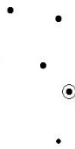


ALL THINGS CONCEIVED

**A PHILOSOPHICAL DISCOURSE
ON THE EXISTENCE OF LIFE
IN AN INFINITE UNIVERSE**

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Ksora

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HISTORY:

Mother

Atoms

Infinity

Universe

SCIENCE:

Observation

Life

Matter

Time

HISTORY

Dear Venus, joy of Earth and joy of Heaven,
All things that live below that heraldry
Of star and planet, whose processional
Moves ever slow and solemn over us,
All things conceived, all things that face the light
In their bright visit, the grain-bearing fields
The marinered oceans, where the wind and cloud
Are quiet in your presence—all proclaim
Your gift, without which they are nothingness.

: Lucretius, *De Rerum Natura* :

Mother

Ksora, the name of this publisher, the name of a star—means *princess*. Ksora is part of a double star system paired with Ruchbah in the constellation Cassiopeia. Ruchbah is Arabic for *knee* and Cassiopeia is of course *the Queen*. This places the princess Ksora on the knee of the woman who gave her life—a child on the lap of her mother. When nursing, and therefore gaining nutrients to live and grow from the mother's teat, this is the circle of life—child to breast to torso to lap and back to child. Life springing from the woman. Her children growing up to have children of their own and so forth—

the cycle of life continues onward. As you can see Ksora is a powerfully important star in the allegory of the heavens and why this author identifies so strongly with this particular stellar body. To me Ksora symbolizes the child that is us ALL—that everlasting bond of life to the universe. An interesting note about this star, this double star rather, is its relation to the North Star Polaris. These two stars along with Alderamin, the “right arm” of the King, form an equilateral triangle. The real base meaning of the word Alderamin is not “right arm” but is the *House of God*—Al-Der meaning *the house* and Amin meaning *God*. Somehow with just their naked eye, the ancients were able to tell that Ksora and Ruchbah were a double star system and named these stars appropriately for the constellation they resided in. That is pretty amazing. Or, perhaps two different cultures named what they thought was one star differently—one happened to mean *knee* and the other *princess*. That is pretty amazing. They also named Alderamin *the House of God* which is now misinterpreted as “right arm.” Maybe they could somehow also see the invisible-to-naked-eye Blue Snowball Nebula for it forms an equilateral triangle with Ruchbah-Ksora and Alderamin—a flipped on the axis version of the triangle formed with Polaris. The Blue Snowball Nebula looks as though it is a giant floating eyeball in the heavens looking down upon us. Perhaps all that is just a fascinating coincidence, a happenstance, but there are

numerous examples of profound genius and insight in antiquity. This should not be surprising as we are the same species now as we have been for a long time. Coming out of the Dark Ages, we have a big head about the superiority of modern intellect. What we have gained in technology, we have lost in wisdom. The more we rely on computerized gadgets, the less human we become. This leads to a false impression that our advanced civilization makes us advanced in all ways, especially when it comes to our sense of knowledge. Only now with all our precise computerized computations can we match the architectural sophistication of some groups of humans living around 10,000 BCE. This was around the time of the supposed fall of Atlantis¹. Göbekli Tepe—study it. Learn about this very ancient site. Discover that architecture came well before agriculture. These were hunter-gathers². They would gather and store their food in large pots buried in the ground. They were nomads who had settled down and in doing so created some of the most amazing art and architecture this planet will ever see. The people of Göbekli Tepe built on

¹Plato's Atlantis was not inspired by the eruption of the volcanic island Thera (now known as Santorini) like some scholars like to say. This is a perfect example of modern hubris—as if that great thinker Plato would be off by a factor of ten or more in time, size, and location of his sinking fabled land. Just because he was ancient, that does not make him a fool.

top of the previous buildings. However, the supplanted structures became less and less sophisticated over time. Where did this knowledge of building precision stonework go? Was it kept secret by clandestine organizations like the Freemasons or Knights Templar as some fringe historians would claim? Did this knowledge vanish over time just to have years of modern ingenuity reclaim a wisdom that was once lost? Whatever the case may be, ancient humans had a gift for architecture that is not appreciated to the degree it should be today. Certainly the Giza Plateau and Easter Island greatly attest to this fact. But Göbekli Tepe was more ancient than those famous wonders of the world and in many ways even more impressive. But do not take my word on it about Göbekli Tepe. Look it up. Verify it. Verify everything that you read

²Prior to agriculture culture, hunter-gather forgers would share everything within their community—food, shelter, clothing, blankets, sexual partners, etc. With women being in charge of their homes and their bodies, they would have the say in who they coupled with. To hoard food in these societies was considered a heinous act often punishable by banishment or death. Then the advent of farming changed all that. Suddenly there was ownership. This of course led to war, and more war. Twentieth century reportedly having the most casualties of any century. And this trend continues as property continues becoming more and more valued as human population increases and resources decrease.

here, or anywhere, please. Verify everything in life that everyone tells you. Do not take it on their authority. Do not trust any opinion on any subject, whether scientist, doctor, scholar, judge, parent, or anybody. Do not even trust your own sense of what is true and what is not. Always question what you know, or feel you know. That was how it all started for me and why I have come to write this book. I questioned everything that everyone told me and eventually found that many of the great *truths* were not true at all. At a young age, I decided to find out why we were here and what here was exactly. It is my obligation to this life—to find out all the answers to all the great questions best I could with the information available at hand. But before figuring out *Why?*, one must first figure out *What?* *What* is here? *What* is the universe exactly? I was told when I was young that the universe was created by an all-powerful deity called God. Considering everyone I knew had believed this idea to be true, I had no reason to doubt it and that was good enough for a child. As a curious youngster, I found myself diving into Greek mythology with a deep, intense passion. I even fantasized about these amazing gods and goddesses having been real at one time and that they were now trapped for eternity on Mount Olympus or scattered hiding forever among the rocks and ferns. Why not? We had this old bearded God dude creating our universe. Why could the Greek gods have not been just as real as my innocent logic

at the time. But when I mentioned this possibility to a couple friends they looked at me as if I was crazy. This meant then that mythology was only *true* when the majority believed it to be so. However, that was not the revelation that shook my foundation and made me come to question everything I would be told. No, I laughed it off with my friends and I did not seriously entertain the reality of ancient gods any longer. Then I started studying Hades, the ancient Greek version of an afterlife realm. That was when everything for me changed. Why was this Hades so curiously similar to this Hell I had heard so much about I wondered. Doing further research, I had come to find out that Hell was indeed purposely modeled after Hades. This was done in order to facilitate the pagans' smooth transition from their beliefs to the Christian version of the universe. If Hell was a lie, then how was God not a lie and the whole Jesus rising from the dead thing and so on I soon began to wonder. That is when my religious beliefs fell like a house of cards. It spread from my philosophical beliefs to my scientific ones and eventually to history and even current news event. I had begun to doubt everything I had been told. Further evidence of this *lie* can be seen in a majority of our holidays we still celebrate today. They were placed on the calendar by Christian leadership in order to usurp holidays that were already being celebrated by various pagan groups. Christmas is a notable example as it was once a winter solstice celebration

called Yuletide that was transformed into the Christian holiday we know and celebrate today—an arbitrary date for the birthday of Jesus Christ³. And then, of course, there is Easter. The Christian establishment did not even bother to

³Some scholars think that Jesus Christ never existed. Strangely enough, it is perhaps another religious sects' hatred of Jesus that speaks strongest to him having been a real person. The Mandaeans believed that John the Baptist was the messiah and Jesus was just a usurper. To them Jesus was a Judas. According to the Mandaeans, Jesus convinced John the Baptist to teach him all his secrets, then went public with his own sect spreading the secrets he had just learned. In the Qur'an, the Mandaeans were called the Sabians. Remarkably, also in the Qur'an was the claim that Jesus faked his crucifixion. These extreme variations on the character of Jesus from groups around the same time make for a more solid indication that Jesus really existed than all the followers he has amassed. Certainly these different views do not place Jesus in the same angelic light that the Christians do—far from it. The Mandaeans shared some biblical heroes like Adam and Noah, but felt that Abraham and Moses like Jesus were false prophets. The Mandaeans were not culturally related to the Hebrew, though Mandaeans had been around much longer than the time John the Baptist and claim an Egyptian origin. Ironically, the Judaic tradition distances itself from its Egyptian roots, even holding to this idea that the Hebrew language is in the Canaanite branch when it is clearly Egyptian in origin. Though few in numbers, there are still Mandaeans around today.

change the name of this pagan holiday—such audacity. But I am glad they did not change the name. It is a glaring example of what once was. A glimmer of hope that we can get back to where we belong. Get back to a deeper understanding of what is really going on; a closer connection to planet Earth; and a better understanding of our Mother the universe and the perpetuation of life that flows through her. Sorry to get all hippy-dippy on you. Let me put it another way. The ancient art of cherishing Mother Nature has sadly waned. Okay still sounding too new agey? In other words, our ancestors—long before Christianity—worshipped the universe as if she was a great Goddess that gave life. I for one do not think this was such a terrible thing at least compared to modern religious beliefs, even if completely unscientific, which understandably does seem to contradict the premise of this book. You see even if not taken literally, the universe is teeming with life. It is the female from which life springs, hence the designation: *female*. No female, no life. What is more, Easter was the name of that progenitor goddess who began our mortal existence in the universe according to mythology. The name Easter was derived from the Sumerian goddess Ishtar which was a variation of the Egyptian goddess of motherhood Isis. Oh mighty Isis! In turn, Isis was the Greek interpretation of the original Egyptian name which was something like Iset. Iset was the feminine of Set, the name of her brother and the

murderer of their other brother Osiris. Osiris also was Iset's incestual husband. Iset was deemed the first daughter borne from the Earth and the Sky. She then in turn became a mother. Her child Horus was typically depicted as sitting on the lap of his mother while nursing. This widely popular image in the ancient times was coopted by the Christians as the Madonna and Christ Child image. Again this was done as a way to help facilitate pagans' conversion to Christianity. As mentioned, Cassiopeia has her child Ksora on her lap in the heavens. This theme of mother with child on lap symbolizing the circle of life was common in ancient times. Set after killing Osiris ruled until his nephew Horus came of age and restored the kingdom. This tale of Iset and family formed in Egypt's infancy and remained popular for ages. As myths and legends were often based on real events, it is intriguing to imagine what these events could have been. Likely Iset and Osiris originally were real rulers but who they really were is perhaps lost to time. Moreover, this story for which they were the protagonists could very well be an allegory for events that took place over a very long period of time. Iset and Osiris ruled as equal—queen and king together until the evil Set usurped all the power to himself. Set represented chaos. Horus the savior represented stability. Perhaps Iset and Osiris represented rule before the *Great Fall of Atlantis*. Call it what you will. There is much evidence to indicate that a modestly advanced culture fell

into barbarous times before civilization began. Plato famously penned the tale of Atlantis from where we get the legendary fable. Though that could all have been just wild imagination, there is physical evidence as well. We are starting to find very ancient structures from around the time of 10,000 BCE in the sea (e.g., Dvārakā in Gulf of Cambay, Yonaguni Monument, Sicilian Channel Monolith). Then there is Göbekli Tepe—like I said, read about it—a genuinely remarkable site. To summarize, we went from stable control to chaos then see stability again. The difference from the initial stability to the latter—a glaring lack of the feminine authority with women no longer having the power—just the male Horus. Hero as he may have been, he was male. Perhaps he represents the masculine rule that we have seen since the beginning of this rise to civilization. The ancient Greeks believed that there were Five Ages. Similarly the Hindu had four ages known as Yuga and the Aztec had their tradition of the Five Suns. The first Grecian age, the Golden Age, was when humans lived among the gods and were completely provided for like they were living in an Eden. The next age, the Silver Age, was a time ruled by women. The age after that was the Bronze Age during which time things were pretty much in chaos. Then throughout the Heroic Age, great men started to rule again. Eventually we find ourselves in the Iron Age, a time of lies when the gods have turned their backs on us. Welcome to today. But

these Five Ages seem to parallel the Egyptian myths. During the first age Iset and Osiris ruled as equals and humans were happy. During the second age, Iset ruled alone since Osiris had died and humans were less content. During the next age, chaos ruled—the time of Set. But then during the age after that, the heroic one, our hero Horus brings humanity out of its barbarism. Then finally we land in the last age, the Iron Age, a time of deception dominated by masculine rule. Clearly the Egyptians and Greeks were not that far away and could easily have had similarities in their beliefs for this reason. But what if the belief system of people completely on the other side of the world had similarities to these Greco-Egyptian ideas about the ages of humankind? Way down at the tip of South America in Tierra del Fuego lived people called the Yaghan⁴ who had a secret. This patriarchal society had passed down this secret from menfolk to menfolk for countless generations. The secret was

⁴More on the matter of human hubris. The first Europeans to come across the Yaghan were Ferdinand Magellan and his crew. We all know Magellan as the first person known to have sailed around the world. Only he did NOT! He died before he could complete this journey. It was actually his slave, an interpreter Magellan dubbed Henrique, a native of the Malay Archipelago, who was the first known person to circumnavigate the globe. Why do we celebrate Magellan who failed over his dark-skinned slave who succeeded? Eurocentric lauding bigotry one must presume.

that long ago the women were in charge and if they ever found this out they would insist on ruling again. The Yaghan were not related to other Native American peoples. They likely did not make their way into the Americas via Europe or Asia. They were the first people in this new world and probably arrived by boats from Africa much like the Aborigines of Australia and New Zealand had once arrived in their lands. This was possibly why the Yaghan had a much different origin story than Eurasian tribes in the Americas. Interestingly enough, many Native American tribes though not related to the Yaghan were in fact matriarchal⁵ (e.g., Iroquois, Ojibwe, Muscogee, Hochunk, Natchez, Hopi, Navajo, Tlingit, Bribri, Guna, Arawak, Jivaro, Machiguenga). Was this perhaps a hold over from early times when the world was ruled by the spirit of Iset—in other words, when the world was far more matriarchal than the present and historic eras of patriarchy? Let us examine another culture who were pushed to the edge of their world having no relation to the peoples around them who pushed them there—the Picts. The early Picts were matriarchal. They dwelled in the northern most part of the island of Great Britain up until the time the Kingdom of Scotland formed. By which time their culture had integrated with the Gaels including becoming patriarchal and Christian. In addition, their spoken language disappeared. However, from various place names and surnames we still have remnants of

the Pictish language. The Scottish term for family *Mac* comes from the Picts, as well as the clan system and kilts. Each clan wears kilts of patterns and colors known as tartans that indicate the family of that clan. These tartans developed from cruder loincloths that earlier Picts wore with markings that also signified their clan. A culture of people also known to wear kin-indicating loincloths were the northeastern Native Americans called the Mi'kmaq. Right

⁵Also matriarchal are our closest living relatives the bonobos. That being in contrast to our other nearest relation—the chimpanzee. The bonobo are a gentle and loving creature by nature. Chimpanzee have this capacity of having a peaceful society and often do live this way when their environment is tranquil and not infringed upon by humans. Tranquil societies happen among the chimpanzee groups who share evenly, much like the bonobos do. This is in opposition to when the male leader chooses who gets what. Since bonobos are matriarchal, they tend to live with much less stress in their daily lives. The bonobo male though not in charge are happier because they are much less stressed than their chimpanzee male counterparts who are either in charge or most likely not. The female ran and/or sharing societies tend to be less stressful among primates. Among primitive human populations as well. Bonobos share everything openly including sex. They are famous for their promiscuity. Among ape societies (including our own) where women are not considered property and are free to choose their own mates, this tension over sex between the sexes becomes rather nonexistent. Make love, not war Apeman!

there in the term Mi'kmaq call themselves we see their name for family *Maq*, which is identical to that of the Picts. Picts and Mi'kmaq shared other similarities besides some words in common, including semi-subterranean housing, tattooing, dancing, and a matriarchal society. Another unique similarity between these two cultures separated by the Northern Atlantic was their amazing pictograms. These detailed hieroglyphs are quite reminiscent of Egyptian hieroglyphs. In fact, a few of the Mi'kmaq glyphs have the same meaning as those found in ancient Egypt. Quite an amazing coincidence. The Egyptians—also kilt wearers and body painters. But perhaps the most interesting comparison is that of the appearance of the Picts and of the Mi'kmaq—shorter and darker in complexion (much like a person from the Middle East might appear)—in comparison to their neighbors the Gaels and the Algonquin, respectively. We also had Mayans and Olmec (hmm, again we see a variant of *Mac*) in Central America with their own hieroglyphs and pyramids. Perhaps the ancient world was not as difficult to traverse as modern minds might think. Because of boats. Mi'kmaq lore states that their people had come from across the great ocean. Scottish legend has it that their land was founded by Scythians from the Black Sea region. Hence, the word *Scot* in Scotland being said to have been derived from the word Scythia. Irish myth states when their people arrived in Ireland there were already people

there known as the Fomorians who were said to have been seafarers from Africa. We also see an interesting coincidence with Mi'kmaq creation myth compared to that of the ancient Sumerians. Both involved their all-powerful god being angry with the wickedness of humans and therefore deciding to wipe out almost all of humanity with an Earth-wide deluge. According to the Mi'kmaq, only an old man and woman survived who then started reseeding the planet. The Black Sea flooded around 5600 BCE and may be the source of the Sumerian deluge story. Ancient Greek accounts stated that the Mossynoeci of the Black Sea were a matriarchal society of tattoo wearers. Interestingly enough, this happens to be near where that mythical society of women warriors the Amazons were said to be from. Also a widely held belief is that the Basques were once matriarchal. The Basques, like The Picts, were supposedly Celtic and originally from Asia. Perhaps the Picts, Basques, Mi'kmaq, and Mossynoeci were closely related but we are not going to be going down that Lost Tribes of Israel rabbit hole so do not worry about being bored with all that. That being said, ancient people traveled and traded over greater distances than anthropologists and historians in academia land tend to want to give them credit. As mentioned, indubitably ancients often traveled by boats. This was how people in ancient times were able to so readily populate the world off mainland Afro-Eurasia—to Madagascar, Malay

Archipelago, Oceania, Japan, Iceland, Azores, and of course the Americas. How did the Yaghan's ancestors get to the Americas? Not by hitching a ride on floating logs and debris or trekking across giant icy land bridges. No, most certainly they built and then sailed across the oceans with boats. Again, likely much more sophisticated than modern scholarship dare acknowledge. Remember Göbekli Tepe and how ancient humans were architecturally-speaking in many ways as precise as we are today. Likely this level of sophisticated craftsmanship when it came to architecture carried over into shipbuilding. But boats are made of wood, an organic material that will decompose over time, unlike stone, so finding evidence of the very ancients' boat-making skills is near impossible. Undoubtedly, this was how Kennewick⁶ Man's family arrived in Washington State—by boat. The DNA of Kennewick Man bones were tested and dated to around 7500 BCE. This DNA was then compared to modern people. The closest match was to that of the Ainu. The Ainu are indigenous to Japan and Russia but have been pushed out by newer arrivals. Nowadays the Ainu are found only in the northern most part of Japan and some neighboring Russian islands and they are few in numbers. Ainu who

⁶Kennewick, in that state of Washington, USA, is just down the road a little ways from where this author grew up and first spotted the star Ksora among those oh so brilliant rural night skies near the banks of the Columbia River. Roll on Columbia roll on!

may have well given us the samurai were known to have been matriarchal. Na and Tan of China; Chiang of Tibet; Ifugao of The Philippines; Minangkabau of Indonesia; Nagovisi of Papua New Guinea; Trobrianders of Melanesia; Khasi and Garo of India; Berbers of North Africa; Ashanti of West Africa; all those cultures listed earlier in this book from the Americas; and so on and so forth—all matriarchal. This is not to say that matriarchal societies showing up here and there is a sign to an ancient paradigm towards female rule as opposed to the current overly masculine period. It could be. It is perhaps more likely that isolated societies developed differently, and in such a large world such as ours, a certain percentage are going to be female dominant. Also not all matriarchies are the same. In many, women share much of the authority with men. There are many varied systems of societies and to link different groups based on something like a matrilineal family unit does not take into account many factors. Perhaps first and foremost a culture can change a major aspect about itself over night if conditions required it. Dealing with major natural disasters or the opposite, advancements brought about through prosperity, can drastically change a society. Right now we are seeing a major shift to the cosmopolitical as we are brought much closer together with the creation of the Internet. This does not mean we will switch back to a predominantly female authoritarian system, if it ever was that way, but we

seem to be heading toward a more balanced—yin and yang—planetary society perhaps like when Iset and Osiris ruled as equals analogically-speaking that is. Obviously we have a long ways to go still towards obtaining that balance. It would be intriguing to check back in on us in a few hundred years. Additionally, it is interesting to note that many ancient cultures (as well as Big Bang proponents today—more on that in the next section *Science*) believed that life came from the inanimate—spontaneous generation. The Latin word for mother is *mater*. Consequentially, it is no coincidence that *mater* is from where we get the words: material and matter. Of course, as we well know, all matter is made up of much, much smaller components—atoms.

Mediate on the Poet,
The Prime Mover,
Who rules all things from all time,
Smaller than the smallest atom,
Yet upholds this vast universe.
: Krishna, *The Bhagavad Gita* :

Atoms

Though Iset and Osiris over time became the principle primordial mother and father of the Egyptian creation story, originally they too had parents. Their parents' names were Iusaaset and Atum. Eventually the Iusaaset and Atum backstories merged with Iset and Osiris until they were all but forgotten. But in the original tale, Iusaaset created the mythical tree of life from which all life initially began. Iset and Osiris were said to have sprung from this sacred tree. In Abrahamic religions, Adam and Eve ate from the sacred tree of knowledge, meaning metaphorically that humans had transformed from unlearned foragers to cultural enthusiasts with a lust for more luxuries. The tree of life, the tree of knowledge—same tree (acacia, not apple). Now Iusaaset, the grandmother of all deities, had several variations to her name including Iusas, a name not so far off from the name Isis, i.e., Iset. On a side

note, masculine versions of the feminine name Isis include the names Asa, Joshua, and Jesus. Easy to see how similarly named Iusaaset could have had her identity usurped by the more popular Iset. Originally in Hebrew, Eve was known as Ish. The name Adam appears to be an obvious variation on the name Atum as well does the name of that mythical garden from where they ate from the tree of knowledge—Eden. It appears inspiration for Adam and Eve (a.k.a. Ish) were the Egyptian creation god and goddess Atum and Iusaaset. Another variation on Atum is a later Egyptian cult god known as Aten—and that believe it or not brings us to atomism. Certainly the word atom is based on the name Adam one would conclude, but it is really based on the variant of Atum—Aten—which also inspired the name Adam. To review, from Atum comes Aten which springs many variations including Adam, Eden, and atom. As well as another variant Edom, which originally meant *red* and *blood* and was the nickname bestowed upon Esau for trading his birthright to his younger brother Jacob for some red stew. But that is another tale. Perhaps. That is to say these ancient stories are so interwoven and rehashed that many stories from many varied cultures could very well be about the same initial events and people. Furthermore, different stories within the same culture could be about a singular situation passed down and changed over time to a point of not much resembling that original moment

in history. When similar sounding names start popping up in similar situations, they may well be about one singular moment even if they are said to be in other places and in other time periods. There is one particular period that seems to be the nexus of much folklore—eighteenth dynasty Egypt, which happened to be the height of the Aten cult uprising. Aten was the sun-disc. A god without a body—unlike the other gods. What other gods? For there was only the Aten. There were no other gods and goddesses. Just Aten. This was the decree of Pharaoh. That pharaoh was Akhenaten, father of the most famous pharaoh of our modern times, Tutankhamun. Akhenaten was Moses. This is not some wild theory. This is a fact verified by several ancient Egyptian sources and that has always been known. That famous historian Josephus even dismissed this fact sticking to his own religious prejudice by stating that the Egyptians just wanted to claim his Jewish hero Moses as their own. This means then that Moses was King Tut's father⁷; that Moses was the prophet of Aten; and that like legend has it, Moses wrote the scripture that would be the foundation to Judaism and spawn other religions now engulfing the world. This might explain why the story of Adam and Eve getting cast out of Eden seems to parallel the story of Akhenaten-Moses getting cast out of Egypt—forced to abandon his hedonistic capital Amarna because he let all those plagues happen. Interestingly enough, Josephus wrote that it was

Moses who first brought us the idea of atomism. Well, actually he wrote that it was one Mochus, a Phoenician, who was the first to develop the idea of atomism. However, Isaac Newton⁸ and many others for some reason believed this Mochus to have also been Moses. Atomism had been floating around for several centuries by the time Josephus was writing in the late first century, so it is conceivable that Moses a.k.a. Akhenaten, who may have also have been this Mochus, first popularized the idea. Though, that is also conceivably just grand speculation. The actual first known written accounts of the discussion of atomism came much later than the time of Akhenaten-Moses. Showing up around the sixth and fifth century BCE were primitive forms of atomism—that is, that in nature there consists two fundamental distinctions, *atoms* and *void*. Atoms are all that are not void. Void, or vacuum, being space absent of matter of any kind. In India, the Ājīvika and the Cārvāka schools of thought taught

⁷Do not even ask who Tutankhamun's mother was. Okay, here you go. It was his own grandmother Tiye. DNA evidence indicates Tiye. Moreover, she had celebrity like a king's mother should and had personal items like a lock of hair in Tut's tomb. None of Tut's obscure aunts and full sisters of Akhenaten (the only other possible candidates for royal motherhood) had such a close connection to the boy king. Furthermore, scholars have found many parallels between Akhenaten's court and the tales of Oedipus. Sorry, but you asked.

about this form of primitive atomism. Later schools of thought in India, like Vaiśeṣika and Nyāya, developed more complex ideas of atomism. Meanwhile in Greece, atomism became quite popular among several schools of thought. So much so that the term atomism comes directly from the Greek word *atomon* (stemming from the Egyptian word *Aten*). In Greek, *atomon* meant *indivisible* as in matter at its smallest possible components. We know through his pupil Democritus, that Leucippus coined the term *atoms*. Aristotle also

⁸Newton as we know brought us Newtonian physics and calculus but was also a known alchemist. To some this notion might bring Newton down a notch among great intellects, but this is because they are still under the misconception that alchemists were all foolishly trying to turn lead into gold. That is simply what alchemists claimed they were doing. But, this claim was a cover story in order to save their heads because what they were really doing was practicing science deemed evil by the religious culture of the time—*black magic*. This of course was more propaganda aimed at keeping the ignorant in the dark of the possibilities of science. “Magic’s just science we don’t understand yet,” Arthur C. Clarke so famously said. Many alchemists like Newton were actually science hobbyists curious about how the pyramids were built, how to harness electricity, etc. These alchemists were simply trying to discover or rediscover the great mysteries without the ever-watchful eye of The Church getting involved by simply claiming to be practicing mysticism instead of science.

credits Leucippus with first coming up with the philosophy of atomism. Accordingly, Leucippus contended that since objects moved there had to be a vacuum that existed or rather did not exist in contrast to the existence of matter in order to facilitate such movement. Democritus went on to become a great teacher of Leucippus's materialism and greatly expanded upon the idea. Although, it would be about a century or so later that Epicurus would significantly modify and popularize the idea of atomism on a much grander scale. A profoundly influential premise by Epicurus was that nothing can be generated from the non-existent. Otherwise anything could be generated from anything. That could lead to a mythological based universe were deities rule. In the deity worshipping culture of these times—Epicurus's and our own—this concept would be most objectionable by many. Likewise, something cannot pass into nothingness. Considering the law of conservation of energy—energy can neither be created nor destroyed but can only change form—sounds like Epicurus was quite accurate with this supposition. Though Big Bang supporters would certainly disagree. Epicurus believed that all matter—life, earth, wind, fire, sound, light, etc.—was made up of atoms, matter at its most reducible, and these atoms existed in space. He said that he arrived at this assumption empirically, an approach he developed from Democritus. Epicurus believed that ideas should be tested through direct

observation married with deductive reasoning. In his doing so, we have Epicurus to greatly credit for giving us the foundation to the scientific method. Epicurus went on to postulate that atoms and space are infinite by no design. Epicurus stated that the totality of all things must be unlimited. If matter was limited in a limitless void, then matter would simply diffuse over time. Obviously, one can eliminate the notion of unlimited matter in limited space, leaving matter and space to be together both either limited or unlimited. Since limited matter can be detected by its own limit, but the totality that has no limit cannot be detected, the conclusion reached must be both matter and space are unlimited and will remain so unless and until empirical evidence is presented to show otherwise. In other words, all objects rise and erode, are born and die, but the totality of all objects cannot go in and out of existence. There would be nothing to contrast the beginning and absence of the totality of all objects to, so the totality of all objects, the universe, ergo cannot have a beginning nor an end. It was Epicurus who really popularized this notion of an eternal, everlasting universe and of matter being made up of indestructible atoms moving around a vast void of emptiness. Before that, it was always some god who suddenly decided it would be a good idea to create a universe—boredom I suppose. One can just picture it—the all-mighty creator sitting around for eternity then one day the

thought comes, “Hmm, I should get a hobby.” It would be a Roman poet named Lucretius who would greatly expand upon Epicurus’s notions with colorfully imaginative verse. Lucretius kept the idea of atomism and the thoughts of Epicurus alive, for our great Greek philosopher’s writings were all but destroyed over time. Whereas, the Roman poet’s work survived—barely—to become a great influence to many. Lucretius introduced Epicureanism to the Romans in the first century BCE in his work *De Rerum Natura—On the Nature of Things. On the Nature of the Universe—On the Nature of Reality*—translate it as you like, it is an epic poem on: *All Things Conceived*. Allegorically, Lucretius evokes Venus and dedicates the poem to her for she represents the Mother Goddess, the Roman Iset, who all humankind have to thank for their existence. However, Lucretius goes on to maintain that the natural world can all be explained by reasons that have nothing to do with the gods including the existence of life. That that in fact was indeed the case—that the natural world was dictated in ways that were separate from whatever the gods were doing. Therefore, people should go about their lives in a carefree manner with no concern for the gods—for the gods have no concern for them and will not be interfering anyhow. Doubtful that Epicureans like Lucretius and Epicurus himself actually had regard for deities but they had to talk in those terms because to not believe in deities at

that time would be deemed total madness and therefore these philosophers would most certainly have gained little attention to their school of thought had they not mentioned the divine. On that godless Epicurean science, Lucretius wrote: *Nil fieri ex nihilo*. Nothing comes from nothing. This was an idea first popularized by Greek philosopher Parmenides during the sixth century BCE—the logic being that that which *is* can only be that which *is* and can never have been *not-is* then *is*. Therefore, there was always an *is* and never a *not-is*. This rudimentary logic of Parmenides paved the path to Epicureanism reasoning and led to an expansion of the idea of permanency that Lucretius so elegantly would express in *De Rerum Natura*. *In nihilum nil posse reverti*—into nothing, nothing will return. Reversely, to the first premise *nothing comes from nothing*, Lucretius wrote how the opposite was true. Hence, that which has always been will always be was a revolutionary idea put forth in his epic poem that was unprecedented in Rome at that time. Lucretius offered many visual examples of how we can infer that atoms exist by witnessing the slow wearing away of a ring, a stone, a statue, over time—the rings that get worn down and polished more and more over the years of being worn on a finger; the stones that water erodes or feet may wear down as they constantly walk over them; and statues that get smoother over many

years of people rubbing them. As for an explanation on the nature of infinity, Lucretius used a javelin for his analogy:

I have already taught you

That matter's basic elements are solid,

Completely so, and that they fly through time

Invincible, indestructible forever.

Now let us work out whether there is any limit

To their sum total; study, likewise, void,

Space, emptiness, area where all things move.

Does this have finite limits or does it reach

Unmeasurable in deep wide boundlessness?

The universe is limitless, unbounded

In any of its areas; otherwise

It would have to have an end somewhere, but no—

Nothing, it seems, can possibly have an end

Without there being something out beyond it,

Beyond perception's range. We must admit

There can be nothing beyond the sum of things,

Therefore that sum is infinite, limitless.

It makes no difference where you stand, your center

Permits of no circumference around it.
Assume, though, for a moment, that all space
Is definitely limited, what happens
If somebody runs to its furthest rim, and rifles
A javelin outward? Will it keep on going,
Full force, or do you think something can stop it?
Here is a dilemma that you cannot escape!
For either there is matter there to stop our spear,
Or space through which it keeps flying. Right?
So it was not flung from any boundary line.
I will keep after you with this argument, ask you,
No matter where you set the outermost limit,
What happens to the javelin after that?
The answer is that the final boundary line
Is nowhere in existence, there will always
Be plenty of room beyond for the spear's flight.

Every time the javelin encountered a new boundary, the javelin could be tossed further until it hit another boundary, from where it could be tossed even further beyond and this could be done repeatedly forever. Therefore the universe must be infinite was Lucretius's argument. A very logical

assessment, but Lucretius never considered the physics that may be involved in a finite universe. The current agreed upon model indicates that the *fabric* of the universe would turn in on itself. You would never reach an endpoint, but you could eventually end up back where you started. That is how a finite universe would behave—much like a möbius strip. A giant donut-shaped universe folding in on itself—like post-Roman Europe. This idea of Lucretius of an infinite universe built upon the study of Epicurus would disappear in the West during the Dark Ages—a time of religious authority playing on the fears of the masses dictating thought by suppressing the allowance of free expression. The authoritative prevailing thought of the time was that a supreme being called God formerly known as Yahweh created the universe. Then one day, someone rediscovered *De Rerum Natura*—Renaissance.

If the doors of perception

Were cleansed

Everything would appear

To man as it is,

Infinite.

: William Blake, *A Memorable Fancy* :

Infinity

Mythical tales of the existence of *De Rerum Natura* were hinted to but it would not be until the fifteenth century before a copy would resurface. In January of 1417, Poggio Bracciolini, papal emissary and rare book collector, discovered a ninth century scribed version of *De Rerum Natura* in a German monastery. He knew of the work through mention in the letters of first century BCE Roman politician Cicero—renowned Latin humanist whose writings had a profound influence on the revolutionary free thinkers of the Renaissance up through the American and French revolutions of the late eighteenth century. Poggio Bracciolini lent his copy to fellow Italian humanist and Italic script developer Niccolò de' Niccoli. Niccoli made another copy which survived and currently resides in the Laurentian Library in Florence. Niccoli's *De Rerum Natura* was the basis for many other copies that soon

sprung up and the basis for the first printed version in Brescia, Italy in 1473. However, two other ninth century manuscripts were discovered later that reside in the Leiden University Library in the Netherlands. *De Rerum Natura* was considered heresy by the Church, so reading it was outlawed during the Renaissance. One sixteenth century friar from Naples ignored this decree. But, Giordano Bruno was no ordinary friar. Besides being a Christian he also was a deep believer of Hermetic-Qabalah mysticism. With Hermetic-Qabalah there was a great emphasis on Egyptianism—ancient Egyptian traditions being considered superior to that of younger traditions like Judaism or Christianity. For the Hermetic-Qabalah follower, the nature of the divine was not separate from that of humankind—*we are God*, so to speak. We are God because God is everything. That is, God and the universe are one and the same. This idea Bruno noted himself—*All in the One*. Everything in the universe is connected and since there is the divine, the divine is connected to the entire universe and therefore the entire universe must be divine, including ourselves. The reason God was all of us as well as the rest of the universe to a Hermetic-Qabalah follower like Bruno was not out of ego—not that *I am God* sort of egomaniacal feeling one gets like when they are high on cocaine. No, rather the opposite—*God is us*. That is because God is so magnificent that God must be everything. Bruno's Hermetic-Qabalah beliefs

mixed with his Christian beliefs at a time when the world was starting to awaken to science—science that he would champion fueled by the Epicurean verses of that Roman poet Lucretius. Despite his religious convictions, Bruno would become a symbol of scientific tolerance. He exalted Copernicus and his book *On the Revolutions of the Celestial Spheres*. The University of Oxford even criticized Bruno for lecturing about this revolutionary idea of a sun-centered universe and would deny him a chance to teach there for that reason. Of course, the university would eventually have to eat crow on that one. Copernicus merely presented the math of what the solar system would be if Earth and the rest of the planets revolved around the Sun, as opposed to all the planets and the Sun revolving around Earth—the conventional wisdom at the time as we well know from our grade school lessons about Christopher Columbus⁹ sailing across the Atlantic Ocean. Bruno took Copernicus's vision of a sun-centered solar system and applied that to the other stars—informing anyone who would listen to him on the topic that the other stars were the same as the Sun and that those stars had planets that revolved around them. This notion was shocking but even more shocking to his peers was when Bruno proclaimed that those planets around those other Suns had people and animals and plants and oceans and such on them as well. And that this goes on infinitely. This because God was infinite, so must

be the universe proclaimed Giordano Bruno. He thought that he had made a profound revelation that others would clearly see too. But instead, he was excommunicated by the Catholic Church so he had to leave Italy; he was then rejected by the Calvinists so he then had to leave Switzerland; only to get rejected by the Lutherans who forced him out of Germany. After that, the University of Oxford in England rejected him. Eventually, rashly he made his way back to Italy where he was arrested and burnt at the stake in 1600 by the Inquisition for holding to his ideas. To Bruno's surprise the world did not embrace his vision of an Epicurean-inspired infinite God-Universe. A few years after his death, a man influenced by the ideas he heard from Bruno would make an invention that would prove the Naples friar was right all

⁹Of course, Christopher Columbus had thought he had discovered Asia. Hence, calling the natives of the Americas "Indians." And of course most now acknowledge a darker version of this discovery involving enslavement, rape, and genocide of the indigenous Americans that Columbus himself set the example for by participating in said acts. These actions set in motion the Native American Holocaust that involved massacre after massacre of the indigenous people of North and South America and the Caribbean by Europeans. But a much larger loss of life stemmed from a lack of immunity to Old World diseases like measles and smallpox. These days we are seeing less celebration of Columbus Day in lieu of Indigenous People's Day of the Americas.

along—that there were many worlds with their own planetary systems. That man was Galileo Galilei. What can I tell you about Galileo that you do not already know, for his fame and his impact on science are renowned? From the tale of him dropping two stones of different mass from the Tower of Pisa, proving the law of constant acceleration, to his acceptance of the sun-centered Copernican solar system that would have him spending the remainder of his days under house arrest under the watchful eyes of the dreaded Holy Roman Catholic Church Inquisition. At least he did not die by fire like Bruno had. This was due to Galileo's celebrity through his contributions to science—like that time he introduced the pendulum to the mechanics of timekeeping. Furthermore, unlike Bruno and much like Epicurus, Galileo approached science empirically. Instead of assuming that a larger object would fall faster since it is larger, Galileo tested this hypothesis and proved it false considering that the different sized objects both fell at the same rate. By conducting an experiment in order to test his hypothesis, Galileo ushered in a new approach to science. For this he is considered the Father of Modern Science. Though, it was Galileo's improvements to the telescope and what he discovered with it that would really prove to be Bruno's vindication. Galileo was the first person since ancient times to discover and announce to the public that there were other foreign objects in

the heavens. These were as you probably well know the Galilean moons of Jupiter—one of the first objects that anyone who has ever looked through a telescope still looks to. This being immediately after they look at the Moon which was Galileo's first choice as well. Galileo soon published his thesis *Sidereus Nuncius* ("Starry Messenger") in 1610 of his discoveries of the features of the Moon and of these four unfamiliar moons orbiting Jupiter. The world has never been the same since. Galileo named these new Jovian satellites after his patron Cosimo de' Medici and Medici's three younger brothers Francesco, Carlo, and Lorenzo. Fortunately, German astronomer Simon Marius around the same time also noticed these four large Jovian moons and kept the tradition of using mythological figures to name the newly discovered celestial objects rather than choosing the nepotistic route. Marius fittingly chose lovers of Zeus, the Greek equivalent to Jupiter: Io, Europa, Ganymede, and Callisto. These four lovers—the satellites of Jupiter—proved that not all objects orbit around the Earth; that the geocentric view of the cosmos was false; that the Aristotelian physics of namesake Aristotle along with the Ptolemaic Earth-centered system of Ptolemy were wrong; that the heliocentric Copernican system was to be taken seriously; and that there was an entire universe out there just waiting to be discovered. A whole entire universe was waiting to be discovered in the realm of the mathematics too—

from the infinite to the infinitesimal. In 1655, John Wallis gave us the symbol for infinity (∞) in his *Treatise on the Conic Sections*. The symbol, which looks like a sideways eight, is more like a Möbius strip. A Möbius strip's twist means that if you were to travel along one side of the strip you will end back where you started and that you can of course do for all infinity. If you had the time. The Möbius strip is quite similar to the endless knot of Tibetan and Celtic cultures that represented the flowing of time and movement throughout eternity and the wisdom derived from this knowledge. The infinity symbol itself is called lemniscate which means *ribboned* in Latin because it looks like a ribbon. The lemniscate symbol of infinity has also come to symbolize the ouroboros—a serpent eating its own tail. Sometimes you will even see the infinity symbol itself depicted as a snake biting its tail. The serpent represents the eternal, ever-renewing universe. The oldest known occurrence of the ouroboros was on a fourteenth century BCE Egyptian funerary text, *The Enigmatic Book of the Netherworld*, found in the tomb of Tutankhamun, son of Akhenaten a.k.a. Moses. Mention of the Serpent of Eternity can be found in the ancient Hindu scripture *The Bhagavad Gita*. A popular symbol among the Greeks, the ouroboros can also be found among the Norse and indigenous South Americans. The ouroboros symbol was wide-spread among the Hermetics and alchemists—who were often one and the same. To the

alchemist, the ouroboros represented the cycle of life and death. From its death, which it causes (the very chemical bonds that keep a creature alive breaking down and from that broken down organic material), springs life again. This is much like how the stars operate—from death, rebirth out of the material of the previous star. Therefore, the serpent eating its own tail makes an appropriate symbol for the eternal universe for those reasons. Subsequently, Wallis's treatise contained the mathematical expression for the infinitesimal as well ($1/\infty$). Strangely enough, the idea of the infinitesimal at the time would kick off a battle between the priesthood and the academics. Of course, the academics would eventually win as they tend to do. But when John Wallis along with his peer Gottfried Wilhelm Leibniz, architect of infinitesimal calculus, and others started working with infinitesimals there was a bit of an uproar. Some intellectuals at the time like Thomas Hobbes were unwilling to accept this new form of mathematics. Hobbes felt that we should just stick to geometry because everything made sense in geometry. He certainly would have hated quantum mechanics then. The Jesuits went so far as to ban the use of infinitesimals. When you divide the infinitesimal down to its smallest components, the width becomes zero according to infinitesimal calculus, but yet adding up infinitesimals does yield a width. These days, we consider this usage of the infinitesimal in terms of

limits. But back in the seventeenth century, this paradox was too much for some minds to handle. I am not even sure that that makes a whole lot of sense to a caveman brain like mine presently or that it really needs to because the important thing is that math won out and that these ideas of the infinite and the infinitesimal were becoming easier for the collective human mind to grasp. This willingness to be open to new mathematical ideas led directly to social revolution. Expand the mind and the mind will notice that we could all be doing better. That is just what happened as the scientific and artistic revolution of the Renaissance lead to the philosophical revolution of late eighteenth century that continues on today. In some strange mind-opening way this eventual acceptance of the infinitesimal would bring about the American and French Revolutions; inspire the great social philosophies of the nineteenth century; and allow science to become a more important aspect of our everyday life. The envisioning of these tiny particles—*seeds*—that were infinitesimally small but made up everything as Bruno that great Epicurean would see it—would heralded us into an age of science in so many multitudes of ways. This was because we wanted to actually see these *seeds*. The day would come when our microscopes would be powerful enough to observe these particles and our telescopes would be strong enough to witness far out into the vastness of the universe.

“God does not play

Dice with the universe,”

Albert Einstein.

No, He just plays

Hide-and-seek.

: Woody Allen, *Husbands and Wives* :

Universe

Getting back to the microscope for a moment. Imagine you were born an amoeba and that some scientist somewhere collected you out of your happy world of swimming around the pond eating algae and fellow single-celled organisms. Now that scientist has you in their lab to be examined. We will also pretend for the benefit of this analogy that you are self-aware. To recap, you are a tiny self-aware microscopic organism being examined by some microbiologist in some laboratory somewhere. You are not exactly sure what is going on, so you decide to determine what your situation is all about. You look around and see that on all sides horizontally is familiar pond. However, underneath you is this bright foreboding light and a hard surface. Above you is another clear, hard surface and a giant eyeball looking down upon you. If you are that amoeba with only your limited tools of perception to guide you,

you are then most likely to think (if you could indeed think) that that giant eyeball belongs to some sort of god-creature. Comparatively, this analogy is not too unlike our own situation. We are that amoeba on that slide trying to figure out what that giant eyeball looking down at us is really all about. We have about as much empirical data as that amoeba does to figure our own universe and who might be staring back at us from some distant planet. Like the telescope—that invention that us amoebas use to stare back at the giant eyeball—the microscope was revolutionary. And like the telescope, it was Galileo Galilei who made major improvements to this invention. Galileo called it, the “little eye” interestingly enough. He pointed his *little eye* towards tiny objects. However, it would be Italian Giambattista Odierna who in 1644 would publish the first major work on discoveries under the microscope in his book *The Fly’s Eye* (translated), which covered exactly that—the internal workings of the living tissue in a housefly’s eye. The first eye that peered down the microscope at microscopic creatures was Dutch scientist Antonie van Leeuwenhoek. In 1676, Leeuwenhoek made his observations of microscopic organisms public. His observations were met with grand skepticism. The Royal Society of London rejected his wild-eyed crazy notions about this tiny world within our own. But Leeuwenhoek’s persistence paid off and by 1677 he was credited with ushering in the world of microbiology. He

was the world's first microbiologist and forever known as The Father of Microbiology for his findings. More importantly, Leeuwenhoek's was the first eyeball in history that an amoeba in turn ever experienced looking down upon its kind. And that amoeba if it could have flipped out, it would have flipped out—because it just came face to face with its God. And you would too if it happened to you. That is the sort of party, a single-celled organism would have to cry at—the realization that you are just an insignificant microorganism in an infinitely vast universe. Around that time of Leeuwenhoek's discovery, the Americas were rapidly becoming colonized by Old-Worlders. One hundred years later in 1776, the United States of America would gain its independence from the British. Boston Tea Party and such—at a time and place where scientific and intellectual study would mix with political ambitions in people like Benjamin Franklin, Thomas Jefferson, and Thomas Paine. Starting with *The First American*, that polymath Franklin. Franklin was noted for his publications like *Poor Richard's Almanack*; for being a statesman, Postmaster General and Ambassador to France; for his inventions including the Franklin stove, bifocals, a modernized glass harmonica, the flexible catheter, and the lightning rod; and for being a scientist—he charted the Atlantic Ocean's Gulf Stream and made major contributions in the realm of electricity, particularly with his discovering the

principle *conservation of charge*. (More about the importance of *conservation of charge* in the next section *Science*.) Thomas Jefferson like Franklin was very much a polymath. Of course, most famous for being the third President of the United States of America, making the Louisiana Purchase from France, and writing the first draft of *The Declaration of Independence* that Franklin helped edit. However, perhaps Jefferson's most important contribution was that of *the voice of the common man*. He opposed the Alien and Sedition Acts of President John Adams¹⁰, the eighteenth century's equivalent to today's Patriot Act—both acts being very much against the very principles for which the United States of America was founded. If it was not for this voice of the common man in Jefferson, it is unlikely that the United States would have never enjoyed the level of individual freedom that it has had. Not that this country has yet to command the level of individual freedom people should have. And, this is important to mention here, because if not for men like Jefferson, individual expression and free-thought might never have flourished. Which brings us to that champion of free-thinkers Thomas Paine and his notable authorships: *Common Sense* in 1776 leading the charge of the American Revolution against the British; *Rights of Man* in 1791 which included a defense of the French and their revolution; and *The Age of Reason* in 1794, a critique on organized Christianity. Paine's

rejection of any allegiance to Church doctrine made him many enemies among the religious and a champion among free-thinkers ever since. The grand republic that these champions of the American Revolution helped establish, at least in principle, would open up the world to some of the greatest writers we would ever know. Names like: novelists from Nathaniel Hawthorne to Samuel Clemens; poets from Walt Whitman to Emily Dickinson¹¹; and transcendentalist essayists Ralph Waldo Emerson and his

¹⁰Interestingly enough, despite or because of his Alien and Sedition Acts, it was John Adams who coined the phrase “tyranny of the majority.” As that noted French philosopher Alexis de Tocqueville quipped in his 1835 book *Democracy in America* after traveling across the USA: “In the United States, the majority undertakes to supply a multitude of ready-made opinions for the use of individuals, who are thus relieved from the necessity of forming opinions of their own.” Actually, Tocqueville had many great quotes from his book about America to choose from. Another great figure to quote is that polarizing personality Ayn Rand who had this to say about the matter: “Individual rights are not subject to a public vote; a majority has no right to vote away the rights of a minority; the political function of rights is precisely to protect minorities from oppression by majorities. And, the smallest minority on earth is the individual.” A rather empathetic insight for a person renown for her cavalier remarks.

protégé Henry David Thoreau. Thoreau would write one of the most influential pieces of all time *Resistance to Civil Government* in 1849. I read this essay as a teenager on assignment at the prep school I attended included with Thoreau's *Walden* first published in 1854. *Walden* detailed Thoreau's experiences living away from society which would inspire many through the years to *get back to nature* so to speak. The essay had since been renamed to *On the Duty of Civil Disobedience* to *On Civil Disobedience* to just *Civil Disobedience*. But whatever its title is it was perhaps one of the most influential pieces of writing I would ever read. *Civil Disobedience* exemplified everything I had already believed individual freedom stood for by that young age. *Civil Disobedience* also spoke about freedom as not being a privilege but as a birthright for everyone and it was our civil duty to ourselves to stand up for that birthright, allowing no authority to hold it over us. *Civil Disobedience*

¹¹Whoa, look there! Ayn Rand and now here we have mention in the body of the book itself of Emily Dickinson—women making a major contribution to the historic dialog finally being evoked in this discussion. Please note that as being the glaring institutionalized crime it is and not something that is in any way intentional on this author's part. Though it could undoubtedly be argued that I could have forced a mention of brilliant minds like the poet Sappho, the composer Hildegard of Bingen, or the chemist Marie Curie into the essay. Okay, I suppose I just did. That is so meta.

was the work that most influenced Mahatma Gandhi in his fight for Indian independence in South Africa, and of course later in India where he famously led his country to independence from the British through passive resistance. These ideas of Thoreau of non-violent resistance in *Civil Disobedience* also were a huge influence on Martin Luther King, Jr. and the African-American Civil Rights Movement. This revolution from tyranny that the world has come to see in many places throughout the world over the last couple centuries had certainly seeped into the realm of scientific study. Much of the foundation of the Industrial Revolution lie in the many amazing inventions of this early American era from Eli Whitney's cotton gin¹² in 1794 and James Watt's steam engine in 1781 to Alexander Graham Bell's telephone in 1876 and Thomas Edison's electric lamp in 1880. In addition to these huge advancements in the mechanical sciences, the world of natural science saw profound discoveries that would change the way we view our universe.

¹²Of course the cotton gin—invented on the ancestral rice plantation of my fifth great grandparents General Nathanael Greene and Catharine Littlefield—led to greater industry in the southern United States which meant an upsurge in slavery that eventually came to a head with civil war. Though as a result of that conflict, slavery became outlawed and there were huge advancements in the field of surgery. But at what a cost.

First off, dinosaurs!! The inspiration for dragons! Still I am a kid at heart. Still I am profoundly fascinated by those terrible lizards. Of course, they were not lizards at all. Turns out dinosaurs¹³ and their flying cousins pterosaurs were much more warm-blooded than reptiles; could cross their limbs unlike reptiles; and had gizzards like birds and crocodiles (proto-dinos). Dinosaurs would have been more colorful than reptiles tend to be as well—much like birds and mammals. In fact, birds are a branch of feathered dinosaurs known

¹³Mammals ruled the planet for some time before dinosaurs took over. But as we know by the mere fact that this mammal is typing this essay and not some dino-descendent, that mammals came back triumphantly. Now watch, some bird eventually will usurp the mammals someday—ok unlikely but they do reign above where we humans require machines to fly. So these mammals that ruled prior to the dinosaurs are known as cynodonts. They were furry, head-butting, milk-producing mammals. And, like the platypus and the echidna, they laid eggs. Odd as they may have been these cynodonts were our mammalian ancestors so they deserve our respect and credit for their place in the faunal history of planet Earth. Truly the order of ages goes: The Age of Rocks; The Age of Oceans; The Age of Microorganisms; The Age of Plants; The Age of Invertebrates; The Age of Fishes; The Age of Amphibians; The Age of Reptiles; The Age of Cynodonts; The Age of Dinosaurs; The Age of Mammals; The Age of Humans; The Age of Robots.

as theropods. The actual term that includes birds, dinosaurs, and pterosaurs is *avemetatarsalians*, but that is rather a mouth full so perhaps a simpler equivalent *pan-aves* meaning “all birds” works better. Expand that family tree to include water-lovers crocodilian and plesiosaurs (like Nessie, the mythical Loch Ness Monster), and we get the term *archosaurs*. Plesiosaurs also not reptiles. Where had these giant monsters, dinosaurs (land rovers), pterosaurs (flying beasts), and plesiosaurs (sea creatures), come from and what happened to them people began to wonder. Ideas like that of birds evolving from dinosaurs for instance were beginning to take shape in the eighteenth century. That is, the idea of species evolution—that complex life-forms developed over time, for example, humans were primates that evolved from other extinct primates¹⁴. All that evolution rap was about to make an enormous impact on the way humankind viewed itself thanks to the original Chuck D, i.e., Charles Darwin. Darwin ever since has been seen as public enemy number one by a vast number of people, especially among the religious minded. But as we all know Darwin’s observations about evolution have prevailed, albeit well modified. The advances in science did not stop at species evolution and the Industrial Revolution for we would also see breakthroughs in mathematics and physics that would change the way we view the entire universe. Much movement forward, some backwards. But

mostly forward, starting with that great mind of all time Albert Einstein. He was right about most things. However, these days that is not the general consensus. This is because Einstein doubted very much that the universe was expanding out of a Big Bang. Secondly, famously Einstein debated Bohr on the nature of quantum mechanics. These days Bohr's quantum mechanics has won out. Quantum mechanics is one of the most tested theories in all of sciencedom. We build giant particle accelerators in Switzerland so particle physicists can smash particles together to see what happens at the quantum level. We have that famous thought experiment that helps explain quantum mechanics through the use of an analogy about a cat that is either dead or

¹⁴Where did humans evolve from more primitive primates? On the savanna? Unlikely as we are not thick furred mammals like those living on the savanna. In fact, our fur, or lack thereof rather, is more similar to aquatic mammals such as walruses and hippos than other primates or any mammals living in hot grassland regions. Our fat deposits, the way we breathe, our amphibious births, and hyper love of water all lend credibility to the possibility that our missing link evolved by some large water reservoir. The idea of the aquatic ape was first proposed by German pathologist Max Westenhöfer in 1942 and then by English marine biologist Alister Hardy in 1960. However, it was author Elaine Morgan who really championed this hypothesis from 1972 up until her passing in 2013.

not dead at the same time. If you are a house cat and your master's name is Schrödinger then best of luck to you. Sensing that something was amiss about Bohr's model, in 1959 a young upstart named Hugh Everett III suggested parallel universes which Bohr's dismissed outright. During the 1960s, Everett's multi-dimensional universe started gaining popularity. I am guessing that had something to do with the emergence of LSD, because this notion of many universes occupying the same space is complete utter mental fantasy requiring a very vivid imagination. Everett's ideas did indicate however that Einstein was correct all along that there was something rotten in Denmark about quantum mechanics—certainly something was completely wrong with Bohr's model. In addition, to his opinions on quantum mechanics, Einstein was correct about the Big Bang being incorrect as well. This is much of what the core of this book you are reading is really all about: To vindicate Mr. Einstein on these points. Where does a novice like myself come off having any opinion about such matters whatsoever? Truly, this whole piece is the foolish ramblings of a madman—a poet, a philosopher, displaced in his moment in history. A time where the only true voice is the voice of peer approved academia. That would certainly be the ideal I agree. But humans are more fallible than we like to think. Academia often is just humans making more mistakes than they like to admit. My engineering degree certainly does

not qualify me for much. A mammoth amount of self-education also falls short of a qualification on the topic of astrophysics and quantum mechanics. You should just stop reading now. That would be the wise course of action. For how likely is it that an undereducated, self-studied person could ever make an impression in the realm of intellectual thinking? If one could only ask Einstein a question like that, he would likely inform you that he himself was not very good at math, for example. Also, as smart as he was, he was not the smartest person in the world. Many of his peers had higher IQs in fact. However, Einstein was an ardent theorist. He would think and continue to think a problem through until he would have his answer. Sometimes he would work on a problem for years. That is the key. It is not about how smart you are necessarily or how educated you are per se. It is about working through a problem and not giving up on it no matter what until it is solved. If more resources and information were needed that would provide help, then research until that data is at hand. Add everything to the pile and remove that which does not fit as you go until finally the answers are all right in front of you. The next section *Science* will lay out all the great questions our great minds are still working on and resolve to solve them best that can be done. It will discuss the nature of life, the universe, and everything. Don't panic! Bring a towel. There will be a couple of mathematic formulas within, but just a

couple, and the ultimate answer is not 42. There will be a discussion on the issues of modern science and in particular the Big Bang and quantum mechanics. You are asking what makes me an authority. I put in the time. I did the research and researched and thought and thought some more up until all these questions were answered—and answered well. These answers one can vet. Please do check the ideas within yourself. Do not take the insane pontifications of a fool's word on anything but in kind do not take any authority's word as final either until you have looked into matters yourself. Then do not even take yourself as the final authority until you have well vetted your views. This book investigates the history of humanity. Our Faiths and our Truths. The Infinite and the Finite. Eternity and the Big Bang. Evolution and Creationism. The Gods and the Goddesses. Mother Nature and the Cycle of Life. I sit upon the lap of my queen, the planet Earth. She provides me nutrients and I provide to her my life—my breath, my excretions, my decay. This bond is a gift and my gift is to see past the walls of academia, the clouds of religious dogma, and the vast wasting of idle time to provide the answers to *What?*, and of course *Why?* This work is an accumulation of my thoughts over a half lifetime. This—my prime mover. I have provided a significant *History*. Now to provide an important *Science*.

SCIENCE

Science

Is the captain,

And practice—

The soldiers.

: Leonardo da Vinci, *Notebook XIX* :

Observation

In truth there will be plenty of history mentioned in this coming half of the book as it pertains to the topic of science. Also, there will be some math in the following chapters but minimal—a couple formula tops. Nothing you cannot handle. First an exploration of the history of the scientific method. However, before that, a thought about observation. Observation is consideration. Those who pay attention to the details care. Why they care is debatable but they do. Those people who talk and talk and rarely listen and do not care if they are letting others join the conversation are outwardly displaying that they only really care about their own needs. Non-verbal honesty. But all of us just care about our own needs to an extent. We are just animals, barely intelligent, focused on surviving—barely out of the woods as foraging creatures. Deep down, men long to hunt by the moonlight again. Perhaps this is why it is men who tend to gravitate towards spending long

hours with toy train sets and, these days, video games. It is all tied into planning and executing *the hunt*. Man misses the Moon. This is part of the reason why people get nostalgic for the Golden Age. It is not about living without modern medicine. It is about the freedom of a simpler life. Everyone having their place. Womenfolk being in charge of the roost—menfolk bringing home the kill. And if you were born male yet wanted to identify female or vice-versa, that was fine. No modern day hang-ups. No 40-hour-per-week job with overpriced medical benefits (if you are lucky). I guess it beats being a soldier at war. Perhaps not too surprisingly it was ancient commerce, medicine, and warfare that caused us easily-distracted humans to start doing things like forming mathematics and thinking empirically. In the East, in sixth century BCE Sun Wu is credited with writing *The Art of War*. Sun was reportedly a military general during the time of the Warring States period in China. Better known as Master Sun or Sun Tzu—his *The Art of War* became widely read during that period and has remained a brilliant strategy guide up through modern times for even the most contemporary of warfare. Sun's *The Art of War* lays out all conceivable actions a commander should take to best lead an army. For every situation with a large armed force whether in combat, in transit, or idle, Sun presented a logical step to take. Sun reached those conclusions through experience—through observation. A century later

during the fifth century BCE in China, we have one Mozi also known as Master Mo a.k.a. Mo Tzu. Mozi was the founder of the school of Mohism. This is during the Warring States period so undoubtedly Mozi read *The Art of War* and this must have influenced the Mohist pragmatic approach to life. The Mohist lifestyle was in opposition to the other two major schools of the time that would both eventually usurp the Mohism following entirely—the Confucianism traditionalists who rejected any type of change and the Daoism yin-yang believers grounded in the metaphysical, not in reality. In contrast the Mohists were logicians and mathematicians to the point of rejecting music and the arts. Trivial aesthetic pursuits were considered of no use to the Mohists. This was much the same reason they rejected war¹⁵, since it was of no use to a person in pursuit of a productive life. However, this was not out of compassion, but out of practicality. For Mohists were hired during the

¹⁵War tops my list of worthless human endeavors closely followed by poverty and then traffic. These are examples of what I like to call collective idiocy. It takes a community of people or more to have warfare, allow others to starve, or get on the poorly planned road systems during the most active parts of the day. If the majority was intelligent, we would never have to deal with such travesties. But we are just animals. A strange mixture of genius and stupidity—everyone. We certainly do not need to go off to war, horde, and work all at the same time. But we do!?

Warring States period as skilled siege engineers. However, after the Qin dynasty was established and warring declined, so did the Mohists. One of the contributions the Mohism school of thought made was *the point*. (*You don't have to have a point, to have a point!*) The point being the part of a line that is no longer divisible. This was very similar to Greek contemporaries Leucippus and Democritus and their ideas on atomism. As mentioned in the previous section *History*, Democritus and his follower Epicurus were the first in the West to really emphasize approaching unknown matters with reasoning. This reasoning included taking observations and using them to reach conclusions instead of just relying on intuition and superstition. A contemporary of Democritus and fellow Greek Hippocrates of Kos would come to be known as the Father of Western Medicine for his contributions to the field of medicine. Hippocrates gave us the Hippocratic Oath. This oath is required of all who practice medicine even today—a bond the doctor has to treat all patients, to never harm, and to always heal best they can. Hippocrates, believing that diseases were caused naturally and not by the gods, treated medicine as a discipline and created the first major school of medicine. Hippocrates's logical approach to medicine had a huge impact on how we approach all disciplines. Medical diagnosis have been documented up to a couple millennia earlier in Egypt. Notable is the Edwin Smith Papyrus

that details what surgery to use when treating various types of trauma. This papyrus dates to about the seventeenth century BCE. But it was Hippocrates who made medicine a profession in its own right. Hippocrates's approach to documenting his science would be mimicked by others including Arabians Abū 'Alī al-Ḥasan ibn al-Ḥasan ibn al-Haytham, Abū al-Rayhān Muhammad ibn Ahmad al-Bīrūnī, and Abū 'Alī al-Ḥusayn ibn 'Abd Allāh ibn Al-Hasan ibn Ali ibn Sīnā many years after the fall of the Library of Alexandria¹⁶. Not long after the first millennium when Europe was having its Dark Ages and Arabia was not, brilliant minds would make great strides in cataloging the scientific world. Ibn al-Haytham was best known for his contributions to the study of optics and ophthalmology early in the eleventh century with the use of heavy observation and experimentation as a basis for rational conclusions. At the

¹⁶The Library of Alexandria did not burn down as popular legend has it but was slowly disassembled over time for econo-political reasons. There were accounts of small fires here and there, some started out of protest, but none that ever destroyed the entire library or even a significant portion of it. While we are at it, the nose of the Great Sphinx on the Giza Plateau was not blown off by Napoleon's army or any army in modern times, but instead was chopped off by a religious fanatic—reportedly a Sufi Muslim in 1378 who was upset that locals were giving the monument offerings. He was hanged.

same time, Al-Bīrūnī was making great strides in the realm of mineralogy, mechanics, and astronomy with his experimental methodological approach to scientific study. Ibn Sīnā cataloged medicine in his works *The Book of Healing* and *The Canon of Medicine* and wrote on a great deal more topics than just medicine—from math to philosophy to physics to poetry. Ibn Sīnā criticized the Aristotelian inductive approach to science. That is, with inductive reasoning if it is probable then it is probably right as opposed to deductive reasoning where only with absolute certainty do we reach a conclusion. The three: Ibn al-Haytham, Al-Bīrūnī, and Ibn Sīnā, and the Arabic world during that time greatly approved on the scientific method and kept science alive until Europe was able to shake the medieval mindset. In the early thirteenth century in England, the Bishop of Lincoln, Robert Grosseteste had a great deal to say about Aristotelian physics. Clearly, Aristotelian science being the preferred science of medieval Europe is the reason we have the term *the Dark Ages* today. Grosseteste was a free thinker for the times and recommended experimentation as part of the scientific process for discovery. Grosseteste's writings as well as the works of the Arabian thinkers mentioned had a huge influence on another thirteenth century English scholar, a Franciscan friar named Roger Bacon. This English monk put all these aforementioned great thinkers' ideas together to form what truly is the real

basis for the scientific method. Bacon suggested a repeated cycle of observation, hypothesis, experimentation, as well as the need for independent verification of these processes. Bacon detailed everything about his experiments so that others could repeat and independently test his results. Of course being in the Dark Ages still, many thought Bacon was practicing witchcraft, so it would take until relatively modern times before he would get credit for his role in developing the scientific method. Bacon argued against scientific decision-making based on tradition and whatever the authority of the time said it was—scholasticism. Scholastic philosophy was prevalent during the era that Roger Bacon lived in. Noted theologians like thirteenth century Italian friar Thomas Aquinas were getting much of the attention during that time. Interestingly enough, it was another prominent figure of scholasticism William of Ockham who during the fourteenth century established that famous principle known as Ockham's razor. This is a logic based principle where the experiment with the fewest assumptions is better and more likely to be true than that of the more complicated premises. In simple terms, the simpler answer tends to be the right answer. Though not a perfectly flawless idea, Ockham's razor does by and large apply to everything. Actually, many others including Grosseteste and Aristotle had similar principles to Ockham's razor. William just gets the credit in modern times.

When we test Ockham's razor against the two prevailing views of the universe, Infinite and Big Bang, we can easily see which answer is more complicated. Has the universe always been and always will be or has the universe relatively recently been born, is expanding, will die and be born again and is mostly made up of matter that we cannot yet detect? Hmm, good question. One we will consider more here in a bit. As Europe approached the Renaissance, the continent's output started tending more towards a scientific nature than the common metaphysical one. In the beginning of the Renaissance we see this emergence of great artists with an eye for realism like Italians Leonardo da Vinci¹⁷ and Michelangelo. And great philosophers.

¹⁷Leonardo considered the *Mona Lisa* to be his most prized work. A piece he was said to take with him as he traveled and that he made many alterations to through his years. It was a painting of a friend of his and unlike his other works was not commissioned for money. In other words, he actually made the painting for his own pleasure, which was a bit unheard of for a person making a living on their art through nobility during the Renaissance. Sometimes she is smiling, sometimes not, depending on the lighting and angle of the viewer. Depending on that viewer's mood, she reflects their current spirit of mind as well. Subtle and enigmatic, the *Mona Lisa* is magical much like the computer design art of those *Magic Eye* books, though she predates computers by five centuries.

We have the sixteenth century political thesis by Italian diplomat Machiavelli, *The Prince*, on the best and most practical ways a ruler should rule. Much like how Sun Tzu's *The Art of War* lays out the best ways to handle any situation with a large army, Machiavelli's *The Prince* explains the wisest choices a ruler has to make in any various political situation. Criticized as being cold and heartless, *The Prince*, much like *The Art of War*, is really quite objective as it explains the likely results of each action the ruling prince could make. *The Prince* in many ways is one of the first truly modern philosophical treatises as it talks in terms of reality as opposed to abstract idealism. The plain truth, sometimes brutal truth, of *The Prince* set a precedence of the truth in science that was about to explode during the European Renaissance. Let us consider Rene "I think therefore I am" Descartes and his philosophical treatise with the hefty title *Discourse on the Method of Rightly Conducting One's Reason and of Seeking Truth in the Sciences* published in 1637. Descartes's discourse contained the first popular publication of the scientific method and would widely influence his contemporaries. Francis Bacon touched on similar ideas in his 1620 publication *Novum Organum Scientiarum* meaning New Instruments of Science as well did Galileo Galilei's influential 1638 *Discourses and Mathematical Demonstrations Relating to Two New Sciences*. Later on in the seventeenth century, the Royal Society was established in London.

Essentially, a scientific peer review committee formed as a coming together of great scientific minds and as a way to establish truth in science. The Royal Society did a great deal to establish rules for conducting scientific experiments and for reviewing and testing them. Renowned chemist and first-string Royal Society fellow Robert Boyle—best known for Boyle’s Law published in 1662 that the pressure and volume of gas in a closed system remains constant—stressed the importance of repeatability in experimentation. Test and retest using the same exact conditions over and over again. Turn of the eighteenth century Royal Society president Isaac Newton¹⁸ had his famous laws of motion. Though these laws did not contribute directly to the development of the scientific method, they certainly did contribute greatly to our understanding of the physical world and helped put a stake through the heart of Aristotelian physics once and for all. In fact, many have debated whether Newton understood his second law of motion the way we do now. He did not call it force equals mass times

¹⁸Isaac Newton had an apple fall on his head. No, not really. Newton saw an apple drop, maybe, and that influenced his thoughts on gravity, supposedly. However it came to be, one thing is for certain, the apple story he embellished. Turns out the whole *George Washington chopping down the cherry tree* story in which the young future first president of the United States could not tell a lie was in itself a lie.

acceleration by any means. That was later inferred. But thanks to his laws of motion we now live in a Newtonian universe as opposed to an Aristotelian one. Moreover, we can add Albert Einstein's contributions to the understanding of physics—namely that space and time are as inseparable as Bert and Ernie. We live in a Newtonian-Einsteinian universe. I argue that that Newtonian-Einsteinian universe applies to the quantum as well as the universal, which I will delve into more as we approach the end of this book. This is not the prevailing scientific community's overall view of the universe by any means. The prevailing view is that we are living in a Bohrian-Hawkingian universe. It may seem like I am trying to turn the clock backwards, however these new ideas are simply wrong. When Niels Bohr investigated the quantum world, he saw something completely different than Albert Einstein. Bohr saw random, rather unexplainable chaos—not order. Then when astronomer Edwin Hubble looked out into the universe, he saw red. The further an object is from us, the more the light from that object shifts to the red. Hubble formulated the Redshift Distance Law that he introduced in 1929. Contrary to popular belief, Hubble like Einstein did not think that this redshifting meant that the universe was expanding. Whenever you hear someone claim that Hubble looked out and saw an expanding universe that is simply just wrong. That is propaganda. That is not what he saw, or even

what he thought he saw. He likely thought it was wise not to jump to such conclusions. The idea of the possibility of a singularity based on Einstein's general relativity came from Karl Schwarzschild in 1915. Schwarzschild foolishly joined the German army during World War I and died the following year of a rare skin disease he had contracted while in the trenches. In 1927, it was French Jesuit priest and astronomer Georges Lemaître who first proposed that the universe was expanding and that the universe had originated from a "Cosmic Egg." Lemaître first derived Hubble's law (not Edwin Hubble who many mistakenly attribute this law to because it is named after him and his discoveries) and gave us Hubble's constant. Lemaître called what would later be known as the Big Bang—"the hypothesis of the primeval atom." In 1933, Lemaître realized that Schwarzschild's object was an unphysical coordinate singularity. Meaning that the singularity within the Schwarzschild radius had no coordinates—longitude and latitude could not apply. It was an unphysical object that was outside the Newtonian universe and needed a new set of physical laws. In 1939, Robert Oppenheimer¹⁹ and George Volkoff based on the work of Richard Tolman, as well as the earlier work of Subrahmanyan Chandrasekhar, predicted neutron stars. Oppenheimer and Volkoff went on to predict that these neutron stars could form *black holes* upon collapsing in on themselves. In 1949, astronomer Fred

Hoyle would jokingly dub Lemaître's Cosmic Egg, "the Big Bang" on a BBC radio broadcast and the term stuck. Stephen Hawking would go on to predict that this Big Bang was just the outpouring of a black hole and this would explain the equilibrium of how we are able to lose information from the universe through black holes. This would be because information lost to the universe through a black hole forms a Big Bang in a universe elsewhere. That sounds all fine and dandy. However, like I said before in comparing the two most

¹⁹Robert Oppenheimer is better known as the Father of the Atomic Bomb. Oppenheimer was said to often give away copies of the ancient Indian scripture *The Bhagavad Gita* as gifts. Oppenheimer claimed to have thought of a line from *The Bhagavad Gita* at the first atomic bomb detonation "Now I am become Death, the destroyer of worlds." This it seems he was either paraphrasing or he had a much different translation than I have. I would like a copy of his translation. When asked if his was the first atomic bomb, Oppenheimer replied "in modern times." Likely he was referring to the flying machines mentioned in the *Mahābhārata*, the Sanskrit epic about the Kurukshetra War that contained *The Bhagavad Gita*. These flying machines, vimāna, could unleash terrible weapons of fire and smoke that were thousands of times brighter than the Sun, could level villages, burn people, make hair and nails fall out, make food inedible, and darken out the sky for many seasons. Sure rather sounds like an atomic weapon. Spooky.

likely states of the universe Infinite versus Big Bang and applying Ockham's razor, Infinity wins. Einstein had a similar saying to Ockham's razor that goes "Everything should be kept as simple as possible, but no simpler." Can we apply the Big Bang theory to Einstein's razor then? Is the Big Bang-Black Hole model of the universe as simple as we can get without getting too simple? Too simple here being that the universe is infinite. And how simple is the Big Bang-Black Hole model, really? Can information actually be lost from our universe flowing into another? According to findings in 2014 by cosmologist Laura Mersini-Houghton, the universe cannot lose information. That it would be a paradox for black holes to exist. The implications of Mersini-Houghton's calculations are that black holes simply cannot exist. This also would mean that the Big Bang universe was false as well. Who is Mersini-Houghton to go against the tried and true findings of Stephen Hawking? Of Robert Oppenheimer? Of Georges Lemaître? And other renowned *men* of science? And decades of data? Laura Mersini-Houghton is from Albania. And *she* is a woman obviously. But I state these facts about nationality and about gender because unfortunately these can be seen as prejudicial marks against a person's credibility—*still!* Not to mention not having the name of a Hawking or a Bohr. Even if her peers in cosmology and astrophysics repeat and accept her findings, it may take years for the public to follow suit. And time would

be needed for the academic world to adjust to these new scientific revelations because entire careers are based on black hole cosmology. There is going to be a great deal of opposition. And this is where peer review fails. Stephen Hawking, for example, is a brilliant man. Few could argue against that point. So brilliant that he is obviously more brilliant than you so you should just agree to whatever Hawking states because it is over your head any way. That is the unfortunate downside of peer review. Peer review is subject to abstract reasoning. Peer review can be greatly influenced by economic and political reasons too. Whenever money is involved, and money is involved here, there is an inherent conflict of interest. Whenever careers are on the line, and careers are on the line here, there is again an inherent conflict of interest. A recent purely mathematic-based study of peer reviewed articles published in credible science journals discovered well over a hundred articles that were complete nonsense. How did so many fabricated findings get by so many educated gatekeepers of science? The buddy system is in place truly and articles get accepted often just because the person publishing the work is accepted. However, even more to the truth would probably be that people do not want to look foolish so they say that this person surely knows what they are talking about so it must be legitimate scientific study. That is the unscientific downside to peer review. Peer review needs to get

back to the basics and include more independent observation. Others need to now independently confirm or reject Mersini-Houghton's findings on there being no black holes. I doubt many will run to the cause. Also, I wonder how much of Mersini-Houghton's view of cosmology rings true. Like many, Mersini-Houghton has trouble with Bohr's model of the quantum universe, however she turns to Hugh Everett III's multiverse as her model. This is to be expected since the only major opposition to Bohr's quantum mechanics happens to be Everett's theories. Perhaps Mersini-Houghton is not familiar with the Pilot Wave theory or recent findings that seem to indicate that this old view of the quantum should be dusted off and reconsidered. Nor would it likely matter if she did because she has built her career on Everett's multiple universe model. Not to call her out in particular for this is part of the problem inherent with peer review. One has to already agree with the model of the universe to sign off on elements of it. The quantum simply involving reality only instead of parallel universes is strangely enough going to be a tough sell. However, the Pilot Wave theory demonstrates just that—the possibility of a quantum universe that is just one universe where particles are not popping in and out of other universal realms that we could never detect. Convenient when some of your theory contains undetectable elements—like dark energy and multiverses. According to quantum mechanics, particles only choose

were to be when being measured. This is based on the concept that they are both particles and waves at the same time. The double-slit experiment first demonstrated by English polymath Thomas Young²⁰ and published in his 1803 *Experiments and Calculations Relative to Physical Optics* demonstrated that light particles appear to behave like waves. In reality, particles are only particles and waves are only waves. However, particles ride wave fronts. Particles are not the wave but just a passenger piloting the wave. When the

²⁰Thomas Young was the first to make any real headway on deciphering the Rosetta Stone. The Rosetta Stone was a 196 BCE decree from Pharaoh Ptolemy V in three scripts: Egyptian hieroglyphs, Egyptian cursive, and ancient Greek—the language of Homer. This decree was in dual languages because that Grecian Ptolemaic dynasty spoke Greek and not Egyptian. It would be French scholar Jean-François Champollion in 1822 who made the first major decipher triggered by the names on the partial stele *Ptolemy* and *Cleopatra*. Cleopatra I was the name of Ptolemy's wife—not to be confused with Cleopatra VII of Julius Caesar and Mark Antony fame. Cleopatra VII unlike her Ptolemaic predecessors learned the Egyptian language and was considered by her subjects to be the embodiment of Isis—*Nea Isis* they called her. Unlikely that Cleopatra and Mark Antony took their own lives by asp and sword, respectively. That is undoubtedly just a purely poetic account. Augustus Caesar had them killed. Helena never went to Troy. Edward de Vere, 17th Earl of Oxford, wrote the works of Shakespeare. Do not believe everything you believe.

particle rides the wave and we can detect the particle, we can also detect the wave. We can even detect the wave at locations other than where the particle resides on the wave. This is why in the double-slit experiment, it appears as if the particle can be at multiple locations at once, when actuality it is just the wave the particle is piloting that is being detected. This is not a wave front from another dimension or universe per se. I mean there are no other universes, only our own. The wave is a plane within our own universe. The idea of multiple universes or universes in other dimensions is really just a pseudo-scientific concept. This is because these multiverse theories including the Big Bang all lack falsifiability. In Karl Popper's 1934 *The Logic of Scientific Discovery*, Popper argued the importance of falsifiability in science and it has been an important part of the scientific method ever since. However, many theoretical physicists ignore this important part of the process. With the multiverse, whether they are Hawking's Big Bang-Black Hole model or Everett's parallel universe model, there is no falsifiability—an ability to test these premises. String theory with its eleven dimensions lacks testability because these dimensions are conventionally undetectable. Also conventionally undetectable are the strings themselves which are supposedly, if they do exist, many thousands of times smaller than the smallest of particles. Again, no falsifiability. When Phil Donahue famously

asked Ayn Rand to prove that God does not exist, she answered that she is not required to prove a negative. Furthermore, one is not required to prove what the universe is by debunking popular theories. That being said, this would be a much less exciting paper if I were not to present some solid reasons for the existence of an Infinite universe besides debunking the Big Bang, or quantum mechanics, for that matter. Consequently, I argue that the Infinite universe is the default. Unfortunately, excitement over the possibilities of expanding universes and black holes has overshadowed reason—the idea of falsifiability tossed aside. Now here I am forced to dispel the negative beliefs in science because they have become foundations due to unchecked peer review reigning over the scientific process. Peer review needs to be infallible and it is not. Scientific journals need a level of independent study that most do not receive. My hero fictional Mr. Spock of Star Trek would find the whole lack of independent review and falsifiability in the current scientific arena quite illogical. When weighing all the options, Spock would at times quote Arthur Conan Doyle's Sherlock Holmes "When you have eliminated the impossible, whatever remains, however improbable, must be the truth." When considering all the possibilities of our universe, only one universe remains—an Infinite universe. The next sections will delve into the reasons the universe is Infinite—undeniable proofs. Laws of physics that

stand up against petty pop theory. Certainly the nature of space-time itself greatly attests to the fact that the universe has always existed as it is and we will get to that. However, a much more tangible reason is staring in the mirror right back at you—you. You, the fact that you are here. The fact that I am here writing this book and life is here is really all the proof you need that the universe is indeed Infinite.

Everything
That is possible
Demands
To exist.

: Gottfried Wilhelm Leibniz, *De Veritatibus Primis* :

Life

Life is defined as organisms that are neither inorganic nor dead. Characteristics of life are growth, metabolism, reproduction, and adaptation. Life must intake foodstuff and excrete its waste by-product. Only from life does life spring. All life is organic. Organic means it has carbon in it, which is true of all lifeforms. Carbon in conjunction with hydrogen, oxygen, nitrogen, phosphorus, sulfur and other elements are the building blocks of life. Therefore, if it is not a carbon-based unit, it is not life. Though Star Trek may have its silicon aliens, that would be science fiction until we can discover differently. Until we otherwise mind-meld with any non-carbon creatures, they are an impossibility. We know this through repeated observation. We also know through repeated observation that all life dies. Death is what happens to life when it can no longer facilitate any of its functions: growth, metabolism, reproduction, and adaptation. That which was once alive will

decompose at the onset of death. The organic compounds in the once living will break down and become nutrients for other life. We may not directly cannibalize our fellow human, but the organic material from our rotted bodies can fertilize soil that in turn grows plants that we can eat. This, the cycle of life and death. While living, life holds the characteristic of growth. That is, life goes through several stages of development. In terms of large animals like ourselves we go through the stages: birth to childhood to adulthood to old age. Birth is when a lifeform is no longer attached or part of the mother. Childhood is when the young lifeform still needs tending to from adults. Adulthood is when an animal can tend to its own well-being. Then old age is when the body starts to slowly lose its functionality prior to death. Growth is a trait of all life and this growth is fueled by life's metabolism—a function in life where foodstuff through physical and chemical processes is converted into energy that in turn keeps the lifeform functioning. No fuel to convert into energy like water or food then the life will die. Metabolism is also important in supplying energy for the reproductive process. Because all individual lifeforms will die, in order for life to continue on, life must reproduce. The reproduction process is done either sexually or asexually. Sexually means a male and a female are required. The male leaves tiny spermatozoa that carry his DNA into the female. These sperm cells find her

egg and through a merging process combine their genetic information—DNA. Then the female carries the offspring to term. (Unless you are a frickin' seahorse for some reason!?) With asexual reproduction a species simply clones themselves. No partner is needed. Lots of single-parent families floating around out there. Then we come to the functionality of adaptation. A rock cannot adapt. A rock is at the mercy of its environment. Where the mountain moves the rock goes. Where the river flows the rock goes. Life on the other hand can get up and move when need be. Life has the ability to manipulate its environment. The rock does not. The rock can only be manipulated by its environment. Life is motivated by its needs. According to Abraham Maslow's hierarchy of needs first published in 1943, human's most basic needs are physiological. That would include water and food intake, homeostasis, sleep, breathing, excretion, and sex²¹. These are the things we need in order to survive. You are over 70% water and yet you continuously want more. You constantly need to replenish the water within you in order to keep alive. A person can only live up to three days without replenishing themselves with water. We came from the oceans so in turn our blood is chemically similar to seawater. We need the nutrients in water and in food to supply the body with fuel for the energy to grow, move, and stay healthy. Nutrients include organics like proteins, carbohydrates, fats, and vitamins, as

well as inorganic minerals. Nutrients are substances that the body needs but cannot produce itself. These nutrients are then processed in the body through homeostasis. All living organisms need to maintain a complex set of interacting metabolic chemical reactions. In other words homeostasis is the internal system that keeps the body stabilized in order for metabolism to function properly. Homeostatic processes include regulating body temperature, pH, glucose, fluids, oxygen levels, circadian rhythms, and perhaps even one's mood. When the body is functioning properly, we will sleep regularly, breath well, and excrete that which we do not need. Excretion of sweat, urine, and feces. Which brings us to sex. Nice segue. Well sexual intercourse does involve a level of intimacy which involves a couple of people sharing bodily fluids. The ultimate purpose of sex besides the pleasure it

²¹I call men hitting on women *le petit viol*—the little rape. An often constant barrage of come-ons are a frequent complaint from many women. Yet, precisely this sort of rape culture is continuously championed in our novels, cinema, and music where the main plot or usually always at least a subplot is boy-chases-girl-and-gets-her-in-the-end. Perhaps we will stop encouraging this sort of behavior when we stop expecting men to be the pursuers. If we can stop encouraging caveman behavior that makes it all a game for men, then perhaps we can help curve the male-on-female violence that happens far too often among human beings. Rarely among bonobos I will add.

tends to bring is pregnancy of the female resulting in offspring. Let me make this distinction between coitus strictly for pleasure versus copulation for the purpose of creating a larger family. The latter version of sex is the topic here. I recommend Alex Comfort's 1972 *The Joy of Sex* for information on the former. Alas, that is another book I am sorry to say. Sex in order to proliferate the species is the specific sexual act being referred to as a need for survival. Sex that amounts to offspring is necessary for the sexual species (as opposed to the asexual one) to continue on. Sometimes even another species is created in the process. Mutation. (Thank you Darwin!) Though many a religious person would disagree, species evolution has a planet of insurmountable evidence to back it up. Theory here is more and more of a misnomer. Instead of the *theory* of evolution it should be called the *fact* of evolution. When you ask a person of faith to answer the question "Which came first the chicken or the egg?" they will say the *chicken* because God created the chicken as is. This can be inferred from the Bible since God created Adam and Eve as adults and not fetuses. A person of science would say that the *egg* came first. What hatched that egg then? Some sort of proto-chicken obviously. In order for a mutation to take and be carried on to the next generations in a non-asexual situation, a species with the mutated traits in their genes mates with another of its species with that same mutation. New

species happen when a group is isolated and are forced into smaller breeding pools. This will often include copulation within families. Incest is best when creating new species. Copulation of a brother and sister carrying the same mutation is the ideal incubator to create a new species. Pretty soon more and more interbreeding cousins within that isolated group will carry that mutation until the new mutated species has usurped the previous incarnation. Multiple mutations over an extended period of time and this isolated group will no longer be able to have offspring if bred with the closest related species outside the group. Why does this process of creating new species even happen? What would be the point? Certainly adaption and survival play a part. Why does the process not stop but continues? Humans will evolve²². To what we can only speculate. Where and how we can only speculate. But it will happen eventually, if we survive. Survival is the last

²²Slowly we humans are evolving even at this moment through the mutation process. Nothing so drastic so as we could not mate with other humans and be unable to have offspring with them because the differences are not that significant. But we are getting fewer teeth. I was born without wisdom teeth ever even budding from my jaw and this is common I have come to discover. Toes are shrinking. Soon enough it may be goodbye pinky toe. But it will take generations of isolation or genetic manipulation in order for a new species of human to emerge out of what we are now.

aspect I will mention here that is unique to life that both helps define and differentiate it from the inanimate. Life has the will to survive—the rock does not. But do we live just to survive? Why is life so crucial to the universe? Life must be crucial to the universe otherwise life would not be an important aspect of it. Could the universe be just as well without life? Stars would still be born and die. But who would witness it? Who would feel it? Who would experience the universe because the rock does not (at least not in the way life feels—non-metaphysically). The rock is just there—hanging out. But life gets to hang out on the rock. Pick it up and toss it if it can. The beauty of the universe would never be seen if there was nothing to see it. Would that make the universe less beautiful? Why yes! That beauty would be lost since there is nothing to appreciate it. The beauty of all that life itself would be lost too. Perhaps life serves a more practical purpose than that of observers. Life provides the elements necessary for Earth-like planets to build atmospheres. How this helps the universe in the scheme of things I am not sure. But it is an example of life's impact on a large rock orbiting a star. When you think about all that I have mentioned in this section, you realize that we are well-designed machines. But not through the design of a supreme being but through the design of the processes of the universe over long periods of time. The universe does what it does, as it does, as it can only do. Life is as essential to

the universe as the rock and the star. Without life there would be nothing to observe the universe. We also know that life can help create a pretty nifty atmosphere on a giant floating space rock lying within a narrow habitable zone from a star. It might imply the metaphysical—that is, that life has to be here in order to observe the universe. However, the universe is just how it is and has to be—vehicle with driver. The universe is our spacecraft and life is its pilot. No pilot, then why have a spacecraft? The universe being full of the animate and the inanimate is not by any grand design. That is just the way it is. The way it has to be. There could be no Grand Designer. For who would design the Grand Designer? Who would create the Great Creator? This does not mean there is no God per se. Certainly this idea of God the Great Creator cannot be since there is no universe that needs to be created in the first place. Certainly God the Almighty Judge sitting on his divine throne rocking that über beardy beard is mythology and can easily be discounted for being as such. However, God the Majestic Connector has merit. This is more in line with the Eastern understanding of what spins the heavens—Dao or Zen. This definition of God being that which connects the energy of everything. This does not have to be a metaphysical definition by any means. All the energy of the universe—call it God. Sure seems to take the weight and importance of being a deity away. However, what defining God this way really does is add

strength to the word. Adds power. God just became even more powerful by taking away all that silliness. Plus, God received a good shave. Okay then if there is no God deity, is there no Heaven? What would be the point of dying then if there is no Heaven? Not really about there being a point. The point of no Heaven would be not having to live an eternity for having been born corporeal and human. For this brief mortal coil (Thanks Oxford!), we are doomed to reflect upon our fleeting existence forever after we die. How is that not Hell? Even if it is all cream puffs and orgy pies, eventually one would get bored. What makes the cream puff special is that it is not eaten every day...for an eternity no less. Pie would get boring too. But people have had visions of an afterlife. Just that—visions. That is all we can take them for until hardcore repeatable evidence is obtained to prove otherwise. The brain continues to think after a person has died for up to three minutes, perhaps longer. More endorphins are released upon death than anytime during one's life. Hallucinations²³ at death are part of the mechanism to facilitate a peaceful experience at the end. The last gift of life. This hallucination is powerful. People who have come back from near-death experiences have commonly mentioned seeing their whole life pass before their eyes—and even things they wish they had done. Then there is that archetypal *go towards the bright light* experience. My guess is that this is an example of

mass hysteria. Another example of mass hysteria would be the emergence of the alien icon known as the Greys²⁴. This wide-eyed, small nose and mouth being is the most common alien sighting these days but that was not always the case. Once popular movies like *Close Encounters of the Third Kind* started putting this image in the public head, one would be deemed “crazy” if their alien description did not have big black eyes and a small frame. All life dies. Even alien life dies. Perhaps some beings, some microscopic ones, can live indefinitely, but you have to run into a star eventually. We know through repeated observation that death is certain—certainly for all humans. The cells of Henrietta Lacks may live on but her body does not. Perhaps she now haunts us like so many other ghosts²⁵? Or, maybe she was reincarnated into a frog? That is good, right? Like Kermit. The problem with a strict human to human reincarnation is the math. There are far more humans alive than have died.

²³Déjà vu is a kind of hallucination in a sense. What happens in the case of déjà vu is that the eyes see the event but the mind has a hiccup in processing the information it has seen. When the mind catches up to what the eyes saw they have this feeling of already having seen the event before but cannot quite figure out why. Since we could not have already have seen the same exact occurrence prior, the only logically conclusion is we saw it in a dream since dreams are that magical default realm explaining any experience that the mind cannot automatically process.

²⁴The Greys are from Zeta Reticuli in the constellation Reticulum the Telescope. Well, according to ufologists that is. Modern day mythos has it that the Greys crashed in Roswell, New Mexico and the world has not been the same since with sudden advancements in computer technology and our love of movies like *Star Wars* and *E.T.* A government hoax perhaps—that is the other prevailing theory. Besides the Greys there are the Nordics, a tall hansom race reportedly from the Seven Sisters star cluster—the Pleiades. The Nordics are the good guys, but the Reptilians are not. The Reptilians are from the dog-star Sirius who some imaginative folks believe can even mask themselves to resemble humans—mostly celebrities, politicians, and business tycoons no less. Then we have human-alien hybrids Nephilim said to look like giant humans. There is a direct correlation from ancient humans’ belief in supernatural beings to modern humans’ belief in space aliens. We would be deemed “crazy” to believe in elves (unless from Iceland) in this day and age so these encounters with the strange, or hallucinations rather, are explained as creatures from outer space. I cannot help but see a reflection of these modern aliens in the supernatural creatures from the past. The Greys are reminiscent of dwarves and trolls; the Nordics are much like elves and angels; the Reptilians fall in the realm of monsters and demons; and the Nephilim being much like the giants and titans. As well, these four varied creatures happen to echo the flavors of our psyche—sour, sweet, bitter, and salt, respectively. Furthermore, these four character types echo the dichotomic characteristics of our personality—our ugliness (the Greys); our beauty (the Nordics); our weaknesses (the Reptilians); and our strengths (the Nephilim).

However, in an Infinite universe there would be an infinite amount of beings. So technically, if cross species reincarnation is the mode it could work, mathematically speaking that is. However, logistically speaking that would be absolutely insane. Organization on an infinite scale requires a supreme being to manage all that, or perhaps it is just a mechanism of the universe. This reincarnation premise is an extraordinary claim that requires evidence so therefore until then is mere fantasy. Now if there is no Heaven, spirit realm, reincarnation, or any afterlife at all then how does that benefit us? How do we benefit by becoming worm food and that is it? The benefit of having no

²⁵There is definitely a phenomenon known as ghosts. More people believe in ghosts than any other irrational belief on the planet. This can be written off as another example of mass hysteria, but let us take the stance that there is some tangible phenomena happening for the sake of argument. What a horrible state to be in, that of a ghost or spirit? Just floating around haunting some house or cemetery. Just a reflection of a person. Perhaps that is all it is. We are receiver-transmitters constantly projecting electrical waves and receiving them. Ghosts, if they are real, could just be waves of energy being transmitted from former beings. Strong energy leaves an impression. However, I doubt that is true and suspect that the ghost phenomena is likely all in the heads of the persons having the encounters. Sorry my ghost-loving friends but that must be the case until proven otherwise.

afterlife, besides not having to live forever, is having one life. Make the most of it. All your pain and suffering gone forever. No more responsibilities will be required of you ever again. We live on through our offspring and the people who remember us. We live on through our creations, our art, our science, our essays. But we do die, because all life dies eventually. Reversely, from life comes life. This is known as the law of biogenesis. LAW!!! (All-caps and three exclamation points really adds emphasis to the point!) This natural law of science was first introduced to us by Louis Pasteur in 1864. Pasteur, of course famous for developing pasteurization as well as vaccinations for rabies, also demonstrated that microorganisms could not develop without some form of contamination. In other words, Pasteur's experiments showed that without life present life cannot come into existence. After eons of people primarily believing in spontaneous generation, the idea was suddenly dispelled. At least until the late 1920's when this theory of the Big Bang started to become popular. A paradox arose where life had to have come from the inanimate at some stage in the universe, yet Pasteur proved otherwise. What do we do— just forget about the law of biogenesis then and try to prove that life can develop from the inanimate? The Big Bang proponents will claim this is up to another field of science to prove that some form of abiogenesis can take place. But other scientists are not required to prove a negative. Though that

has not stopped some from trying. The Miller–Urey experiment conducted by Stanley Miller and Harold Urey in 1953 displayed that the building blocks of life known as amino acids were present at primordial Earth. Life could develop from these amino acids certainly if magic was somehow involved I suppose. There is no evidence that these building blocks could have become animated. This experiment often gets sighted as proof of abiogenesis, when in fact it most definitely was not. How did life populate the Earth then? Panspermia—extremophiles hitching a ride on comets and other space debris. This concept that does not seem to go away is that life will be unable to survive the conditions of space. That is harder somehow to believe than spontaneous generation? We know that bacterial life can survive extremely harsh conditions on Earth—volcanic vents, arctic temperatures. Bacteria lives on the outside of the International Space Station. The outside! Life is everywhere. Matter is everywhere. Space is not such the extreme vacuum that one might think. Space dust and larger debris is everywhere. Extremophile bacteria are traveling on this debris out to populate new planets—everywhere.

Who knows

But that,

On the lower frequencies,

I speak for you?

: Ralph Ellison, *Invisible Man* :

Matter

Matter—what does it matter? What is the point if the universe has always been? What is the reason for it all? There is no reason. There is no reason for a universe that has always been. No need for a reason. This idea for a reason for the existence of the universe vanishes when the universe is infinite. An infinite universe and its birth-less state is a hard concept for most. We see everything born and die—from the bridge to the mountain to the person to the turtle. Everything comes into existence then leaves again. But that is just an illusion. We are not the person or the bridge or the mountain or the turtle. We are particles of matter in space. These particles are eternal, at least the energy from them is. As particles seemingly come into and out of existence, they must transfer their energy to other particles. Our matter-energy has touched the rest of the universe endlessly. You are not the same person a year ago as you are today. Consequently, the matter-energy that makes up

your being right now will be entirely different a year from now. You have already dispersed many times over. We are stardust—we are golden. Objects come and go but the universe does not. Stephen Hawking would tell us that asking what came before the universe is like asking what is north of the North Pole. Respectfully, this is an example circular logic²⁶ on Hawking's part. Asking what is north of the North Pole is a nonsensical question in the first place. It is like asking, "What is west of blue?" However, asking what happened before the universe of a Big Bang origin is not an illogical question to ask. Most definitely the answer for where the universe came from is more universe. Even Hawking's model concludes that our universe likely is just information funneled out of a massive black hole. This model assumes an infinite mechanism—Big Bang birth to expanding universe to Big Crunch death to massive black hole to Big Bang birth again. The Big Bang birth and massive black hole it sprung from are in different realms or dimensions or parallel universes in this model. Conveniently, the massive black hole cannot be detected in any way. Since this Big Bang-Black Hole model has no way of being tested for falsifiability, it should not technically even be considered as a

²⁶A famous example of circular logic is: The greatest trick the Devil ever pulled was convincing the world he did not exist. To which I rebuttal: The greatest trick the Devil ever pulled was convincing Christians of their own circular logic.

possibility by published professionals with doctorates, let alone if you hold the Lucasian Chair of Mathematics at the University of Cambridge—as Hawking. The Big Bang model has no way of being proved and so for that reason should be discounted by any scientist, for scientists should by profession and namesake always believe in and utilize the scientific method. Yet the Big Bang despite its lack of testability remains the most popular model among cosmologists today. Though you might not know it by watching the media, but not all astrophysicists concur. An open letter to the scientific community was published in the academic journal *New Scientist* May 2004. This cosmology statement stated that many in the field of physics and related scientific fields disagree with the Big Bang model. That actually the overwhelming amount of data contradicts the Big Bang ever happening. The statement goes on to state there is an element of fear involved as well for people are afraid to lose their funding if they speak out against the Big Bang. This is not how science should work. This is more in line with how religion often works, at least in the Dark Ages. Many working and some retired professors and professionals signed this open letter. Among them was Canadian professor and physicist Paul Marmet just prior to his death. Marmet has a website dedicated to the debunking of the Big Bang. Another signer of the statement was American plasma physicist Eric Lerner who wrote *The Big*

Bang Never Happened published in 1991. Lerner worked with noted Swedish plasma physicist Hannes Alfvén, winner of the 1970 Nobel Prize in Physics for the field he himself developed known as magnetohydrodynamics. Alfvén cautioned against universal models borne out of mathematics etched out on a chalkboard rather than derived through observation. He favored the Alfvén-Klein model of the universe that he, Oskar Klein, and Carl-Gunne Fälthammar came up first published in 1966. Their book *Worlds-Antiworlds* introduced plasma cosmology based on their work in plasma physics. The major holdup with their plasma cosmology model is that it is based on the assumption that the universe is indeed in a state of expansion, some sort of growth-flux, based on the observation of Hubble's redshift. The other problem with the plasma cosmology model of the universe is that it is too complicated (Ockham's razor). The plasma universe is not the next most popular model either—possibly owing to the fact that the plasma universe is quite involved, requiring the entire universe to be in a state of plasmatic fluctuation. A much simpler and the second most popular idea behind the Big Bang to explain redshift (albeit a distant second) is the Tired Light theory. Though there are many various explanations along the tired light line, the main premise is that it is the light that is being affected, manipulated somehow, and that is in fact the reason for the Great Redshift. Falling back on Ockham's razor. What is the

much simpler explanation: Is the entire universe expanding or is light shifting to the red? Light travels on a wave. When applying the phenomenon known as Doppler effect to the light coming from distant galaxies, then yes the universe would appear as if it was indeed expanding. The light from objects moving towards you turns bluish. Reversely, light from objects moving away turns reddish. This is known as Doppler effect as you probably recall from the middle school science class film with the moving train. But in case you do not recall, I will briefly explain. The wave from the object moving towards you gets scrunched. A tighter wave is a bluer wave, while the opposite is true for red. Objects moving away will have a longer waveform as the wave is being pulled towards the moving away object, creating an elongated wave and the appearance of a more reddish hue than if the object was stable. Saying that the redshifting of distance stars is caused by Doppler effect when it could be something else entirely leads to the possibility of going down a blind path. It would be like saying that an ocean retaining wall could only be wet by high waves, even though the waves cannot get that high and it is raining out. Some phenomenon is just not intuitive. The claim is that Doppler effect causing redshifting has purportedly been confirmed through other observations. However, what we really get is indications at best. Like I mentioned, we are just amoebas under a microscope trying to figure out what that big eye

looking down on us is. We are receiving our measurement from only one vantage point. We need to get a long ways from here in order to get another perspective in order to make the sort of measurements we need in order to tell whether the universe is actually expanding or not. Half a galaxy away would not be far enough. That is like moving to the other side of the slide, if you are an amoeba, that is. However, the biggest “proof” on the Big Bang proponents’ side is cosmic microwave background radiation. The cosmic radiation was discovered in 1964 by American radio astronomers Arno Penzias and Robert Wilson at Bell Labs in New Jersey. However, cosmic microwave background radiation also happens to fit the static universe model and is just as profound of evidence for a universe that has always been. Cosmic radiation could simply be caused by the heat of stars in an Infinite universe. It is sad that such a weak observation such as this cosmic radiation can be cause to completely dictate the majority of cosmologists’ research. That is humans for you. We cannot even follow our own rules. Rules are fine until they get implemented to authority—those with clout. In this case it has been scientific peer review that has failed. Humans jumped on the radiation is proof of Big Bang bandwagon and have been giving it a hayride around the public ever since. We can see the redshift from the Doppler effect of that bandwagon driving away and we can see the redshift of tired light too. Again

light travels on a wave. All waves²⁷, whether they are mechanical or electromagnetic, share certain properties. These properties include: Oscillations of energy caused by a source, moving straight out from that source unless encountering other objects; and elongation. All waves elongate—get longer, gaining a lower frequency the further from the original source. Ever toss a stone into a still pond and watch the ripples? You can actually see the waves getting shorter and longer. Now shrink that down to the micro level of a light wave and the visual effect would be seeing the light shift to the red. We are seeing an Infinite universe the way it is meant to be seen—shifting red. Okay, get ready for here is a formula for you. The frequency of a light wave is determined by speed of light over wavelength:

$$f = c/\lambda$$

Assuming the universe was a pure vacuum, then we can postulate that the frequency of any light beam would stay the same. In which case, we can see why many scientists might assume Doppler effect to explain the Great Redshift. But the universe is not a pure vacuum. Space between all the stars, planets, and asteroid-sized objects is filled with lots of debris—space dust and gasses. Tons of it. All this matter adds up and has mass and gravitational pull. Like the wave of energy caused by the pebble breaking the surface of the

pond that is dealing with the hindrance of water, light waves are dealing with the hindrance of an impure space. Let us now add friction of space travel into the previously mentioned formula as (n). Here (n) is the accumulative degree of wave hindrance due to the friction of space. This leads to the formula for determining light frequency to actually be as follows:

$$f = (c/n)/\lambda$$

Greater mathematical minds than mine will have to solve for (n). But the above formula is the base equation for determining universal light wave frequency—considering the fact that outer space is not a pure vacuum. To recap, shifting to the red is a natural aspect of light waves since elongation is

²⁷Sound waves can be powerful enough to move objects. There are sonic weapons currently in use that can knock a person on their ass and cause some serious physical internal damage. Sonic guns have even been used to blast apart solid structures. Sound waves are now used to levitate items. All this leads me to wonder about the legends that the ancients harnessed sound to move the multi-ton stones that we are still today baffled as to how they were transported. I image it would take quite a very large and finely tuned drum circle to move one of those large blocks of The Great Pyramid of Giza, if that were indeed even a possibility.

a property of all waves. A wave is a wave is a wave. The Great Redshift of the universe is a natural visual phenomenon that we should be seeing. It would be strange if light waves did not shift to the red. Light waves show us more than details about shifting. The color bands also show scientists the chemical make-up of stars. Through this data, astronomers can determine the relative age of these stars. Surprise, surprise—some stars are older than the universe! The Methuselah star in our own galaxy is calculated to be nearly a billion years older than the supposed age of our universe. Then there are all those globular star clusters also clocking in as older than this Big Bang universe. A gross miscalculation on the parts of professional astronomers world-wide—unlikely. But even if that was the case, these star clusters and galaxies including our own Milky Way are part of a greater community. Think about the evolution process here on Earth. We went from life just being small one-celled organisms to the multi-celled thinking beasts we are today. There was an evolutionary process from small to large. Same thing for the universe. Solar systems like our own take several billion years to form. A galaxy of solar systems would take even several times longer to form. Now a cluster of galaxies would take tens of billions of years to form. Already much older than the universe at this point, but it does not stop there. Superclusters of galaxy clusters would take hundreds of billions of years to form. Then there are

super-superclusters, which would likely take up in the thousands of billions of years to form—that is like a *gazillion* years I do believe. Evolution takes time, especially when dealing with the cosmos. To combat this obvious evolution of superclusters, cosmologist Alan Guth introduced in 1980 the cosmic inflation theory. Cosmic inflation is now widely accepted as the explanation for how the universe became so vast and non-homogenous in such a short time—the universe being merely three times the age of our young planet and solar system. With the inflation universe, matter would have had to have travelled many, many, many, many, many, many (getting the point), many times faster than light in order to explain the universe's bulk and ununiformed clustering. The inflationary universe explanation needs extraordinary evidence which is just not present. Matter moving that much faster than light would leave an aftereffect that would make the cosmic background radiation seem like a whisper in the wind in comparison. The main lack of evidence for the Big Bang idea is the lack of so-called dark energy and dark matter which is supposed to make up over ninety-five percent of the universe. Almost all of the universe is somehow missing? This is my *emperor is wearing no cloth* moment if ever there was one. Okay most of the universe has to be made up of dark energy and dark matter yet there is no detection of said energy and matter of dark. But they keep looking. They also

keep a watchful eye on protons because if one ever breaks down then the universe itself could break down and reversely be built up. Hence a possible proof for Big Bang lovers to cling to. Alas, Big Bangers the proof is not there. No protons breaking down; no universe that is mostly missing; and on top of all that, we have stars older than the universe. Simply put, the Big Bang model just does not hold up. The Infinite universe model does however. One of the popular supposed proofs that the universe is not infinite is this notion that the entire sky would be light. The thought being that if you go out in any direction you will eventually hit a light source. Well, as I mentioned light diffuses over time and then there are all those objects that do not generate light that are in the way. The other misconception about infinity involves monkeys, typewriters, and the works of Edward de Vere, ahem, Shakespeare. Essentially, if you had an infinite amount of monkeys typing away on typewriters that eventually one of them would type the entire catalog of Shakespeare. Another take on this basic idea is that there is identical Earths because the universe being infinite will do everything and multiple times. In an infinite universe everything possible *can* happen. Not everything *will* happen and multiple times over at that. Possible within the universe is not monkeys typing plays. Monkeys do not do that. Nor will there be an identical Earth. Infinite means infinite possibilities. Exactly identical planets are not

possible. The beautiful thing about random is just that—the randomness of it all. It took one higher primate being very calculating with his words to create the works of Shakespeare. Like a fingerprint, every play is different, every monkey, every planet, every society. A person may look very similar to another, or be nearly the same, like with identical twins. But identical twins' DNA is not quite the same and even something about these twins' appearances would be different—a scar, a pimple. The beautiful thing about infinity is that it is infinite so it never has to repeat itself. In short, the universe could very well appear to us as it does, all redshifting and non-repeating with all its cosmic radiation, and be infinite in scale and in time. That is the default in fact. The universe is infinite until proven otherwise. To claim the universe has always been is not a stretch, only a stretch of the imagination for many. To claim that something could come from nothing or a singularity and expand outwards to form a universe is an extraordinary claim. The Big Bang universe is downright Biblical. In fact, the Big Bang is eerily similar to the origin story in the book of Genesis in the Bible. So similar that leading Christian figures in modern times even endorse the Big Bang—from Christian evangelist Billy Graham to Popes John Paul II and Francis. The Big Bang concept, no matter how you slice it, is a form of creationism. The universe was born and grew; life sprung from the inanimate—Creationism. It is no wonder that modern

religions can so readily adapt the Big Bang theory because it mimics their own creationism stories. Universe from out of nowhere, then life from out of the lifeless. This Big Bang-Black Hole universal model needs a catalyst—it may as well be God. Interestingly enough, many devout will not accept the Big Bang because there is no mention of God. The one thing that those who believe in a religious origin have on the scientists and atheists that do not is a catalyst. They just have to say God decided to make the universe and there you go. Scientists have pretty much nothing. The most they can come up with are giant black holes in parallel universes. This is what we are supposed to believe—giant black holes in a parallel universes!?! There needs to be evidence for this not just conjecture before even being presented before peer review for publication. Yet this is the foundation of cosmology today—mythical black holes in invisible universes. Couch jockeys like me should not even be in on this debate of whether the universe is infinite or not. This should have been settled once Louis Pasteur came up with the law of biogenesis. If life is perpetual, so must the universe. Energy is also perpetual. Like in the way Benjamin Franklin demonstrated how electrical charge in a closed system remains constant, similarly the amount of energy in a closed system remains unchanged. This is known as conservation of energy and is a mechanism of the first law of thermodynamics. Because of this law, we can

deduce that the amount of energy for the entire universe remains unchanged. When you consider all the energy of the entire known universe and then you consider all the energy of a Big Bang singularity, there is a ginormous mismatch. One would think that this disproportion of energy would put the entire argument to rest, but Big Bang proponents argue that “within a closed system” energy does remain constant. To which, the obvious rebuttal is then to question how the universe grew in energy in the first place. The reply would be that the universe grew in energy to a certain point. Once the universe reached some arbitrary amount of energy and stopped growing energy-wise it continued to expand outward. Laws of physics be damned! However, instead of expanding away from each other, galaxies have been shown to cluster together—like stars like to cluster, like space debris likes to cluster. Clustering is what the make-up of the universe does, not expand outwards. Big Bang proponents have not demonstrated that the laws of physics could have once been different. They have not demonstrated that life can generate spontaneously. They have not demonstrated how our supposed present closed universe could have more energy than the singularity we supposedly sprung from. Furthermore, they have not demonstrated how time could have just up and one day started.

The thing that hath been,
It is that which shall be;
And that which is done is
That which shall be done:
And there is no new thing
Under the Sun.

: Solomon (Amenhotep III), *King James Bible* :

Time

Time. We should all have plenty of time to pursue our dreams but most of us have to eke out a living. *Blow, wind! Come, wrack! At least we'll die with harness on our back.* For a fraction of what war cost, we could house, feed, and educate the world. That money would come back in fold when the output would be a much better society. Though maybe tomorrow we may plant that proverbial tree, you cannot turn back the clocks and go back in time to fix things. I have logged many hours fantasizing about doing just that. About going back and making another choice in my own life or just going back to another age. Perhaps the Stone Age when we had more of an egalitarian society. Sure getting good medical care was difficult, but no nine-to-five jobs either. Tough call. But we are here in this day and age and make the most of

it we must. Do I cry out like the fool in the town square that the end of the universe is *not* nigh? Do I spend my time yelling at the wind to change direction or do I just wait out the weather? Most of the smart people I know who believe in the Big Bang because that is what the experts tell them to believe are quick to say that if the experts told them to believe in another type of universe that they would. They really do not know and are fine with this changing of their minds if and when the time comes. This does not change the outcome of how the universe is. But, being right does not matter as much as being seen as normal. It is not considered normal to go against the scientific community because they are the experts. This I agree with wholeheartedly, however when the scientific community go against science then some people will cry out. My role here. However, I do not want to do the actual science myself. Get the proper degree and credentials. Be ostracized by my peers. Find no work. I would rather just spend my time researching and philosophizing about the true nature of the universe. This way, I would not have wasted a career just to be equally disregarded. Besides I do not have the disposition for lab work and living off grant money. I do however have a disposition to read what people who have a disposition for scientific endeavors have published. Then put my thoughts on it all in a book for perhaps a smattering of people to read. In the end, whatever course we

choose matters little but to ourselves. For we will become star bits again. You are just passing the time with pursuits that interest you like reading this book. In a hundred years who will know who you are? In a thousand? Several billion when the Earth is no longer here. Who will know of what you have done then? Time just keeps flowing and flowing and flowing away from where we have been. Time does this and it does not stop doing this. I can say that through my continued observation of time, as in my entire life, that time does not stop. Joshua of the Bible cannot stop the Sun and make it go backwards. I also know—through observation, through hearing the stories of people who have aged more than I, through reading about history—that time had been going on well before I was born. Through repeated observation, one can declare that time is uninteruptable. This must then be a scientific law. If time cannot be interrupted, then it could not have been initiated either since that would dictate that an interruption in time would have had to have taken place. There can never be a time-stopper—nature’s Joshua—in any form. Going further, since time and space are one as Albert Einstein so eloquently pointed out in his essay on *General Relativity*, space-time cannot be initiated nor interrupted. This is not just a good idea, it *is* the law. This law of the perpetual space-time continuum negates the Big Bang. This means that the idea of the Big Bang needs to be removed from the scientific realm entirely and placed

squarely in the science fiction arena where it belongs. The Big Bang after all is pseudo-science by definition. All multi-dimensional universes are pseudo-science by definition. This is the criticism by scientists themselves. Not all. Not the ones that are popular with the media. Unfortunately, there are many esteemed cosmologists who do shy away from the multiverse theories like the Big Bang in lieu of actual evidence. How can one make this leap of imagination and still call themselves a scientist instead of a poet who dabbles in science like me? Education comes with a certain amount of indoctrination to the opinions of the educator. An instructor teaching the Big Bang in college will expound upon the thought that it is the prevailing truth so we should believe in it. Having studied these courses myself, what you learn is math and theory without actual evidence. This is a very sad affair. Why not just teach that the planet was created only 6,000 years ago by God? The two concepts—barely old universe, barely old Earth—are quite equivalent if you think about it. But then here I go myself about to jump the scientific rails by suggesting the possibility that time flows in both directions. We know there is matter and there is anti-matter. Since space and time are married as space-time and all (Thanks Albert!), this means that anti-matter particles are flowing the opposite way in time. This idea of anti-time particles actually flowing backwards in time was broached by Fritjof Capra in his seminal book

comparing Eastern philosophies to modern physics—*The Tao of Physics*. In other words, time is flowing both directions at once. This is a component of the universe. The universe could not work any other way but to have matter and anti-matter where linear time is flowing forward as well as backwards. What that really means in practice is pure speculation. Does this mean we can also go backwards in time? Doubtful. Can we see the future? It certainly feels that way at times. But I would not put much stock in precognition without profound evidence to back it up. Which to my knowledge does not exist. I say this having had some interesting premonitions myself at times. In fact, I declare that it would be stranger if really odd and seemingly unexplainable coincidences never occurred—events that may even appear as precognitions. But how can one measure strange coincidences in the first place? The most famous of all seers Nostradamus gives us poems that can be interpreted many ways depending on the perception of the reader. If one were to measure his true success rate, we see that it is sorely lacking. Upon examination of his most famous prediction about Hitler, it was undoubtedly about the Hister—another name for the Danube River—and not about old sinister Adolph at all. Time may flow both ways, but tapping into the future is another beast entirely and of the strictly science fiction variety at that. But what about time can be determined? Time is not a constant. Time is

influenced by the space of which it is merged. Mass and gravity influence time. Distance and velocity influence time. Everything can influence time. Therefore, there must be a way to quantify time. An equation that works on the universal as well as the quantum level and all points in-between. Mass and gravity influence time negatively, that is, the more mass and/or gravity are influencing time, the more time will slow down. Therefore, mass and gravity are intrinsic to the divisible portion solving for the nature of time—that is, time's ratio as a function of the universe. Since time is not a constant, sometimes time is faster, sometimes time is slower. This is its nature. To solve for this ratio for time with mass and gravity as reducing influences, we need to know the increasing influences on time's clock as well. Velocity is the prime component for speeding time up. The faster the velocity of an object, the quicker time moves relative to that object. Placing velocity in the dividend for our time ratio equation leaves the other influence left to be considered—distance. In this formula, that distance is in meters squared when calculating within the lovely metric system, which the United States is still in the Dark Ages when it comes to adopting but I digress yet again. Distance squared times velocity over gravity times mass gives us the time ratio equation:

$$t = m^2v / Gm$$

What this equation means is that time will go pretty slow when experienced on a large lump of rock at a fairly slow speed—say on a planet such as ours. Time would be even slower on Jupiter, and then slower still on the Sun, and even slower on a massive red hypergiant star—with the speed of these objects all being relatively similar but with gravity increasing the more massive the object gets. The time ratio for the entire universe would be zero considering the entire universe would not have a velocity, since it is the entire universe and would not speed off in any direction being that it is all directions at once. If one were to go much faster than these objects of planets and stars, then their velocity and smaller mass and gravity would make the time ratio larger producing a greater amount of time in comparison to objects just hanging out on planets and stars. That is why in theory you can speed off in a rocket ship and return to find all your friends and relatives are long dead and gone. Now let us look at the quantum level and how the nature of time would work in the submicroscopic realm when applying the time ratio equation. Particles like electrons move very fast and weigh practically nothing. Toss an electron into the time ratio equation then suddenly you toss all of quantum mechanics on its head. Bohr rolling around in his grave. An electron experiences a great deal more time than we do²⁸. A great deal more! Because it is so fast and because it is so weightless. Little to no gravity and mass being

divided by a great deal of velocity and distance equals a great deal of time being experienced by that electron. In application this means electrons appear to do all sorts of crazy things like be in several places at once. But really particles are traveling at such a sped up time interval that they just happen to appear to be in multiple places at once to us. The time ratio equation sheds some light on the true mechanics of our universe's most infinitesimal components. No more dead cats in boxes. Of course, the time ratio equation needs testing. If it proves incorrect perhaps the premise is not. Time is not a constant and we should be able to quantify that. The time ratio equation here within is my attempt to do just that. The quantum theory is well studied, ergo well established, and will take many decades to unravel but that day will come. More and more I see the movement among cosmology towards the infinite again. Ideas without evidence that break the laws of

²⁸Time flies faster for a fly compared to a human. This is why flies are often able to miraculously escape getting swatted by flyswatters. Even a child compared to an older person with their small bodies and spurts of energies are experiencing time quicker. In other words, the younger person is experiencing more time in the same span than the older person. This greatly contributes to the child's boredom compared to their elders. Furthermore, this would explain why time appears to speed up the older one gets. Because it really does.

physics such as the Big Bang do us all a disservice. The religious fringe is justified in criticizing the Big Bang. At least the religious folks have a catalyst for their universe in God, while Big Bangers hold to giant undetectable black holes in other dimensions. Which is crazier? As established, an origin to the universe is impossible by the mere fact that we are here—living, breathing life—the components that experience the universe. As Louie Pasteur’s scientific experiments determined—only life begets life. Therefore—life has been around infinitely. Ergo—so has the universe. Energy tells the same story for it can neither be created nor destroyed. Time tells the tale of infinity as well, as time can neither be initiated nor interrupted. These laws on life, energy, and time prove without a doubt that the universe has always been. From our mother we are born. Of atoms we are made. Infinite is the universe. Though observation by life we know we are of all matter—all energy—in a brief moment of everlasting, ever-eternal time.

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