

GENESIS

One

1. Once upon a time, a man sat in front of his home just before sunset. It was a quiet evening, not a breath of wind, a magical time. An eggshell blue sky painted here and there with white clouds glowing pink from the setting sun, arced over him.
2. He immersed himself in watching the sunset, the changing colors, and the peacefulness settling on the Earth in the fading light.
3. Before long, his child came and sat beside him. Together they watched the blue shades and the fiery orange, pink and yellow colors fade into gray, dark blue and then darkness.
4. The child scooted closer to him. They sat quietly and watched. They shared a sense of awe at the majesty of the Earth and the sky around them, and there was a deep connection between them.
5. As the light faded, a star appeared in the deepening, dark blue sky. And then another. And another. By the time the light had faded completely, the sky was filled with stars, some bright, some faint, some lightly hued, millions of tiny twinkling lights.
6. And the man and his child thought it was good. "Isn't it beautiful?" whispered the child.
7. "Yes," murmured the father. A moment later, he said, "Our ancestors have sat as we sit and gazed in awe at it all. And they wondered whence it all came."

Two

1. Do you know where we came from, my child? It's a question that we humans have been asking for a long time. The story of our beginning, my child, the beginning of mankind, is long and more bizarre perhaps than anything you could imagine.
2. "Tell me, Father."
3. The Japanese believed that two great gods, Izanagi and Izanami, swirled the waters of the oceans and created the islands of Japan.ⁱ The Norsemen believed that fire melted ice, and the drops turned into humans.ⁱⁱ The American Indians believed that Mother Earth spawned people who came out of the ground.ⁱⁱⁱ And, you may know that today, Christians and Muslims believe that a single god created heaven and Earth for us and that he then created us in his image.^{iv v}
4. If you look at the many explanations of the origin of the world, my child, you will see that every people had their own and diverse beliefs. Some believed in many gods, some in a single god. Most people believed that their gods created the world.

5. Ancient people made up stories to explain things that they didn't understand. You will encounter many of these stories and beliefs as you grow up and meet other people. Many of them believe that their scriptures are word-for-word spoken by their gods.
6. You may read many of their stories and their scriptures. I found it fascinating to learn how people in history tried to explain things they didn't understand, like where the stars came from, where the Earth came from, and whence mankind came.
7. Today, though, scientists can explain where our universe came from. Scientists, thousands of them from all over the world, working hard over the last hundred and more years, have gathered evidence that our world, and not only our world, but our *universe* had a much different, and in some ways, even more bizarre beginning than those imagined by the Japanese, the Vikings, and the American Indians.
8. These worldwide scientists conducted experiments, they looked at evidence, at data, and they have been able to explain the origin of the universe. They dug in the ground, they examined fossils, they dissected living things and non-living things, they peered into space with telescopes, and they shared what they learned with other scientists so they could prove their findings.
9. Despite all that we have learned from science, my child, many people in the world still believe in the stories in the ancient scriptures that they were taught as small children. Many adults today still teach the stories in the scriptures as if they were truth.
10. But we have learned where we came from. We have learned how the universe began, we know where our Earth came from, and we know how we humans came to be. We even know how our Earth will end—when and how the world will end.
11. I want you to know these things, my child, because there are many people who will try to teach you the stories of the past as if they were true. I want you to be aware of what we have learned. I want you to understand what the thousands of scientists around the world have discovered. I want you to base your conclusions about the world around you on facts rather than other peoples' stories, beliefs, and myths.
12. "How can we know what is true, Father?" the child asked.
13. We gather data, my child. We gather from many different sources. We put our trust in evidence that is repeatable and verifiable.
14. I think it is important for you to understand this, my child, so that you will not be misled by the stories and myths that have been passed down from generation to generation by people all over the Earth. Those were stories created by ancient ancestors who did not understand the things we understand today.

Three

1. In the beginning, there was a Big Bang.^{vi vii} All of the matter that we see and know of in our universe was so condensed and so very, very hot that it was

a bubbling amorphous (shapeless) *plasma*.^{viii} Plasma is like a thick hot soup or cooking oatmeal that boils and bubbles.

2. One of these bubbles expanded rapidly, very rapidly, faster than you and I can imagine, and then in a tiny fraction of a second, there was a huge, gigantic explosion--what we call the "Big Bang." Some say this was not an explosion as we normally think of one—emanating from one place—but arising all over the surface of this rapidly expanding bubble.^{ix}
3. This expansion and then explosion, the Big Bang, marked the beginning of our universe and all that we see and cannot see in it.
4. The birth of our universe was great and terrible, explosive and violent, so explosive and so violent that it is beyond the minds of most people to comprehend. ^x
5. And so it was.
6. The Big Bang was a universe birthing from nothing, but not nothing really, a random occurrence in a plasma of energy and matter continuously annihilating one another, bubbling over and over again, here and there, until this particular bubble expanded and exploded.^{xi xii xiii}
7. This was neither good nor bad, it just was.
8. This bubble and the huge explosion of it thrust hot matter outward in all directions and became all of the matter and energy in our entire universe.
9. "But what was there *before* the bubble, Father?"
10. What, if anything, was beyond and before the beginning makes no difference to us because it did not and could not affect time or space or anything in our universe as we know it because it did not exist.
11. But there *was* a beginning, a great and powerful beginning, in which matter and time and space as we know them were born. We know this because scientists tracking the stars observe that they continue to fly apart.^{xiv}
12. The stars we see are moving farther and farther away from each other. If we go backward in time, the stars were closer and closer together until they were all in one place, the original bubble.
13. We think there may have been other bubbles as well. Maybe some of those bubbles bumped against ours. If they did, they would have left a circular residue where the bubbles touched. You have played with bubbles, yes/no? When two bubbles touch, there is a seam between them in the shape of a circle.
14. In 2015, scientists found the residue of what looks like the seam with another bubble that long, long ago was connected to our universe.^{xv} Surely we shall learn more about this as we study it. What, if anything, including the bubbling plasma, was *before* the Big Bang, we do not know for sure. Scientists still debate the existence of these bubbles, but they agree on the explosion, the Big Bang.
15. We know that the Big Bang occurred about 13.8 billion years ago.^{xvi} That is a very, very, long time ago, but we know from multiple sources that that is how long ago it was.
16. When in the beginning the plasma bubble exploded hot matter spewed outward in all directions. And there was no light; the universe was dark.^{xvii}

17. And as the matter in the Big Bang began to spread out in all directions, it began to cool very slowly.
18. And as the matter began to cool, a complex series of events took place.
19. “Wow, I can’t quite imagine an explosion that big, Father. It is almost too much to understand.”
20. Yes, my child, yes, it is. If you only understand a little now, that’s okay. Later if you read and study, you will understand more. But don’t let your inability to understand it all at first deter you. Keep learning a little bit at a time. Some people will use your inability to understand everything to confuse you. In the *Old Testament*, for example, it says that god’s thoughts are higher than man’s thoughts.^{xviii} People use that as a way of explaining what they do not understand. They say, “Don’t worry about it. God knows.” But we *can* understand where the universe came from, and we have. We may have to study it and work on it, but bit by bit, we have understood—and so can you.

ⁱ <http://www.mythencyclopedia.com/Iz-Le/Izanagi-and-Izanami.html>, May 2016

ⁱⁱ <https://www.timelessmyths.com/norse/beginning.html>, May 2016

ⁱⁱⁱ http://www.bibliotecapleyades.net/mitos_creacion/esp_mitoscreacion_14.htm, May 2016

^{iv} (Holy Bible) Genesis 1:27

^v https://en.wikipedia.org/wiki/Islamic_view_of_the_Christian_Bible, May 2016

^{vi} <http://www.space.com/25126-big-bang-theory.html>, May 2016

^{vii} Weinberg, Steven, *The First Three Minutes: A Modern View of the Origin of the Universe*, 1993, New York, Basic.

^{viii} Weinberg, Steven, *The First Three Minutes: A Modern View of the Origin of the Universe*, 1993, New York, Basic.

^{ix} <http://www.space.com/25100-multiverse-cosmic-inflation-gravitational-waves.html>.

^x Stenger (2014)

^{xi} *A Universe from Nothing*, Lawrence M. Krauss, 2013, New York, Atria.

^{xii} *Before the Big Bang: Inflation, gravitational waves and the birth of universes*, John Gribbin, 2015, Amazon Digital Services, Seattle.

^{xiii} <https://www.technologyreview.com/s/421999/astronomers-find-first-evidence-of-other-universes/>, May 2016

^{xiv} <https://www.loc.gov/rr/scitech/mysteries/universe.html>, May 2016, and multiple other sources.

^{xv} Janek (2015)

^{xvi} <http://www.space.com/24054-how-old-is-the-universe.html>, May 2016

^{xvii} <http://jwst.nasa.gov/firstlight.html>, May 2016

^{xviii} *Holy Bible*, Isaiah 55:8-9