Alberto Canen

The observer

Genesis
From the poetic narrative
to a scientific explanation.



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Alberto Canen

The observer

Cover and interior illustrations done by the author.

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Chapter 1

Introduction

The account of creation in Genesis, is it just an introduction to biblical scripture? What are its verses hiding? Myth, invention or scientific truth? This book attempts to address an issue about which both scientists and religious people feel uncomfortable. Science flatly dismisses the story, first with a smirk and then with anger, and the Catholic Church has relegated it to a mere introduction to the Scriptures. "The tale of Creation is a religious text with religious teachings," they say. "There is no science in it", "we should not seek scientific explanations", of course.
But...

I must admit that I have always been a harsh critic of the Genesis. I was always among those we tried to conceal a smile and changed the subject in order to avoid discussing it. Talking about Genesis and Creation in particular seemed unthinkable to me…, until a few months ago.

It is about a year since my youngest son asked me about God with great interest, more than he used to have.
At the time we chatted, I explained everything I could within my knowledge and we agreed to read the holy books of the major religions to expand concepts. So we

began to read, first the Bible [1], as the main book of Catholicism-Judaism-Islam, to then continue with the Bhagavad Gita [2] of Hinduism-Buddhism [3].

1 - See appendix I

2 - Bhagavad-Gita, the most important Hindu scripture. It is considered one of the most important religious texts in the world. The term Bhagavad-Gita means Bhagawan´s song (Bhagawan, God, who has [all]opulence). Often the Bhagawad-Gita is simply called Gita (Gi-tá-). Although the Sanskrit noun is feminine Gita ("Song"), in Spanish it is often translated as masculine can be viewed many times as male ("el canto" instead of "la canción"), and the stress can also change (from gi:´t?a to ´gi:t?a:). It is part of the epic text Mahabharata (possibly from the third century BC.) and consists of 700 verses. It contains a conversation between Krishna -whom the Hindus consider an incarnation of Vishnu (while krisnaístas consider it the origin of Vishnu), or as the main personality of God- and his cousin and friend Arjuna on the battlefield in the moments before the start of the Kurukshetra war. In response to the confusion and moral dilemma of Arjuna, Krishna explains to him all the mysteries of spirituality. During his speech, Krishna reveals his identity as the "God himself" (suaiam Bhagawan), blessing Arjuna with an impressive view of his divine universal form among other teachings.

3 - Although much of Buddhism denies that their doctrine has its essence in the Bhagavad Gita, and therefore in Hinduism, it is undeniable that Buddha's teachings are based on or are the same as those of Hinduism: dharma (right action) and the end of samsara (cycle of birth) to attain nirvana (enlightenment).

When I read him the Bible, when we were moving forward with the book of Joseph, I had what we might call a revelation. I understood then the reason for the Bible, the reason for the creation of the Chosen People, the reason for the coming of the Messiah, The Creation, Eden, the policies of the Catholic Church, the momentous task of the Jewish people, polytheism, monotheism, and much more. This revelation caused me such a shock that I decided to write it down and I poured it in my book *One God* (*Un Único Dios)*.

The explanation of the Creation story of Genesis was to be part of that book, but after analyzing it with my editor and literary adviser we decided it was better to leave it for a separate book as it warranted special treatment.

When I finished the book *One God*, in August 2011 I returned to the account of creation in Genesis and devoted myself to solve it.

It was clear to me that the Genesis story was real; they were facts that could have happened but were somehow masked.

What was the key? What was the Rosetta stone that would allow me to interpret the narrative?

The key, I discovered, was that the story -the text- was a narrative of someone who was telling what he was seeing. That was the key -the board, so to speak- on which I had to assemble the pieces of this puzzle.

In the text of Creation there was an observer, a narrator. They were not just verses, no, it was clear that it was a narration: the narration of an observer.

By introducing this variable, the narrator-observer, all made sense. From then on the rest was just a case of looking for the right questions: Was it a vision or a revelation? Or both? How long did the vision take? Who was he? Where did he live? What was his location?

The location, the location was crucial.

The observer and its location were the cornerstones for understanding the story of Creation.

This book describes the journey I had to make from the Bible to science in a permanent back and forth until I managed to unravel the mystery.

I encourage you to join me in my discovery.

Let´s have a cup of coffee, find a comfortable chair, and leave the preconceptions aside for a moment.

Let us open our minds and look at what mysteries have been hidden in the verses of Genesis for over three thousand years.

The version I have used for this comparison is The Jerusalem Bible.

The Jerusalem Bible (Bible de Jerusalem) is a version of the Bible published in installments between 1948 and 1953 that the French Biblical and Archaeological School of Jerusalem published later as the result of the translation to French of the Greek and Hebrew manuscripts. It was later translated into other local languages, and to the Spanish language. The approach they took was to compare the translation with the original texts in Hebrew, Aramaic and Greek.

Chapter 2

1

THE BIBLE, THE GENESIS, CREATION

Seven days?

Who has not wondered: seven days? Yes, who would not? –as we look at each other askance, with a mean grin.

It is a fact that fewer and fewer people believe that God created the heavens and the earth in seven days.

What about the dinosaurs? Well, by the time this question arises (a purely rhetorical one, of course) we are already engaged in a discussion that might embarrass even the toughest hooligans.

Usually, speaking of Genesis leads us, inevitably, to an irreconcilable division between science and religion. Apparently, one overrides the other. If Genesis says seven days, and science has proved there were six billion years, it all indicates that something is wrong, obviously... in The Bible.

It is difficult for us to say that the analysis of science is wrong, apart maybe from a hundred million years up or down. So, following this logic, we will base this analysis on what science claims that were the early days of the solar system and of our planet, the Earth, based on the current findings.

Well, if the solar system and the Earth have been in existence for more than six thousand million years since they were just a cloud of dust and gas floating adrift in our beautiful galaxy... how did we get to those seven days? Sure, I know, don´t tell me: pure superstition, myths, and ancient tales of various mythologies. Well, I don´t blame you, I was of the same opinion until, reading the Bible to my youngest son, I discovered that something was wrong with the texts of Genesis, or wasn´t?

Something in the sacred texts caught my attention and I stopped for a moment to look at them and I thought: what if the Genesis made sense? What if the narrative were consistent with the scientific explanation? What if the text of Genesis was the vision of someone who has seen the creation of the solar system like in a movie? And I remembered how many discoveries have started with this simple phrase: What if...?

And yes, let´s try to approach the issue from that perspective, after all… what could we lose?

Of course, I should clarify at this point that I believe in God. I believe that God created everything. I am, as they say, a believer.

Philosophically I lean more towards the Hindu-Buddhist side, than towards the Jewish-Catholic-Muslim, but as God is the same in both cases, I see no conflict in reading the holy books of both religions, and analyze what God has told men, in Mesopotamia as well as in the Indus Valley.

Well, let´s see then what God has told us.

Chapter 3

2

BILLIONS

First, let´s reflect on the "never well weighted" seven days.

Of course, the seven biblical days should have some sort of explanation, I thought, and I devoted myself to find it.

The first thing that occurred to me was that if God was infinite, a God´s day might last a billion years, so seven days of God may well be six billion years. You may say, why six billion years? Well, because it is currently estimated that from the original nebula to the present six billion years have passed, and four billion six hundred

million years since the consolidation of the Earth.

Although Occident has not handled major figures -and when I say major figures I mean figures as large as billions of years- in their mythologies, it may be interesting to note that in India, at the time of writing the Genesis they were already used to thinking of numbers of that magnitude.

For example: according to the Vedic scriptures [4], the four yugas (ages) form a cycle of 4,320,000 years (Majá-yuga, or 'great age'), which is repeated again and again. The first is the Satya-yuga or 'age of truth' of 1,728,000 years in which the average life span of a person was 100,000 years. It is the Golden Age, according to another classification.

Then comes the Duapara-yuga or 'second age' which covers 1,296,000 years with an average life span of 10,000 years; it is also called the Silver Age.

The 'third age', Treta-yuga, lasted about 864,000 years, with an average life span of 1,000 years; it is also known as the Bronze Age (although it is not meant to match the Bronze Age in India).

Finally, Kali Yuga or "age of quarrel" lasted 432,000 years where the average life span of a human being was 100 years (at the beginning of it, 5100 years ago). It was called Iron Age (it is not meant to match the Iron Age in India either).

Interesting, very interesting.

4 - Vedas (literally "knowledge" in Sanskrit) are four ancient texts, the basis of Vedic religion, which was prior to the Hindu religion. The Sanskrit word Veda comes from an Indo-European term (Weid), related to the vision, is the root of the Latin words vedere (see) and Veritas (truth) and the Spanish words "ver" (see) and “verdad” (truth). The Vedic texts were developed into what is called the Vedic culture, based on castes (varna or 'color') and ashrams (religious life stages).

So far I didn´t find any drawbacks to consider the "seven days".

If one believes in God, it would be normal, I think, to believe that He is infinite, thus it has not bothered me at all changing days for millions or billions of years

Let´s continue.

Let´s consider now the explanation that science gives us about the birth of the solar system and our planet Earth, in order to then be able to compare it with the text of Genesis.

I invite you to place ourselves in place and time.

Let's go to that moment when it all started in our little corner of the universe.

Six billion years ago, a cloud of gas and stardust -what is called a planetary nebula-, floats adrift in space.

This nebula, the cloud of stellar gas and dust is the waste product of a star that after its death as a supernova [5] (star that explodes in its death, its final stage) scatters into space the materials that have been formed inside it from simpler elements.

The objects created in this stellar oven -now more complex- make up this huge cloud of dust, gas and ice that floats peacefully adrift. Our local nebula.

5 - Supernova: Star that explodes and throws around most of its mass to high speeds. After this explosive phenomenon there may be two outcomes: either the star is completely destroyed, or its central core remains, which in turn collapses by itself giving life to a very massive object such as a neutron star or a Black Hole.

The phenomenon of the explosion of a supernova is similar to the explosion of a Nova, but with the essential difference that in the first case the energies involved are a million times stronger. When a catastrophic event like this happens, astronomers observe a star igniting in the sky that can reach apparent magnitudes of -6m or more.

The explosion of a supernova is a relatively rare phenomenon. We have testimonies of such events: in 1054, a star in the constellation Taurus ignited, the remains of which can still be seen in the form of the beautiful Crab Nebula; in 1572, the great astronomer Tycho Brahe observed a supernova shining in the constellation Cassiopeia, in 1640, a similar phenomenon was observed by Kepler. These are all appearances of supernovae that exploded in our Galaxy.

Today it is estimated that each galaxy produces, on average, a supernova every six centuries. A famous supernova of an external galaxy is Andromeda, appeared in 1885.

At one point, this calm, this placid floating, is altered by the arrival of waves, wave-shock waves produced possibly by the explosion of another supernova, another star which ends its days in the vicinity.

These shock waves, these waves that impact and shake our peaceful nebula trigger a contraction on it, and when it contracts it starts spinning and flattening.

This flattened disk that is now our planetary nebula leads most of the material toward the center, where it accumulates.

This huge mass of matter (mostly gas) makes it collapse under its own weight and due to gravity, initiating the combustion of a fledgling central star, the Sun.

The same force of gravity -the same gravitational force- that generates matter accumulation in the heart and leads to the creation of a star, in our case the Sun, also produces swirls and clumps in the dust disk.

These lumps that turn like swirls about themselves and continue their journey around the center are the nodes that will give rise to planets.

These primordial planets, these nodes or swirls of stellar matter, continue their path around the sun, but not in a circular motion, but in a spiral, falling toward it, moving closer with every lap, every orbit. It follows that when their spins started, the original swirls, they were farther away than the "finished" planets are now.

And what was the consequence of that approach to the Sun down that spiral road? Well, what happened was that those baby planets we might say were "cleaning" of debris, dust, and gas the space through which they passed and, thus, they increased their mass with the captured matter.

So, let's recap and look at the big picture.

First comes a chaotic cloud of dust and gas, the result of a prior supernova explosion that scatters its matter into space.

Then, an accretion disk is generated from that matter which will give rise, first to the Sun and then to the planets.

Finally, that disk is itself a cloud of dust and gas, which the orbiting planets will be cleaning from the surrounding space.

When they "sweep" that material by drawing it to themselves, the planets will increase their size with the captured dust and gas.

Many of these rocks, dust and ice, remnants from that cloud, are the meteorites that still today keep hurtling to earth, and that have scarred the surface of the moon and our own planet.

Also the solar wind, product of the nuclear combustion of the Sun, cleans the surrounding space from the light material and dislodges it into the confines of the system.

While this wave of gas and light dust is ejected by the solar wind, it is again caught in its path by the gravitational pull of planets in its wake, thus increasing a little more the mass of each one of them.

Well, we already have got primitive planets revolving in nearly circular orbits around the sun, because when the overall movement of the system was stabilized, these orbits are no longer spiral.

These planets, which were receiving material from the space gas and powder -possibly often in the form of violent collisions- must have existed at the time in molten lava state (in the case of non-gaseous planets), because the friction generates heat, and those collisions produced a lot of friction which resulted in a large increase in temperature that melted rocks and dust uniting all in single, and often almost spherical masses.

Since the planets were receiving less and less impacts, they began to cool, and as they cooled down, they generated a shell, a scab, a solid surface on the earth's crust on which we currently walk. Not only the surface was formed, but also the gases that were released and trapped by the force of gravity formed an atmosphere; this was the case in our planet Earth and how the atmosphere which we breathe today was created.

Meanwhile, the ice of the original cloud, also trapped, originated water and therefore its accumulation would generate the seas, rivers and rain.

Well, okay, let´s now think about how it was like when the planet, even though it had cooled enough to form the earth's crust, was still too hot for water to accumulate in liquid form on the surface. At that time, the cycle: evaporation-condensation-rain was much faster due to high surface temperatures. In those days, the humidity was truly unbearable. Showers and thunderstorms occurred without continuity. The rain evaporated as soon as it touched the earth.

An impenetrable sky, heavy fog and sunlight that could barely filtered.

Surely it would have been impossible for one person to have been on the surface, to have seen the stars or the sun itself due, first, to the thickness of the clouds and fog, and secondly, because of the remnant dust which would still be floating in space among emerging planets.

Sounds too complicated or difficult to imagine? Yes, it does.

I think that it would be a good exercise to put ourselves in that situation to imagine ourselves in the midst of a severe sandstorm and once there try to see the Sun.

We would probably see the light, the glow that surrounded us, but it would be difficult to accurately identify the source, the origin of that light. Dust, "sand" that flies in the storm, that airborne dust would prevent us from seeing the Sun.

Moreover, while this "sandstorm" goes on "outside", here, in the planet's atmosphere, we would be in the middle of a torrential boiling rain with clouds, thunder and lightning, as well as volcanic eruptions, ash rains and poisonous fumes.

Certainly all a stage, a huge stage, a scenario very different from today.

This scenario, in which we probably would not last a minute nowadays, would create the ideal conditions to start the journey of life (humidity, temperature, solar radiation and cosmic rays, which impacted with hardly any impediments). Ideal conditions that would create the first amino acids, the first molecular chains. Chains that later would give rise to more complex organisms.

Now, that the conditions are ripe, let´s examine the next step. The evolution of life.

Chapter 4

3

AND IN THIS CORNER... LIVE!

We saw earlier that life as we know it on our planet, began with and in the water. Water has a key role in our kind of existence. Consider that we humans are composed of seventy percent of that element; we could almost say that we are sea animals adapted to the surface.

Well, we must place ourselves there and think that, the planet is cooling, the water remains liquid longer, and it is accumulating in the lowest places by simple gravity simultaneously.

This initial ocean, it seems, was just one and so were the lands -as continents.

Science calls today that super-continent *Vaalbara-Pangaea* [6].

6 - Pangaea (Vaalbara-Pangaea): from the Greek prefix "pan" meaning "all" and the Greek word "gea", "soil" or "earth". Thus, it would be a word that means "the whole earth."
Pangaea is the result of the evolution of the first continent Vaalbara, which was probably formed about 4 billion years ago. Pangaea splits some 208 million years ago into Laurasia and Gondwana. At present fragments of this ancient continent are part of Africa, Australia, India and Madagascar.
Chronology
Minor or partial supercontinents:
-Nena (supercontinent, it emerges about 1,8 billion years).
-Atlantica (supercontinent, it emerges about 1,8 billion years).
-Gondwana (it emerges about 200 million years ago).
-Laurasia (Along with Gondwana, Laurasia emerged about 200 million years ago).
-Eurasia (the supercontinent Eurasia is now made up of Europe and Asia).
Major supercontinents:
-Vaalbara (it emerges about 4 billion years ago).
-Ur (supercontinent, it emerges about 3 billion years ago).
-Kenorland (it emerges about 2,5 billion years ago).
-Columbia (supercontinent, it emerges about 1,8 billion years ago).
-Rodinia (it emerges about 1,1 billion years ago).
-Pannotia (it emerges about 600 million years ago).
-Pangaea (it emerges about 300 million years ago).

Pangaea does not remain as the only continent but gets fractured and its segments drift, sail so to speak on the molten lava beneath the crust and lead to the continents we know today.

Let´s tell now tell a *racconto* and put all these facts in perspective.

Note that life, to evolve, develops first in the sea and then migrates to the land, while the supercontinent Pangaea-Vaalbara breaks and moves across the globe to fill the places we find familiar today.

At sea, where life generated animals, plants were also created, which moved inland and became land-dwelling vegetation, trees, grass, etc. ..

Some of the marine animals that had "come out" to land, while evolving, returned to the sea where they continued their evolution -e.g. cetaceans (whales, dolphins, etc.).

Other primeval animals became used to living on the surface and resulted in the famous dinosaurs, who reigned on the planet for about one hundred and sixty million years.

I do not want to overwhelm or drown you with the history of our world -many of you are certainly aware of it- but it is important we refresh what we know and try to notice certain "details" that are essential clues for understanding the topic at hand.

Let continue, (with a small remark).

Dinosaurs emerge about two hundred and thirty million years ago and disappear -go extinct- about sixty five million years approximately.

Considering that the human species, the first *Homo,* appears only in the last two million years, we understand that dinosaurs and humans never coexisted.

From the last dinosaur to the first *Homo* there was a sixty million years lapse, enough to not have ever encountered one another.

At this point I would like to focus your attention on some details of the evolution of life that will be important when we discuss the Genesis.

Interestingly, some dinosaurs could fly -like the Pterosaur-, and may have had their habitats on the beach. Consider that these animals had wings like bats and they were unfit to taxi like a plane or a duck, but they needed to jump from a high area, a high ridge to start the flight; and for that, what better than a cliff above the sea? Some of them were very large animals with a 12 meters wingspan, almost like a small plane.

It is also very important to emphasize that humans have been the last to appear in this story, the story of evolution.

Right. As you may have noticed it took about six billion years for the Solar System to form and man appeared in the last two million years.

It is common practice to compare these six billion years with one year of three hundred sixty five days, in which the nebula begins to collapse the first of January and the human species makes its appearance at 23:00, December 31.

Mankind has his *moment* at the end, at the very end of the whole process.

I think this brief *racconto* of the history of the Earth gives us a sufficient and necessary basis of information to perform our comparison, so let's try!

Chapter 5

4

Behold...

GENESIS [7]

7 - Genesis. The Greek name comes from the contents of the book: the origin of the world, mankind and the Jewish people, the genealogy of all mankind from the beginning of time. Also "Genesis" has the sense of "prologue" as Jewish history properly begins with the Exodus, which Genesis is merely a prelude. This title appears in the Septuagint or Greek Septuagint (LXX). In Hebrew, the book is called "Bere?šyt": "In the Beginning, from the first word in the opening sentence. The text used for analysis belongs to The Jerusalem Bible, Editions du Cerf, Paris, 1973.

> «In the beginning God created heaven and earth. Now the earth was a formless void, there was darkness over the deep, with a divine wind sweeping over the waters. God said, “Let there be light,” and there was light. God saw that light was good, and God divided light from darkness. God called light “day”, and darkness he called “night”. Evening came and morning came: the first day. »(Genesis 1:1-5).

Let´s observe carefully what this first paragraph tells us.

In this description, I clearly distinguish the original chaos nebula of cosmic dust that science mentions. A "sea" of dust, for someone who may be watching in in the darkness, and who does not have the slightest idea that what he is witnessing is not water but a nebula in which he (our possible observer) is "floating". This individual is in the place, in the exact place, in which hundreds of millions of years later the Earth in formation will be located. Moreover, as he is not yet on solid ground all he can discern or understand, according to its parameters, is the abyss, the abyss of space.

Then, this same individual (who continues his observation and narrates what he sees) perceives that the light shines for the first time and believes that God at that precise moment has created it -the light- as he still cannot see that it is the sun that

originates the light. He sees the light, but not where it comes from. For him it is as if God had "switched on" the light.

Then we face the first major dilemma typical of Genesis: how light can be created before the stars? (This obviously rhetorical question is usually accompanied by some skeptical gesture, knowing boastful look and intent to end the conversation). Yes, it is true, it cannot be, but -there is always a but- what if we placed the viewer in the exact location where the primordial swirl was, the one which will lead to our planet? It is obvious that our observer could have seen the light, but would have been unable to know where that light had come from, because -as noted earlier- the "dust storm" would have prevented it. Also, as he would be “standing” on the swirling, he would perceive the passage of day-night, light-darkness, due to its rotation. This person -because he´d be standing, situated, on the swirling- would turn with him, and therefore, a moment he would be facing the light, and the next, he would have his back to it.

Here, we can already realize that it is essential, fundamental, the existence of an observer and -even more-its location, in order to understand the Genesis.

This individual who notes, and then tells what he has seen, is watching it from a particular site, from a specific location. He is somewhere stationed at the time when he "watches", at the time of receiving the vision, the revelation. And that place, that location where he is, is what makes the difference; that's what makes us believe that the description of Genesis may make sense; it is the key to the riddle. The key that opens a world of possibilities

(What now? Where is the boastful grin? ...).

***

It is necessary to clarify that when I talk about an observer I mean someone who in recent times, say about three thousand years ago, receives a vision or a revelation of God and through it he watches the creation of the solar system.

It doesn´t mean that the observer has witnessed the creation at the time God was doing it, but that he saw or grasped it later through some kind of extremely concise vision.

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