The

New Universal Model

A Clear and Simple View of the Universe

By

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An Autobiography

Forward

I have a Heart Attack - The doctors did everything they could...but I Lived Anyway.

I'm lying on a hard, uncomfortable bed in the emergency room of a small town Hospital in southern Louisiana at about 10:45 PM on the evening of March 18th, 2010 . Earlier I was having trouble breathing and decided, wisely, it was time to seek medical attention. My wife hastily drove me the 2 or 3 miles to the emergency entrance and walked me inside. The staffers quickly realized I was in serious trouble and whisked me into the emergency room where I was connected to an array of beeping monitors and had an IV started. I was surrounded by 6 or 7 doctors and medical technicians , and my dear wife who were all looking at me with expressions of grave concern. I could see the monitor to my right displaying my heartbeat readout. it showed a graphic representation of my heart blinking on and off along with a numerical display showing my heart was beating between 230 and 245 beats a minute. I heard a voice say, "Atrial Fibrillation. We don't have much time."

(Atrial fibrillation, AF for short, is a condition where the normal top to bottom rhythmic contractions of the heart muscle are disturbed and the top chambers spasmodically quiver resulting in very little blood flow to the lungs and body. Allowed to continue without intervention, death is the likely outcome.)

Under these circumstances I expected to be terrified. The end could come at any moment. But all that I could think about was the grief stricken look on my wife's face and the pain she was suffering. I knew then how awful it would be if the situation was reversed. I spoke up and said, "Honey, I'm sure glad it's me on this table instead of you."

They put the paddles front and back and prepared to shock my heart back to normal rhythm. Fortunately, the drug they were feeding in my IV did the trick and in a few minutes my heart converted back to a normal rate of 70 beats per minute. The doctor in charge raised her hands and said, "We saved you!". The other medical staffers gave a little round of applause and my wife looked very very relieved. While they were rolling me from the emergency room to intensive care, the doctor in charge spoke to me. She said, "Mr. Young, I've been doing ER work for many years and have seen many patients in your situation, but you're the first one to make a statement like you did about being glad it was you and not your wife on the table. That's a new one on me and I'm impressed." I didn't know what to say but I mumbled something about if I had died my problems would have been over so there was no point in worrying about it, but my wife would have had to carry on alone without me. That's what prompted me to say what I did.

I spent the next 4 days in ICU and underwent every test medical technology could muster, from a non invasive sonogram to a very invasive angiogram with a somewhat invasive radio isotope scan in between. The angiogram involves threading a catheter in thru the femoral artery in the groin up to the heart where an X-ray sensitive dye is injected. The result of this test showed I had significant blockage in 3 of my coronary arteries. Next came the radio-isotope scan. This is to determine how much, if any, damage had been done to my heart muscle due to the coronary blockages and to determine if enough viable muscle was left to warrant the installation of stents to hold the blocked arteries open. Fortunately, the blockages had developed so slowly that the parts of heart muscle that were starving for blood had time to send out chemical signals to nearby arteries causing branches to grow toward the places that needed more blood. This process is called angiogenesis, and its one of the reasons cancer is so hard to beat. The tumor uses this process to trick nearby arteries into growing toward it and feeding it. Although I had 80% blockage in some coronary arteries, I never had any chest pain at all. All I noticed was that over the years my endurance had been declining. I'd get out of breath more easily than when I was younger. I chalked this up to getting older. I guessed at 66 some loss of endurance was normal. I had no idea I was a heart attack waiting to happen. They call this a silent heart attack and I'm very fortunate to have survived it. Many don't.

They scheduled me for stent installation at a regional Louisiana hospital on the 1st of April. I hoped they weren't fooling me - hehe. Another invasive procedure. They again thread a catheter into the femoral artery in the groin up to the heart and somehow work it to the spots where the blockages are located. Then, they insert a stent, a device that springs open the artery and holds it open. The operation was a success and after a week or so of recovery I felt much better. No more shortness of breath. Unfortunately, although the stents corrected the blockage problems, they still had not accounted for why my heart had gone into fibrillation. It was explained to me that as we get older the body undergoes certain biological changes. For instance, hair stops growing on your head and starts growing out your ears and nose. In the case of the heart, the major veins from the lungs and the body sometimes develop little nerve growths that can fire off signals that interfere with the normal heart rhythm. No one knows why this happens but I have a theory. Maybe as men get older, past child producing age, nature has no use for us and takes steps to get rid of the dead wood - so to speak :) I say this because woman are generally not subject to fibrillation even with advanced age. Nature may have a use for older women as they are still of value for taking care of grand children and even great grand children. I have no facts to back up this theory. Its just an opinion. I could be wrong.

Never-the-less, the doctors recommended an EP study. That is, an Electro Dynamic scan of the big veins near the heart. The object is to try to find the areas that are producing the unwanted nervous impulses that interfere with normal heart rhythm, and in some cases use microwave radiation via a catheter to burn certain areas of the veins. The scar tissue that forms when the burns heal acts as an insulator to block the unwanted nerve impulses. This is major surgery as catheters must be threaded through both major veins at the groin at the same time to allow access for all the sensor and microwave probes needed.

I can tell you its no walk in the park. Afterwards my groin area looked like I had been run over by a truck. Unfortunately, they were not able to successfully correct the problem that had caused the fibrillation and that meant I would need an implantable defibrillator and a pacemaker. They tell me in order to determine the exact type defibrillator I'd need, they stopped my heart several times, then re-started it taking careful measurements of just what kind of jolt was needed to get it started. This data was eventually programmed into the defibrillator they would later implant. Recovery time from the EP study was about 2 weeks. During this time I was subject to another attack of fibrillation at any time, so they made arrangements for me to wear a portable defibrillator. It consisted of a harness with 2 paddles in the back and one in front and an array of sensors all connected to a wearable computer, powered by a battery pack. I was expected to wear this contraption 24\7 including while sleeping.

I must tell you I'm glad I didn't have any air travel planned during this time as airport security would have taken one look at me and concluded I was a suicide bomber and arrested me on the spot. The damn thing was so uncomfortable I confess I did not wear it all the time....or even most of the time. I figured since I live only a few minutes from the hospital if I get another attack I could get there in time for them to save me..again. When I went in for my post op check-up after the EP study the doctors asked why I wasn't wearing the defibrillator. When I told them my reasoning, they shock their heads in disbelief. I guess I'm not a very good patient, but it turned out well. I didn't have an attack while waiting for my defibrillator implant.

On May 6th I reported for the defibrillator implant operation. I will not go into detail here as to the place nor the persons involved as several serious mistakes were made which ultimately resulted in the operation beginning while I was still wide awake. That's right! My head was completely covered by surgical drapes at the time so I had no eye contact with the doctor and I didn't realize he did not know I had not yet been put to sleep. My first inkling that something was terribly wrong was when I felt the doctor plunge his scalpel into my chest...and none to gently I might add. "YOW!", I yelled. "Are you planning on putting me to sleep anytime soon?" I won't go into the verbal exchange that followed. Suffice it to say I was soon asleep, thankfully, and I awoke in the recovery room none the worse from my truly terrifying experience. I have now fully recovered from the defibrillator - pacemaker operation and am back to work full time. The only difference is a noticeable bulge in my chest at the implant site. All things considered this has been quite a memorable experience. It would be easy to dwell on the negatives, and there sure have been some negatives. I suspect not many people have experienced what it must have been like to undergo surgery before anesthesia. I know all too well and I can tell you its not any fun. But there have been positives too.

It seems I have been given a new lease on life and I feel compelled use this time as productively as I can. I will now attempt to distill my life experience, and maybe even some small measure of wisdom, to words on paper.

Some of it may resonate with someone, somewhere, at some time, and then again, maybe not. But there is quite a lot to tell, and all of it could have easily gone to the grave with me on March 18th, 2010. Hopefully, I'll be able to find the words to set it all down in an entertaining and informative manner, but that is for you, Dear Reader, to decide.

Forward

"It Ain't Easy Being Green" Kermit the Frog

Usually, autobiographies start with, "I was born...." Yes, I was born some 66 years ago but this book is not about me or my birth. The only thing auto about this biography is the fact that it is me who is writing it down.

It's about the birth of science and it's subsequent development throughout history. It's about the scientific methodology of trial and error. It's about a history of 'Oops….we got that one wrong, but we know better now.' It's about a scientific hierarchy slow to accept change, quick to ridicule new thinking. It's about the long, hard road an original thinker must travel to be noticed by the scientific community, especially if that thinking runs counter to conventional wisdom and the thinker lacks academic credentials, even if that thinking is 'Why didn't I think of that' - 'Slap in the face' obvious and self evident to even the casual reader.

My recent heart attack has clearly brought home the fact that I will not live forever. This brush with death reminds me the sum total of my existence can be gone in an instant, so if there's anything in my life experience, an original thought or two perhaps, that could contribute to a better understanding of the universe, or dare I say, even the betterment of the human condition, then it would be a shame if it died with me, never having seen the light of day. And so to begin...

Most of Everything We Know is Wrong

Nowadays original thinking is not dangerous, at least not physically. You may be branded a crackpot, a lunatic, or maybe just an eccentric. But they don't burn you at the stake for unconventional thinking anymore, at least not literally. Not so in the time of Galileo Galilee who first pointed a telescope at the heavens and saw the moons of Jupiter. The Roman Catholic Church said the Earth was the center of the universe and everything revolved around it. If you were to publish anything that ran counter to Official Church Doctrine you would very likely be paid a visit by Church Officials, carried off to a torture chamber and have a little Fear Of God put into you by someone well versed in the art of inflicting pain.

Galileo immediately knew the Church was wrong as he watched the moons of Jupiter change positions from night to night. Even though Galileo was quite famous and was a personal friend of the pope, he knew better than to publish his findings as fact. Instead, he wrote a fictional story that described the Jovian moons entitled 'The Starry Messenger'. The Church was not fooled by this ploy and certainly not amused. Galileo was summoned for an audience before the pope and called to account for this blasphemy. Given the choice of publishing a retraction or being sent to the torture chamber, Galileo wisely elected to publish the retraction. Even so, he carefully encrypted a message retracting the retraction so well hidden that only a handful of the world's greatest thinkers would get it. Certainly, he thought, no one in the Church would be smart enough to catch it. And he was right. It worked for many years until he got into a little snit with one of his intellectual friends who finked him out to the pope. Again, Galileo was called before the pope. By this time Galileo was a living legend and the Church would have been putting their own credibility at stake if they tortured or killed this beloved figure, so the Church relented a bit and settled on house arrest for life. Galileo was still under house arrest when he died.

An interesting footnote to the above story is that in the early 1990's The Roman Catholic Church finally got around to officially forgiving Galileo for his blasphemy and grudgingly admitting that yes, he was right about Jupiter's moons...and it only took 400 years.

The scientific establishment is not much better than the Church when it comes to accepting thinking that runs counter to current wisdom. A good example is the famous Michelson Morley interferometer experiment of 1887. Once it was discovered light was a wave, big science set itself to the task of discovering the medium that must exist in order for light to travel through the vacuum of space. Wave mechanics was pretty well understood at the time and the scientists confidently predicted the properties of the proposed medium. They even named it. The so-called ether would have to be very rigid to account for the high speed of light, yet tenuous enough for the Earth and planets to plough through it without being slowed down. Michelson and Morley approached the problem by proposing that a beam of light sent in the same direction that Earth moves in its orbit would naturally measure slower than a beam sent perpendicular to the Earth's direction of travel, Like

much like a swimmer swimming against the current. The apparatus also split the original beam with prisms and sent them in several other directions too, perpendicular and rearward in relation to Earths orbital travel. The expected difference was very small, less than half a wavelength so they had built their apparatus extremely well. It was exquisitely sensitive. They expected a small difference, but the result was ...no difference at all! No matter which direction they aimed, when the beams were re-combined they showed no interference pattern at all. Michelson and Morley were dumbfounded. They had set out to prove the existence of the ether, but had actually proved that the ether did NOT exist. Naturally and predictably, they did not believe the results of their own experiment since to accept the results as true would set the foundations of conventional scientific wisdom atremble.

The classic Michelson Morley interferometer experiment proved that light travels at the same speed in every direction no matter what the speed of the observer nor the source of the beam. In simple terms, light has a constant speed no matter what the frame of reverence nor the speed of the observer. Michelson and Morley, predictably, never accepted the results of their own experiment and spent the remainder of their lives trying to determine what was wrong with their apparatus. It took Albert Einstein and Special Relativity to make sense of it all.

Most people cringe at the mention of relativity assuming a genius IQ is needed to understand it. Nothing could be farther from the truth. Anyone can understand the concept if it is explained in simple terms. Explaining complicated things in simple terms is something I'm really good at, probably because I'm so simpleminded :) I shall do so now and in a few minutes you, Dear Reader, will be an expert with no effort at all.

The concept: The speed of light is a constant. It will always be 186,000 miles per second. Actually, the currently accepted speed is about 186,282 miles per second but that doesn't matter. What matters is...the speed of light is a universal constant. It will always register that speed on the meter, no matter where the meter is, or how fast the meter is moving. The concept of the constant speed of light is the foundation of relativity. So if the speed of light never changes, what does change. The simple answer is, time. The sense of the passage of time for each observer changes just enough so that the meter always reads the same. Still not quite sure about it? Here's a little story that makes it clear as a bell.

We're at a spaceport on planet Earth. We have a spaceship that can travel at very nearly the speed of light. We are going to take a trip to the nearest star, Alpha Centuri, some 25 trillion miles away. That's a long trip. So long in fact that it takes light over 4 years to get there. We also have a gigantic searchlight on the ground alongside our spaceship. We get aboard and begin the journey. The ground crew switches on the searchlight. It happens to be aimed so that it's beam is right alongside our spaceship for the whole trip. The beam reaches the speed of light instantly of course, but our spaceship takes a while to accelerate. When we reach half the speed of light, one of the passengers sticks his meter out the window and measures the speed at which light is passing our spaceship. Lo and behold! The meter reads 186,000 miles per second even though our ship is traveling at half the speed of

light. A guy back at the spaceport has a big telescope and is watching us. He has meters on his telescope so that he can tell how fast things are moving. He sees our spaceship and looks at his meter. Yep! Its going about 93,000 miles per second, half the speed of light. He sees the light beam traveling alongside our spaceship. He looks at his meter and sees it is moving at 186,000 miles per second. From his viewpoint the beam of light is passing our starship at about 93,000 miles per second. It's going twice as fast as our ship.

Now we go back to the passengers inside the ship. They look at their meter to see how fast light is passing their ship. The meter says, correctly, 186,000 miles per second. Remember, light has a constant speed. How can the passengers see the light passing them at 186,000 miles per second when the guy with the telescope sees it is passing the ship at 93,000 miles per second. The simple answer is, the passenger's sense of time has slowed down. Slowed down enough so that in their eyes, light really IS passing them at 186,000 miles per second. This is verified by their meter which is operating under the same perspective as the passengers. The meter's time is also slowed down. That's right. The apparent passage of time is determined by the speed of the observer. The faster the ship goes, the slower time passes inside, and always just enough so that the light beam appears to be passing them at the speed of light, 186,000 miles per second. See? - I told you it was simple.

Now that you're an expert on relativity we can take the next step. Imagine the ship's captain is in a hurry and opens up the throttles even more. He continues accelerating until the ship reaches 99% of the speed of light. The passage of time for the passengers has now slowed down to a crawl. So slow in fact that from their perspective, the whole trip takes only a few days. Back at home, the guy at the telescope has been watching for over 4 years. Now the captain turns the ship around and heads back home at 99% of the speed of light. Again, the guy watching through the telescope sees it take over 4 years for the return trip, but the passengers are only about a week older. When they get back home they may be surprised to find all their friends have gotten 8 years older while they were away.

See? That wasn't so hard either. Now you're an expert on relativity AND time travel, which makes you pretty special. You understand concepts that completely baffle the vast majority of the rest of the people on Planet Earth. And not only that...you are now qualified to explain it to others.

And this is just the tip of the iceberg. As you progress through this book you will be introduced to many more concepts, some of which will be brand new to you. Some of them will be brand new to the scientific community too, but each and every one will be presented clearly, simply, and be as easy to grasp as relativity and time travel.

Getting back to Albert Einstein, Special Relativity founded on the constant speed of light explained the results of the Michelson Morley interferometer experiment perfectly. Even so, Michelson and Morley didn't believe in relativity and went to their graves convinced the problem was due to some subtle fault with their apparatus. They knew that even though light might have a constant speed, that did not explain what allowed it to travel through empty space so they never gave up on the ether theory. Modern science still cannot explain how a wave can travel through the vacuum of space. More on that later.

Einstein's incredible mental gift allowed him to visualize complex ideas in simple, even childlike terms. He called it 'thought experiments'. Actually, he had little choice since in the early 1900's the laboratory equipment needed to scientifically investigate his ideas did not yet exist, and wouldn't for another 20 years or so.

Somehow, with his mind alone, Einstein deduced that light has a constant speed, and that matter and energy are interchangeable. That is, matter and energy are the same thing, just in different forms. Even more amazingly, he distilled it all down into a single equation. Yes - E=MC squared...the most famous equation of all time.

Relax. Understanding E=MC squared isn't any harder than understanding relativity and time travel, and you didn't have any problem with those…

E stands for Energy. The amount of energy in the universe is constant. There will never be any more and there has never be any less, and all of it came into existence at the moment of the Big Bang. There will be a chapter devoted to the Big Bang later, but for now its enough to know that energy is heat and it is responsible for the motion of matter. In fact, everything that is above absolute zero contains some energy and the hotter it is, the more energy it contains.

M stands for Matter. Matter is what atoms are made of and atoms are made of very small particles called protons, neutrons, and electrons. The electron appears to be indivisible but protons and neutrons are made of even smaller particles called quarks.

C stands for the Speed of Light. It is also a universal constant as we have learned earlier.

Squared means the speed of light times itself. That is, 186,000 miles per second times 186,000 miles per second. Never mind what that works out to, its enough to know it's a really big number. Really really big.

= means Equals. That means a tiny amount of matter contains a vast amount of energy. This is the energy released in an atomic explosion. Atom bombs, like the ones dropped on Japan during WW II convert some of the Uranium or Plutonium in the warhead into energy. Its important to understand that only a tiny fraction of the warhead is actually converted to energy. Less than one percent in fact. Even so, that was enough to devastate Hiroshima and Nagasaki. The remaining mass of the Uranium or Plutonium is transmuted into smaller atoms and other sub-atomic debris.

To sum up, all E=MC squared means is...a little bit of matter can be converted into a vast amount of energy, and conversely, it takes a vast amount of energy to make a little bit of matter. Its easy enough to see now, but how Einstein managed to figure it out with no tools except his brain and pencil and paper passes all human understanding. Even more amazingly, Einstein did it all before the internal structure of the atom was even discovered.

As it turns out, in Einstein's day there was no way to push particles fast enough to prove or disprove relativity indisputably, so it was not accepted by the Scientific Community publicly, but secretly the great minds of the day knew Einstein was right. Then...Einstein showed that the orbit of Mercury - which moved in a way Isaac Newton's gravity could not explain, was a result of the sun's gravity bending space, just as relativity predicted.

A rare total solar eclipse was needed to confirm relativity. In 1917 several teams of scientists packed up and shipped their telescopes to the few points on Earth where such an eclipse could be observed. Bad weather, political issues, and equipment failures plagued the astronomers and there were many failed attempts. The chronicle of the attempts, failures, and the eventual success of collecting the observations that confirmed relativity is a good story in itself and I recommend it for farther reading.

So Einstein was vindicated. Relativity was accepted by mainstream science, and it only took about 20 years this time. That's progress I guess.

But in the meantime Big Science was busily investigating the inner structure of the atom, and what they found was, in a word, baffling. The components of the atom, protons, neutrons, and electrons sometimes acted like particles, and sometimes acted like waves. And sometimes they could be in two places at once. Newtonian physics was out the window. The Uncertainty Principle was gaining acceptance, but some of the elder scientific establishment, predictably, refused to believe it.

Most notably, Albert Einstein, the father of modern science, flatly refused to believe in probability theory and the Uncertainty Principle, and he spent the rest of his life trying to disprove it. Einstein's famous quote pretty much sums it up. He said, "God does not play dice with the universe."

Einstein died without finding a solution, and again scientific history repeated itself. Namely, that the old scientists have to die off before the new thinking is accepted.

The greatest scientific mind of modern times, Steven Hawking, replied to Einstein's quote this way. "Not only does God play dice with the universe, sometimes He throws them where they cannot be seen."

To sum up this chapter, time after time in the history of science most of what they thought they knew...was wrong, and there is no good reason to suppose it is any different now.

In the next few chapters I plan to introduce some new thinking, concepts that, if true, will rock the very foundations of conventional wisdom. But before I upset the apple cart, it would be a good idea to look at what's in the apple cart now. Its called "The Standard Model."

The Standard Model

The Standard Model, simply put, is the sum total of scientific knowledge at the present time. As we have seen in the previous chapter it is not cast in stone. It can be changed. But that change comes with much kicking and screaming and wringing of hands.

Again, there is no need to cringe. It isn't any harder than relativity or time travel, and that was a piece of cake, wasn't it? Besides, there is no need to explain every gory detail. Its enough to understand the basic concepts of QED...that's Quantum Electro-Dynamics.

Come back here! It's not going to be that hard.

As you already know atoms are made of three basic particles. Protons, Neutrons, and Electrons. Protons carry a positive electrical charge. Electrons carry a negative electrical charge and the neutron is nothing more than a proton that has absorbed an electron and become electrically neutral. See? Its already getting simpler. Now we only have two particles to worry about.

Protons and neutrons make up the nucleus of the atom and contain most of the atom's weight, or mass. In fact, more than 99% of the mass of any given atom is contained within the nucleus. The electrons are fluffy little things that weigh almost nothing and fly around the nucleus at great speed. A good way to visualize the atom is to compare it to our solar system. The sun is like the nucleus and the planets are like the electrons whizzing around it. Since the electron carries a negatives charge it is strongly attracted to the positively charged nucleus. In fact, an electron would like nothing better than to fly right in to the nucleus and get up close and personal with a proton, changing it into a neutron in the process. They would too, except for a little something called Quantum Mechanics.

No, quantum mechanics isn't hard either. Its all about particles doing what is easiest for them to do. That's a cornerstone of physics so it is worth repeating. Everything does what is easiest to do, not just atoms and particles. There is only one exception, and that is when humans beings, with their hot little hands, get involved and upset the natural order of things.

The atom bomb is a good example. Uranium would rather not explode. The only reason it does is because we have discovered that a tiny fraction of the Uranium atoms in a given sample have a few less neutrons in the nucleus. This makes the atom unstable and it will blow up on its own if we wait long enough. For example, half of the U-235 atoms in a sample of Uranium will blow up spontaneously in 4.5 billion years. This is called the half-life. There are other unstable atoms with much shorter half-lives, and the shorter the half-life the easier it is to make a bomb out of it. The purpose of The Manhattan Project in WW II was to separate the Uranium atoms that go boom from the ones that don't.

They had to be very careful too, because if you get enough Uranium atoms that go boom together in one place the whole thing goes boom in a chain reaction. The amount of U-235 atoms needed to start a chain reaction is called 'Critical Mass'. In the course of developing the bomb we didn't know how much U-235 it took to 'go critical', and we were damn lucky the scientists didn't blow themselves to smithereens finding out. Fortunately, the first atomic blast didn't happen by accident, but it was no sure bet, believe me.

Getting back to why electrons don't go slamming into the nucleus at the first opportunity. As I said earlier, they always do what's easiest for them to do. In this case its easier for them to go into orbit rather than crash into the nucleus. Why this happens is another cornerstone of Quantum Physics and its well worth spending a few minutes to understand the concept. Again, its not hard. It just needs to be explained clearly.

As we saw earlier, particles can sometimes act like waves and when an electron is in orbit around the nucleus, it has its wave mojo on big-time.

Every electron carries a certain amount of energy with it. This makes it vibrate, like a wave, as it spins around the nucleus. Its helpful if you don't visualize the Electron as a particle at all, but as a continuous wave all the way around its orbital path. In order for the orbit to be stable, each orbit of the wave must exactly match the previous orbit so there is no way to tell where one wave begins and another ends. It blends together into a continuous band. Stable orbits are said to be 'Resonant'. The only way an electron can change orbits is to absorb or emit just enough energy to jump to the next path of resonance.

There! We've covered wave particle duality with hardly a hiccup and it wasn't hard at all, so there's no reason to suppose the next concept will be any harder.

Introducing….the Photon. The photon is how nature transmits energy from one place to another. Photons don't weigh anything and always travel at the speed of light. See? You're already ahead of me. I heard you say, "Photons ARE light." And you're absolutely correct. Light, heat, radio waves, microwaves, X-rays, and gamma rays are all made of photons. This is another cornerstone of Quantum Theory. Photons are little packets of energy. Electrons make photons by emitting some energy. They can also absorb photons and gain some energy. In the case of the orbiting electron, it can absorb a photon but only if the photon has just exactly the right amount of energy to move it to the next higher resonant orbit. Conversely, an electron can only emit a photon that removes exactly enough energy to drop it into the next lower resonant orbit. It's all so simple.

Now, why can't an electron crash into the nucleus? Because it can never emit enough energy to drop it out of its lowest resonant orbit.

"But you said neutrons are protons that have absorbed an electron, and now you tell me that can't happen. What gives?"

Good catch, Dear Reader. I can see you're on your toes and not about to let me get away with anything. Hehe.

I should have said an electron can never fall into the nucleus 'under ordinary circumstances'. However, it CAN happen under extraordinary circumstances. For instance, in the fiery nuclear furnace at the core of stars.

It can also happen here on Earth as a product of radioactive decay when an unstable atom like U-235 blows up. That's also a natural process. But there is an unnatural process that can do it too. Again it involves human beings and their hot little hands, building things like linear accelerators and sending particles zinging down the pipe at nearly the speed of light to smash into atoms to watch what comes out. As an investigative tool a linear accelerator is roughly equivalent smashing a Swiss watch with a hammer, looking at the resulting debris, and trying to reason out what made it tick.

Amazingly, this approach has revealed quite a lot about the structure of matter and has been effective in the development of the mathematical tools theoretical physicists use to try to make sense of it all. Yep. Good old Quantum Electro-Dynamics.

In all fairness QED does a pretty good job. The value of any analytic tool can be judged by the accurateness of the predictions it makes, and QED has been right on the button when it comes to the rules about how electrons absorb and emit photons, change energy levels, and the behavior of electrons in general. But in the deep dark recesses of the atomic nucleus there are still mysteries where QED fails miserably.

But mysteries are much more fun that talking about stuff we already know. Now that you know all about QED, at least as much as the average theoretical physicist, its time to roll up our sleeves and get to the interesting stuff. We pretend to be an electron that has somehow lost all its energy and falls like a stone into the nucleus. Thwaaap.

Ok. Here we are. Let's take a look around. Wow! Look at all these protons. If it's a heavy atom like iron, for instance, there are 26 Protons and they are all bunched up very close to each other. What's wrong with this picture? That's right! You guessed it. There are 26 positive charges in here in very close proximity and they don't like each other at all. By all that's Good and Holey electromagnetic repulsion should be sending them all off in every direction at nearly the speed of light. But no….something is holding them together.

The Strong Force

That 'something' is called the Strong Force and it is about 300 times stronger than the repulsion the protons feel for each other. It appears to operate over only very short distances, like the apparent diameter of a proton. That's really short indeed. Early in the history of the investigation of the structure of the atom, physicists wondered how atoms with more than one proton in the nucleus could exist. What was keeping the protons from

flying out? It wasn't until the discovery of radioactivity that the physicists had any inkling of the great and mysterious forces that lie deep within the nucleus.

Let's take a look at what is known about the strong force. For one thing it is attractive only. Not like magnetic force that can be attractive or repulsive. For another, it is really really strong. As mentioned earlier, about 300 times stronger than the force of magnetic repulsion. And thirdly, theoretical physicists believe it is never felt beyond the confines of the nucleus. The physicists are wrong about that. They just don't know it yet. More on that in a later chapter. And fourthly, physicists believe the strong force does not obey the inverse square law like the other forces, gravity and magnetism do. They're wrong about that too as we shall later see.

Oops! Sorry about that. I introduced a term I have not explained. The inverse square law. But don't worry. It's a piece of cake.

Known officially as The Law of Inverse Squares, the official definition is the force felt between two attractive objects is inversely proportional to the square of the distance between them. In plain English that means if something is twice as far away, the force between them will be reduced to one quarter. We have Isaac Newton to thank for this pillar in the foundation of modern science and it works out down to the last decimal place. It is fundamental to the law of universal gravitation and has been just as universally accepted as Gospel...until we started digging around in the nucleus.

By the way, did I mention electromagnetism also obeys the inverse square law? I didn't? OK. I'll mention it. Electromagnetism also obeys the inverse square law perfectly...down to the last decimal point.

Theoretical physicists are still scratching their collective heads over why the strong force does not seem to obey the inverse square law. They would like nothing better that to find a connection between the forces that do obey the law, gravity and magnetism, and the force that doesn't, the strong force. But alas, nothing seems to work. They built even bigger accelerators and smashed the protons together even harder looking for clues. To their great surprise when they smashed protons together hard enough a particle that no one had ever seen before popped out. It was ten times lighter than a proton. Even worse, there were 4 distinctly different kinds. For reasons best left unsaid the physicists called the new particles Quarks. They named the 4 varieties Up, Down, Top, and Bottom. And if that wasn't bad enough, a 5th, totally unexpected quark variety was discovered. They named it the Strange Quark. They worked the math and reworked the math and finally concluded a 6th variety of quark was needed to make the books balance, so to speak. So they smashed more protons together even harder and eventually discovered the 6th quark which they named Charm since it made the math work out...somewhat.

I will not even mention that each quark had its corresponding antiparticle nor that many other particles were discovered as they increased the power of their accelerators and I

absolutely won't talk about Quantum Chromo-Dynamics, the new branch of quantum physics that was developed to deal with the growing family of subatomic nuclear particles. This was getting a little ridiculous. The words of the Greek philosopher Occam come to mind. He said, to paraphrase, whenever the explanation for something gets too complicated, its probably wrong. I wouldn't be a bit surprised if Occam's quote turned out to be right on the button when it comes to quantum physics, and he said it thousands of years ago. Smart guy.

In point of fact, quantum physics is in deep doo doo on many levels. It fails completely near the Event Horizon of a Black Hole. Much more on Black Holes later. It also fails to explain why particles have any mass at all. To explain mass, a proposed new particle must be found called the Higgs Boson. It is thought to be very heavy as particles go and the power needed to find it is far beyond the capabilities of any present or proposed future accelerator. I have a gut feeling about the Higgs, and I have learned to trust my guts when it comes to theoretical physics and my guts tell me the theorists are barking up the wrong tree. I think much of quantum physics is also barking up that same tree. It will take some revolutionary original thinking to steer theoretical physicists to the right tree. And that, Dear Reader, is my life's work and the purpose of this book. I'm almost ready to start fleshing out my view of the true nature of matter and the universe. Like everything else I have talked about its really very simple. So simple in fact that you, an expert on relativity, time travel and quantum physics, will slap yourself on the head and say, "Wow! Why didn't I think of that?"

But before I begin to reveal the simple truth, the concepts that will cause the scientific hierarchy much gnashing of teeth and much wringing of hands as the foundations of conventional wisdom tremble, I need to fill in just a little more background. The next chapter is about Black Holes, and understanding them is no harder than anything we've covered so far. Honest Injun.

Chapter Three

Black Holes

So much has been in the media and written about black holes it seems almost redundant to burden the reader with page after page of boring details, but it is very important to understand the basic concept as it underpins much of my New Universal Model that I have been hinting about. As usual, I'll explain it in simple terms.

Stars are really big balls of mostly Hydrogen gas. A star is born when enough hydrogen gas comes together to have enough gravity to compress the core to a high enough temperature and pressure to start the fusion process. Stars produce heat and light by fusing hydrogen into helium. About 4% of the mass is converted into energy in this process. An example of fusion here on Earth is the hydrogen bomb. It makes a much bigger bang because Uranium bombs convert less than 1% of the Uranium into energy. Uranium bombs release energy by splitting large atoms into smaller ones in a process called fission. Hydrogen fusion is a process where four hydrogen atoms are fused into one atom of Helium. The resulting helium atom weighs about 4% less than the four hydrogen atoms that went into the reaction. The 4% difference is converted into energy in accordance with Einstein's equation E=MC squared. The important concept to grasp here is, the outward force of the fusion reaction exactly balances the inward pull of gravity and the star is in equilibrium. And here it will stay, fusion energy just balancing gravity until the hydrogen fuel is used up. This process can go on for billions of years.

There are notable exceptions to the general rule. Some stars get brighter and dimmer periodically. Interestingly, the period is directly related to the star's mass. The bigger it is the faster it oscillates. The discovery of these oscillating stars, called Cepheid Variables, provided an important astronomical tool for measuring interstellar and intergalactic distances. Once the distance to any one of them was known, the distance to any other one could be worked out mathematically.

But most stars remain in equilibrium for the majority of their lives. It is what happens after a star has used up its hydrogen that can lead to the formation of a black hole. When the fuel runs out and the thermonuclear fires begin to die down, gravity starts winning the battle. Equilibrium is lost and the star begins contracting. As it does so the core heats up. Eventually another thermonuclear reaction starts up. This time helium is fused into even heavier elements, namely Oxygen. This reaction doesn't release as much energy as the hydrogen helium reaction and the star soon runs out of fuel again. Again gravity wins out and the star starts contracting again. This goes on, step by step, lighter atoms fusing into heavier ones until Iron is reached. Iron is the dead end of the nuclear fusion energy ladder. No amount of compression can get any more nuclear energy out of iron. The fires die down for the final time and the star cools and finally becomes a big, cold, dead lump of iron. That is unless the star is more than 4 times as massive than our sun. Massive stars end their lives in a blaze of glory, an explosion rivaled only by the Big Bang, a Supernova.

Massive stars don't stop at the iron stage. Gravity becomes so irresistible that the electrons in iron atoms are crushed into the nucleus and all the protons are changed into neutrons. We talked about this earlier. The result is a neutron star. A single teaspoon of neutron star material weighs millions, even billions of tons. Hard to imagine but true none-the-less.

Neutron stars are stable. They eventually cool and become cold, dead balls of Neutronium. That's the name physicists have given matter with all the empty space squeezed out.

So what makes a supernova? Some stars are so massive that they don't stop at the Neutronium stage. They go right on collapsing down to...nothingness.. The rebound from the collapse is the supernova explosion and what's left over in the center is a black hole.

A black hole is literally a hole in space. A place where gravity has crushed matter down to a mathematical point with no dimensions. Physicists call this point a Singularity. We would never know it was there except it still weighs as much as an entire star. If you've ever heard the expression, "Hey man, that's heavy." this is the place they were talking about. Black holes are the ultimate in heavy.

But black holes do make their presence known by their enormous gravitational fields. Gravitational field strength is measured by how fast it can accelerate anything in range of it. Earth has a gravitational acceleration of about seven miles per second or roughly 25,000 miles per hour. When NASA sends spacecraft to the moon, mars, or any place else beyond Earth orbit, it must go at least 25,000 miles per hour to escape Earth's gravity.

Black holes have a gravitational acceleration that exceeds the speed of light. Nothing can escape, not even light. As you approach a black hole its gravity gets stronger and stronger. At some point the gravitational acceleration of the black hole exactly matches the speed of light. This point is called the Event Horizon. Beyond this point Quantum Physics throws up its hands and says 'uncle'.

There are dozens theories about what happens beyond the event horizon. String theory, Superstring theory, Super symmetry, M or Brane theory, parallel universes, and a host of others. Some of these theories have many adherents and they point to 11 dimensional mathematical models and swear up and down their particular pet theory is right but frankly, its all guesswork. None of the current theories have that satisfying "Oh yeah! Now it all makes sense." gut feeling about them that Einstein must have felt when he deduced E=MC squared, or Newton must have felt when he wrote down f=ma. That's force equals mass times acceleration. If a theory doesn't have that bolt from the blue, gut feeling about it, or it takes 27 pages of 11 dimensional mathematics to explain it, then I believe it's a pretty good bet they're barking up the wrong tree. I tell you now my New Universal Model theory is breathtakingly simple and 'slap in the face' obvious, and has that deep gut feeling about it that inspires confidence, but first there is one more little detail to cover. I promise I will begin spinning it out while we talk about the Big Bang.

Chapter Four

The Big Bang

As far as we know, the universe began in a titanic explosion some 13.8 billion years ago and there is a great deal of evidence to support this view. Not the least of which is the undeniable fact that the universe is expanding. Hubble put us on the right track when he noticed a red shift in the spectrum of light from distant galaxies. And the farther away a galaxy was, the greater the red shift. Just exactly what you'd expect if the universe was expanding. It also implied that the universe was smaller at an earlier time. If the rate of expansion could be determined, simple mathematics would reveal how much time had passed since the beginning. The rate of expansion is known as the Hubble Constant and as telescopes got better and better it has been possible to calculate the value of the Hubble Constant ever more accurately. Astronomers, cosmologists, and physicists pretty much agree that 13.8 billion years is the right figure and there is no serious argument from any quarter. It's also agreed that in the beginning the universe expanded faster than light. This must be true as there is no other way the galaxies could have gotten so far apart so quickly. No, this is not a violation of Einstein's nothing can go faster than light rule. In the beginning there was no time and no space. The expanding bubble of the early universe created time and space as it went so there was no reason it couldn't expand faster than light.

What IS in dispute is the manner in which matter was created from the energy of the Big Bang. You already know matter and energy are two forms of the same thing and that it takes a great deal of energy to make a small amount of matter. But you might not know that when energy is converted to matter it always does so in accordance with the Law of Symmetry. Particles are always created in pairs. One particle is ordinary matter and the other is antimatter. It simply cannot happen any other way.

Matter and antimatter are deadly enemies. When particles of matter and antimatter meet they instantly flash back into the same amount of energy it took to create them, and the conversion is 100%.

So, at least half the particles in the universe must be antimatter….right? You'd think so, but, strangely, the visible universe appears to be all matter. 100%. There is no significant amount of antimatter in the universe at all, at least none we can detect. Strange, indeed.

So the prevailing theory put forward by the cosmologists is, the Big Bang created slightly more matter than antimatter. And after the fireworks were over this slight excess of matter accounts for all the matter in the universe today. Of course this means the law of conservation of symmetry is out the window, but the theorists don't have any other explanation, so they shrug their shoulders and say, "Oh well, sometimes symmetry can be broken."

HOGWASH! Bending the laws of physics to account for the missing antimatter is just plain dirty pool. It just feels wrong deep in my guts, and I trust my gut feelings.

The only reason such scientific blasphemy has been accepted as Gospel by the theorists is, they have no other way to explain it.

The mystery of the missing antimatter has been a driving force and the inspiration behind my New Universal Model theory and explaining where the antimatter went is one of the cornerstones. And, as usual, its very simple.

In the universe today nothing can go faster than light nor even match it except light itself. But shortly after the Big Bang, during the so-called inflationary phase, exceeding the speed of light was possible since space and time did not exist outside the expanding bubble of the universe. I propose a symmetrical view of the inflationary phase. All the antimatter expanded faster than light while all the matter was left behind. Maybe not 100% as there was still quite a fireworks show back then, enough to still be detected as snow on a TV set between channels. The so-called 'Echo of the Big Bang' that so much fuss was made over when it was first discovered.

But most of the antimatter crossed the light barrier when it was still 'legal' to do so. Behind the teacher's back so to speak. And it is still there today, still moving faster than light having made the transition during inflation.

'Missing Mass' has been a hot topic in cosmology lately. Most of the mass of the universe is invisible. We know it is there as its gravitational influence on the mass we can see is undeniable. The theorists scratched their heads and invented 'Dark Matter' and 'Dark Energy' to account for it. Never mind that they don't know what it is and don't know where to look for it. They know it is there so they just made up something to explain it.

Well, I can tell you what it is and where it is. Its antimatter and it is still here, still moving faster than light and has been ever since inflation. Trans-light antimatter may not account for all the missing mass, but my guts tell me it accounts for the majority of it.

Symmetry is a cornerstone of physical law as we understand it and if the antimatter half of the universe is really there, it's a safe bet that it is the exact mirror image of the matter half.

In the matter universe nothing can go faster than light. In the antimatter universe nothing can go slower than light. In the matter universe most of the mass is at rest or close to it. The more energy a particle has the faster it goes, but it can never quite reach the speed of light.

In the antimatter universe the more energy a particle carries the slower it goes, but it can never quite slow down to the speed of light. Just the exact opposite of the matter universe.

And, the less energy a particle carries the faster it goes. Particles at rest in the antimatter universe would travel at almost infinite speed. They would effectively be everywhere at once. Take a minute to let that sink in.

No, they wouldn't go flying off into nothingness. The universe curves in on itself and that keeps them all herded in here quite nicely.

The antimatter universe, composed of particles that are as good as everywhere at once in the matter universe might kind of smear together and, as seen from our perspective, appear as a perfectly uniform background in much the same way that an electron in an atom kind of smears around its orbit as a uniform band.

What would you call this background? The term 'Fabric of Space' practically rears up and slaps me in the face. Here is the ether Michelson and Morley were looking for but never found. Here is the medium that allows light to travel through the vacuum of space. Its so plain it gives me goose bumps. When the idea popped into my head many years ago I felt like I had been hit by a bolt of lightning and my guts told me this is something that could shake the foundations of conventional wisdom. But this is just one part of my New Universal Model. There are several more cornerstones and they are all as simple as this one and they all fit together like a hand in a glove and they give me a warm, fuzzy feeling inside.

But I'm getting ahead of myself, as usual.

Faster then light particles have been the subject of speculation for decades. There's even a name for them. Tachyons. In the next chapter we will take a closer look at this imaginary particle that just may turn out to be real.

Chapter Five

The Tachyon Flux

The idea of Tachyons has been a stock item in science fiction lore for decades. Captain Kirk wouldn't be caught dead without his trusty tachyon generator. The idea of sub-space radio communications in Star Trek is based on tachyons. Since tachyons are everywhere at once its at least conceivable, no matter how far into space the Enterprise goes, they can always phone home instantly. Wouldn't it be ironic if the science fiction writers got it right and tachyons actually exist. Kind of like how Arthur C. Clarke used the concept of the communications satellite in geo-synchronous orbit in a science fiction story long ago, and it all came true. He is honored by having that area of space named "The Clarke Belt".

But if tachyons are real the implications go far beyond just a dinky satellite communications network. It would rock the very foundations of science and explain many of the mysteries that currently confound theoretical physics. Here's a few biggies.

In quantum physics it is known for positively sure that information about the quantum state of certain particles can be transmitted faster than light. Much faster. For instance, a particle can be in one of two possible quantum states. When a particle pair is created in an accelerator they will always have opposite quantum states. If the physicist measures the quantum state of one particle, its twin will instantaneously assume the opposite quantum state. Since both particles are embedded in the tachyon flux, its at least conceivable the particles could communicate with each other instantaneously via the tachyon link.

Light now has a medium to travel through. This should make physicists happy. They always knew waves need a medium to vibrate and the universal background tachyon flux, the very fabric of space itself, is just what the doctor ordered to fill this bill. As mentioned earlier the tachyon flux could well be the ether Michelson and Morley were looking for, but never found.

The directors of Project SETI, the search for intelligent alien civilizations, may be barking up the wrong tree too. One might even imagine interstellar or even intergalactic communication via the tachyon channel is possible, or even already and accomplished fact. Maybe its just that we have not been looking in the right place. Maybe we will learn to build a tachyon radio. Maybe we will get a big surprise when we first turn it on and find the tachyon channel is alive with alien chatter and maybe even a bigger surprise when we find one the messages is FOR US! And I think I have a pretty good idea what will be in that message.

"Hey you guys...OK OK you found us....now would you please stop with the static already? That thing you hacked together is bleeding across 2 billion channels and is starting to become a real pain in the behind. "

"Now..here's the schematics to build one that is at least tunable....and when you've finished that, give us a call and we'll see about getting you people a novice ticket...and some basic instruction. We have been watching you and are glad you managed to discover the tachyon channel before blowing yourselves to smithereens. A lot of civilizations like yours do just that. Even though you're as dumb as posts, we like your music and art so we'll help you solve your great problems, so we can see some more I Love Lucy episodes" :)

OK. I took a few liberties there, hehe, but it is entirely possible a cosmic tachyon communications network already exists and is just waiting to be discovered. How's that for egg in your beer? :)

Oh yes, Dear Reader, I would not be surprised if my warm fuzzies are contagious and you are beginning to feel them too. And this is only the tip of the iceberg. If the tachyon flux is real, the possibilities are nearly endless and everywhere you look new ones come bubbling up.

So, rather than continuing to gaze into the crystal ball and speculating what we might use the tachyon flux for, it might to be better to let the future scientists and engineers, and ordinary people too, dream up the possibilities. They will surely do a better job than anything my humble mind might conjure up.

If you think this is good so far, wait until I introduce the next cornerstone of the New Universal Model in the next chapter.

Everything is Made of Little Bitty Black Holes

The reason I spent so much time on atomic structure, namely, the strong force, and black holes earlier is because the relationship of gravity and the strong force is the second cornerstone of the New Universal Model.

Theoretical physicists would just love to explore beyond the event horizon of a black hole and delve into the mysteries of the Strong Force, but alas, the only tool they have, Quantum Mechanics, fails miserably at both. So, its either invent some new mathematical tools, or do some original thinking. I have been pondering gravity and the strong force every day for over 30 years now, and when the insight finally hit me, again, it was like a bolt of lightning, and the gut feeling was even warmer and fuzzier than before.

Remember the spaceship we flew to the nearest star earlier to examine relativity? Well, its time to warm up the jets again but this time our destination is a black hole. The guy at the spaceport with the big telescope is still there and the gigantic searchlight too. The Captain orders the gang plank raised and engages the engines. The ground crew switches on the searchlight as the ship lifts off. Next stop? Where no one has gone before.

We have already seen how the passage of time for the passengers depends on their speed. The faster they go the slower time runs, from their perspective. As the ship approaches the event horizon of the black hole the Captain cuts the engines. They will not be needed anymore since the gravity of the black hole has taken over and the ship is rapidly approaching the speed of light. The guy at the spaceport with the telescope sees the ship going faster and faster. Finally, just as the ship touches the event horizon the guy with the telescope sees it blink out of existence. Gone! Never to be seen again by anyone in this universe. The Captain and the passengers all wrote out their wills before that left because they were pretty sure it would be a one way trip.

Strangely, as the ship touches the event horizon the passengers notice nothing unusual at all. One of them sticks his meter out the window to measure the speed of the searchlight beam. Predictably, the meter reads 186,000 miles per second (and a fraction) right on the nose. The exact speed of light as you would expect. But the ship is now traveling at the speed of light too. The only possible way the meter can register the same speed as the ship is, if relative time for the passengers has stopped completely. And in fact, time stops at the event horizon. There is no serious argument from any quarter about this. Its what happens next that is the subject of much debate. As usual, the answer is simple and obvious.

Time slows down when approaching the event horizon. Time stops at the event horizon. Time may run BACKWARDS beyond the event horizon. How far backwards you ask? All the way back...to the beginning...to the moment of the Big Bang. Black holes are a link between today and all the yesterdays since the Big Bang. Visualizing the time vortex is difficult since it is not in 3 dimensional space. There is good reason to believe 11 dimensions are involved. We can never hope to see anymore than a shadow of higher dimensional

objects from a 3 dimensional perspective, but, as usual, I have an easy way of explaining it.

Imagine a 2 dimensional object, like a sheet of paper. It has length and width but no thickness. Now, from the perspective of a 2 dimensional being living there, we will pass a 3 dimensional object through it, a ball for instance. When the ball first touches the sheet of paper the 2 dimensional being will see a dot. As the ball begins to penetrate, the dot becomes a disk. As the ball penetrates farther, the disk gets larger. When the ball gets half way through the disk reaches its maximum size. Then, as the ball passes the half way point the disk begins to get smaller and smaller. Finally, the disk becomes a dot again as the ball gets almost all the way through. As the ball completes the journey, the dot disappears. Now we conduct an interview with the 2 dimensional being who just witnessed a 3 dimensional ball pass through his living space.

Interviewer: Mr. 2D, what did you see?
Mr. 2D: I saw a dot that turned into a disk. The disk got bigger, then it got smaller, then it became a dot again, then it disappeared.
Interviewer: What you saw was a 3 dimensional object, called a sphere, pass through your world. Can you describe it?
Mr. 2D: Yes, I just did. A sphere is a dot that becomes a disk. The disk gets bigger, then smaller, becomes a dot again, then disappears.

As you see, Mr. 2D could only see part of the 3 dimensional object at any given time as it passed through his plane of existence. He can never see it all at once and he can never truly visualize a sphere. From our 3 dimensional perspective we can only see part of a higher dimensional object at a time and never truly visualize all of it, but we may be able to see parts of it like Mr. 2D did. The so-called Zero Point is the perfect example. When theoretical physicists look at any point in space from the tiniest possible perspective, they see a boiling cauldron of virtual particles popping into existence from nowhere and then just as quickly vanishing again. There is no net energy gain or loss so they named this phenomena the 'Zero Point'. It is a complete mystery to science at this point in time.

Could it be this is what the Tachyon Flux looks like from our 3D perspective? We can never visualize the fabric of space since it exists in a different dimension, but we may be able to see its shadow, see tiny parts of it as it passes through our 3D plane of existence like Mr. 2D. Since traditional science has not come forward with any sort of rational explanation, I hereby claim the Zero Point as strong evidence for the existence of the Tachyon Flux in particular and the mirror image antimatter universe in general. And besides, it gives me the warm fuzzies. Not to mention it's the third cornerstone of my theory.

Next, we go back to the atomic nucleus and take a closer look at the strong force. Theorists would really love to know why the strong force doesn't obey the inverse square law. Well, maybe if we look at a proton in a new and different way we can coax it into doing just that.

What do we know about the proton? Well, it has some mass. It weighs about 1635 times more than an electron. We also know it carries a positive charge and strongly repels other protons. And we know if you shoot one at another hard enough, a point can be reached where there is not enough time for repulsion to deflect its path and it gets close enough for the strong force to grab it and hold on tight. This is called fusion.

Its interesting to note here that the branch of quantum mechanics that deals with all nuclear particle interactions is called Field Theory and the calculations are made with Field Equations. The behavior of all particles is completely dependant on the interaction one particle's field, nuclear, magnetic or both, with the field of another particle. There are no exceptions. There is no record whatsoever of any particle actually having physical contact with any other particle, no matter how hard we smash them together. Protons are much smaller than light waves so no matter how powerful the microscope, we can't see them. We have, however, managed to get some kind of image by hitting them with a very strong magnetic field, then suddenly switching it off. The proton absorbs some energy and then releases it. Sensitive detectors pick up the released energy and computers generate an image. The best we can do is get an image of a fuzzy little ball.

Since no one has actually seen a proton, we are free to speculate. Using field mechanics, we can get some idea of the apparent diameter of a proton, but this is only a guess since we are using the proton's field to make the guess, not the physical object itself.

Suppose a proton does not have any size at all but has all its mass concentrated into a mathematical point with no dimensions. That point would be called a singularity. Since it has no size but does have mass, the density of this point would be infinite. The gravitational field generated by an infinitely dense point would also be infinite. An infinitely strong gravitational field radiating from a point with no dimensions is very interesting. It could easily be mistaken for the strong force. If we apply the law of inverse squares to an infinitely dense point in space, you don't have to get very far away before the gravitational acceleration of the infinitely dense point diminishes enough to exactly equal the speed of light. Lo and Behold. An event horizon. A little farther out, say to the apparent diameter of a proton and the gravitational force has inverse squared itself down to the point where it exactly equals the strong force. And beyond that? By the time we get to where the electrons are orbiting, it has inverse squared its way down to the strength of ordinary gravity and is completely unnoticeable to the electrons.

That's right. If particles are little bitty black holes, gravity and the strong force can be one and the same, and in fact, in my New Universal Model, they are. Why no one else has put this concept forward is beyond me. Its as simple and obvious as a slap in the face and it is the forth cornerstone of the New Universal Model.

Not just protons, EVERY particle that contains mass is a little black hole. Matter, physically speaking, does not exist. It's all made of little bitty black holes.

This is the forth cornerstone ties the other three together and neatly provides an integrated picture of the universe as a whole while also solving the great mysteries of physics that have been perplexing theoretical physicists and cosmologists throughout history.

Now that we have looked at the guts, the nuts and bolts of the New Universal Model, its time to step away and look at the big picture.

Although the New Universal Model does a good job of explaining the physical side of the universe in general, it is, after all, just a box of tools. The next chapter will attempt to address the really big questions the philosophers have pondered throughout history.

We have conceived, designed, and assembled our vehicle in the past chapters. Now, lets take it out for a test drive.

Chapter Seven

The Mind of God

There is no more controversial subject than religion. Religion and science have always been at odds with each other. Historically, science as been very good at answering questions concerning HOW things work, but left the questions of WHY to philosophers and theologians. Now that we have some new scientific tools, it seems a fair test would be to apply them to a subject science has never seriously addressed before. A good place to start might be to look at what religions throughout history have had in common.

It is pretty much agreed upon one of the things that separates humans from animals is self awareness. While its true some higher apes do recognize themselves in a mirror, and some elephants show great interest in the bones of their dead relatives, only humans beings know for positively sure that one day they will die. Obviously, throughout life human beings are highly motivated to avoid situations that could result in death. We share this desire to live as long as possible with the animals of course, but only human beings can conceive of an afterlife.

The obvious great attraction of religion is the promise of the chance to live on after death in an idyllic setting. Whether it is called heaven, nirvana, or the happy hunting ground it's a basic tenant of each and every one I have researched. Also, all religions set down a series of rules to live by to achieve this immortality and stress the dire consequences one will suffer should they break the rules. This is a consistent theme across the entire spectrum of belief systems.

But is any of it real? After we die do we really go to heaven if we're good and go to hell if we're bad? Whether it is real or not, one thing is certain. It is human nature to seek to gain advantage in the game of life. Human beings have two basic goals. Survival and procreation. In other words, food and sex. In this respect we are no different than any other life form on this planet, but only human beings seek to extend their survival beyond the grave. One religion in particular promises sex after death too. Namely, 72 virgins. I will not mention which one it is as its practitioners are noted for taking a dim view of those who would speak disrespectfully of their religion, especially writers.

Its not hard to see how unscrupulous individuals throughout history could have sought to gain great advantage by representing themselves as messengers from God or even as Gods themselves. Modern day televangelists bring this point home with singular clarity.

Still, there are many who truly seek the path to spiritual enlightenment. You may have met someone who has undergone the 'Religious Experience." I have, and there is no doubt whatsoever that something profound has happened to them. It is a life changing event. It is my observation that most people don't change. But some do, and there is no doubt about it. Some describe it as 'getting the call' or 'it was like getting hit by a bolt of lightning'.

Whatever happened, it was real enough to them. Truly a life changing experience, and its not a flash in the pan either. It lasts a lifetime. It is profound changes in human behavior like this that lead me to believe something significant has occurred, something that could be scientifically investigated with the right tools, and we have some dandy new ones too, so lets use them to look at the religious experience.

The tachyon flux, the background that defines the very fabric of space itself is everywhere at once. Every single particle, atom, and molecule in the matter universe is embedded within its matrix. Everything touches it. Everything! Everywhere! The entire cosmos! Including the living cells of every living thing on this planet and on every other planet in the universe, particularly the cells of every living brain. We have already seen how 2 particles can exchange information about each other's quantum state instantly, over any distance. This is absolutely true and has been accepted as fact by the scientific community. It really isn't that much of a stretch to imagine that every living brain in the universe can exchange information with every other living brain, instantly. And the matrix of the tachyon flux is not limited to the present. It extends back through time to the beginning, meaning every brain that has EVER lived in the entire cosmos is part of what I shall call 'The Cosmic Mind.' Some might even call it the 'Mind of God'. Whatever you might call it, every religion knows about it. The Eastern religions call it Nirvana, the state of spiritual enlightenment they describe as being one with the universe. That sure sounds like the Cosmic Mind to me. Some philosophers have called it 'The Akashic Record'. Wikipedia defines it as...

"The akashic records (akasha is a Sanskrit word meaning "sky", "space" or "aether") is a term used in theosophy (and Anthroposophy) to describe a compendium of mystical knowledge encoded in a non-physical plane of existence."

That sure sounds like the tachyon flux to me. Its just that I define it with scientifically valid, logical reasoning and they define it with metaphysical mumbo jumbo. But its clear we are talking about the same thing.

The big question is, how do you get there? America's most famous psychic, Edgar Cayce, knew how to get there. He went to sleep. Actually a trance-like state he had learned to enter easily, during which he could be asked questions on any subject and he could answer as if he had access to all knowledge. I highly recommend the book, 'Edgar Cayce, The Sleeping Prophet'. The story of the life of Edgar Cayce influenced me greatly on my path to the discovery of the tachyon flux.

Cayce was once asked while in his trance-like state, "Where does the knowledge come from?" He answered, "Its like going to a filing cabinet, taking out a folder and reading from the papers in it." Cayce described his experience in terms he was familiar with, filing cabinets and folders. On another occasion, while he was awake, someone asked him, "How do you do it?" His answered with the most important words I have ever heard in my life, words that set a direction for my life that has not wavered since, words that define the path to enlightenment like none other I have ever heard. It is my great pleasure

and privilege to share them with you now. Edgar Cayce said…

"I believe anyone can do as I do….if they would only be willing to pay the price of detachment from self-interest that it takes to develop those abilities."

That is the true path, Dear Reader, detachment from self-interest. Any trace of selfishness will block your path. There are many ways to say it. The Christian way is to humble yourself and be of service to others expecting no reward nor even acknowledgement. The way of Eastern religions is to clear the mind of worldly things through meditation, the object being the complete suppression of the ego. Whatever technique is used, the path is always the same….detachment from self-interest.

Many will seek the path to enlightenment but few will find it.

Some final thoughts.

Thank you for reading. I should have collected my thoughts and written them down long ago. There is much more, of course, a lifetime of experiences, but as I said in the beginning this isn't about me. Its about sharing a clear and simple view of the universe. It is also possible this brief look at the universe through the lens of the New Universal Model will raise more questions than it answers. I sincerely hope so. It may even be right. Or maybe not. Who knows. I do know it has given me a warm feeling inside and a calm, inner strength, a strength that showed when I was lying near death on a cold, hard bed in an emergency room, and was not afraid.

John Young