

II-Summation: The Creation Narrative of the Bible.

The Creation Narrative of the Bible (CNB) completely agrees with the Creation Narrative of Science (CNS), if the Biblical account is correctly understood. This summation is the CNB as I understand it. The main Biblical source for the narrative is Genesis 1 and 2. Other portions of the Bible also have significant further remarks on the narrative. They provide support and supplementary information to the CNB described here.

It should not be a surprise that this is a tempestuous subject. The many theological interpretations of the Biblical creation accounts vary widely with each other and with the current CNS. They were developed over thousands of years, and with many different understandings about science and the natural world. The question is, whether a valid interpretation¹ of the Biblical account agrees in detail with CNS. After all, CNS disagrees not just with traditional interpretations of the Bible, but also with many previous views from science itself. Only after serious and sometimes contentious argument did the current view of CNS take shape over the past century, but consensus took place because of a basic agreement among scientists as to what constitutes a compelling argument. Unfortunately, among religious scholars, no such agreement exists or perhaps is even possible, because deeply-held belief often transcends rational discussion or even evaluation.

My personal belief is that to the extent that the CNS is based on empirical observations of nature, it should agree with the CNB, because I believe that the Bible is a true revelation inspired by the Creator. Generally, the Bible is not intended to be a book of science, but when it touches on scientific matters its message is accurate. One would expect that the CNS provides details that the Bible omits. This is why the two narratives combined are so interesting and instructive.

I. Before the Beginning (Genesis 1:2).

The CNB "Day One" begins in 1:3. The Setting of 1:2 is before the beginning.² St. Augustine recognized this in his commentary on Genesis.³ In his view, the "formless and empty" earth

¹ A "valid interpretation" does no violence to the Hebrew text but takes the natural meaning of the original language as best can be determined, and understanding of course, that words can be figurative, particularly when dealing with matters that are completely beyond human experience. In general, mystical and symbolic interpretations are excluded unless the context clearly indicates that such are intended.

² Many Bible scholars view Genesis 1:2 quite differently. See, for example, the notes of the Scofield Reference Bible. A common view is that this verse describes an earth ruined by God's judgment—perhaps the result of a rebellion of Satanic forces. It is not our intention to defend against such views, but rather to present what seems to be a consistent view, which is supported by some ancient authorities such as St. Augustine.

³ St. Augustine of Hippo (13 November 354—28 August 430), [*The Literal Meaning of Genesis*](#), abbreviated here *Ad. Lit.* (Latin: *De Genesi ad Litteram*).

was the "potential" earth before it actually existed—the earth before there was an earth.⁴ This led to a major theological viewpoint about Creation "in potential" and "in actuality" which 800 years later found its way into Thomas Aquinas' [Summa Theologica, Question 66](#), "Whether formlessness of created matter preceded in time its formation?"

Augustine extended this interpretation to all of the creation Days. In Augustine's view, Genesis 1:1 "In the beginning God created the heavens and the earth" marks the entire creation "in potential" with the creation in actual material form occurring during the creation Days. My own view, which I believe is a valid (but not the only valid!) interpretation of the original Hebrew text, is that Genesis 1:1 is an overall summary of the entire creation narrative, covering the first two chapters, and does not itself describe creation activity.⁵

The Hindu *Rig Veda*, which is generally viewed as a contemporary with the Genesis account, expresses the situation before creation in much the same words as Genesis 1:2 uses⁶, which

⁴ In the science of St. Augustine's day, the form of a solid determined its physical characteristics. So "without form" meant (to him) that it wasn't a proper solid, and "empty" reinforced this by implying that it was as yet non-existent. See *Ad Lit.* 1.15.30: "Now, we may suppose that this unformed matter is meant by the following words: 'But the earth was invisible and formless, and darkness was over the abyss. And the Spirit of God was stirring above the water.'" The science of St. Augustine's day identified the [elements](#) as fire, air (gas), water (liquid), and earth (solid) with the ether sometimes added as a fifth element. The form of a solid determined its unique characteristics. Plato and Aristotle developed some of the reasoning behind this understanding of the natural world. See [Wikipedia, Theory of forms](#).

⁵ See C. John Collins, [Genesis 1-4: A Linguistic, Literary, and Theological Commentary](#) (2006), p. 42 which gives various possible, but valid views about the meaning of Genesis 1:1—including my view that it is a "summary of the account".

My view is that Genesis 1:1 and 2:4 are "bookend" summaries of the creation narrative: in 1:1 what is to be described, and in 2:4 what was described—both using the special word *bará* to note God's direct creative activity in a general way. The use of *bará* in Days Five and Six refer to specific creative activity—celebrating the animal "spirit" in Day Five and the special creation of humans in Day Six.

⁶ The Hindu *Rig Veda* creation myth, "[Nasadiya Sukta](#)", hints, rather elliptically, at this nothingness, and yet hedges by implying that (perhaps) there is something there. See my fuller discussion at [creationnarrative.org](#). What I appreciate about this myth is that it explicitly describes things that are implied but not named in the Genesis account. Wikipedia translates the relevant passages as follows, as translated by A. L. Bashan (1914-1986)—note the last line is analogous to the creation of light in Day One:

Then even nothingness was not, nor existence,
There was no air then, nor the heavens beyond it.
What covered it? Where was it? In whose keeping?
Was there then cosmic water, in depths unfathomed?
Then there was neither death nor immortality
nor was there then the torch of night and day.
The One breathed windlessly and self-sustaining.
There was that One then, and there was no other.
At first there was only darkness wrapped in darkness.
All this was only unilluminated water.
That One which came to be, enclosed in nothing,

indicates that these are words used at that time to refer to a time of non-existence before the beginning. The words of 1:2 (and in the Hindu account)—water, darkness, the deep, etc. refer not to actual material objects but to the qualities of formless fluidity, emptiness, boundlessness, etc. before there was form, filling and boundaries, using familiar words to describe an indescribable setting.

Aside: The meaning of "Day" in CNB. The first chapters of Genesis give the Bible's account of creation, divided into six "days" of activity and a day of rest. The issue is, do these days⁷ specify the length of time to do these tasks? This was the topic of a debate in 1929 between two popular proponents of the Christian Faith, William Bell Riley and Harry Rimmer.⁸ This debate continues today, with many Christians promoting the "24-hour literal day" view, which is the "solar day" argued by Rimmer.

The word "day" is used in Genesis in three senses, all found in Genesis 1:1-2:4:

"Moses clearly uses the word "day" in three senses. He uses it of the period of light between two periods of darkness. He uses it for a succession of days, whether they be simply the periods of light or whether it also includes with each period of light the preceding period of darkness. And he uses it for a general period of time. Thus in chapter 2 he speaks of the whole creation as one day. "These are the generations of heaven and earth in the day (singular) when they were created." This includes all the six days in one. The word day is often used in the Bible for a general period of time. All that we can say of a particular usage is that it indicates a period of time. To know how long the period is intended to be, we must examine the context and see what the writer had in mind." ... "The fact of the matter is that there is absolutely no evidence in the Bible itself, to show how long the creative days were."⁹

arose at last, born of the power of heat.

This is so close to Genesis 1:2, that one wonders if the translator chose the words to emphasize the similarity. Since I do not know Sanskrit, I cannot say, but several other translations of this same hymn seem to confirm that it is an independent translation. Quite likely, both accounts are based on the same ancient oral tradition.

⁷ the word "day" translates the Hebrew word *yom* (or the Greek equivalent *hemera* in the LXX and NT).

⁸ Dr. William Bell Riley and Harry Rimmer, A Debate: Resolved, that the Creative Days in Genesis were Aeons, not Solar Days (1929). See MacRae, [The Days of Creation in Genesis: An assessment of the Riley-Rimmer Debate](#) (2017). Both Rimmer and Riley profess the full inspiration and authority of the Bible, but have differing views on the meaning of the Creation Days of Genesis 1. In this debate Riley defends the view that the creation days were eras, and Rimmer defends the view that the creation days are literal 24-hour days.

⁹ MacRae, *ibid*. The first sense (light between periods of darkness): 5 And God called the light Day, and the darkness he called Night. The second sense is in the same verse ... and the evening and the morning were the first day (whether one takes this as a single day or a series of days). The third sense: Gen 2:4 These are the generations of the heavens and of the earth when they were created, in the day that the Lord God made the earth and the heavens.

Here we take the point of view that the days of Creation are workdays¹⁰ of unspecified duration; that is, they are the fulfillment of specific work tasks (Ex. 20:9-10: "Six days shalt thou labour, and do all thy work ... For in six days the Lord made heaven and earth, the sea, and all that in them is, and rested the seventh day.")

II. Day One: The Creation of Light and Darkness. (Genesis 1:3-5).

The very first event in both CNS and CNB is the creation of light:

3 And God said, Let there be light: and there was light.

The creation of darkness is next:

4 And God saw the light, that it was good: and God divided the light from the darkness.

St. Augustine asked, "How can we explain the light and darkness mentioned in verse 4?"¹¹ The answer is: the light of Day One is not sunlight and it is not "spiritual light" as St. Augustine suggests. This he suggests with some evident uncertainty as to his conclusions.¹²

The CNS gives good (in my view) answers to these puzzles that St. Augustine so brilliantly exposed. The light of Day One is the light of the Big Bang. The Sun did not yet exist—in fact the Sun, as well as all of the matter in the universe, came out of the light of Day One, over the course of many billions of years.

¹⁰ See Vern S. Poythress, [Redeeming Science: A God-Centered Approach](#), where Prof. Poythress uses the term "analogical days". He remarks (p.143) that "Instinctively, ancient readers do not focus on the question of time length as measured by clock orientation." He notes further, "the six days in Genesis 1 are God's work days, and as such are analogous to rather than identical to ordinary human days."

¹¹ *Ad. Lit.* I.10 chapter title. On several levels, St. Augustine was puzzled by Day One. He remarks in I.10.18, "One might say that light was made immediately, but that the space of a day could have gone by while it was being separated from the darkness, and while light and darkness were being given their names. But it would be strange if this could have taken as much time to be done by God as it takes us to say it. And the separation of light and darkness was done, surely, in the very act of the creation of light. There could not have been any light unless it was separated from the darkness." I appreciate the very clear way that he expresses his consternation here. Later he asks if it was "spiritual light" since the sun was not yet created—but that led to its own complexities. Eventually he concluded that it was a form of spiritual light, but that takes us beyond the scope of this synopsis.

Augustine argued that light cannot exist without darkness, as if light was a quality rather than a physical substance. Probably that confusion about light was generally shared with his contemporaries. There is a sharp difference between physical light and the various other sorts of "light". Physical light does not exist in contrast with darkness.

¹² *Ibid.* I.11 heading "What is the connection between the light of v. 3 and the light of v. 14?" It seems fair to conclude that St. Augustine was not completely satisfied with his conclusions.

Darkness appeared in the universe after it had cooled down to the point where neutral atoms could form.¹³ From that point onward the powerful electrical forces were (largely) confined within neutral atoms, and gravitational forces controlled the subsequent evolution of the universe including the creation of matter in the crucible of stars.

III. Creation of the Sun and Earth. These are not mentioned in CNB but clearly occurred between Day One and Day Two, because the presence of the earth is implied in Day Two. CNS gives the details but does not (of course) distinguish between events that occurred naturally, and events that required God's intervention to guide nature.

A number of authors have commented on the special nature of the Solar System and Earth, particularly if viewed as a place from which humans can observe and learn about the universe.¹⁴

IV. Day Two: The Creation of shields to separate Inner from Outer Space. (Genesis 1:6-8).

The "firmament" in Day Two is a shield or fence between inner space and outer space. It is a protection of the Earth from the rest of the universe, so that the project of life can proceed. Proverbs 8:27 describes it as "he drew a circle" (ESV) or "he set a compass" (KJV) on the face of the deep – literally "encircling" or "encompassing"; i.e. placing a fence: the same Hebrew word *chuwg* can be a noun or verb.

No life could exist without an effective protection from outer space: a shield is an absolute necessity. This is why life randomly forming in outer space is unbelievable (to me).¹⁵

In Hebrew, this shield is called the *raqia*, a word derived from an ancient meaning of "expanse" or "covering"—i.e. a shield. The word does not include the concept of solidity. That is an ancient addition that was inserted when the Hebrew was translated into the Greek Septuagint by the most advanced scientists of the ancient world. The best science of the day recognized

¹³ Or, in the terms of modern physics, when the symmetry between energy and matter was broken. See Leon M. Lederman and Christopher T. Hill, [Symmetry and the Beautiful Universe](#), (2004).

¹⁴ See Rich Deem, [The Incredible Design of the Earth and Our Solar System](#) for a number of remarkable features about the Sun and Earth, including placement of the solar system near the co-rotation radius of the Milky Way galaxy. This placement gives many benefits, particularly: (1) an unobstructed view of the universe for viewing by his special human creation; and (2) relief from the task of plowing through the galaxy's dense spiral arms as it rotates. See also Preben Grosbol, et al, [Spiral Structure in the Milky Way: Confronting Observations and Theory](#) (2010) on the co-rotation radius "just outside the Sun". See also the Anthropic Principle discussed below. Also Geraint F. Lewis and Luke A. Barnes, [A Fortunate Universe: Life in a finely Tuned Cosmos](#) (2016).

¹⁵ Most chemistry of life requires a controlled environment, which is the most basic function of a living cell. But beyond that, there must be means to protect any *active* living cell engaged in metabolism from hostile external effects. I do not see how this can happen in outer space. Perhaps a dormant cell can exist in space (some spores are remarkably robust and can survive very extreme conditions), but how could metabolism take place?

the need for a separation of inner and outer space. They figured this must mean a something solid. So the translation of the Hebrew *raqia* into the Greek *stereoma*, and the Latin *firmamentum* seemed to these early scholars as simply expressing the obvious fact that the *raqia* had to be a concrete, solid entity to shield the earth.

However the Hebrews made no such presumption of solidity—as is evident in the fact that later in the same creation account, Genesis 1:20 says that fowl fly above the earth in the open firmament, using the same word *raqia*.

A shield is absolutely necessary to protect inner space, but this shield is not solid; in fact multiple shields exist¹⁶, each essential to the existence of advanced life on earth: Examples: a magnetic shield to deflect high-energy charged rays and solar mass ejections from the nearby sun; and an ozone shield to filter out high energy gamma rays.

In the case of any "habitable zone" surrounding a star, these shields against high energy particles (charged and neutral) are needed because this zone is necessarily too close to the star: all life exposed to these rays would be killed without the shield. On Day Five, animal life began in water, before the shields were fully built: the water itself provides an effective shield. Life on land and in the air had to wait until the ozone shield was in place some 100 million years later (around 400 Million years ago).

Note that the ozone shield is neither solid nor visible, so early man, however "scientific" could not know about it.

V. Creation of Life. This is not mentioned in the CNB but clearly occurred before Day Three, which involves fruit trees flourishing on the dry land. Today, plants and animals are both considered to be "life" and in fact science has shown a fundamental similarity in the way that they use a common central dogma. It seems likely that the ancient Hebrews would not consider plant and animal life as the same sort of thing. The CNS gives an excellent description of the timeline for the appearance of living species.

The miracle¹⁷ (and it was one!) is that the first life appeared almost as soon as the earth cooled enough for the oceans to condense and cool to a temperature slightly below pasteurization temperature (about 150°F). The first life was bacteria similar to cyanobacteria—photosynthetic bacteria which use sunlight as a source of energy. These first bacteria prepared the earth for future plants and animals by putting oxygen into the atmosphere, and by building up organic nutrients. Of course the ancient Hebrews would not know about this, since bacteria are not visible to the eye. More to the point, God did not reveal this origin of life before the time when

¹⁶ See the discussion at creationnarrative.org.

¹⁷ A miracle is an event that transcends the scope of natural events. My conclusion from the well-known facts about the nature and complexity of living cells is that life could never have come about by natural processes, even given all the time in the universe.

microbes could be viewed in a lens, which avoided a temptation to ascribe magical properties to inanimate matter.¹⁸

VI. Day Three: Creation of Dry Land and Vegetation. (Genesis 1:9-13). There are two distinct parts to Day Three. The first part describes the creation of dry land and the second part describes the flourishing of food plants on the dry land.

1. Creation of Dry Land.

9 And God said, Let the waters under the heaven be gathered together unto one place, and let the dry land appear: and it was so. 10 And God called the dry land Earth; and the gathering together of the waters called he Seas: and God saw that it was good.

There is a lot going on behind the scenes in these two sentences—of course that could have been said about Days One and Two as well, but here much of it is not even hinted at. Here is what happened, as revealed in CNS.

As verse 9 implies, the early earth was covered with water to a depth of about 1000 feet, from icy comets and out-gassing of water vapor as the molten earth cooled. The earth's crust at this point was fairly smooth. Volcanic cones temporarily penetrated the ocean surface but quickly wore down to form broad shallow tidal zones, due to the huge tides caused by the nearby moon. The first life arose in these shallow tidal zones.¹⁹

The description in verse 9 about dry land appearing out of the oceans is exactly correct—permanent²⁰ because it literally floats over the denser semi-fluid magma that underlays the earth's crust. It even appears to be true that the first permanent dry land began in "one place"²¹ although that may be reading too much into a short statement.

The early earth's crust fractured into plates which were dragged along by currents²² deep in the molten interior. At collision points one plate is thrust under its neighbor, and melts as it is carried into the earth's interior. Lighter materials rise to form granites that float atop the denser magma. The result, over billions of years is the formation of dry land—dry because the lighter

¹⁸ This knowledge of the beginnings of life was first known when such life could be viewed in the 1670s, in [Leeuwenhoek's single lens microscope](#).

¹⁹ Some argue that life began around deep sea vents, but in my view this is a later development. I may be wrong!

²⁰ The "permanence" is the result of a balance between the continual erosion and formation of new continental material.

²¹ The modern continents began as a super-continent called [Gondwana](#), formed about 600-500 million years ago. See the Wikipedia articles on [plate tectonics](#) and [Continental drift](#). Gondwana itself appears to have formed from a number of earlier microcontinents. Analysis of ancient geological formations leads to a remarkable timeline to show how Gondwana eventually evolved into the modern continents.

²² The currents are the result of heat convection, and tidal forces caused by the moon.

granites are thrust up above the sea level²³, and permanent because the project of life on land took over 400 million years and *needed* permanence—just as the Earth's orbit needs stability as we will note when we get to Day Four. Thus "dry land appeared"²⁴, and the oceans gathered together around the dry land. This process of plates colliding continues today, with the edges of the plates marked by volcanic activity that trace out the edges of the plates worldwide.

These two verses cover a long process that took place over a period of about 3 billion years.

²³ Obviously "dry land" does not mean "arid", but that it is above the mean sea level.

²⁴ It is amusing to observe how Bible commentaries on this passage struggled with this simple statement. Apparently the thought that the crust could rise out of the surrounding oceans did not occur, so they were faced with apparent violations of physics. In the end, natural processes fully explain the emergence of continents from a global ocean. This explanation was not generally accepted by scientists until the mid-20th century.

2. Creation of food plants.

11 And God said, Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself, upon the earth: and it was so.

12 And the earth brought forth grass, and herb yielding seed after his kind, and the tree yielding fruit, whose seed was in itself, after his kind: and God saw that it was good.

13 And the evening and the morning were the third day.

The second part of Day Three describes the greening of the land that rose above the oceans in the first part of this Day. The geological record shows that this greening began in earnest during the Devonian age, around 410 million years ago²⁵. The greening had to wait until the ozone shield of Day Two had built up to the point where it was able to filter out the most harmful cosmic rays. Prior to this, the first living matter lived in water—which filters out the harmful rays.

The plants mentioned here provide food for the animals that will be created on Day Six: grasses, herbs and fruit trees. Ultimately all of life needs plant food either directly or indirectly through the food chain. Even plants themselves need fertile soil which was built up from the remains of other plants and bacteria, because no plants and very few varieties of bacteria can live wholly on inorganic matter.²⁶ So God in Day Three fills the dry land with food.

Since this is the first reference to plants, it should be noted that no plants of the sort named here, can grow in soil unless it has organic matter for food. So the creation of these plants implies that their growth was preceded by billions of years of build-up of soil nutrients, especially fixed carbon and nitrogen. Virtually all of the fixed nitrogen in the world today was produced by the nitrogenase molecule. See CNS for a description of how this was done.²⁷

Creation after his Kind. The final creative act mentioned in this day is the creation of seeds that reproduce "after his kind". I don't think the emphasis here is so much on the preservation of particular species, as it is on the remarkable fact that life can make multiple copies of itself by making seeds.²⁸ The seeds may look nothing like the parents, which makes them seem

²⁵ The earliest "forest" of land plants is the amazing find of intact soft-bodied plants in the Rhynie Chert near Aberdeen, Scotland. These fossils were providentially preserved as finely detailed and complete plants *in situ*, and can be precisely dated to the early Devonian: 410-390 million years ago, right at the start of land colonization. Individual cells from every part of the plant's life cycle can be viewed with microscopic details meticulously preserved in 3 dimensions. See the [Wikipedia article on the Rhynie Chert](#) and the web page of the [Münster Paleobotanical Research Group](#).

²⁶ Nitrates are "inorganic" but that is an accident of nomenclature. Most nitrates are products of nitrogenase fixing by bacteria; a relatively small amount is the product of lightning discharge.

²⁷ A recent newspaper headline proclaimed that "soil from Mars" can grow crops. What is not mentioned is that this growth requires the addition of nutrients. [Alone, Martian soil doesn't have the necessary elements for plant life](#). The Mars soil contains little if any fixed nitrogen or carbon. See the Wikipedia article on [Martian Soil](#).

²⁸ Some Biblical scholars claim that this phrase refers to the fixity of species. This has led to the notion that the Creator does not use evolutionary change to produce new species. In my own view, "after its kind" is not about

especially marvelous. And these seeds produce offspring like the parents, and multiply to "fill the land".

The trees mentioned in these verses are all flowering plants, angiosperms. Most trees and plants fall into this group (phylum Anthophyta). The seeds are sexually produced which means that they can mix the genetic code of two separate (male and female) individuals. This ensures that the descendent is similar to, but not exactly like either parent. So "after his kind" refers to similar but not exact copies. Over time this produces the great variety of descendents.

Generally, flowering plants require insect pollination, which means that many flying insects (looking ahead to Day Five) have already been created by this time.²⁹

VII. Day Four: Timepieces in the Heavens for marking time. (Genesis 1:14-19).

*And God said,
Let there be lights in the firmament of the heaven
to divide the day from the night;
and let them be for signs, and for seasons, and for days, and years:
And let them be for lights in the firmament of the heaven
to give light upon the earth: and it was so.*

Genesis 1:14-15

Day Four wraps up the preparation of a physical habitat for Man, a process that began with the creation of light (and eventually the elements) in Day One, a protected haven in Day Two, and dry land provisioned with food in Day Three. In Days Five and Six, the work will turn to the creation of animal life to fill this haven for life.

On Day Four, the task is to ensure that the habitat is properly lighted and is so stable that it can harbor life continuously for almost 4 billion years, which is the length of time that the geological record indicates passed between the first life on the early earth and the creation of Man. This achievement requires a clockwork perfection in the creation³⁰, reflected in the use of heavenly signs to mark out the seasons, days and years. There is a lot of implied behind-the-scenes work involved in the task of this day, work that makes the earth unique among all of the potential earths orbiting all of the potential suns throughout the universe.

fixity of species, but about the phenomenal fact that living species are able to pass their genetic signature to their offspring and thus continue the race (of plant or animal); it says little or nothing about fixity of species as such. [See the endnote on natural evolution.](#)

²⁹ Early land plants and flying insects appear together in the fossil record.

³⁰ The topic of fine-tuning of the universe describes this perfection, and is the subject of an important feature of the universe called the *Anthropic Principle*. There are many books on this subject, one of the most recent being Geraint F. Lewis and Luke A. Barnes, *op. cit.*

Until recent times, nobody could have known the miraculous extent of the work involved in this task—indeed until the past century or so, the span of time required for this work was entirely unknown, so that if written by a lesser author, the tasks of this day might have been unappreciated and overlooked, as it is by many scientists today.

There is a story behind this. In the early 17th Century, Isaac Newton puzzled about the stability of the earth and its position among the planets that orbit the Sun. He concluded that there is no way to explain that stability except by postulating that God had to "tweak" the earth's orbit from time to time. A century later, another scientist—Laplace—thought he could prove that the earth's orbit is stable. He wrote a book³¹, and on presenting it to Napoleon, he remarked that "he had no need for that hypothesis"—meaning the necessity of God's intervention to keep the orbit stable. In fact, it is Laplace who was wrong, not Newton.³² Today it is understood that the stability of the Earth's orbit cannot be assured over a period of time even a small fraction of the almost 4 billion years since life first began, because the earth combined with the other planets amounts to a chaotic multi-body problem in physics, a problem that has no assured solution over the long run (say, over a few hundred million years). Even very small disturbances have unpredictable effects in the long run. One would not expect a planet to have a (relatively) stable orbit for billions of years, as in fact is the case for the earth.

Here is the physical fact behind Day Four revealed in CNS: the earth has (necessarily) remained in the Habitable Zone of the Solar System continuously for over four billion years. And over that entire span, the earth's orbit has been stable. This, despite the fact that the earth is measurably influenced by the other planets (particularly by Jupiter and Saturn) in small ways that are ultimately unpredictable, and despite the fact that the Solar System has orbited the center of the Milky Way galaxy more than a dozen times over these four billion years. As noted above, the Solar System appears to be in the co-rotation zone which minimizes the potential collisions with other space objects.

With this background, let's go back to the statements in Day Four. Most of the Day concerns giving light in the day and night, and separating light from darkness. But within this general theme is the remarkable statement that these "lights" will "be for signs, and for seasons, and for days, and years." It takes systematic observation extended over many years to do this: first, to realize that the stars are constant and reliable signs, then to gather the information that they

³¹ Honore de La Place, *Mechanique Celeste* (1799). See the anecdote cited in [Hmolpedia](#) (a specialized encyclopedia of "human thermodynamics, human chemistry and human physics." See CNS for more remarks and quotes about this.

³² To be fair, nobody (including Newton and Laplace) suspected that the earth had to be stable for billions of years. Nonetheless, Laplace claimed to have a mathematical demonstration, which if *mathematically* true, should apply for any length of time. In this, he was wrong.

contain in a systematic way so that it is possible to recognize and name returning patterns of stars that can be used to predict the seasons and measure the year.³³

This is the start of the first systematic science, astronomy, so wonderfully celebrated in Psalm 19:1, "*The heavens declare the glory of God; and the firmament sheweth his handywork.*" So Day Four marks the seeds of science, that unique achievement that specially marks off humans from every other living species on earth. Today this same recognition of the clockwork nature of the heavens has led scientists to know in astonishing detail how the skies would look to an observer many thousands of years into the past and future, and from any position on the earth.³⁴

Aside—Naming. It is notable that the Sun and Moon are not named. In fact there are few proper names used in the Genesis creation account. Why? My own belief is that in a pagan culture, the proper names were usually tied to the names of gods, and so the Biblical account may have avoided names to prevent the implicit endorsement of such "gods". Indeed elsewhere in the Bible, as well as in modern society, many common names derive from the names of gods, such as the names for weekdays and months.³⁵

VIII. Day Five: Creation of Marine Life and Fowl (birds and insects). (Genesis 1:20-23).

And God said,

*Let the waters bring forth abundantly the moving creature that hath life,
and fowl³⁶ that may fly above the earth in the open firmament of heaven.*

*And God created [bará]³⁷ great whales, and every living creature that moveth,
which the waters brought forth abundantly, after their kind, and every winged fowl after his
kind:*

*and God saw that it was good. And God blessed them, saying,
Be fruitful and multiply, and fill the waters of the seas, and let fowl multiply in the earth.*

And the evening and the morning were the fifth day.

³³ Anyone familiar with the night sky must be struck with the apparent patterns of stars, and by regular observation, will see the regular return of specific patterns over the years. Particularly prominent (in the Northern Hemisphere) are Ursa Major, Ursa Minor, Orion, Taurus and the Pleiades. These sow the seeds of astronomy. Nonetheless it must take many years to formalize these observations—particularly when written language was still unknown, making year-to-year variations difficult to record. The constellations themselves were the first "written language" written in the stars. See Walter Maunder, [Astronomy of the Bible](#) (1904).

³⁴ Paintings at Lascaux Cave, dated to 17,300 BP (years before the present time), are the earliest evidence of astronomical observations conducted by humans. See David C. Bossard, [Astronomy at Lascaux Cave](#).

³⁵ See [Origin of the Names of the Days](#) and [Origin of the Names of the Months](#).

³⁶ The Hebrew word translated "fowl" includes flying insects.

³⁷ This is the first use of *bará* = create (used only of God) in the six creation days. It is used one other time, in the creation of man. The only other usage in the creation account is in a summary statement of the creation as a whole (1:1 and 2:3-4).

Day Five is the first major pivot in the creation narrative. In Day One through Day Four, the focus was on preparing the earth for animal life, which is then described in Days Five and Six. The signal for this pivot is the use of *bará* = to create, for the first time in the creation Days. The only other use of the word is when Man is created in verse 26, which also signals a major pivot.

The word is used in Day Five to describe God's creation of animals having life—*nephesh chayá* = a living soul, that which breathes. It celebrates the sort of life that has soul—something that is capable of movement, feelings and emotions, a certain amount of free will, perhaps limited thought with the ability to make decisions. This is a considerable step beyond just life itself, as miraculous as that is. Evidently it is such a step that it qualified for the special word *bará*.

Scientists today still probe the limits of independent thought among the higher animals, but it seems clear that animals are not totally programmed, as plants appear to be. This suggests to me that the creation of animal life—the animal soul—involves a depth and complexity of creative activity that is not fully appreciated in science today—much like the incredible miracle of the creation of life itself was not appreciated by science a century ago (and by some, even today!). I expect that time—probably not in my lifetime—will unfold the marvel of this creation, with new evidence of the Creator's divine handiwork.

According to CNS, the creation of animal life happened suddenly: in an (geologically speaking) instant of time all of the basic animal body plans were created in all of their glorious complexity: not starting off simply and getting more complex in time, but starting (at least in some instances) with the most complex forms, and then specializing and simplifying later on.³⁸
³⁹ The geological record even can date this: around 530-520 Million years ago. And this miracle occurred in the oceans, as Day Five asserts.

This is another case where the geological record beautifully supplements the Genesis account with vast amounts of additional information about the development of early animal life in water. One thing that is evident: animal life is first mentioned as living in a water environment, and

³⁸ This is called the Cambrian Explosion, and occurred between 530-510 million years ago. Essentially all of the basic animal body plans appear suddenly about this time. In contrast, plants evolved over a much longer time period, and especially after the migration to dry land: early fern-type plants appear around 400 million years ago, followed by conifers (monocots) and deciduous trees at intervals of up to 100 million years. See [Body Plans: Beginnings of the Eukaryotic Phyla](#), which lists the major plant and animal phyla and classes, and indicates the earliest appearances in the fossil record. The most prolific plants today, the angiosperms (flowering plants) appeared around 100-200 million years ago, with a great variations appearing over the years. The observation about starting complex and then specializing and simplifying was made by a number of early geologists.

³⁹ The early geologist Hugh Milller called this "The magnates walk first": the pattern of complex to specialized and simplified, abundantly demonstrated in the fossil record.

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this is exactly what one finds in the geological record. Why would the ancient writer conclude that animal life began in the oceans?

IX. Day Six: Creation of Land Animals and Man. (Genesis 1:24-31).

1. Land Animals.

And God said,
Let the earth bring forth the living creature (*nephesh chaya*) after his kind,
cattle and creeping things,
and beast of the earth after his kind:
and it was so.
And God made the beast of the earth after his kind,
and cattle after their kind,
and every thing that creepeth upon the earth after his kind:
and God saw that it was good.

Genesis 1:24-25

Day Six celebrates the creation of land animals, and finally of Man, the crowning event of the entire creation narrative. The movement of animals to land (and birds in the air) had to wait until the Ozone layer was fully in place, which happened around 400 Ma, at about the same time that plants began to "green" the land on Day Three.

As with the plants in Day Three, and the sea creatures of Day Five, the animals mentioned are the most advanced land animals, from the highest, most developed body plan, the Craniata (or Vertebrata).⁴⁰ These are the animals that have a (greater or lesser) ability to think, emote, and other characteristics that are, I believe, implied by the statement that they are "living souls" (or living creatures).

Only general terms for the animals are mentioned and the terms used appear to refer to familiar categories of modern animals:

- The cattle (*behemah*) appear to refer to grazing animals such as cattle and sheep—in the book of Job the behemoth is probably the hippopotamus (a grazing animal)
- The creeping things may refer to burrowing and ground animals, and
- The beasts of the earth may refer to wild animals, perhaps carnivores.

⁴⁰ This body plan has a brain connected to a central spinal cord and enclosed in a skull which forms the head. The spinal cord is enclosed in a reticulated bony or cartilaginous spinal column.

2. Man.

Genesis 1:26-27;31

*And God said, Let us make man in our image, after our likeness:
and let them have dominion over the fish of the sea,
and over the fowl of the air,
and over the cattle, and over all the earth,
and over every creeping thing that creepeth upon the earth.
... So God created [bará] man in his own image,
in the image of God created [bará] he him;
male and female created [bará] he them.*

...

Genesis 2:7

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

The CNB describes the creation of humans in Genesis 1 beginning with verse 26, and in Genesis 2,⁴¹ and uses the special word *bará* for creation of man, repeated three times for emphasis.⁴² This creation separates humans from any other animal species and emphasizes that humans (both male and female) are created in God's image; that is, humans share in the capability and authority of God himself, and that male and female equally share in this. The exact meaning of "image" is not explained.⁴³

⁴¹ Genesis 2 is not a creation narrative, but gives further details about man's creation, and his rule over the rest of nature. In Chapter 1 God has the name *Elohim*. In Chapter 2, the name *Yahweh* is used, a name which emphasizes the personality and dignity of God, which he passes on to mankind, who he has placed in charge of the animal creation.

⁴² On *bará*. The writer intends by this triple usage to contrast with the single usage of *bará* in Day 5. Multiple repetition of a word is a literary device called a [Diacope](#). The statement of man's dominion is likewise a diacope, emphasizing that dominion over all animals.

⁴³ For discussion of this question, see Robert C. Newman, [Some Perspectives on the Image of God in Man From Biblical Theology](#) (1984).

Appendix I
Comparison of CNS and CNB.

Event	Time	CNS	CNB
Before the Beginning		Does Not Apply	Genesis 1:2 Non-existent earth
Creation of Light	13,800 My	Creation of Light in Big Bang	Day One: Creation of Light
Creation of Darkness	13,400 My, (BB +380 Ky)	Neutral Atoms; Universe Transparent	Day One: Creation of Darkness
Milky Way Galaxy Forms	~12,800 My	Galaxy & Cluster Formation Era	"Heavens Form"
Solar System forms at Galaxy co-rotation radius	4,550 My	Solar System Forms at Galaxy Co-Rotation radius.	
Earth Forms in habitable zone of sun	4,550 My	Formation in Habitable Zone; Orbital stability for over 4,000 My	
Moon Forms	4,510 My		
Final Cooling; formation of Crust, Global Ocean	3,900 My	Liquid oceans form when earth cooled to below boiling temperature	

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		Begin Buildup of Shields to separate outer and inner space: magnetic, ozone.	Day Two.
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Bacterial Cell: Marine Bacterial Life with Photosynthesis and Nitrogen Fixing by Complex RuBisCo and Nitrogenase.	begin 3,800 My	Carbon Isotope evidence 3,850 My. Ocean Temperature below Pasteurization (~140°F). Bacterial fossils after 3,600 My. Tubular and Cyanobacteria-like fossils.	Creation of life (implied on Day Three)
Asexual reproduction	Begins 3,800 My with first life.	Cell reproduction by division, and with lateral gene transfer between bacteria	
		Stabilization of Heavens	Day Four
Oxygen atmosphere	begin 3,500 My	product of photosynthesis.	
Soils with Fixed organic wastes (fixed Carbon and Nitrogen)	begin 3,500 My	wastes of metabolism and bodies.	
Build Ore deposits (various oxides including U, Fe, Si)	3,500-2,000 My	insoluble oxides from oxidization of ocean salts.	
Form permanent Dry Land	Begin 2,000 My	Develop mantle currents. Collision/separation of tectonic plates. Continents form at collision of plates, float on denser mantle.	Day Three, part 1
Eukaryotic Cell	1,800 My	Complex cell structure with organelles and cytoskeleton. All multi-cellular species with inter-cellular signalling.	
Sexual reproduction (sperm and egg)	1,800 My	Meiosis and Mitosis.	Day Three part 2 "Reproduction after his kind"
Visible (multicellular) marine Plants and Animals	540 My	"Cambrian Explosion". Plant and Animal species.	Day Five

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Life on dry land and air		Plants and Animals on land. See the Body Plans .	Day Six, part 1
Creation of Humans	50-30 Ky	Humans created in God's Image	Day Six, part 2

Appendix II

Unknowable Things in the Genesis Narrative

The Genesis account asserts several things that (until within the last century) could not be known by man apart from God's revelation because they concern things that are totally beyond the human wisdom of the day:

1. That the Universe had a beginning and came into being from nothing.
2. That the Universe began with the creation of light.
3. That advanced life (multicellular life) could not exist without an effective shield that separates inner from outer space.
4. That the early earth was completely covered with water: there was no dry land.
5. That dry land emerged from the global ocean, but the ocean still is in one place.
6. That animal life began in water, and later moved to dry land.

I challenge anyone to explain how any of these facts that are now known to be true could have been rationally discovered by early humans. I would love to see a secular explanation apart from direct revelation from God.

In addition there are some *known* and abundantly clear facts that the Bible notes but no rational scientist can explain how it happened or might conceivably happen:

7. That the first life began as a vastly complex, organized, self-replicating entity in the universe, with no plausible precursor. Anything but random!
8. That animal life has qualities that cannot be explained by any rational extrapolation from prior life—the *nephesh chayah* on Day 5.
9. That there is a vast gap between the human creation and any other living creature.

The Genesis creation account emphasizes all of these points, which lifts that narrative far above any other scientific "explanation" or pagan "evolved" myth.

END NOTE ON NATURAL EVOLUTION

The contrast between CNS and CNB: Natural Evolution is a basic theme of CNS to explain the presence and diversity of Living Species. However among scientists today there is a broad agreement that the basic assumptions of natural evolution cannot possibly be met in the world as we observe it—either as an explanation for the first appearance of life, or for the establishment of the various plant and animal phyla.

The absence of a Creator comes at a high cost of moral compromise because it does not explain the existence of life in even the minimum conceivable complexity—which is incredibly large compared with what natural evolution would presume. This is a major compromise and shortcoming of the stance among many scientists today.

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