

Observer Effects Within the Multiverse

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ABSTRACT

Theoretical constructs related to observations assert that the making of observations, especially by sentient entities, is a prerequisite to the coalescence of the reality that we experience in the present, which then unfolds into the future. These concepts are developed in ways related to physics and quantum mechanics. What is presented here relies more on a philosophical approach. It addresses what constitutes an observation, and the resulting effects that ripple out from these observations. It shows how the future is a composite created by collections of observations made by collections of observers. Since this future is a composite of a multitude of observations, it is potentially very complex, and the variety of outcomes constitutes what is called the Multiverse. The approach also considers the possible fate of the universe in the event that observers, along with their observations, were to cease to exist.

The term Multiverse is viewed and defined in different ways. One is the Many Worlds hypothesis, that posits at each instant in time, the pathway into the future splits into a multitude of outcomes, each one leading into its own unique future; which then splits again and again. If true, each of us is entrapped in a time trajectory that can lead to bizarre outcomes. Look around, we may be in one now. Several versions of the Multiverse are provided as references [1-14].

Since so many have weighed in on the idea of the Multiverse, it provides permission to provide yet another approach to the Multiverse. This approach is derived from the philosophical journey described in *Treefall* [15].

COMMENTARY

The *Treefall* [15] journey begins on a small island in the South Pacific Ocean, with a tropical forest at its center. The day was hot and still, but as the sun set, ominous clouds gathered on the horizon. Shortly after darkness fell, the wind began to blow and the rain came. The wind blew harder and harder. The tropical forest was lashed mercilessly by the wind and rain, and the tall trees swayed back and forth, their roots straining at the ground. The storm lashed the forest for hours, until one great tree, the tallest and most majestic in the forest, finally succumbed to its brutal force. The soggy ground around its roots gave way, and with loud ripping and tearing, the great tree began to topple into the forest. It fell slowly at first, then faster and faster. As it fell, its limbs, which were intertwined with limbs of surrounding trees, were snapped and shattered into woody shrapnel. Finally, after a huge struggle between the forces of life and the force of gravity, the mighty tree crashed to the ground, striking with such force that its trunk sank deeply into the rain-drenched soil, which groaned as it made way for the violent intruder. Finally, all

was still. But despite the enormous turmoil caused by the fall of the mighty tree, it bothered no one. Because no one, absolutely no one, was there to hear it.

The following morning dawned bright and clear. At mid-morning a jaunty yacht appeared on the horizon and sailed toward the deserted island. It moored a few yards offshore, and several men disembarked with heavy packs and boxes. Out of them came elaborate equipment, which they proceeded to set up with great care. They prepared a meal, and while they worked, they were attentive to their surroundings and frequently looked in the direction of the forest. They saw and remarked upon every bird in the air and pointed toward every small animal that appeared at the edge of the forest. They noticed every insect that crawled on the ground. They ate while gathered in a tight circle and talked among themselves in an earnest and serious manner. Finally, at mid-afternoon, they carefully gathered up their equipment and moved into the tropical forest. Nothing escaped their attention. They noted every tree, every rock, every plant, as they proceeded slowly through the forest. They took pictures

of everything, and their notebooks filled up with the data they were gathering.

In the course of time, they came upon the mighty fallen tree. They were quite excited by the discovery and swarmed over and around it, peering and poking everywhere. They pointed to the many branches that had been snapped and broken during the fall and shook their heads in awe when they saw how deeply the trunk was embedded in the ground. Several of them examined the great root-ball that had been wrenched from the ground. They looked at the sky and appeared a little concerned that another great storm might come. They studied the tree and its surroundings for a long time, but eventually their curiosity was satisfied, and they prepared to leave. They all gathered near the huge root-ball of the fallen tree and gazed down the length of the fallen trunk. They looked up, and in the eyes of their minds, imagined what the mighty tree must have been like before it fell. They imagined the awesome forces of the wind that were required to wrench its roots from the ground, and imagined its cataclysmic descent into the forest, breaking and snapping branches as it went. They imagined the violent impact that would be required to drive it deeply into its final resting place. One of them shook his head and said deliberately, "WOW! When this enormous tree fell last night, it made one heck of a noise!" All his companions nodded thoughtfully in agreement.

As the observers looked at the tree embedded in the ground, they thought about the moment it smote the earth, like a hammer against a cymbal, and how the ground reverberated like a cymbal, and the waves of the reverberations radiated outward from the center of their creation. The entire tropical island resonated with the reverberations of the cymbal, and the oceans resonated with the island, and the continents with all their cities and people listening resonated with the oceans, and the earth resonated with the continents and wobbled in its orbit around the sun, and the sun resonated with these wobbles, and all the planets resonated with the wobbles of the earth and the sun, and the new wobbles of the solar system emanated into the greater universe like the ripples created by a rock tossed into a pond, whereupon the entire galaxy resonated with these ripples and sent the message on until the entire universe resonated with the sound of the falling tree.

The tree fell during this storm instead of during a different storm, because of where it had grown and when its seed had been planted, which was by a bird that had paused on a branch with a seed in its beak. The bird had flown from tree to tree and from branch to branch. It dropped the seed where it did because of choices it had made up to the moment of dropping and could just as well have dropped the seed at another spot,

in obedience to a different whim. The seed in another spot would have fared better or worse, and the tree that would have sprouted would have fared differently. This different tree would likely have fallen at a different time in a different storm and would have smote the cymbal of the earth in a different place in a different way. The ripples that would have been set loose upon the universe would have emanated from this different center, and the universe would have resonated in a different way. The universe that resulted from the one seed would thus be different from the other and would be headed toward a different Destiny. It is sobering to think that a little bird, flitting from branch to branch, dropping a seed at a time and place of its own choosing, can have such awesome power.

THE EXISTENCE OF THE UNIVERSE REQUIRES OBSERVERS

To proceed, it will be necessary to invoke the argument that observers are required for the universe to exist. It is useful to see if the universe is designed in such a way that is consistent with its needing observers. Especially telling would be to look closely at any strange and bizarre properties that the universe has. For example, if the universe needs observers to exist, then this is true all of the time, not just some of the time. All of the time means that observers are needed at the very beginning of the universe, during its existence, and at its end. This creates a paradox in that observers could not have been in existence when our universe began, so the idea that observers observed the beginning of the universe and its immediate aftermath seems untenable.

Unless it isn't. One of the consequences of Relativity is that as a mass is accelerated faster and faster toward the speed of light, its mass gets greater and greater, and that if it could achieve the speed of light, it would have infinite mass. In addition, as the object approaches the speed of light its time frame slows down and it ages more slowly. If the object can attain the speed of light, time stops for it. No object with mass can achieve this, but massless photons can and do. It is therefore true that for a photon traveling through empty space, time does not pass at all. For photons, time stands still.

Now apply this idea to when you look up at the stars at night, and see objects that are thousands, millions, and even billions of light years away. When a photon that originated from a galaxy that is a billion light years away began its journey a billion years ago, life on earth consisted of primitive forms drifting in the sea. However, from the moment of its departure to the moment of its arrival at your eye, from the relativistic perspective of the photon, not a single instant has passed since it left its galaxy a billion years ago. For the photon, for which time does not pass, not an instant has passed.

This idea applies to photons that were released during the earliest moments of the nascent universe. It follows that if a contemporary observer can see and observe these photons is actually observing the birth of the universe at the moment that it actually occurred. Since time does not pass for the photons, it makes no difference if the observer were observing those photons at the moment of their creation while in the presence of the actual creation, or billions of years later via intra-space telescopes that capture those photons released during the origin of the universe. The photons are exactly the same. To observe them billions of years later places the observer in the presence of the creation, at the time it happened. The observer is observing the origin of the universe at the time of its origin, not at some later time. For those photons that arrive and are observed now, what is observed is the universe at the moment of creation, and for those observed photons, that moment of creations in NOW. By observing these photons, we are actually observing the initial moments of the beginning of the universe. We were there then, we are here now. What of the future of our observations?

We are now in the throes of observing the universe as it gradually unfolds before us. It is a challenge. Now that we are doing this, what are our qualifications as observers? What does it take to be successful stewards of the future of the universe? The observers would need an innate desire to make observations and would need to be sufficiently intelligent to implement advanced technology. Technology is needed because the observers must perform observations of the larger universe throughout the rest of its existence as well as look back into time to observe the universe coming into being. The latter requires observations of very dim red photons coming from the expanding edge of the universe. The ability to capture these photons requires the construction of sophisticated optical devices. If the observers are on a planet with a turbulent atmosphere, it would be necessary to develop technology that could lift the optical devices into space where they could obtain an unobstructed view.

The desire to do these things would be so strong that the observers would attempt to do them as soon as possible after discovering the scientific principles that would make them possible. A study of the history of the observers would therefore show that the discovery of the principles of flight would be followed by development of space-worthy vehicles within a remarkably short period of time. Rapid implementation of this technology would be extremely expensive and would place a considerable burden on the collection of observers. The observers themselves might not know why they are doing this, not knowing their desire to observe is an instinctive biological need. They could question the wisdom of expending

their wealth in this way, but they would do it anyway. Their innate compulsion to observe would find outlets in many ways. Prior to the development of advanced technology, they would employ whatever means possible to explore their environment. They would endeavor to find and examine every accessible part of their planet. As technology developed, they would press it into service as rapidly as possible to extend their observations. Once they had discovered how to fashion devices that would allow them to cross over water, they would embark on journeys of discovery long before they had learned to make the devices safe to use.

When these explorations under dangerous circumstances led to pain and death among their members, they might question the wisdom of what they were doing, but they would do it anyway. Explorers and discoverers would be held in exalted esteem, and stories about their exploits would be honored and recounted with pride. As soon as the means for writing was developed, these stories would be the very first things to be recorded into documents, and no observer could be considered educated unless he knew the details that were set forth therein. The greatest heroes of any age would be those who pushed the hardest and the farthest into the unknown. If explorers that embarked on a perilous journey did not return, others would not rest until their fate had been determined. Their remains would be sought. The circumstances of their final moments would be investigated. There would be a desire to use this information so that the next mission would be successful. New explorers would go out as soon as possible.

They would go everywhere they possibly could, into the deepest part of the ocean, and up onto the highest bit of land. As they looked up into the heavens, they would wonder about the stars. The observers would invent optical devices to get a closer look at them, and as soon as they discovered what stars were, they would desire to go there to explore new worlds.

To be sure, it would be better over the long term if the observers knew what they were doing and why they were doing it. If it is true that observers are needed for the universe to maintain a defined existence, it is important for the observers to recognize that the universe must be kept under unbroken observational surveillance from its beginning to its end. Whereas the observers can reach backward through time by observing photons from the beginning, the only way to observe the future is to wait for it to happen. All of the current cosmological theories suggest that our universe is less than halfway to its demise in old age. Current estimates of the age of the universe say about 13 billion years, so the observers are in the throes of a daunting task, which is to maintain an unbroken vigil for the billions of years from now until the end of the universe.

It seems unlikely that an innate desire expressed only in terms of a biological imperative is enough to keep things on an even keel for billions of years. A person who is dying because of a lack of vitamin C will develop profound cravings but may uselessly attempt to requite them by eating a donut instead of a piece of fruit. It is easy to imagine how the cravings for exploration and discovery could find undesirable outlets that interfere with or prevent observational accomplishments. For example, the craving that would drive an explorer into the danger of the unknown could be transmuted into a willingness to participate in battles and wars. Heroic status that would ordinarily benefit those who braved the dangers of discovery would instead go to those who braved the dangers of battle. One can imagine a scenario in which all the intellect and wealth that was being expended on making discoveries and observations would instead be shunted into supporting hostile actions. A worst-case scenario could be one in which these actions led to the extinction of the observers, since this would cause the extinction of the universe. One would hope that the observers would come to their senses before the ultimate disaster had come upon them, but they might not.

It seems that the only solution to prevent this from happening is for the observers to come to understand their purpose and role in the universe. In the absence of understanding, they might believe that their existence is of such little consequence that the possibility of their being extinguished is of no concern to the larger universe and that their passing would go unheeded. If they do get embroiled in battles and wars, they might get so disgusted with themselves that they would favor self-destruction. On the other hand, if they were to realize the significance of their existence, and that their role in the universe was actually of crucial and central importance, they could abandon their hostilities and attempt to devise political and moral structures that would make survival through the endless ages possible. We would see space exploration in a new light, because our earth will perish long before the end of the universe, so we need to move off the earth to places where observations can continue in safety.

One can only speculate what such political and moral structures would be like, but there are some features that they would be sure to possess. The mind, the intellect, our senses, and the ability to use these to experience and interpret our surroundings would be held with great reverence, both with respect to oneself and those of others. These must be used with the greatest possible honesty and integrity, to observe one thing and report that you observed another would be abhorrent. Institutions that contribute to stability and continuity would be held in very high regard. Being a

member of a family, to learn as a child and to nurture and teach as a parent, to transmit knowledge and values would be a sacred duty and trust. Professions that involved exploration and discovery would be respected and esteemed, and this respect would be extended to everyone who performed roles that strengthened and contributed to the ability to carry out these tasks. Any deed that could be seen to enhance and advance these things would be regarded as good. Any deed that provided an impediment would be regarded as bad or evil. This constitutes a natural moral code that exists outside the confines of religious doctrine. It is instead a moral code that invokes the duty of observers to carefully guide the unfolding of the universe to its ultimate end.

These arguments can show how to distinguish between right and wrong, and good from evil. Many depend on religion to do this. Some have lost confidence in religious traditions, so lose confidence in their teaching how we should behave. Centuries ago, when Christianity had its grip on the population, people's religious beliefs tended to guide them in virtuous directions. We were taught that we were made in the image of God, and that we were God's primary interest and concern. The earth was the center of the universe, and we were the most important thing on the earth. When things were going badly for us, God cared so much for us that he sacrificed his Son to set us back on the path to righteousness. If we were good, we would go to heaven. If we were bad, we would go to hell. Heaven was really, really wonderful. And hell was really, really awful.

And then Copernicus discovered that the earth goes around the sun. No more center of the universe for us. Galileo pointed his telescope to the heavens and discovered that many of the ethereal bodies were big rocks. Time passed, and things got worse. Now we see that our Earth is nothing but a little planet going around an ordinary sun, located on an arm of an ordinary galaxy. One of billions and billions of other galaxies. We seem as insignificant as grains of sand underneath a rock on a deserted beach, or in the desert, or at the bottom of the sea. No wonder we try to bring significance into our lives by making a lot of money, buying a big house, and getting an important job, and living in a powerful country that wins its wars, and doing things that appear to be significant. It's hard to take yourself seriously when we are as insignificant as grains of sand on a deserted beach, or in the desert, or at the bottom of the sea. The Catholic bishops knew this was going to happen, and they tried to stop Copernicus and Galileo from telling what they had discovered. But they couldn't stop them, and now we have a crisis of confidence in which it seems that what we do is of absolutely no consequence whatsoever. Why try to do good if nothing you do matters in the long run?

But suppose our role as Observers makes the universe possible. Suddenly everything is completely different. We are insignificant no longer. So, what if our planet is tiny and our galaxy ordinary? If it weren't for us the universe wouldn't exist. And if we don't survive, the universe will cease to exist. The fact that the universe profoundly needs us and is constructed in such a way that needs us, then it shows that we are doing a task that even God can't do! Maybe God somehow created the universe, but for some reason observers are needed to achieve its purposes. God doesn't even know how to be an Observer! Move aside God and let us do the job that you can't do!

The Ten Commandments tell us how to behave, but not why. Our role of observers teaches us how to behave and why. It starts by telling us we are observers and tells us our purpose. We are to observe. If this is our purpose, we must be constantly vigilant to never worship other idols by way of allowing ourselves or anyone else to subvert our talents and abilities to make observations to pursue other ends, such as wealth, or power, or domination. We also learn why we should not bear false witness, which is because the making of observations is a sacred purpose that is a collective effort of all observers, and the universe exists as a totality of these observations. This totality is weakened by lies, and for an observer to observe one thing and report another is a grievous wrong. To report false observations about another observer is particularly grievous. The reason we should not kill is because every observer is on a sacred mission. To kill an observer and thus destroy the capability of performing that mission is a reprehensible act that subverts the stability of the universe. The reason we should neither steal nor commit adultery is because the fulfillment of our purpose requires making uninterrupted observations until the end of the universe. This will require great stability of human institutions. Stealing represents an assault on the stability of civil institutions, which are necessary to maintain social order. Adultery represents an assault on the stability of the family, which is and will be the primary means of transmitting moral values through the countless generations before us. To be able to make observations under difficult circumstances and to report them accurately, an observer must cultivate self-reliance and personal responsibility so our sustenance and possessions should be a result of our own efforts. We must also build strong and responsible relationships with other observers; relationships that will last over a long period of time. This is why we must not covet another's spouse and property, because to do so represents a desire to take short-cuts toward possessions and relationships that we do not deserve because they did not result from our own self-reliance and personal responsibility. The desire to take these short cuts

should be resisted. We even learn why we should recognize a Sabbath and rest. Although performing observations is a sacred purpose, it cannot be allowed to consume all our efforts because it will be destructive to this purpose in the long run. There is more to making observations than just observing events. An essential component of making observations is the use of the intellect for making interpretations and inferences about what is observed. This is a slow process that requires the mind to be in a reflective mood. We therefore need to take some time out from actively making observations, and to relax and to reflect on the meaning of what we have observed. We should do this at least once a week

HOW THE UNIVERSE BEGAN AND HOW IT COULD END

Cosmologists agree that the universe originated in the Big Bang. This involved inflation from a singularity. Upon inflation, which involved cooling and coalescing of the intense energy of the singularity into fundamental particles, our universe came into existence. The transition from a singularity to a universe could happen in many different ways, each of which would establish a universe with a distinct set of physical laws. For any universe to come into being, it must have a set of natural laws that make its existence possible. Although many combinations of physical laws could achieve a stable universe, our own universe may have adopted the requirement for observers, and we have seen that our universe has properties that are consistent with its needing observers. The question arises, how does a universe "know" that it possesses a set of laws that permits its existence, and therefore comes into being? One possibility is that an infinite number of universes are created, most of which cannot exist and are extinguished at the instant of creation. Thus, only those universes whose existence is possible would persist.

Our universe may be one that is destined to persist, but perhaps not. One of the properties of our universe, because of photons produced at the beginning persist unchanged by passage of time, is that it is simultaneously very old and just created, which is what makes our observation of its creation possible. Since it is at the instant of creation that the laws of the universe are established, it is this instant that determines whether a universe possesses laws that allow it to persist. This quality of persistence of the instant of creation would project into the future.

If an infinite number of universes were created, many of them would be almost identical to our own, except for differences in one or more tiny details. It is in these tiny details that a fatal flaw might lurk, whose consequences would grow with time, causing the universe in which they occur to become

unstable and cease to exist. Our universe could be one of these doomed universes, and just because things seem to be going reasonably well up to now, there is no guarantee that they will continue to go this way forever. The fact that there could be an infinite number of ways that a universe could be created that is almost, but not quite, consistent with persistent existence suggests that the probability of our being in a universe that has gotten everything just right may be small. If we are in such a flawed universe, then we are doomed.

There is a way to avoid this dilemma. There could be a mechanism to select only those whose physical laws make true existence probable. In this scenario, any particular universe would have to have some way of “knowing” whether it possesses a set of laws that is consistent with existence, and if it does, then it can come into existence. Cosmologists tell us that the universe has three possible fates, and the one that will actually occur is determined by the amount of mass and energy our universe contains. There is a certain mass and energy such that, if the universe has less than this, it will continue to expand forever. If it is greater than this, the gravity exerted by this mass will eventually bring expansion of the universe to a halt, whereupon the expansion of the universe will reverse into a contraction and collapse back toward the center where it will end in a Big Crunch, which is like the Big Bang, but in mirror form.

Let us consider the possibility that the universe is destined to end in a Big Crunch. Although this seems to be a bleak prospect, it is in this scenario that the problem of how the universe “knows” it can exist can be resolved. The Big Bang started with a singularity. The Big Crunch would end in a similar singularity. These singularities constitute a wall, and what goes on beyond that wall is forever unknown to us; and the laws by which things operate on the other side of the wall of the singularity are unconstrained by the laws that we see on our side of the wall. Although we see the beginning of the universe as separated from the end of the universe by an enormous gulf of time, that might not be true on the other side of the wall of the singularity. For all we know, on the other side of the wall, the universe that is beginning and the universe that is ending may exist in a simultaneous timeframe. Thus, the universe at its beginning could “see” the universe at its end, thus establishing that existence of the universe from the beginning to its end is possible. Perhaps the only universes that can come into existence are those that have both a beginning and an end, so it is only those universes that will come into existence and expand outside the singularity to appear on this side of the wall as a real universe.

Let us explore some of the implications. Everything about our universe rests on probabilities, never certainties. The fact

that our universe possesses both a beginning and an end on the other side of the wall could merely mean that it is highly probable that our universe will persist from beginning to end on this side of the wall. As we all know, even very high probabilities do not amount to certainties. No matter how much you know about a horse, you can never be certain that it will win.

We are perhaps in the situation of an aspiring knight, who consulted a diviner prior to his journey forth. The diviner said to him, “You have admirable qualities; you are smart, you are clever, you are strong, you are persistent. You have ideals and you want to do good. But you will meet with great adversity. You will discover that you have many weaknesses, and you will be tempted to stray from the path that you know is right. You will encounter situations that will appear hopeless, and you will be tempted to give up and allow yourself to perish. You will be presented with many choices, some of which will lead to success; and others that will lead to doom. To succeed, you will be required to fight and give your all; any less, and you will fail. You will have great doubts. However, in all of this, remember that you are of noble birth. Your qualities are not an accident. In the face of hopeless adversity, think of this and know that somewhere within you is the strength that is required for you to prevail. It will not come without effort, but it is there. Learn to know yourself; your weaknesses and limitations as well as your strengths. Learn to use all these qualities in your quest. If you do this, you are almost certain to succeed.”

The thing to focus on here is that one may have qualities that will allow one to succeed. But if these qualities are not properly implemented, one will fail. It is likely that we are in this situation as observers of the universe. We have the qualities that are required for us to maintain our observational vigil from the beginning of the universe to its end. It is highly probable that these qualities will enable us to do this, but it is not certain. If our purpose is deflected by attractions to that which is ignoble; then the universe, with all its promise and all our accomplishments, will cease to exist. Not only to cease to exist from now and forever after, but to cease to have ever been. The reason it would cease to have ever been is because of that component of our universe that is forever at the instant of creation, and it is at this instant that the question of its persistence of existence is resolved. Therefore, if our universe were to cease to exist, it would cease at this instant of creation; and all other aspects of the universe would simultaneously cease to exist at this same instant. Since it ceases to exist at the moment of creation, anything that happened after this moment would be relegated to nothing. It is bleak to think that if we should falter in our task to observe the universe

until its end, our accomplishments up to the moment of faltering would not be merely forgotten but cease to having been accomplished; all of our experiences would cease from having been experienced. To be forgotten is one thing. To never having existed is quite another. This makes the stakes of continuing our vigil to the bitter end extremely high.

THE DOOR AT THE END OF THE UNIVERSE

Now consider the fate of the universe that ends in a Big Crunch. Because of the qualities of observers, we can hope that there will be some very hardy souls who will manage to be vigilant until the bitter end. One would expect that between now and then, the population of observers would have grown enormously and occupied many worlds. Over the course of time, the universe would have expanded, reached its maximum and begun to contract. The galaxies and stars would have continued through their evolutionary processes, and the matter of the universe would have been largely converted into energy. The number of habitable worlds would have decreased greatly, so the number of observers that could be supported would also be decreased greatly. Those that remain will have come to thoroughly know and understand the nature of the universe and their role in it, and that carrying out observations until the last possible moment is the ultimate purpose of human existence. They had tried to fulfill that role to the very best of their ability, although it had often been very difficult and there were times it looked like they might not pull through. But they had, and everyone existed in a state of great anticipation for the moment of culmination of their purpose, which was to continuously make observations until the universe was safely escorted into the arms of the singularity.

The observers prepared themselves in every conceivable way. They constructed observation platforms that were awesome and magnificent, of every conceivable material and of every conceivable design. Some held thousands of observers, some with hundreds, some with dozens, and some with only one. Although they had accumulated the knowledge of the ages and the wisdom that came with it, they had enormous respect for the unpredictable, and even though practically everything that could happen in the universe had happened, what was yet to come had that element of uncertainty. Their vital task was to reduce that uncertainty as much as possible. Although they knew that they could not observe the final instant of the universe, they knew that by making observations ever closer to that final instant they would learn more and more about it until its nature would be known with high certainty. The great questions to which they had no definite answers were: How close to the end did they have to make observations to be close enough, and could they

maintain their vigil long enough to reach that point? The great philosophers had debated these questions through the ages. At the end, the only thing they knew for certain was that their innate qualities were such that the probability of success was high; otherwise, their universe would not have gotten this far. But they also knew that bundled into that probability was the tumultuous nature of the observer spirit, which included the uncanny ability of an individual to do something at the crucial moment that could make the difference between success and failure. For all they knew, the fate of the countless ages of the universe, and the countless lives of countless observers, would come down to a split-second action performed by a single individual. Perhaps this action would be performed as the very last action by the very last observer to perish in the enormous heat and pressure created during the approach to the cataclysmic singularity. It would be at that moment that the very last observation that could be made in the universe is made. At that moment, all that can be known about the universe is known. All the material substance of the universe, all its energy, and all its accumulation of souls would merge into a single undifferentiated state to become one with each other as well as all other elements of the universe. A total oneness of everything; all knowledge, all feeling, all experience, all substance. The instant of this oneness would coincide with the achievement of the singularity, whereupon the purpose of our existence would be realized. If that happens, we will have done our job and done it well.

BEYOND THE WALL OF THE SINGULARITY

We can proceed beyond the singularity only in our imagination, for it is a wall beyond which we can never go. If we could be on the other side of the wall at the instant of the singularity, we might see an incredible flash of light that is at first formless; but quickly begins to acquire a shape. Within a few moments it begins to look more like a Being of some kind. It is shaped like a human, but much more glorious than any human we have ever seen. It is stunningly beautiful. It is a totally merged composite of everything that the universe from which it was formed. It is beautiful because it is a composite of every person and every consciousness, so is the most beautiful Being possible. It is dazzling white, because its color is a composite of all colors. Its gender and age are indefinite, because it is a composite of all the men and women who had ever lived; all the young, and all the old. To look at its face, we would see traces of everyone we had ever known, everyone we had ever loved. Written across this face would be the experiences of the people from which it was made. All the joy, all the sadness, all the pleasure, all the pain that had ever been experienced would be there. All the wisdom of the ages would be there. Within the essence of this Being would

be everything that had ever happened in the universe. It would have the knowledge of the birth of every star, the death of every planet, the birth of every child, the death of every person, the laugh of every baby, the tears of every woman, the fears of every man. It would know of every sunrise and every sunset. Every hope, every dream. Every success, every failure. It would know everything.

If this Being were to approach the wall of the singularity. It might see there, suspended and waiting quietly, two universes side by side. One a universe at the moment of its creation, the other a universe at the moment of its end. They are clearly a pair, and each is related to the other. The Being approaches them. (S)he knows what to do, having done it countless times before. (S)he embraces the two universes, bringing them closer and closer together. As they get closer, the Being begins to change form, and to flow toward the two universes. All three get closer and closer, and it becomes clear that they are going to merge into one, and the essence of the Being becomes one with the new universe, which is now simultaneously at its beginning and at its end. Whereupon an infinitesimal point appears on the other side of the wall, which inflates and begins to expand with incredible speed. It is accompanied by a great light. A new universe is born. It seems to be nothing but energy that is in the process of coalescing into matter, but it is clearly much more than this.

CONCLUSION

Everything is the way it is because of resonance. The universe began as if Thor smote a cymbal with his mighty hammer, and the universe now consists of the resonances of its reverberations. As the universe progresses, instant by instant, the next instant is always the one that resonates best with the present instant. Although one can imagine a future instant that would be better, the only future that can happen is the one that resonates best with the present.

The universe is a symphony, and all its spheres are music. An important theme is played as an obbligato, that began as a whisper and grows, to dominate. As the theme of Ravel's Bolero intrudes quietly, and then grows relentlessly, constantly increasing its strength and power, each moment unfolding unto the next with an inevitable seamless perfection; on the one hand constantly inventive, but also predictable and true to itself, it grows and becomes more inclusive of all the instruments who join, one by one, until all are playing the theme in a great crescendo.

This obbligato is Life. Without it, the symphony of the universe would be dull and predictable, with no invention. But because of the obbligato, the universe is filled with

possibilities, just as a piece played by a jazz musician is filled with possibilities. To the jazz musician, every riff is the one that makes the most sense at the current moment, each one moving into the next in a rich combination of predictability and invention. As each riff is played, it creates a sense of inevitability as it progresses, note by note. Each note resonates with the next. At each note, there is also an element of non-predictability; there are other choices that make nearly equal sense, and a different jazz musician, with a different set of musical experiences, might choose one of those instead. And once chosen, it would also seem inevitable.

So it is with the universe, which is a Multiverse. Without Life playing its obbligato of invention, the Multiverse would play itself out to a completely predictable final chord. But with the inventions of the obbligato, the universe can riff toward a multitude of possible final chords. Whereas the final chord of any symphony seems an inevitable conclusion to what has come before, every symphony has a different final chord; and it takes a great composer to create a final chord that perfectly sums the whole.

So, as we live our lives, we are participating in the composition of the greatest symphony that is possible. Our every action is a riff that takes the universe in a new direction, toward a different final chord. We therefore need to weigh carefully the consequences of what we do. We need to seek harmony in every action, to compose a symphony that has a final chord of sublime beauty and perfection. Perhaps the final chord must be of perfect beauty and be perfect in its harmony within itself and with what has gone before, for our Souls to reach salvation, whatever that may be.

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