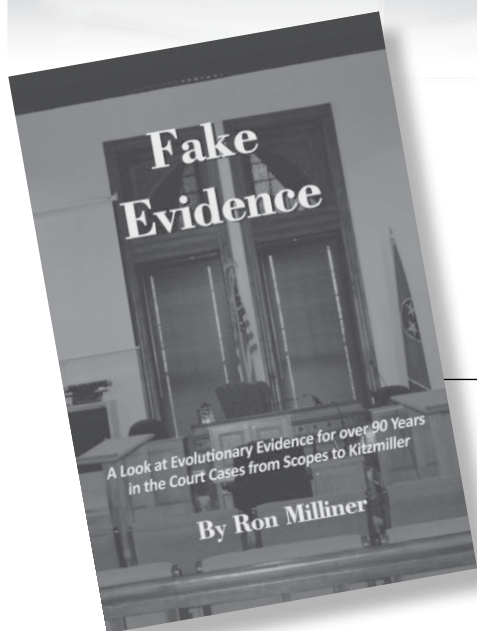
Summary

Secular scientists are clearly puzzled by an apparent dearth of thick Ice Age forests. This could be evidence in favor of Oard's Ice Age model, but it may also present difficulties for creation researchers, since abundant precipitation early in the Ice Age would be expected to favor rapid plant growth. This information is presented here in the hope of spurring further creation research in this area.

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Media Reviews



Fake Evidence: A Look at Evolutionary Evidence for over 90 Years in the Court Cases from Scopes to Kitzmiller

by Ron Milliner

HarperCollins, Nashville, 2018,
120 pages, \$9.00

Former science teacher Ron Milliner documents the fact that much of the evidence for evolution presented during American creation-evolution trials is wrong or, at best, very problematic. He begins by reviewing the Scopes trial, showing that the evolutionists used erroneous arguments including vestigial organs, the Piltdown man, and the ontogeny-phylogeny arguments of Ernst Haeckel.

Science writer Debora Mackenzie, in a review of the Scopes trial, makes no mention of the false arguments, implying that the anti-evolutionists were ignorant, backward folks who had the audacity to oppose science fact (Mackenzie, 2005, p. 9). As Milliner documents not only in the Scopes trial but also in the other trial he covers, the Dover Intelligent Design Trial, evolution blocks reason and knowledge progress. Fortunately the creation worldview moves forward in spite of the Darwinian impediments.

One point Milliner documents is that a bench trial is no place to rule on evidence for evolution or creation. He shows that Judge Jones in the Dover-Kitzmiller Intelligent Design case was openly biased against creationism, even admitting that “This is a case that involved folks who really wore religion on their sleeve. And...to my mind, that fired me up even more against the intelligent design view” (p. 2).

Milliner gets at the heart of the Scopes Monkey Trial case in Chapter 2, documenting that the case was mostly about racism. The racist quotes in the biology text used by the school in the Scopes trial case were clear and damning, and would later be used by the KKK to support their unholy cause for decades.

The Dover case is covered in detail, noting one of the main arguments of the evolutionists was that creationists want to redefine science by allowing supernaturalism. Science, ex-young earth creationist Brian Alters of McGill University stresses, is about what we can observe, ignoring the fact that the strict empirical method of what we can

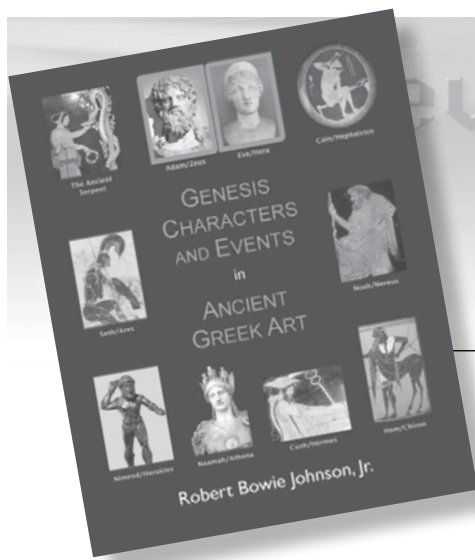
observe has shown Darwinism proven wrong by science (pp. 54, 106, 113).

The Dover case was essentially about placing a book titled *Pandas and People* in the school library so students could read it if they chose (p. 55). The authors, Percival Davis and Dean H. Kenyon, have impeccable credentials and are both successful authors. The open hatred against *Pandas and People* is expressed on Amazon with 60% of the reviewers giving it one-star reviews. The criticisms are replete with sarcasm and name-calling, showing that most have not read the book.

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Genesis Characters and Events in Ancient Art

by Robert B. Johnson

Solving Light Books, Annapolis,
MD, 2016, 98 pages, \$30.00

This full-color book shows that biblical events repeatedly show up in Greek art and folklore. The Genesis Flood is the most well-known example of this common pattern (Bergman, 1994). Although many of the details vary, diverse features of the Genesis Flood appear in almost every ancient creation myth. The same is true of both the creation record and the other events described in Genesis. Author Johnson helps one understand Greek “mythology” in a totally new framework that makes a great deal of sense. The artwork of Greece is more than a classical depiction of myths and is based on history. Johnson demonstrates how biblical history impacted numerous early societies in their art, in their creation stories, and in their mythology.

One wonders why ancient societies, especially Greece, with the wisdom of Socrates and Plato, heralded as the wisest civilization of the ancient world and the cradle of modern civilizations, worshipped gods and goddesses with bizarre behaviors. This book is a step in relating the Greek myths to actual history. In short, “the early events and people described in the Book of Genesis hold the interpretive key to understanding” many ancient myths (p. xi).

The history of Adam and Eve was passed down by Noah and his family to all peoples on Earth, but was distorted by time and transmission. This is a common occurrence when folklore and history pass orally from one generation to the next. The Greeks largely rejected the Creator God of Genesis and Greek gods looked and acted very much like human beings (p. 2). Johnson concludes that their mythological personages were early human ancestors, thus the Greeks actually indulged in a form of ancestor worship.

Johnson offers several examples of how biblical characters and events are pictured in Greek gods and mythology. Adam is represented in the Greek god Zeus and Eve is Dione. Johnson further shows that Seth is Ares, Cain is Hephaistos, Noah is Nereus, Ham is Chiron, and Nimrod is Herakles. Zeus and Hera are represented as a couple from whom all other Olympian gods and mortal men are descended (p. 8).

The specifics of Greek stories vary from the actual events because the Greeks had no official written record. Johnson not only compares Bible characters with Greek characters, but also compares Bible events with Greek myths or, actually, Greek didactic stories. The Greek accounts, although very similar to biblical accounts, draw very different conclusions that illustrate the conflict today between theism (the Bible) vs. humanism (the Greek myths).

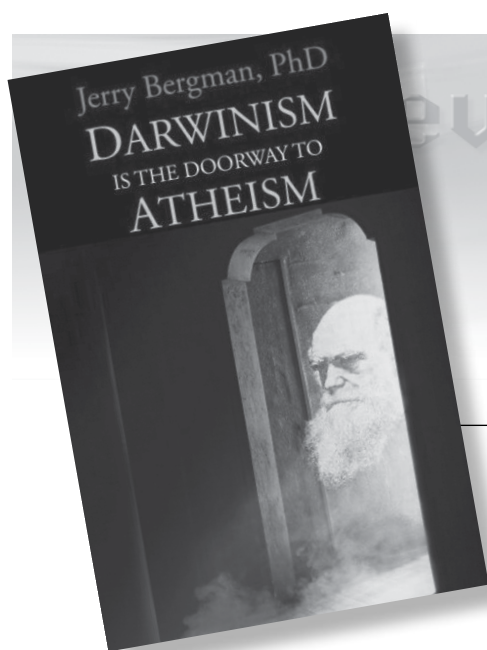
The Genesis event depicting eating the forbidden fruit is not portrayed in Greek as a transgression that brought sin into the world, but instead as a liberating act that brought enlightenment to mankind. Furthermore, in Greek, the serpent is a friend who frees humans from an oppressive God. Consequently, the snake is a savior (p. 5). By eating the fruit, the first couple became gods, specifically Zeus and Hera, knowing good and evil. Author Johnson shows that Greek myths are based directly on history as recorded in Genesis, but altered to present a different story that at times gives opposite conclusions to the truth.

I encourage follow-up by Greek scholars to further research on Greek history. The book is short-changed by the lack of an index, and more importantly, by an absence of references. However, Johnson’s other books including *Noah in Ancient Greek Art* and *Athena and Eden: The Hidden Meaning of the Parthenon’s East Facade*, cover similar material with documentation.

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Darwinism Is the Doorway to Atheism

by Jerry Bergman

Leafcutter Press, 2019,
333 pages, \$20.00

This book is a difficult read. Bergman's earlier book, *Persuaded by the Evidence*, 2008, is a compilation of testimonies of young-earth creationists, identifying the key pieces of evidence that turned their thinking toward God. This book, in contrast, gives a biography of people who reached an anti-epiphany in their thinking and decided that a certain piece of scientific evidence was sufficient reason to abandon faith in God and the Christian gospel.

The book describes people who have become quite militant in their anti-Christian activities. Often, they are in positions of power in universities and use their influence to persuade students to abandon Christian faith. Peer pressure to fit into the college culture makes it easy for students to shed Christian upbringing. Professors sometimes use their authority try to force acceptance of a Darwinian worldview under penalty of a bad grade. This is a difficult obstacle for students to overcome.

What makes the stories most disturbing is that many of these people had a history of familiarity with the biblical account of creation and creationist literature as well as Christian upbringing. Their gradual acceptance of Darwinism came over the course of years of

involvement in the university setting and acquiring seeds of doubt a little at a time. For this reason, I am not certain that this is a book I would recommend to just anyone. Identifying these viral ideas and expounding on them in this book takes a lot of immunity to resist even with author explanations. The sheer volume of disbelief is enough to cause discouragement. Such reading is like coming down with a case of emotional flu.

Equally difficult is the fact that many of these individuals have enjoyed professional success and accolades. This worldly success is a great attraction for students of science, and one must have a love of the truth that supersedes the desire for individual achievement.

The account of Stephen Godfrey is interesting in that, for most of his life, he was a creationist and openly advocated that position. His parents and wife are strong Christians, but as he pursued his scientific activities there came a time where his worldview "came crashing down" while on a paleontological expedition digging for pelycosaur in rural Kansas. During that dig, the team found numerous examples of footprints of terrestrial animals. "You can't imagine a global flood and animals finding ground to make footprints on... That, more than anything, any other experience in my life, really shook me to the core." (p. 116).

Godfrey also found the arguments concerning floating log mats, such as proposed by Stephen Austin, unconvinc-

ing. However, other explanations exist, and Godfrey could have researched them before making his decision to abandon the creationist worldview.

The barrage approach is a very effective but fallacious way to win an argument. The tactic is to overwhelm an opponent by asking one question after another without giving time for a response. If a person is immersed in an academic environment that encourages belief in Darwinism and presents penalties for skepticism of that belief, the choice is to remain and allow the toxic environment to slowly absorb into the mind, or to ask God to provide a way of escape.

As a young chemistry student, I recall the following quote on a professor's door, "When a student comes to me and tells me that he wants to go into science to save the world, I encourage him rather to go into charity. What science needs are egotists, true egotists, who enjoy science for its own sake."

The quote set off a few alarms in my mind about the direction I was taking with my studies in chemistry. Just as laboratory carcinogens are dangerous, I also recognized that the philosophies taught by some professors were poisonous. Had I continued that path, I may have ended up compromising my faith similar to those noted in this book. I began to seek answers and found a professor, John N. Moore, who was managing editor of the *Creation Research Society Quarterly* at that time. He helped me sort through

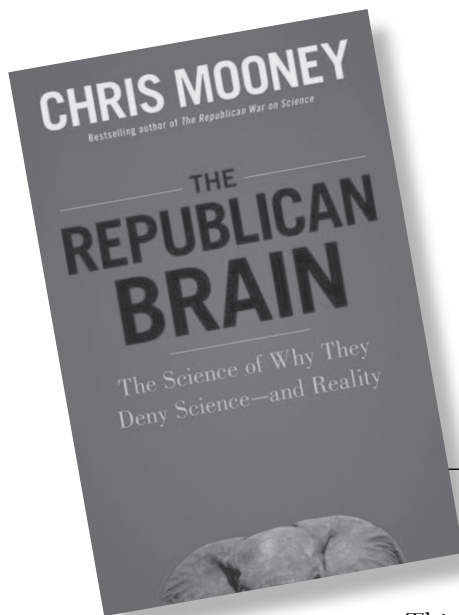
the evolutionary arguments, and this book does the same thing.

The temptation is that during times of duress and due to the sheer volume of lies, one might give up the faith. I Corin-

thians 10:12–13 gives us an admonition and a remedy: “So, if you think you are standing firm, be careful that you don’t fall! No temptation has seized you except what is common to man. And God is

faithful; he will not let you be tempted beyond what you can bear. but when you are tempted, he will also provide a way out so that you can stand up under it.”

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The Republican Brain: The Science of Why They Deny Science—and Reality

by Chris Mooney

Wiley, New York, 2012,
329 pages, \$26.00

This book attempts to show what is mentally wrong with what Mooney calls science deniers—that is, creationists. Mooney begins by stating, “We all know many American conservatives have issues with Charles Darwin and the theory of evolution” (p.1). Then, citing numerous psychological and sociological studies, he proceeds to explain *why* they deny reality.

Many of his examples come, not from creationist sources, but from the

website *Conservapedia*, which in 2012 had 37,000 pages of articles and 285 million views. Mooney claims the focus of the website is on attacking evolution and global warming, and that homosexuality is tied to mental disorders. Mooney claims that science has proven this behavior to be biologically normal (p. 1).

Mooney also states or implies, citing posts on *Conservapedia*, that creationists deny relativity, believe HIV does not cause AIDS, and think that the 9/11 attack was a conspiracy. However, he cites no evidence that these ideas are common among most creationists or

conservatives. He adds that these ideas are “clustered among Republicans, conservatives, and especially Tea Partiers,” again citing no support (p. 3). Mooney ties creation to Republicans by citing a study that notes 57% of Republicans accept the view that God created humans.

This book is ostensibly written for liberals who are, Mooney claims, baffled by why so many smart conservatives cling to what liberals believe are incorrect and sometimes bizarre “facts” in the face of insurmountable contrary evidence, adding that “Democrats are the party of experts, scientists, and facts” (p. 7).

The problem with this reasoning is the assumption that the current liberal and science positions on global warming and evolution are the correct view of reality.

Mooney and others ignore the fact that thousands of persons, many trained in science, were converted to the anti-evolutionary worldview by the evidence and rejected Darwinism based on their study of the science.

As Mooney correctly observes, liberals need to stop assuming that creationists are ignorant or misinformed, and that if they (creationists) are presented with correct information and the supporting evidence, they will accept evolution. He adds, as supported by sociological and psychological studies, that liberals and conservatives process information differently, but the studies he applies to conservatives *also* apply to liberals. In my experience, many creationists were once evolutionists, thus they know the other side, but very few evolutionists have favorable knowledge of the creation worldview.

It is clear that Mooney has read little on creation. He makes the following irresponsible claim: “Conservatives have placed themselves in direct conflict with modern scientific knowledge, which shows beyond serious question that global warming is real and caused by humans, and evolution is real and the cause of humans. If you don’t accept either claim, you cannot possibly understand the world or our place in it” (p. 7).

As Mooney admits, most people “read and respond even to scientific or technical evidence so as to justify their pre-existing beliefs,” and this applies to evolutionists probably more so than to creationists. An example of Mooney’s science follows:

Evolution built the human brain—but not all at once. The brain has been described as a ‘confederation of systems’ with different evolutionary ages and purposes. Many of these systems, and especially the older ones, are closely related to those we find in other animals. Others are more unique to us—they evolved alongside rapid increases in the size of our brains that allowed us to become *Homo sapiens*, somewhere in Africa well over 150,000 years ago. The systems of the human brain work very well together. Evolution wouldn’t have built an information processing machine that tended to get you killed. But there are also some oddities that arise because evolution could only build onto what it already had, jury-rigging and tweaking rather than designing something new from the ground up (p. 30).

This claim comes directly from the Darwinist playbook and is, at best, a just-so story which has no basis in fact. It relies on the reptile brain theory called the triune brain hypothesis which was rejected over a decade ago by most leading neuroscientists. It was developed by neuroscientist Paul MacLean around the 1960s and widely popularized by the astronomer Carl Sagan and others. This theory

asserts that we have a “lizard brain” under our “mammal brain,” and that our “mammal brain” is itself under our primate/human brain. Under this hypothesis, brain evolution is an additive process: new layers of brain tissue emerge on top of old layers, leading to a tenuous but effective coexistence between the “old brain” and the “new brain.” ...

But MacLean’s triune brain theory is completely wrong—and neuroscientists have known it’s wrong for decades. The theory is wrong for a simple reason: our brains aren’t fundamentally different from those of reptiles, or even from those of fish. Every mammal has a neocortex (not just the really intelligent ones), and all vertebrates, including reptiles, birds, amphibians, and fish, have analogues of a cortex (Toker, 2018).

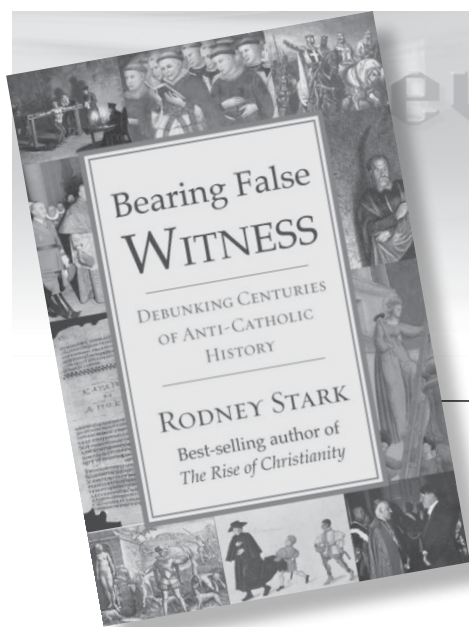
Daniel Toker added that the theory was based on very shaky foundations from loose observations of what MacLean incorrectly considered uniquely mammalian behavior. Nonetheless “MacLean went on to develop a full-blown theory of human brain evolution” based on his theory and little more (Toker, 2018). Furthermore, the idea was eloquently debunked as long ago as 1990 by Terrence W. Deacon (1990).

Mooney focuses on a Darwinist audience, and what his book inadvertently shows is how flaws in thinking lead to evolution-creation conflicts. Mooney also attempts, often unsuccessfully, to show why liberal arguments are generally ineffective against creationists and conservatives, and why liberals have difficulty promoting their science-and reason-based government.

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Bearing False Witness: Debunking Centuries of Anti-Catholic History

by Rodney Stark

Templeton Press, West
Conshohocken, PA, 2016,
280 pages, \$27.95

Professor Stark documents that the establishment of evolution as the creation story of our age is a result of the culmination of a large number of events. One is the Dark Ages myth, which is the claim made, or implied, that the rise of Christianity was a result of the church becoming powerful enough to suppress both science and thinking. The claim is this cultural darkness was caused when “the leaders of orthodox Christendom built a grand barrier against the progress of knowledge” (p. 73).

This myth concludes that the Dark Age was broken only by the Renaissance (French for “rebirth”) in which knowledge, science, and, eventually, evolution overthrew creation in 1859. The myth also concludes that the Renaissance occurred due to the decline of church power in major Italian cities, allowing secular teaching to eventually become dominant. The next step was a further decline of church authority, which birthed the Enlightenment or Age of Reason, when science almost completely dominated the answers to the old theological questions such as how life forms originated and, by extension, the meaning and purpose of life. Stark concludes that this story now dominates our textbooks even though

“historians have known that this scheme is a complete fraud” (p. 75).

In my reading, I have often come across claims that conclude, or infer, that the Christian church is evil, anti-Semitic, and especially opposes science and reason. The more reading I did, the more I came to reject this view and accept the position that Stark has documented in this book.

In one example, it is documented that Cardinal Eugenio Pacelli, later Pope Pius XII, the so-called Hitler’s pope, actually did what he could to save Jews. The estimate Stark gave is that by the pope’s own efforts, and in spite of risking the wrath of Nazi Germany, Pope Pius XII saved “at least 700,000, but probably as many as 860,000 Jews from certain death at Nazi hands” (p. 31). It is often claimed Pope Pius XII could have done much more, but the Vatican had no army and no tanks or planes, and to a large degree his life was at the mercy of Hitler and the German government.

It is also well documented that Nazi Germany “bitterly attacked the Catholic Church, had closed all the Catholic schools, and had arrested thousands of priests and nuns and sent them to Dachau and other death camps” (p. 30). Hitler made it very clear he was going to destroy the Catholic Church in time and actually had to hold back the many impatient high-level Nazis in his government, stressing they had to fight one battle at a time. Hitler was, if nothing else, a good politician and realized they

must at least try to appear supportive of the churches until they were no longer needed. Stark also reviews the many best-selling books, such as *Hitler’s Pope*, that attempted to paint the pope as pro-Nazi, or at least a person who did nothing to help the Jews.

Stark also evaluates the common claim that the church was anti-science. As has been well documented by leading science-history historians, such as Ronald Numbers and numerous other scholars, this claim is false. Stark documents that many claims pitting the church against science are fraudulent. One example Stark gives is Pope Leo XII refusing to be vaccinated against smallpox because he and the church believed that “smallpox is a judgement from God.” In fact, the pope had no objection to vaccination, and the church actively promoted vaccination as soon as its efficacy was documented.

Another example is the church supporting natural theology, which taught that one can learn about God by studying His creation, just as one can learn about an artist by studying his artistic creations. Toward this goal, the church started universities devoted to the pursuit of advancing knowledge. Although schools have long existed throughout most of Europe and Asia, universities, meaning a community of teachers and scholars, are a product of the Medieval church (p. 140). This requires academic freedom to fulfill their goal of going beyond existing knowledge (p. 141).

However, during the classical period [or era], dissection of the human body was forbidden because “the dignity of the human body forbid [sic] dissection,” which explains why Aristotle, Galen, and Celsius had to rely solely on animal dissections (p. 142). With the founding of the Christian universities, this view changed because it was eventually accepted in Christendom that what was unique to humans was not the body but rather the soul. This history is in contrast to the view that it was the church that forbade dissection, preventing the progress of medicine, when the source was actually the classical world, which Christianity had to overcome. It was the church that overcame this long-term probation, specifically in Catholic Italy first, and then throughout Europe, resulting in major progress of human anatomical knowledge. Reasons for the

overturning of the prohibition include forensics (too many murders escaped detection), disease (postmortems were needed to determine the cause of death, especially during the plagues or if the cause was uncertain), and the training of medical students (pp. 142–143). Since all Christian university instruction was in Latin, scholars from Poland to England could work together to achieve the common goals of academia.

Lastly, as there was no Dark Age, likewise there was no scientific revolution, an idea Stark explains was invented to discredit the Medieval church (p. 144). Science was built on a foundation that began with Christian university scholars notable for their piety and scientific prowess. The claimed Scientific Revolution, supposedly begun by Copernicus, was in truth built on the work of his many important predecessors.

Copernicus did not leap forward with his so-called heliocentric worldview but used the knowledge he gleaned from his university professors and colleagues to arrive at a logical conclusion based on the insight he gained from predecessors, including Robert Grosseteste (1168–1253), Albertus Magnus (1200–1280), Roger Bacon (1214–1394), William of Ockham (1295–1349), Nicole D’Oresme (1325–1382), Nicholas of Cusa (1401–1464), and others. All were important in helping Copernicus produce his results (pp. 145–150).

I found this well-written book very helpful to understand the major role of the church in supporting both science and education and highly recommend it to everyone, Catholic and non-Catholic alike.

Jerry Bergman
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Instructions to Authors

Submission

Electronic submissions of all manuscripts and graphics are preferred and should be sent to the editor of the *Creation Research Society Quarterly* in Word, WordPerfect, or Star-Office/Open Office (see the inside front cover for address). Printed copies also are accepted. If submitting a printed copy, an original plus two copies of each manuscript should be sent to the editor. The manuscript and copies will not be returned to authors unless a stamped, self-addressed envelope accompanies submission. If submitting a manuscript electronically, a printed copy is not necessary unless specifically requested by the *Quarterly* editor. Manuscripts containing more than 35 pages (double-spaced and including references, tables, and figure legends) are discouraged. An author who determines that the topic cannot be adequately covered within this number of pages is encouraged to submit separate papers that can be serialized.

All submitted manuscripts will be reviewed by two or more technical referees. However, each section editor of the *Quarterly* has final authority regarding the acceptance of a manuscript for publication. While some manuscripts may be accepted with little or no modification, typically editors will seek specific revisions of the manuscript before acceptance. Authors will then be asked to submit revisions based upon comments made by the referees. In these instances, authors are encouraged to submit a detailed letter explaining changes made in the revision, and, if necessary, give reasons for not incorporating specific changes suggested by the editor or reviewer. If an author believes the rejection of a manuscript was not justified, an appeal may be made to the *Quarterly* editor (details of appeal process at the Society's web site, www.creationresearch.org).

Authors who are unsure of proper English usage should have their manuscripts checked by someone proficient in the English language. Also, authors should endeavor to make certain the manuscript (particularly the references) conforms to the style and format of the *Quarterly*. Manuscripts may be rejected on the basis of poor English or lack of conformity to the proper format.

The *Quarterly* is a journal of original writings, and only under unusual circumstances will previously published material be reprinted. Questions regarding this should be submitted to the Editor (CRSQeditor@creationresearch.org) prior to submitting any previously published material. In addition, manuscripts submitted to the *Quarterly* should not be concurrently submitted to another journal. Violation of this will result in immediate rejection of the submitted manuscript. Also, if an author uses copyrighted photographs or other material, a release from the copyright holder should be submitted.

Appearance

Manuscripts shall be computer-printed or neatly typed. Lines should be double-spaced, including figure legends, table footnotes, and references. All pages should be sequentially numbered. Upon acceptance of the manuscript for publication, an electronic version is requested (Word, WordPerfect, or Star-Office/Open Office), with the graphics in separate electronic files. However, if submission of an electronic final version is not possible for the author, then a cleanly printed or typed copy is acceptable.

Submitted manuscripts should have the following organizational format:

- 1. Title page.** This page should contain the title of the manuscript, the author's name, and all relevant contact information (including mailing address, telephone number, fax number, and e-mail address). If the manuscript is submitted by multiple authors, one author should serve as the corresponding author, and this should be noted on the title page.
- 2. Abstract page.** This is page 1 of the manuscript, and should contain the article title at the top, followed by the abstract for the article. Abstracts should be between 100 and 250 words in length and present an overview of the material discussed in the article, including all major conclusions. Use of abbreviations and references in the abstract should be avoided. This page should also contain at least five key words appropriate for identifying this article via a computer search.
- 3. Introduction.** The introduction should provide sufficient background information to allow the reader to understand the relevance and significance of the article for creation science.
- 4. Body of the text.** Two types of headings are typically used by the CRSQ. A major heading consists of a large font bold print that is centered in column, and is used for each major change of focus or topic. A minor heading consists of a regular font bold print that is flush to the left margin, and is used following a major heading and helps to organize points within each major topic. Do not split words with hyphens, or use all capital letters for any words. Also, do not use bold type, except for headings (italics can be occasionally used to draw distinction to specific words). Italics should not be used for foreign words in common usage, e.g., "et al.", "ibid.", "ca." and "ad infinitum." Previously published literature should be cited using the author's last name(s) and the year of publication (ex. Smith, 2003; Smith and Jones, 2003). If the citation has more than two authors, only the first author's name should appear (ex. Smith et al., 2003). Contributing authors should examine this issue of the CRSQ or consult the Society's web site for specific examples as well as a more detailed explanation of manuscript preparation. Frequently-used terms can be abbrevi-

ated by placing abbreviations in parentheses following the first usage of the term in the text, for example, polyacrylamide gel electrophoresis (PAGE) or catastrophic plate tectonics (CPT). Only the abbreviation need be used afterward. If numerous abbreviations are used, authors should consider providing a list of abbreviations. Also, because of the variable usage of the terms “microevolution” and “macroevolution,” authors should clearly define how they are specifically using these terms. Use of the term “creationism” should be avoided. All figures and tables should be cited in the body of the text, and be numbered in the sequential order that they appear in the text (figures and tables are numbered separately with Arabic and Roman numerals, respectively).

5. Summary. A summary paragraph(s) is often useful for readers. The summary should provide the reader an overview of the material just presented, and often helps the reader to summarize the salient points and conclusions the author has made throughout the text.

6. References. Authors should take extra measures to be certain that all references cited within the text are documented in the reference section. These references should be formatted in the current CRSQ style. (When the *Quarterly* appears in the references multiple times, then an abbreviation to CRSQ is acceptable.) The examples below cover the most common types of references:

Robinson, D.A., and D.P. Cavanaugh. 1998. A quantitative approach to baraminology with examples from the catarrhine primates. *CRSQ* 34:196–208.

Lipman, E.A., B. Schuler, O. Bakajin, and W.A. Eaton. 2003. Single-molecule measurement of protein folding kinetics. *Science* 301:1233–1235.

Margulis, L. 1971a. The origin of plant and animal cells. *American Scientific* 59:230–235.

Margulis, L. 1971b. *Origin of Eukaryotic Cells*. Yale University Press, New Haven, CT.

Hitchcock, A.S. 1971. *Manual of Grasses of the United States*. Dover Publications, New York, NY.

Walker, T.B. 1994. A biblical geologic model. In Walsh, R.E. (editor), *Proceedings of the Third International Conference on Creationism* (technical symposium sessions), pp. 581–592. Creation Science Fellowship, Pittsburgh, PA.

7. Tables. All tables cited in the text should be individually placed in numerical order following the reference section, and not embedded in the text. Each table should have a header statement that serves as a title for that table (see a current issue of the *Quarterly* for specific examples). Use tabs, rather than multiple spaces, in aligning columns within a table. Tables should be composed with *14-point type* to insure proper appearance in the columns of the *CRSQ*.

8. Figures. All figures cited in the text should be individually placed in numerical order, and placed after the tables. Do

not embed figures in the text. Each figure should contain a legend that provides sufficient description to enable the reader to understand the basic concepts of the figure without needing to refer to the text. Legends should be on a separate page from the figure. All figures and drawings should be of high quality (hand-drawn illustrations and lettering should be professionally done). Images are to be a minimum resolution of 300 dpi at 100% size. Patterns, not shading, should be used to distinguish areas within graphs or other figures. Unacceptable illustrations will result in rejection of the manuscript. Authors are also strongly encouraged to submit an electronic version (.cdr, .cpt, .gif, .jpg, and .tif formats) of all figures in individual files that are separate from the electronic file containing the text and tables.

Special Sections

Letters to the Editor:

Submission of letters regarding topics relevant to the Society or creation science is encouraged. Submission of letters commenting upon articles published in the *Quarterly* will be published two issues after the article's original publication date. Authors will be given an opportunity for a concurrent response. No further letters referring to a specific *Quarterly* article will be published. Following this period, individuals who desire to write additional responses/comments (particularly critical comments) regarding a specific *Quarterly* article are encouraged to submit their own articles to the *Quarterly* for review and publication.

Editor's Forum:

Occasionally, the editor will invite individuals to submit differing opinions on specific topics relevant to the *Quarterly*. Each author will have opportunity to present a position paper (2000 words), and one response (1000 words) to the differing position paper. In all matters, the editor will have final and complete editorial control. Topics for these forums will be solely at the editor's discretion, but suggestions of topics are welcome.

Book Reviews:

All book reviews should be submitted to the book review editor, who will determine the acceptability of each submitted review. Book reviews should be limited to 1000 words. Following the style of reviews printed in this issue, all book reviews should contain the following information: book title, author, publisher, publication date, number of pages, and retail cost. Reviews should endeavor to present the salient points of the book that are relevant to the issues of creation/evolution. Typically, such points are accompanied by the reviewer's analysis of the book's content, clarity, and relevance to the creation issue.

Creation Research Society

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All members (categories 1–5 above) must subscribe to the Statement of Belief as defined on the next page.

Please complete the lower portion of this form and mail it with payment to CRS Membership Secretary, 6801 N. Highway 89, Chino Valley, AZ 86323, or fax for credit card payment to (928) 636-1153. Applications may also be completed online at creationresearch.org.



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Creation Research Society

History—The Creation Research Society was organized in 1963, with Dr. Walter E. Lammerts as first president and editor of a quarterly publication. Initially started as an informal committee of 10 scientists, it has grown rapidly, evidently filling a need for an association devoted to research and publication in the field of scientific creation, with a current membership of over 600 voting members (graduate degrees in science) and about 1000 non-voting members. The *Creation Research Society Quarterly* is a peer-reviewed technical journal. It has been gradually enlarged and modified, and is currently recognized as one of the outstanding publications in the field. In 1996 the CRSQ was joined by the newsletter *Creation Matters* as a source of information of interest to creationists.

Activities—The Society is a research and publication society, and also engages in various meetings and promotional activities. There is no affiliation with any other scientific or religious organizations. Its members conduct research on problems related to its purposes, and a research fund and research center are maintained to assist in such projects. Contributions to the research

fund for these purposes are tax deductible. As part of its vigorous research and field study programs, the Society operates The Van Andel Creation Research Center in Chino Valley, Arizona.

Membership—Voting membership is limited to scientists who have at least an earned graduate degree in a natural or applied science and subscribe to the Statement of Belief. Sustaining membership is available for those who do not meet the academic criterion for voting membership, but do subscribe to the Statement of Belief.

Statement of Belief—Members of the Creation Research Society, which include research scientists representing various fields of scientific inquiry, are committed to full belief in the biblical record of creation and early history, and thus to a concept of dynamic special creation (as opposed to evolution) both of the universe and the earth with its complexity of living forms. We propose to re-evaluate science from this viewpoint, and since 1964 have published a quarterly of research articles in this field. *All members of the Society subscribe to the following statement of belief:*

1. The Bible is the written Word of God, and because it is inspired throughout, all its assertions are historically and scientifically true in all the original autographs. To the student of nature this means that the account of origins in Genesis is a factual presentation of simple historical truths.

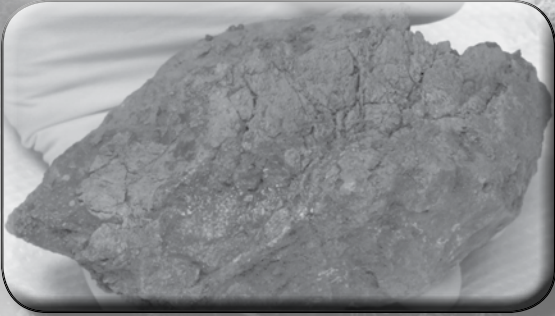
2. All basic types of living things, including humans, were made by direct creative acts of God during the Creation Week described in Genesis. Whatever biological changes have occurred since Creation Week have accomplished only changes within the original created kinds.

3. The Great Flood described in Genesis, commonly referred to as the Noachian Flood, was a historical event worldwide in its extent and effect.

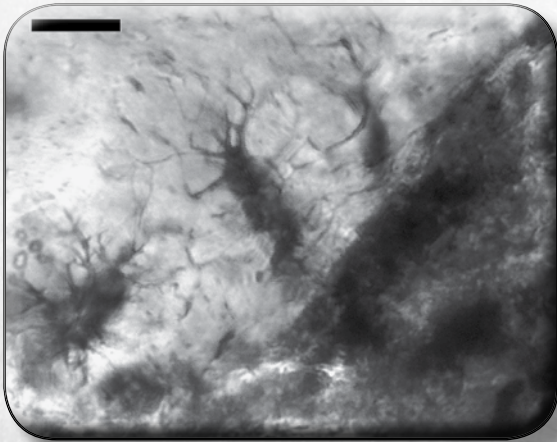
4. We are an organization of Christian men and women of science who accept Jesus Christ as our Lord and Savior. The act of the special creation of Adam and Eve as one man and woman and their subsequent fall into sin is the basis for our belief in the necessity of a Savior for all people. Therefore, salvation can come only through accepting Jesus Christ as our Savior.

iDINO II

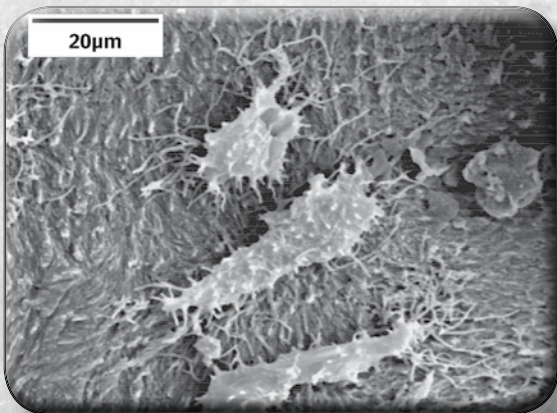
Investigation of Dinosaur Intact Natural Osteo-tissue



A fragment of the *Triceratops* brow horn.
Fragments, such as this one,
still contain tissue and cells.



Microscopic examination of tissue
extracted from a *Triceratops* horn
reveals bone cells still present.



Electron microscope picture of
intact bone cells still in tissue
extracted from a *Triceratops* horn.

How can pliable, stretchable tissue survive inside dinosaur fossils for over 65 million years?

How can this tissue still contain intact cells and even dinosaur proteins?

How can this fragile biological material survive for so long?

The answer to these questions directly challenges the current, evolutionary-biased, geologic timescale.

The Creation Research Society began its iDINO research initiative for the purpose of studying soft tissue in dinosaur fossils. The first phase of the project detected pliable, unfossilized tissue in a brow horn of a *Triceratops*. Within this tissue were intact osteocytes (bone cells). Some results from the iDINO project have been published in a technical microscopy journal and presented at an international microscopy conference. The Spring 2015 issue of the *Creation Research Society Quarterly* also features a special report of the iDINO project. Plus, to further spread the important information about soft tissue, the Society is developing a video (Echoes of the Jurassic).

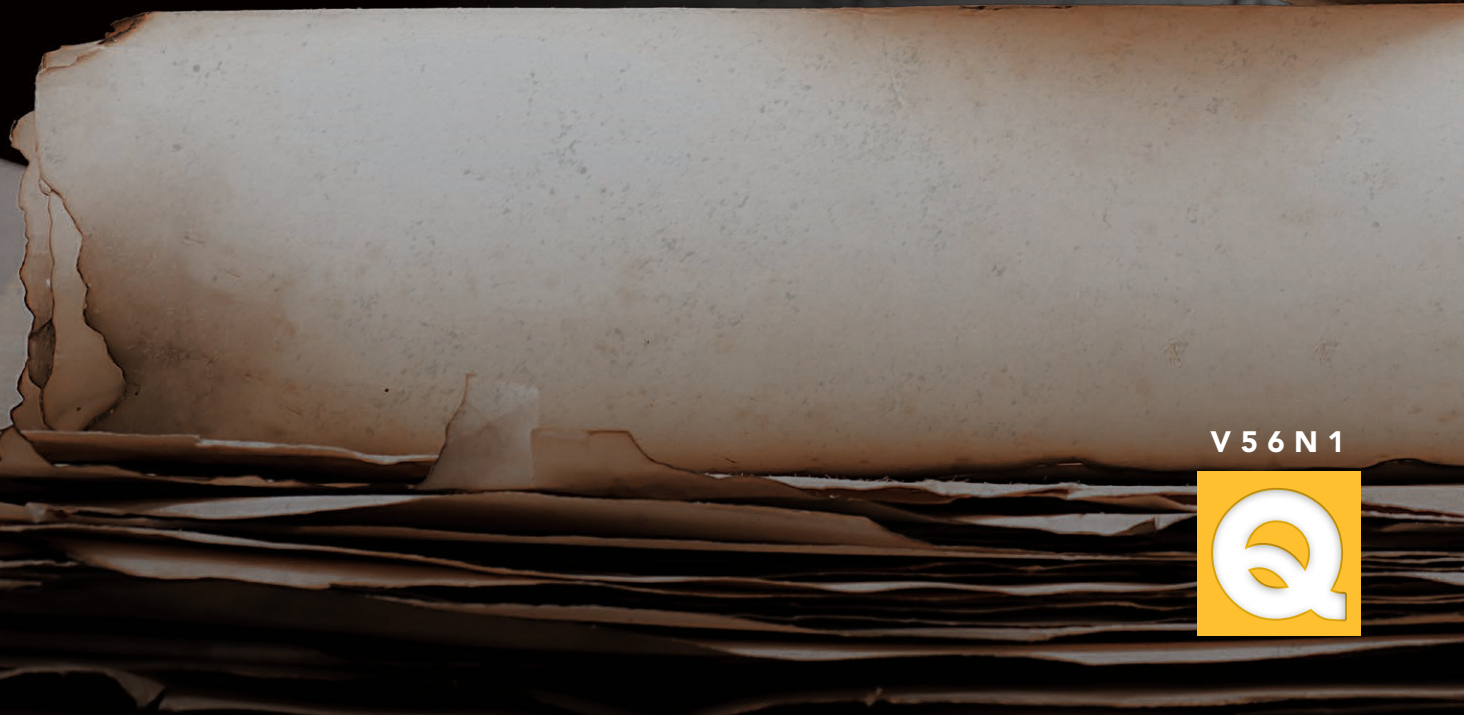
The **second phase** of the project (iDINO II) will look more extensively at the process of tissue preservation. Evolutionists have offered various theories of how this tissue could survive for millions of years. iDINO II will methodically investigate these preservation claims, assessing their plausibility.

The iDINO results have already provided a strong challenge to the evolutionary worldview. More extensive and detailed examination may provide even stronger evidence that the age of dinosaur fossils is far less than 65 million years. To this end, the Society continues to seek those willing to fund this project with either one-time gifts or monthly donations.

For more information contact us at (928) 636-1153 or crsvarc@crsvarc.com.

Also visit <http://tinyurl.com/nphm2c4> for project updates and details.

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οὗ ῥίνα τμηθεῖσαν φέρει.
νεκρᾶς ἡλικίας τὴν ἀσκητικὴν ἀγωγὴν
ἀπομυκνόντες ὅρεσι ποιησάμενος, καὶ πολλοὺς ἀγῶ-
νιστας ἐκείνου, τὰς ἱερὰς Εἰκόνας καὶ
παρρησιασάμενος, παρρησιασάμενος
καὶ ἀθεότητα
ὡς φασίν,
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