

HOW THE EARTH RAN AWAY WITH THE MOON

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ABSTRACT

THIS ARTICLE PROPOSES AN ALTERNATIVE MODEL OF LUNAR ORIGIN THEORY AND EVOLUTION OF THE EARTH-MOON ORBITAL SYSTEM.

The theory currently governing scientists' ideas about the creation of the Moon and the Earth-Moon Orbital System is called "Giant Impact Hypothesis" (GIH).

GIH posits that, while the Earth was still molten and very young, it was impacted by a large planetoid (commonly referred to as "Theia") estimated to be near the size of Mars. Next, a massive orbital ring of debris was created around the Earth in the aftermath, which then began to accrete into an ever larger body, eventually becoming the Moon.

"Capture Hypothesis" (CH), which is a now less favored model of Lunar Origin Theory, posits that the Moon formed elsewhere in the Solar System and was later captured into orbit by Earth's gravitational field some time after it had already formed. Its ideas speak more to how the Moon arrived in its current orbit, as opposed to how it actually formed.

The Alternative model which we are proposing borrows some elements of GIH and merges them with others from the general concept of a "Capture Hypothesis".

While this alternative model agrees that the Moon DID in fact form through a Giant Impact Event similar to the one described by GIH, it does NOT agree that this impact occurred with the Earth. Instead, we contend that "Theia" actually collided with MERCURY - NOT WITH THE EARTH.

It is there, around Mercury, that the Moon initially formed and, eventually, arrived at Earth some time later through a planetary transfer/capture event experienced between Mercury, Venus and the Earth.

We recognize that Venus is the ONLY planet which rotates in a retrograde (backwards/clockwise) direction, and we see this most unique feature of Venus arising as a DIRECT RESULT of it having served as the "connecting step" in the "planetary stairway" between Mercury and Earth in the capture/transfer event that brought our Moon from its original home with Mercury to its current home in orbit around Earth.

It must be stated that the viability of any "Capture" form of Lunar Origin Theory is currently considered to be unlikely; primarily due to identical matches in the isotopic signatures of elements such as oxygen and tungsten found in Earth and Moon rocks when compared. This is a problem that our model tackles head on and, in fact, explains better than any other Lunar Origin model has as of yet.

We believe that these identical isotopic signatures found in Earth and Moon rocks can be explained through the understanding of a geological concept/hypothesis referred to as the "Late

Veneer Hypothesis” (LVH), and the intimate role we believe it played in the Lunar Origin story - especially in the context of this isotopic “evidence”.

According to LVH, when the Earth was initially forming, most of the original siderophile elements (i.e. gold, platinum, palladium, iridium, etc.) that bond most readily with iron would have been drawn down into Earth’s core over tens of millions of years, and would thereby be removed from the Earth’s crust and mantle.

As so, LVH contends (and most scientists agree) that the abundant amounts of these siderophile elements found on the outer layer of Earth would have had to be formed through METEORITE BOMBARDMENT - AFTER the core of Earth had already formed.

We contend that the material which supplied this massive meteorite bombardment, proposed by LVH SPECIFICALLY ORIGINATED from the same Giant Impact Event which occurred between a large planetoid and Mercury and that it also produced what would become Earth’s Moon.

Specifically, when this “Theia” object collided with Mercury, a massive amount of ejecta exploded into the surrounding space. Much of it formed an orbital ring around Mercury and slowly accreted into what became the Moon. However, not all of this material was swept up by the newly forming Moon.

Instead, we contend that a substantial amount was dispersed further into space, with some of it escaping the Solar System altogether, but much of it eventually reaching Earth. This provided the material necessary for the addition of a “Late Veneer” of chondritic material to the upper mantle of Earth – FOLLOWING the cessation of its core formation.

We believe the answer to investigation into WHY Earth and Moon rocks have an essentially identical isotopic composition of said elements is that the rocks themselves ARE IN FACT IDENTICAL MATERIAL, having originated from the same source/cataclysmic event. We contend that much of Earth’s crust originated from Mercury in this way, and we are essentially standing on the surface of what used to be Mercury’s surface, parts of its interior and the planetoid “Theia” which collided with it.

Our model also contends that a Lunar Capture event may be a truer explanation for the development of Earth’s tectonic plates and Earth’s inclined axis of rotation of 23.5° (resulting in Earth’s seasons), when theorizing that these features may be the consequence of a planet our size capturing a satellite as large as the Moon over the many millions of years it would take for such a process to occur.

Finally, we believe that an event/process as significant as the Earth capturing the Moon was in fact the principal catalyst for an event known as the “Cambrian Explosion”.

The Cambrian Explosion may be the most seminal moment in Earth's history, as it marks the seemingly sudden and rapid increase in the evolution of complex life forms found in the fossil record WORLDWIDE beginning about 540 million years ago.

We believe an event such as the capturing of a satellite the size of our Moon by the Earth can explain BOTH the timing and the magnitude of the Cambrian Explosion: two key elements in identifying any sort of causation possibilities.

Such a model can begin to answer questions like WHY the Cambrian Explosion began when it did 540 million years ago, while in the same breath, explaining why it DID NOT OCCUR during the first 4 billion years of Earth's history, as the Moon had not yet been calibrated at the distance from the Earth most conducive to the beginning of the creation of complex life forms on the Earth.

HOW THE EARTH RAN AWAY WITH THE MOON

INTRODUCTION

Faithfully suspended in every night sky, the Moon hangs as a perfect example of grace and beauty, pervading the darkness with a hero's cause -

TO ILLUMINATE.

An elusive cosmic mystery, laid in plain sight, the greatest story never told is one authored by the Spirit of Life. Each night its truth is buried in a beam of light and reflected off the Moon's own revolutionary journey and on to the sphere that is our own. The origins of such paths are only ever drawn between that which we believe is true, and that of which mankind remains unenlightened. It beckons us to follow where every yellow brick road inevitably leads - beyond the veil.

There is a great deal of speculation about the extent to which the Moon may affect life here on Earth (ever heard of werewolves?). However, it may surprise many to discover that there is still no overwhelming consensus in the scientific community for EXACTLY HOW the Moon formed; and certainly none free of discrepancies.

As of this writing, the most widely accepted idea explaining how the Moon formed is known as "Giant Impact Hypothesis" (GIH). [1] *reference?*

GIH is currently favored because, when compared to competing theories, it seemingly does the best job of explaining a number of different characteristics found within the Moon's

composition, along with many of the features observed within the Earth-Moon orbital system in general.

Still, its framework remains flawed and there are some major difficulties with its ideas that have yet to be resolved. GIH is sometimes referred to as “the best idea we currently have”; while it is probably a bit more substantial a hypothesis than that description suggests, it still remains somewhat limited in scope and stands waiting to be improved upon.

The “Capture Hypothesis” (CH) is another type of Lunar Origin theory which posits that the Moon formed elsewhere in the solar system and was later captured by Earth’s gravitational field. Its ideas speak more to how the Moon may have come to be in orbit around the Earth, as opposed to how it actually formed.

There is currently no version of a “Lunar Capture” hypothesis which provides any specific mechanism or explanation for how the Moon itself may have come into existence. Its different versions generally posit that the Moon simply formed elsewhere in the Solar System, and at some point thereafter, was captured by the Earth...without getting much more specific than that.

As such, it too remains somewhat limited in scope. However, we believe the type of events that CH describes played a more integral part in the Lunar Origin story than is currently recognized, and remains an important missing piece of the puzzle we must solve to truly understand how the Moon actually formed.

While GIH does indeed explain many aspects of lunar data sets, I believe, on the whole, it remains somewhat unfulfilled and ultimately “captures” only a portion of the lunar origin story (no pun intended - ok, maybe just a LITTLE...).

Many people, myself included, believe that the Lunar Origin process was much more dynamic and complex than is currently recognized today, and that understanding it requires a deeper focus on the Solar System’s story as a **WHOLE AND INTEGRATED FABRIC**, as opposed to a history comprised of isolated events that are unrelated to each other. It is with this ideology that we propose the ideas in this chapter, with the goal of widening our perspectives about the history of the Moon, its connection with the rest of the planets and the interdependent relationships and history they each share with each other.

It seems that even in space, they only ever “make up” to “break up”, as I believe evidence of their ancient rendezvous can be found recorded and reflected in some of the more obscure and uncelebrated features of the Solar System.

Our hypothesis borrows elements from GIH along with others from CH; to expand the scope of those already existing ideas by understanding and applying them in new and alternative ways.

Because GIH is the currently held theory governing the origin of the Moon, a brief synopsis is as follows...

GIANT IMPACT HYPOTHESIS - THE 4 GENERAL STAGES

1. A Mars-sized object collides with the embryo/proto-planet, Earth, heating and deforming both bodies and spewing ejecta into space.
2. The impactor rebounds and hits the planet Earth again, WHERE MOST OF THE IMPACTOR'S CORE BECOMES INCORPORATED INTO THE PLANET'S CORE.
3. An orbital ring of very hot ejecta (very little of it metallic/volatile material) eventually cools and condenses into discrete particles.
4. As particles accrete, they sweep up the disk of ejecta. The largest body sweeps up the remaining debris/particles; becoming the Moon. [2] reference?

ALTERNATIVE MODEL

To begin, I agree that an impact event somewhat similar to that described in GIH did in fact occur to produce the Moon. However, I differ in belief as to where it occurred and exactly what it occurred with.

I contend that, instead of an impact experienced with Earth, this Mars-sized planetoid (commonly referred to as "Theia") actually collided with MERCURY - NOT WITH THE EARTH.

After this "Giant Impact" with Mercury an orbiting ring of debris (lacking in volatiles) would have formed around the planet, and would have eventually accreted into the Moon in much the same way as GIH suggests happened around the Earth.

In this way, we believe that the Moon indeed formed through a giant impact, but that it instead occurred with Mercury, which would lead to the belief that the Moon FIRST orbited Mercury, and not the Earth. As this hypothesis will attempt to convey, we suggest that the Moon came into its present day orbit around Earth in a sort of planetary transfer, or concerted capture process involving primarily Mercury, Venus, Earth and the Sun.

In this case we specifically believe that the Moon eventually escaped Mercury's gravitation due to this orbital system's extremely close proximity to the Sun and the intense tidal forces which would be imposed on any such system that may have evolved at such a distance from the Sun as Mercury. After possibly settling into its own orbit around the Sun, the Moon

likely was captured first by Venus' gravitational field and still, AGAIN later, escaped Venus to finally be captured by Earth, where it obviously resides in orbit today.

Of course such a hypothesis is itself a variation of the already existing concept of a "lunar capture event" and its general merging with the concept of a "giant impact event".

I truly feel some of the concepts that will be explored here have TREMENDOUS MERIT, and beg for further context and deeper understanding; not to mention further study.

Though this isn't the forum to analyze each facet in EXHAUSTIVE academic detail, it can be used to outline a general framework of thought and to bring attention to some very solvable problems. Of course, this would be pointless without addressing some of the MAIN COUNTER-ARGUMENTS against the viability of any model consisting of ideas such as ours; all of them will be addressed in this study.

I believe that it is not at all overly ambitious to think that the effects of this Lunar Capture event can be found playing a part in everything from Earth's inclined rotation axis of 23.5° (responsible for the seasons), to the unique retrograde (or "backwards") rotation of Venus, to the principal causal mode which ultimately catalyzed an extremely seminal moment in Earth's history known as the Cambrian Explosion (the rapid increase of complex life found in the fossil record beginning 540 mill. yrs. ago). Before beginning our search for supporting evidence, we will first directly address the strongest evidence and primary argument currently held by many scientists against any capture event's viability, which is the geochemical composition of earth and Lunar material.

THE GEOCHEMICAL COMPOSITION OF EARTH AND LUNAR ROCKS

Possibly the most IMPORTANT piece of evidence relative to this Impact Capture hybrid model we have proposed may be, quite poetically, what currently exists as the "strongest" ARGUMENT AGAINST any Lunar capture event's viability: that is to say, the characteristics found within the geochemical composition of Earth and Lunar rocks when compared.

When comparing Earth and Lunar rocks it is found that there are ESSENTIALLY IDENTICAL isotopic matches of elements like oxygen and tungsten within each of their composition. This data set is the most frequently cited "conflict" that is cited to explain why such an event (or ANY Capture theory) is deemed "impossible", or at the very least, "highly improbable".

The different isotopic signatures found within any rock offers us a vast amount of information ABOUT that rock. This is especially true of oxygen and tungsten, due to their stability over long periods of time.

One of the things such signatures can theoretically tell us is where in the Solar System that rock formed. The simple idea is that, if a rock formed even a small distance from where the Earth formed within the protoplanetary disk (wherein all of the planets formed) it would still have a measurably different isotopic signature of these elements within its composition than would a rock which formed as part of the Earth. This is because they would have each formed at different distances from the Sun, and therefore, not only at different temperatures but among a myriad of other various conditions present within these different “patches” of the protoplanetary disk.

In this case, the identical isotopic matches found here confusingly suggest that the Moon and the Earth formed in the SAME EXACT AREA of the solar nebula, and that they are essentially the SAME EXACT MATERIAL. This particular observation does not match well with, and even directly contradicts the ideas outlined in GIH in a very important and consequential way. We must remember, a “theory” does not work if only 95% of its principles agree with those reflected in the objective realities of nature.

The conundrum that this set of facts presents us with is nothing less than fascinating: and has proven to be a difficult hurdle for any Lunar Origin model to overcome as of yet; even GIH.

The problem this poses for GIH is a glaring one and, despite elaborate attempts to reconcile the issue, it is one which never-the-less remains unsolved. It poses such a problem for a couple of different reasons. In the first place, the entire theory rests on the contention that “Theia” collided with the Earth while the Earth was still molten and very young. This time constraint must be placed on the process in order to make the entire theory feasible as the Earth must have been molten at the time of impact in order for all of the current system’s observed features to have then been produced through that event.

However, even though the Earth must have been very young and still molten at the time of impact, scientists have deduced that, at the same time “Theia” collided with Earth it must have been at least 100 million years old. To gain a better perspective, it’s worth the reminder that the Earth is currently estimated to be 4.5 billion years old. Therefore, while 100 million years may seem like a long time to us, in astronomical terms it still can be considered relatively short.

Never-the-less, the interesting thing is that 100 million years is still long enough to prevent us from positing that the impactor “Theia” initially formed in the same exact part of space as the Earth did. Because the isotopic signatures of these key elements found within Earth and Lunar rocks are so identical, the inclination is to assume that the Earth and Moon must have formed within the same patch of the original protoplanetary disk, and in the same part of space.

However, in this case such a conclusion is one we cannot reach because, if “Theia” did in fact form at the type of close proximity to Earth that would be necessary to produce such identical isotopic matches, the two bodies could never have even survived 100 million years

without colliding into each other much, much sooner. In fact, many scientists have concluded that they could not have even survived 20 million years without experiencing such an impact.

As such, it is universally agreed upon that “Theia” must have come from a somewhat more distant part of space in order to allow both “Theia” and the Earth to form for at least 100 million years before experiencing a giant impact. On the other hand, if “Theia” had to have come from a somewhat more distant part of space to be able to collide with Earth in the first place, it consequently would have formed at a significantly different distance from the Sun than did the Earth. This would therefore require “Theia” to have a different isotopic signature than Earth’s composition, as they each would have formed in a different “patch” of the initial protoplanetary disk.

Assuming a Giant Impact did occur between Earth and “Theia” to produce the Moon, scientists would expect to find at least 30% of the original “Theia” material in the overall composition of Lunar material, but they essentially find none. As far as scientists can tell, Earth rocks and Moon rocks are essentially the same, and for lack of any better “descriptive terms” (*analysis???*), this just doesn’t make sense and ultimately upsets the calculations that would prove the theory.

The problem which this poses for a “capture” event is actually somewhat similar. If the Earth and the Moon somehow formed of the same exact material, and in the same exact part of space (which the isotopic evidence seems to indicate), then the Moon never would have - NEVER COULD HAVE - formed and resided far away from Earth to later be captured. It would have had to ALWAYS BE right near the Earth when forming to have such an identical isotopic composition of oxygen and tungsten in its rocks when compared.

This data set remains unreconciled by any Lunar Origin Theory as yet, including GIH and remains a core mystery which must be solved to truly understand the origin of our Moon. While these are ultimately legitimate contradictions, they don’t necessarily mean that GIH is “wrong”. It just means that parts of it are, and that there are important pieces missing that can fill the gaps in our understanding as to how the Moon formed.

Because perspective is EVERYTHING and things are not always what they seem, we believe there may be an answer to this problem, and one which feels like the type of elegantly simple insight that Nature embodies in most of its expressions.

This brings us to maybe the MOST important aspect of the Lunar Origin story and the way to unlocking its secrets. The key component which scientists are missing in this scenario is the insight that just because the Moon and Earth rocks have these identical isotopic signatures DOES NOT necessarily mean that the WHOLE of the planets/objects themselves each had to have formed in the same exact part of space - IF ONE CONSIDERS THE POSSIBILITY THAT THE SURFACE OF THE EARTH IS NOT NATIVE TO THE EARTH ITSELF.

I believe a MAJOR component of this process, and a possible answer to the puzzle which this isotopic evidence presents, lies in the deeper understanding of what is known as the “Late Veneer Hypothesis” (LVH). I believe this theory and the event it describes is being overlooked as it applies to Lunar Origin theory in general and could potentially provide us with some real answers and equally insightful revelations.

THE LATE VENEER HYPOTHESIS

According to “Late Veneer Hypothesis” (LVH) most of the original “iron-loving”, or volatile elements (i.e. gold, platinum, palladium and iridium) that bond most readily with iron, would have been drawn down into Earth’s core over tens of millions of years when the planet was initially forming, and thereby would be removed from the Earth’s crust and mantle. This would occur through a process called “differentiation”.

According to our understanding of planet forming processes, these elements should not and COULD NOT be found present in the surface layers of Earth in any type of abundance AFTER the planet had formed because they simply would not have “survived” the intensely hot temperatures experienced in these processes, and would have been drawn down into the planet’s core.

As so, LVH contends that the amounts of these siderophile elements which we see present today in the outer layers of Earth, would have had to be supplied by meteorite bombardment some time AFTER the core of Earth had already formed.

In simple terms, this posits that, at some point after much of Earth and its core had already formed, it was bombarded/covered by a heavy cosmic rain of rocky meteorite material, creating a sort of “candy shell” around the Earth, like an almond being dipped into milk chocolate.

However, what doesn’t seem to be discussed much is exactly WHERE all of this meteorite material could have come from? I don’t believe it was just a random batch of space debris. However, I do believe that this massive bombardment of meteorite material SPECIFICALLY ORIGINATED from the same Giant Impact event that occurred between a large planetoid and Mercury and which, of course, also produced the Moon.

SOLVING THE ISOTOPIC “PROBLEM”

As computer models of such a Giant Impact event indicate, when this “Theia” object collided with Mercury, a massive amount of debris would have initially exploded into space. Much of this debris would have formed a “ring” around Mercury, and would have slowly accreted into what became the Moon. However, I don’t believe that ALL or even most of this material was swept up by the newly forming Moon.

Instead, I contend that a substantial amount escaped the orbit of Mercury and eventually reached Earth, providing the source material necessary for a “late veneer” addition of chondritic material to Earth’s upper mantle, following the cessation of core formation.

Studies done regarding what would happen during and after a giant impact like this support the viability of a model such as what we have proposed.

It is known that the moon is extremely iron-poor and lacking in the type of volatile elements that are found in abundance on the surface of the Earth; this is one of the main reasons scientists rightly believe that our Moon was produced from a giant impact event in the first place. The comparatively low density and lack of volatile elements found in the Moon’s composition relative to most other planetary bodies in the Solar System, especially the Earth, strongly suggest that the Moon did indeed form through a Giant Impact event of some kind.

However, the “Late Veneer” which was later added to the Earth, and that we contend was itself sourced from this Mercury-Moon giant impact event, is iron and volatile rich and essentially **the exact opposite. ????**

At first glance we may ask how one giant impact event can produce material that is iron-poor and lacking volatiles which formed into the Moon while, at the same time producing iron and volatile rich material that was delivered to a completely different planet to serve as the source for Earth’s “late veneer” addition of chondritic surfacing? The real question obviously becomes: can this “contradiction” be reconciled? According to a study done by Cameron, A.G.W. and Ward, W.R. titled “ The Origin of the Moon”, 1976, and which is still referenced by astronomers today, the answer would seem to be yes.

In it, part of their hypothesis suggests that during a giant impact event such as the one we have modeled, most of the outer silicates of the colliding body (Theia) would be vaporized; whereas neither the metallic core of Theia, nor the volatile material in the crust of the planet being impacted would be vaporized, at least not to the same extent.

As so, it is true that MOST of the collisional material sent into orbit would primarily consist of silicates, leaving the coalescing Moon deficient in iron. However, they further hypothesize that the more volatile materials which **WERE** ejected during the collision would “escape the solar system” , whereas silicates would tend to coalesce in space more efficiently.

Right here is the crux of our argument: as there is already precedent for the idea that since silicates tend to coalesce easier in space, possibly during such a giant impact scenario there may have been a type of “separation” of the silicates from the volatiles in the aftermath. This would leave the silicates in orbit around the planet to coalesce and, eventually, to accrete into what would become the Moon; the volatiles would simply “disappear” from the story.

Consequently, when looking at this scenario from the perspective of the giant impact having occurred with Mercury, it changes the possibilities for the final destination of some of that volatile material dispersing out from the innermost planet.

I see these volatiles not simply “escaping the Solar System”, but themselves later reaching and colliding with Earth to provide a Late Veneer of chondritic material delivered through meteorite bombardment.

We contend that most of Earth's crust originated from Mercury in this way, and we are essentially standing on the surface of what used to be Mercury, parts of its interior, and the planetoid “Theia” which collided with it

The reason WHY Earth and Moon rocks have an essentially identical isotopic composition is because the material itself IS IN FACT IDENTICAL, and originated from the same source and the same cataclysmic event. This reliably explains the identical isotopic signature of tungsten and oxygen found within Earth and Lunar material and thus legitimizes this particular form of capture theory we have put forth.

The truth is, we still don't know the isotopic composition of the isolated lower mantle of Earth itself, let alone any isolated geophysical surface samples of Mercury or Venus. The Moon is the ONLY extraterrestrial body for which we possess such samples with a supposedly known geologic context (excluding Mars). It is for this reason that the weight which this isotopic “evidence” holds is overestimated, misunderstood and certainly premature.

Still, for all of this to be viable, we must investigate whether there is any evidence that Mercury has experienced a Giant Impact in its past. When we do, we just might be surprised by what we find.....

SUPPORTING EVIDENCE FOUND IN MERCURY

MERCURY'S MANTLE

If this giant impact event which produced the Moon really did occur with Mercury, you would expect to be able to find some sort of notable geologic evidence within the planet to support it.

When surveying the library of known information about Mercury, it really doesn't take long to find that the surface of Mercury, itself, bears the evidence of a cataclysmic event in its past which resulted in the literal SHATTERING and loss of much of its crust. Its mantle/crust is now only about 400 km thick. [3] reference?

As far as planets go, Mercury's mantle is abnormally thin, with scientists estimating that there may be as much as HALF of the planet's original mantle now missing. It would seem extremely likely that this fact would somehow be related to a large impact event of SOME KIND. What's amazing is that it has been posited in at least one published scientific paper that a giant impact event is responsible for this observation of Mercury's mantle. (Collisional Striping of Mercury's Mantle, Benz, Slattery, Cameron-1988, Icarus 74, 516-528) should this have a reference number? Are we inserting footnotes for the reference #s? However, for some reason this line of reasoning has not been earnestly pursued. Such "collisional stripping" has in no way been connected with the formation of the Moon.

In the end, half of Mercury's original mantle is now missing and SOMETHING must have caused this to occur. In the VERY LEAST, the possibility exists that a Giant Impact event is responsible for this phenomena, especially since this is by no means the only evidence supporting the idea that Mercury experienced a Giant Impact in it's past.

MERCURY'S INTERNAL STRUCTURE

As would be dictated in a Giant Impact scenario, the Moon is iron-poor, lacking in volatiles, and has an extremely SMALL iron core.

In contrast, Mercury is iron-rich and has an abnormally LARGE iron core, accounting for nearly 70% of the radius of the planet (the largest ratio of any in the Solar System).[4][5] references?

These facts and this relationship between the two objects is important when considered in the context of a Giant Impact event, how it unfolds and what is left behind. It is here that it becomes important to remember the four General Stages of a "Giant Impact" event that we previously outlined, especially the first two: 1) a Mars-sized object collides with the embryo/proto-planet, Earth, heating and deforming both bodies and spewing ejecta into space; 2) The impactor rebounds and hits the planet Earth again, WHERE MOST OF THE IMPACTOR'S CORE BECOMES INCORPORATED INTO THE PLANET'S CORE.

Mercury's LARGE iron core, in relation to the moon's SMALL one, is a significant characteristic that would exist if a Giant Impact occurred between the two. It fits the narrative more than nicely - with the key being that the impactors core becomes incorporated into the planet's core (MERCURY'S) on impact and rebounded impact.

It seems unlikely that Mercury would have such a LARGE iron core in relation to all of the other planets if it was not impacted by another differentiated planetoid. In this case, that impactor's core was "injected" into Mercury's, causing such an abnormal and unique ratio as is found within Mercury's internal structure today; "leaving behind" a much larger iron core than Mercury had possessed prior to the impact event.

THE LOBATE SCARPS

The surface of Mercury also bears what could possibly be further evidence of a global surface heating event related to a Giant Impact having occurred sometime in the planet's history, in what are known as Lobate Scarps. These long, curving ridges are up to 3 km high and up to 500 km long. The scarps even cut through craters, indicating that they formed AFTER the Heavy Bombardment periods of the early solar system's history, which occurred at least ~700 million years after the planets formed. This makes the scarps unlikely to be a by-product of Mercury's initial formation process, as the scarps, themselves, did not form until long after Mercury initially had formed. [6] reference?

The Lobate Scarps are the kind of faults that form by compression, which suggests that the entire crust of Mercury was compressed long ago on a global scale. I believe they are evidence of a global surface heating event and the consequent cooling of the planet which would occur over many millions of years after a giant impact. Their possible connection with a giant impact event is not currently recognized as it should be. If Mercury experienced such a giant impact event, most of the planet would have become molten to some extent. At some point after this, its surface would have then begun to cool around a much LARGER iron core than the planet previously possessed. As Mercury lost internal heat, the core would then contract and its crust would become compressed; breaking to form the Lobate Scarps (much as the peel of a drying apple will wrinkle when left in the Sun for a couple of days).

The Lobate Scarps were once thought to be unique to Mercury; but recently astronomers have detected faint ones on the Moon as well. In 2009, NASA launched the Lunar Reconnaissance orbiter, which in 2010 brought back some interesting revelations through its observations and measurements of the Moon.

One of the notable things it discovered were these same sort of Lobate scarps on the Moon are much smaller than the ones found on Mercury; this seems easily explained by the much larger iron core possessed by Mercury and the much stronger compressive force that would be exerted on its surface compared to the Moon's as each of their cores cooled after the impact event. [7] reference?

Another contributing aspect of note in this discussion is that Mercury and the Moon are the ONLY two planetary bodies where the Lobate Scarp features have been found, which only further connects the Moon and Mercury and lends even stronger support to the idea that they may be a consequence of a giant impact event experienced between them.

MERCURY'S ECCENTRIC ORBIT

Mercury has the most eccentric orbit of ALL of the planets. Its eccentricity is 0.21; with its distance from the Sun ranging from 46,000,000 km to 70,000,000 km. Mercury's higher velocity when it is near perihelion is clear from the greater distance it covers in each 5-day interval.

In simple terms, Mercury's orbital path around the Sun resembles more of an "oval" or elliptical shape than do the rest of the planets, which trace a path that is more "circular"(yet still technically elliptical). I believe this characteristic can be considered supporting evidence for Mercury having experienced a giant impact in its past. With the idea that Mercury once held a more traditional, or "circular" orbit, I believe AT LEAST 2 things could have changed this...

1. The Giant Impact itself knocked Mercury a bit "off course", slightly affecting its orbital path.
2. Once the debris ring around Mercury accreted into the Moon, a more dynamic set of circumstances would have developed, where a 3-way "network" of tidal forces would then be in play between the Sun, Mercury and the Moon. The Sun's massive gravitation at these distances would wreak havoc on such an orbital system, causing any orbiting Moon to fall into an increasingly more eccentric/elliptical orbit around Mercury over time. This would not only allow the Moon to eventually escape the planet's gravitational field and possibly be recaptured again, but such tidal forces exchanged between the 3 objects would also affect MERCURY'S ORBIT AROUND THE SUN ITSELF as well, with similar eccentric consequences.

We will explore this all important concept of tidal forces later in the study, as it plays a central role in every orbital system in the universe. However, it is in these ways that I believe Mercury's orbital path is evidence of not only a Giant Impact event, but the retention of an orbiting Moon (which we believe was our Earth Moon) for some period of time thereafter and the "after effects" of its eventual loss.

MERCURY CONCLUSIONS

There seems to be a preponderance of evidence at least SUGGESTING that Mercury has experienced a Giant Impact event in its history. It seems irresponsible to rule it out without having at least thoroughly analyzed PHYSICAL GEOCHEMICAL SURFACE SAMPLES of the planet - something we have as yet failed to do.

I believe that Mercury's geochemical composition will bear some of the same isotopic similarities found in Lunar and Earth rocks. A determination will have to be made about how much of Mercury's original surface, how much of its interior and how much of the impactor (Theia) may have been responsible for creating the Moon in order to TRULY UNDERSTAND any isotopic evidence found in the planet's material composition since then; all of this while allowing for considerations of any other event that may have occurred.

Nevertheless, I believe there will be some sort of connection supporting the idea that Mercury, NOT THE EARTH, was the "mother" planet which "birthed" the Moon. Already, recent studies of these isotopic signatures of Lunar rocks have been shown to most closely match that of "Aubrite" meteorites, which are, of course, most closely associated with Mercury by many scientists.

COMPARATIVE PLANETOLOGY

I believe ANY Lunar Origin theory, and certainly our Impact-Capture Hybrid version, requires a look at our Solar System in a greater context; focusing on the connectivity of its components and common threads of that fabric, as opposed to its isolated features alone.

A SIMPLE BIT of comparative planetology can reveal some of these similarities and provide us with some unique insight into the history of our Solar System's backyard. One of the most revealing data points relevant to our ideas here are the simple RATES OF ROTATION that each of the planets exhibit. With each data point in the table representing 1 full rotation of the planet (in respect to the Sun, and measured in "Earth" hours/days) each planet's rate of rotation is as follows:

PLANET	RATE OF ROTATION	1ST CLASS
NEPTUNE	16.11 HOURS	1st Class
URANUS	17.23 HOURS	1st Class
SATURN	10.57 HOURS	1st Class
JUPITER	9.92 HOURS	1st Class

MARS	24.62 HOURS	1st Class
EARTH	24.00 HOURS	1st Class
PLANET	RATE OF ROTATION	2ND CLASS
VENUS	243.00 DAYS	2nd Class
MERCURY	58.60 DAYS	2nd Class

THE TWO CLASSES

When analyzing these numbers we recognize 2 distinct classes, identified by a common characteristic. The 3rd planet from the Sun (Earth) all the way through the 8th planet (Neptune) each complete one full rotation in a matter of HOURS. As so, they represent the 1st class.

Jupiter, which is so massive that it could contain 1000 Earths within itself, STILL completes one rotation at a majestically fast pace of 9.92 hours.

Representing the 2nd class are Mercury and Venus, the 1st and 2nd planets from the Sun. Both complete one full rotation in a matter of DAYS - not hours - with Venus rotating once at the sluggish pace of 243.0 DAYS, and in a uniquely retrograde (backwards) direction.

The stark contrast between these 2 groups tells us that the inner 2 planets are rotating at a much drastically slower pace than are the 3rd through 8th planets.

What one could then easily surmise is that ALL of the planets at one time in the beginning of the Solar System's history rotated at a more uniform rate (matter of hours), and at some point SOMETHING not only changed, but **DRASTICALLY SLOWED** both Mercury and Venus' rates of rotation.

With particular relevance to the terrestrial planets the question this presents us with is two-pronged: 1) What specifically slowed the rotations of the 2 inner planets? 2) Why did the other two terrestrial planets, Earth and Mars, not experience this same change?

The obvious and most relevant factors in answering these questions are the **LOCATIONS** and **DISTANCE** from the Sun of both Mercury and Venus. The 2 closest planets experienced a drastic slowing of their rates of rotation. The rest did not. When trying to understand what specifically could cause such a thing, we find the answer in a another paralleling common thread.

THE SOLAR SYSTEM'S MOONS

With another bit of comparative planetology, we will now briefly look at the other moons in our Solar System, and try to understand the relevance of their presence around those respective planets in the context of these questions.

There have been over 170 observed moons around the classical and dwarf planets. The moons in our Solar System are not distributed equally and it is suspected there may be many others in its far reaches that have yet to be discovered.

Pluto, Neptune and Uranus each have 5 or more known moons. Saturn has nearly 50 known moons. Jupiter has 4 large moons and at least 60 known smaller ones.

Mars has 2 known moons and Earth, obviously, has 1 moon. The fascinating fact is revealed when we see that NEITHER Mercury, nor Venus retain ANY orbiting moons!

This has always been a question for astronomers, as our understanding of the Solar Nebula hypothesis would lead us to believe that all of the planets formed in a similar way; and thus, **should each???** share the characteristic of having developed/retained at least one orbiting moon as well?

Again, the relevant question becomes; if Earth and Mars have at least one moon, why do Mercury and Venus have NONE?

TWO PLUS TWO EQUALS YES

I believe the answer to these questions, and an important piece of evidence supportive of our impact-capture model, lies in the paralleling trends of the 2 data sets we have analyzed. Mercury and Venus, the 2 closest planets to the Sun, are the only planets which have no moon. Yet, as we have previously noted, they are also the only 2 planets to complete one rotation in a matter of DAYS, not hours (55+ and 243+).

These two data points MUST be connected, and it seems almost OBVIOUS when we consider the only known phenomena (other than a giant impact) that could slow the rotation of an entire planet, which is OF COURSE, quite poetically, the presence of an orbiting moon.

TIDAL FORCES

As we all know, the Moon principally governs the Ocean's tides here on Earth, due to the simple force of gravity. While the mathematical minutiae are not important here in this forum, the fact is that in our Earth-Moon orbital system, BOTH bodies exert different degrees of tidal force on each other.

Although there are no bodies of water on the Moon, this doesn't stop Earth's gravitation from exerting tidal force on the Moon itself. Over time, friction within the flexing rock has slowed the Moon's rotation to the point that it now keeps the same face toward Earth at all times as it orbits, which is a phenomenon known as Tidal locking.

Conversely, while to a much lesser degree due to the fractional total mass of the Moon, the Moon still exerts a tidal force of its own on the Earth, and not just its water. By extension, so to speak, the friction between the tidal bulges of water and the ocean beds themselves slows the Earth's rotation over time and makes the length of a day grow by 0.0023 seconds per century.

Fossils of ancient tide markings confirm that only 900 million years ago, Earth's day was 18 hours long. Today Earth's rate of rotation is 24 hours per day, which means it has slowed by 6 hours per day over the last ~ 900 million years.

Here we have a universally recognized phenomena which is a scientifically accepted cause for the slowing of a Earth's rate of rotation (and therefore any other planet's), and that cause is the presence of an orbiting moon and its resistant tidal forces.

Tidal forces, however, can also affect orbital motion. Earth rotates eastward, and friction with the ocean beds drags the Tidal Bulges of water slightly eastward out of a direct Earth-Moon line.

These tidal bulges are massive, and their gravitational field pulls the Moon forward in its orbit while doing so. As a result, the Moon's orbit is growing larger by about 3.8 cm a year. So, not only is the Moon slowing Earth's rate of rotation as it orbits, it is moving away from the Earth as it does so.

CONCLUSION

All of these observations lay a factual foundation for hypothesizing that: if the presence of an orbiting moon could slow the rate of Earth's rotation, and if that same moon would be moving away from the planet as it does so; then a similar event could be responsible for the comparatively slow rotations of Mercury and Venus as well as the eventual loss of their moons. The only difference is that the Earth probably hasn't held the Moon for as long as Mercury and Venus did, and, more importantly, Mercury and Venus are closer to the Sun and its massive gravitational influence, which would only make these processes more extreme.

I am actually not alone in this belief that the Sun's intense tidal forces imposed on an orbital system within such a proximity as Venus or Mercury would be too great over time for either to retain an orbiting moon; at least for any indefinite period. It isn't too hard to conceive of how the Sun's massive gravitation at these distances would wreak havoc on such an orbital

system, as numerous other astronomers have made similar observations and suggestions as to why Venus and Mercury do not retain any orbiting satellite.

Still, if they lost Earth's moon in the past, just how did it happen?

THE PLANETARY LADDER

The physics and specific mechanics of such a Lunar Capture event like the one we have proposed are extremely technical and complex in their nature, and much too comprehensive of an undertaking to fully detail in a book such as this or by an author such as myself. However, they also remain largely understudied and, I believe, the feasibility of such a transfer event is much less “miraculous” than currently thought, as capture events are a rather common functional feature of other Solar System bodies. Having said that, we can still point to some characteristics which we feel are relevant, and leave the math up to the smart people.

It may help in this case to view the planets involved as steps on a ladder, and the Moon's journey to Earth as a trip up that stairway (or down, depending on whether you're a glass half full or half empty person).

As previously noted, because of the Sun's tidal forces imposed on an orbital system within such a close proximity to the Sun as Mercury, the Moon's orbit around Mercury would become ever more eccentric around that planet over time.

As the Moon expanded into an ever widening and more eccentric orbit, it would have eventually reached escape velocity and broken free from Mercury's gravitation. After this it would seem to have settled into its own orbit around the Sun for at least some time following a similarly eccentric and elliptical path as it previously had around Mercury. Over time, the Sun would essentially “smooth out” the Moon's orbital path, causing it to become more traditional and “circular”, widening as it did so. During this process the moon would therefore be moving closer to Venus with each successive pass. Because Venus is the planet in between Earth and Mercury, it would obviously serve as the next step on the ladder.

Most bodies in the universe rotate in a counter-clockwise or “prograde” direction (except Uranus, which has its own unique circumstances). ALL of the planets in the Solar System orbit the Sun in this same “prograde” or counter-clockwise direction. Is this right???

Venus is the only planet which rotates “backwards” in a clockwise or “retrograde” direction. However, due to our understanding of how the solar system formed, it is virtually certain that this backward rotation was caused some time after all of the planets had formed, and that Venus initially rotated in the same direction as all of the other planets. This is a little discussed phenomenon of the solar system, probably because it isn't very well understood and,

outside of this theory doesn't seem to have much bearing on how things evolved. Oddly enough, the only explanation astronomers currently offer for this phenomenon is that Venus must have experienced a giant impact in its past that caused it to then rotate in a retrograde manner afterwards. The reasons for dismissing this idea are too numerous to list but this line of thought has absolutely not been proven and has been weekly supported...to put it lightly.

Conversely, I believe that the fact that Venus is the only planet which rotates in a retrograde direction is evidence which strongly supports this model, and is a phenomenon which was directly caused by the process of Venus capturing the Moon, holding it in orbit for a time, and then later being "stripped" of it by Earth's gravitational force.

If this is true, when Venus actually began its capture of the Moon, the network of tidal forces between the Sun, the Moon, Mercury and Venus would have more forcefully slowed Venus' rate of rotation due to the orbital interactions (tug-of-war) experienced between these bodies as the process of a transfer and capture of such a large satellite as the Moon occurred.

Played out over however many millions of years, we can hypothetically assume in this model that such a process reduced Venus' rate of rotation to almost NIL or something near that.

After Venus had captured the Moon into its orbit, the Moon's orbital path would again become ever more eccentric and elliptical over time, in the same way as it previously had around Mercury (due to the close proximity to the Sun and its tidal forces). With the Moon in such a widening/eccentric orbit, it would be moving closer to the Earth each time Venus and the Moon passed.

Earth's gravitational pull would then come more forcefully into play, engaging Venus in yet another "planetary tug-of-war" for the Moon in the same way that Venus had engaged Mercury before.

This, in concert with the Moon's resistant tidal forces while in orbit around Venus, eventually pushed the planet's direction of rotation BACKWARDS, from NIL, into a retrograde (clockwise) direction.

*****AS A SIDE NOTE THAT COULD BE VERY IMPORTANT***** : Venus' 583.92 day interval between successive close encounters with Earth is equal to 5.001444 Venusian solar days; making approximately the same face visible from Earth at each close encounter. This sort of planetary-tidal-locking relationship between Earth and Venus may have arisen from their orbital interactions during this transfer/tug-of-war for the Moon. With close inspection, I assume there may be many other orbital relationships between the planets that have yet to be recognized as relevant to this event or other events similar to this one that they may have experienced.

However, the most EXCITING piece of this beautiful cosmological puzzle may be what happened when the Moon arrived here, at its HOME on Earth. In another dazzling connection, about 500 million years ago Venus' crust and interior appears to have gone dead; with essentially no geologic activity having occurred since that time. This is almost simultaneous with the BEGINNING of an equally momentous event here on Earth; the Cambrian Explosion. The essential “death” of Venus and the “coming to life” of Earth happening at basically the same time is definitely no coincidence. It’s all in the Moon...

WHAT DOES THIS MEAN?

Now that we have learned how the Moon likely was a captured object, we can begin trying to understand how this may relate to the proper interpretation of the Biblical Creation story in Genesis. As we previously suggested, the passage recounting the creative activity of Creation Day 4 does not detail for us the actual “creation”, or bringing into existence of the Sun, Moon and Zodiac.

Instead, this passage details the “fixing and fashioning” of these bodies in space relative to the Earth, and of course, to each other. Because of how the Genesis “Creation week” story is structured, where the activity of each creation day lays the foundation for the next, and is necessary to facilitate and allow for that activity to even be possible, it is my interpretation that such a calibration of the Sun, Moon, Zodiac and Earth was a necessary event which gave rise to the conditions most conducive for facilitating the creative activity of the following Creation Days 5 and 6.

Because Creation Day 5 and Creation Day 6 detail the appearance of complex life forms on the planet, the obvious interpretation is that the calibration of these heavenly bodies played a direct role in the development of these life forms on the face of the Earth. The question is: what, if anything, does mainstream Science have to say about this? Understanding that the Moon is a captured object is part of receiving the proof that a calibration of this kind did in fact occur, and an insight into how exactly that happened.

The fact that the Moon PERFECTLY COVERS the Sun during a total Solar Eclipse while, in fact, the Moon is 400 times smaller than the Sun, yet each body appears to be the same exact size in the sky, and absent ANY logical reason or explanation for why or how this situation should arise, confirms that a cosmic calibration is in effect. However, just because there was a calibration doesn’t automatically mean that it had anything to do with the rise of complex life on Earth. To draw such a conclusion, we certainly need more, and when investigating a little further

it's pretty amazing when we find that it certainly may have occurred after all through an event which most scientists generally refer to as the "Cambrian Explosion".

THE CAMBRIAN EXPLOSION

The Cambrian Explosion was an extremely seminal moment in Earth's history that began about 540 million years ago (ma), where the fossil record (particularly that of an equally mysterious and amazing geologic formation known as the "Great Unconformity" begins to reveal a massive, global and rapid increase in the evolution of complex life forms and the diversity of species on Earth.

The Earth is about 4.5 Billion years old, and for the first 4 Billion years or so the only life forms present on the planet were of the single celled microbial variety. Then, all of a sudden and seemingly out of nowhere, about 540 ma the fossil record reveals the sudden and accelerated appearance of life forms that became evermore complex. From the exoskeletons to the vertebrates, the record shows the evolution of complex organisms into more diverse species of life; these types of complex life forms had not previously existed.

There are many thousands of factors which scientists feel may have aided this process, like, for example, the advent of bilaterian developmental systems and more specifically, the origin of the bilaterian gut and macrophagy about 100 million years prior (650 ma). However, such an example, like most any other, cannot be considered as a direct TRIGGER for the Cambrian Explosion and its macroevolutionary cascade, but rather should be deemed to be a necessary pre-condition which instead enabled certain critical developments like the evolution of larger body sizes that helped make its eventual occurrence possible, as opposed to actually triggering it.

Up until this point, scientists do not have a definitive understanding as to what exactly catalyzed the Cambrian Explosion. Any explanation must not only explain the timing of the event, but its magnitude as well, as the event itself was a global one whose effects were felt worldwide.

The question this then presents us with is basically three-pronged: 1) Why did the Cambrian Explosion begin 540 Million years ago?; 2) Why did it NOT occur for the first 4 Billion years of Earth's history?; 3) How did it trigger such a widespread and Global change?

The complex nature of this event, and the massive amount of data required to most adequately support or "prove" any direct claim of its causation, is unfortunately too great an undertaking to comprehensively detail in a book such as this. Still, I can't resist putting forth the idea (along with some supporting evidence) that the Earth capturing the Moon in the ways which

we have described will soon prove to be the principal catalyst of the Cambrian Explosion and its timing.

Up until now, hypotheses posited as stand alone triggers for the Cambrian Explosion can typically be considered as belonging to anyone of 3 different categories: 1) Ecologic; 2) Genetic; 3) Abiotic Environmental. For me, it is the 3rd one of these, the Environmental changes, which seem the most exciting, and where some really cool ideas have been put forth by some really smart people.

I have personally read a decent amount of literature on this topic, but a paper published in the Journal Nature in 2012 titled “Formation of the Great Unconformity as a trigger for the Cambrian Explosion” by Shane E. Peters and Robert R. Gaines still stands out for me to this day.

To best understand the ideas put forth in this paper, one first has to understand exactly what the “Great Unconformity” is. To put it simply, it is an extremely prominent and unique geomorphic surfacing found in many different places around the world, especially on the North American continent.

Normally the rock record is formed little by little, where layers of earth that eventually solidify into rock are piled on top of each other at a relatively uniform rate, one tiny layer at a time over many Billions of years. Hypothetically speaking, a 20ft deep chunk of Earth might represent 100 Million years of history; where every 0.2 feet represents 1 Million years or so in a “normal” section of the rock record.

However, the “Great Unconformity” is an anomaly. The Unconformity itself is a deposit of sedimentary rock which at its deepest layers is about 540 Million years old. The unique thing about it is that it is juxtaposed against bedrock directly underneath it that is often times much older. In fact, many Billions of years older. To a Geologist, it is as if the rock record literally skips a couple Billion years when moving from the bedrock underneath up to the Unconformity itself.

This is essentially the reason why it is called the “Great Unconformity”. It is “Great” because it is found worldwide and it is an “Unconformity” because it does not “conform” to the typical processes and rates of sedimentary deposit which seem to have formed the majority of rocks during the first few Billion years in Earth’s history prior to the time of it’s deposit.

Geologists understand this feature could have only been produced from deposits left by shallow ancient seas which covered the continents on a large scale ~550 ma, and specifically, the repeated advance and retreat of those seas over those entire continents at that time.

As such, it is generally understood that this type of Global flooding is what formed the “Great Unconformity”, and that this sort of flooding on this type of large scale did not seem to have occurred at any point prior in Earth’s history: at least not in any appreciable way. Despite all

of this, scientists still do not yet know what CAUSED this flooding to occur; they simply know it happened.

Because a great deal of the fossils scientists discover are found within this layer of the rock record, understanding its formation and the part it played in Earth's history is becoming ever more important. From my point of view, the genius of Shane Peters and Robert Gaines is that they are essentially proposing that the actual FORMATION PROCESS of the Great Unconformity itself is not only what recorded the Cambrian Explosion, but what triggered it as well.

The general idea is that the wide scale flooding of these already hyper-eroded surfaces of -peneplanation covering the continents triggered a whole host of Earth system changes that could have activated the explosion, not the least of which was the impact this would have had on ocean chemistry at that time.

In this scenario, as the surface rock was gradually eroded away, enhanced chemical weathering processes would have started occurring as the newly exposed bedrock would have then begun reacting with air and water in ways which had not been possible before.

Such enhanced weathering of both the regolith and crystalline rock would have begun to release ions such as silica, phosphate, calcium, potassium and iron into the oceans. This, of course, had a profound impact on not only the ocean's chemistry, but the simple trilobite-like organisms living within them that had already begun forming at that time.

Both the human body today and the bodies of these simple organisms alive back then keep a very precise balance of these types of ions within themselves in order to function properly. When an influx of those ions occurs, resulting in an imbalance within the organism's body, one of the biological defenses the body has for this is to make those excess ions into minerals in a process called biomineralization.

Gaines and Peters also note that the fossil record betrays the fact that the three major biominerals - silicon dioxide (in radiolarians), calcium phosphate (found in bones and teeth) and calcium carbonate (found in invertebrate shells) all appeared around this same time: within a wide range of distantly related organisms.

One can easily see how this could be an integral step in the evolution and proliferation of complex life forms on Earth; the appearance of biominerals allowed for the development of even more sophisticated, diverse and durable systems with the advent of bones, teeth and shells.

In addition to this, the release of ions such as phosphate into these shallow Cambrian Seas in response to those same processes served as a significant source of nutrients for these organisms to feed on as they evolved. Such sea level rises also inevitably led to the inundation of continental margins and their interiors which would have ultimately produced a widespread

increase in the diversity and size of habitable area for these organisms. In theory, this would have in turn driven a paralleling increase in the diversity of species with the types of habitat available to them as they continued developing, diversifying and partitioning.

Of course, the only piece of the puzzle which seems to be missing is what may have caused this widespread, repeated continental flooding on a Global Scale that must have been responsible for the formation of the Great Unconformity. In my mind, the answer quite simply is the Capture of the Moon by the Earth. We already know the tidal force the Moon has on the oceans as it just orbits the Earth. It isn't hard to imagine how this would have been exacerbated during an actual Lunar Capture event.

As I noted before, the fact that Venus essentially went "geologically dead" ~500 ma, with no discernable geologic activity having occurred on the planet since that time, suggests that this was when the Moon may have broken free from any orbit or general gravitational influence upon Venus that it may have previously had.

This is, of course, within the same window of time that the Earth "came alive" in another way as the Cambrian Explosion began. The Earth capturing the Moon alone is not enough by itself to consider this the trigger of the Cambrian Explosion. It had to occur right around 540 Ma to even be in the realm of possibility. To be clear, the PROCESS of capturing the Moon may have BEGUN much earlier than this, however, the idea is that 540 Ma would have been the time that the Moon entered that "sweet spot", or the precise calibration with the Sun and the Earth necessary to then trigger this macroevolutionary event.

There are many other ways in which this Lunar Capture event could have hypothetically helped facilitate the Cambrian Explosion, such as the calibrating of the exact length of a day. As we also previously noted, tide markings on ancient fossils show that over the last ~900 Million years the length of a day has grown by 6 hours from 18 to 24 hours.

This is generally attributed to the presence of the orbiting Moon, its resistant tidal forces and the process of it becoming tidally locked with the Earth (where the same face of the Moon faces the Earth at all times as it orbits). However, it seems this could be even better understood by considering the implications the process of the Moon's Capture would have on this feature.

In this same vein, it should be noted that the Bible states that God made the Great Light (Sun) to **RULE** the day, and the Lesser Light (Moon) to **RULE** the night. This could be interpreted as the Sun and Moon playing a part in the calibration of the length of a day and a night, which is to say the rate at which the Earth itself rotates. This would be considered another precondition which ultimately helped facilitate the eventual triggering of the Cambrian Explosion through the actual Capture of the Moon.

I don't believe, however, that it ends there; as such a Lunar Capture event would also seem to likely be involved with the way Earth rotates on its axis at an angle tilted 23.5° from its

ecliptic. This is obviously the reason why Earth experiences seasons. I believe as our planet was capturing the Moon, during each successive pass of the Earth by this Venus-Moon orbital system, and with Venus still pulling on the Moon, the Moon, in turn, would have tugged ever so gently on the Earth, as a sort of tidal drag, akin to dragging your hand through water. With each passing and with each tug, Earth's axis tilted ever so much more until it became dragged into its average axial tilt of 23.5°.

Most of the planets spin on a somewhat tilted axis, and these types of events may be a better explanation for its cause. Again, this would be another exciting area to further study. Still, I believe Earth's tilted axis is a direct function of a Lunar Capture event occurring in this way.

Your notes say to insert ****K on back....but there wasn't anything on the back.**

I believe this event is also a better explanation for the formation of Earth's tectonic plates. As it stands now, untold "gravitational interactions" between Venus and Earth THEMSELVES are held responsible for the massive, global network of fractures in Earth's crust that make up the tectonic plates.

Yet, if you imagine a Moon-sized body placed somewhere in between the planets, you get a much more dynamic series of forces and counter-forces with two planets and their gravity competing for one Moon. The stress imposed on the Earth's crust while FIGHTING Venus' gravity for the Moon is seemingly a more reasonable causation for such an intricate network of deep, global, surface fractures which are the tectonic plates, and is an exciting area for further study.

**☆☆☆☆| I'M NOT SURE IF I SHOULD END IT HEREI don't want to
get too PREACHY ON EM HERR....LMAO*******

FINAL CONCLUSIONS

These are, of course, VERY BIG IDEAS which we are introducing, that will no doubt be met with some level of skepticism (and appropriately so). It wouldn't be science if there were not questions asked and many more answered. The simple fact is that if it is TRUTH, then it will stand. But, in regards to the origin of our Moon, the time for diligence is due...

In a world full of mystery, and equally full of mis-information, the “truth” can feel obscure and even unattainable much of the time. However, we live in a discoverable universe, and so, we are capable of understanding it in ways much deeper than most may believe.

Einstein said, “The most incomprehensible thing about the universe is that it is comprehensible.” Many other accomplished physicists have shared the same sentiment: that it is an almost perplexing wonder that even $2 + 2$ would equal 4. Einstein also said, “Knowledge is limited, but imagination encircles the world.” It is with this most daring human element that the engine of progress is driven.

We say all this to say, that NOTHING is impossible. Whether we hold a degree from Yale or Harvard, or we teach ourselves in the darkness of a prison cell; in the end we are all human, we all have capable minds, and imagination is the great equalizer.

The only thing which should EVER take precedent in science, and yes, ANY area of life, is TRUTH. Because, the purest definition of science SHOULD be “a noble pursuit of the TRUTH”.

We believe that the answers are out there, waiting to be found, and if we work together, we will reach them MUCH faster than if we chase after them alone, constantly worrying about WHO IS RIGHT instead of WHAT IS TRUE.

We are under no delusions that the rather simple contents in the body of this text have unequivocally PROVEN ANYTHING. However, we hope that we have presented just enough evidence, and piqued just enough interest, to inspire our fellow academics to re-engage in a genuine, open dialogue about the different possibilities for the Origin of our Moon. After all, it is very important indeed. In this case, we may have been so focused on the “Solar” that we may be overlooking the “System” and how that may come together to deepen our understanding of the Lunar Origin story...and potentially much, much more.

Excerpts of this article were taken from the textbook “Horizons-Exploring the Universe” by Michael Seeds and David Backman.

The general ideas of this article are, as far as we know, 100% original and certainly were constructed COMPLETELY INDEPENDENT of any others which may exist. Any excerpts taken were used purely for factual support.

A special thank you to its authors is still due, as this is my favorite textbook ever read, and NOTHING I have done would be possible without it. So, from the bottom of my heart, thank you!