The science behind science fiction

Business

“ If at first an idea doesn’t sound absurd, then there is no hope for it”-Albert Einstein This inane yet cogent statement, coming from the very lips of the ultimate imperator of physics, proves the fact that the ideas forming the very foundations of physics, originally started out as laughing matters which were thoroughly denied by physicists back then. Be it the majestic Copernican revolution which formed the base of modern cosmology or the dejected existence of an atomic bomb by the very man who happened to discover an atomic nucleus, the definition of “ scientific impossibility” has dramatically metamorphosed over the years, and is working its magic even today. Back in the ages, majority of scientific minds had an unbroken determination to construct a perpetual motion machine; a device which with a single input of power would run forever.

Today, such a machine is regardlessly denied by the firm laws of physics, which includes the involvement of thermodynamics and the law of conservation of energy. However, these laws and facts were established whence an inquisitive mind wandered in an area untouched by the other population. Once the mind, after eons of research and work, discovered that such a machine was impossible to build due to some restrictions, he established a certain set of rules, which we call thermodynamics or laws of conservation of energy. In the process of building a perpetual motion machine, physics stumbled upon some of the most significant laws and rules, and though a perpetual motion machine wasn’t materialized, the aid of its research powered thousands of other necessary inventions. This fact proves that every time humans meddle with the apparent impossible, a new wave of transition sweeps physics and updates it, establishing some new laws and

refining the other ones. In the mid-eighties, a French author and pioneer helped establish the current and modern genre of Science-Fiction.

Aliased Jules Verne, the French lad predicted the existence of space travel, air transport, water transport much before any known plans of these particulars were devised. Back then, Verne’s books such as 20, 000 Leagues Under the Sea and Around the World in Eighty Days, were considered fantasy and were laughed about by some of the brightest minds of that time. However, today, a hundred years later, Verne’s predictions have become what we moderns call “ infrastructure”. Be it the frequent air-trips we make or the suit we put on to go scuba diving, Verne had it all theorized with him a hundred years back. Somewhere around the same time, another English ink slinger came into existence by the name of HG Wells.

His non-fictional bestseller, Anticipations, predicted the existence of trains, ships and planes. He made perplexing predictions of the state of the world in the year 2000 which included everything from high-speed trains (metro) to the establishment of a European Union and hypothesis of urban Migration. Today, Jules Verne and HG Wells are collectively known as the founding father of science fiction, but at the time they were considered “ just other lads who dream for a living”. The momentary situation does seem to be a lot different then what it once was. Due to technological advancements and good research work, physicists have thoroughly looked into the vast ocean of apparent scientific impossibilities like time-travel and teleportation. Science fiction has got a lot more serious and is no more a laughing matter.

Futuristic predictions are being grounded and there is a stunning scientific breakthrough on an almost daily basis. Physics has trudged a long way from where it once was and almost every previously-thought impossibility is now theorized and explained. Future physics guarantees the materialization of what happens to be today's science fiction. From space tourism to quantum teleportation, the next few generations are likely to see all the predictions and assumptions which were made by their forefathers to fabricate. However, this where a peculiar question cooks up. What exactly are the future inventions which theoretical physics has hypothesized? Lets take a look at time travel " How can the past and future be, when the past no longer is and future is not yet? The present is always existing and if it did not become the past, which never was, time would acquire the definition of eternity.

" These two lines, written by Saint Augustine in 700 A. D, puzzle physicists even at the present moment. The logic Augustine is trying to explain defies the very existence of time, as there is no longer a past after the present and the future hasn't happened, leaving the current moment to be a variable, always changing. Therefore what is time? Does it even exist? Or is it just a mere illusion? But to counterfeit Augustine's anti-time logic, H. G Wells, the famous science visionary and author, says that there are four dimensions. For example, a cube is made up of three dimensions, height, width and length.

It can't exist without the absence of any one of these dimensions. According to Wells, there is a fourth dimension, a specific duration, a time limit or the amount of time the very cube exists for. I were to completely destroy the

cube by burning it, and to see the amount of time it took to burn and destroy I set a timer. Just as the cube came into existence, I set it on fire. It took one minute for the cube to destroy or cease to exist.

Therefore the cube’s duration was one minute. Its age was one minute. The cube lasted for a minute before ceasing to exist. But how would have the cube existed at all if it didn’t have a duration or time limit? A cube can’t exist for zero nanoseconds! Even if the cube comes into existence for the minutest of time, it will have a duration. It needs duration to exist. A particular parameter that describes the amount of time it existed for.

Every existing thing has duration because if it did, it wouldn’t exist. This is where the biggest question in modern physics comes in. What is time? You find a perfect physical definition of time with enough evidence to support it and you have Nobel Prize at your feet. The best and most accepted answer so far has been delivered by Einstein. According to Einstein, if one human was to move at the speed of light , time would pass faster for him/her.

Which leads to an even bigger question. How does time control age? If that one human was to travel faster than the speed of light, would he age faster than other stationery humans? Or would he remain just the same age as his body wouldn’t wear off? What exactly controls age, then? According to science, age is nothing but a constant wear and tear of the body that eventually leads to the end of a lifespan, as key organs, like heart and the brain, are tired and torn due to constant work. Without the human body repair system, humans would have a much shorter life-expectancy. Luckily, every time we get hurt or break a leg, it cures. But once you’re old, a wound

may not heal as fast as it once did or may never cure at all! This happens because of the deactivation of a gene family in our body, known as Longevity Genes. Its these genes that get the human auto-repair system to work, but once deactivated, the repair system just doesn't function cause it gets no command from its boss.

Therefore, if humans find a way to activate these special genes, once they have been deactivated naturally by the body, then the repair system will continue tissue replenish and repair forever, making human eternal. Therefore time would have no effect on humans as they would last forever. This is where another major question comes in. If everything in the entire universe, including the earth and everything, was to remain in one form or unchanged state forever, then would time cease to exist? Imagine that you have built a time machine and journey into the distant future. But when you land there you discover nothing has changed! There are no flying cars or robots.

Even your clothes haven't moved an inch from their original postion. The sun hasn't moved for millenniums. This means that no change has occurred anywhere. Clocks have stopped, everything is still. And it will stay like this forever. Therefore there is nothing like time in such a place.

Can it be said that time is made of two parameters placed between the start of a change and end of a change? A clock's hand moves ever second, its position changes, and that change between the new position and the old position of the hand is known as a second. But if the clock, didn't tick, sun didn't rise and everything was still and untouched, forever, then there would

be no time as there would be no change! So time can be described as the flow of events between some amount of changes. The theory that was just explained is just one of the countless ones present all across history. That’s why, even today time remains a mystery. Its like the world’s most mysterious puzzle, there have been more than a 1000 solutions to it, which are probably all right, we have no way of knowing. The ultimate invention of the millennium would indefinitely be time travel.

If time travel becomes a possibility then nothing would remain as it is. History may accidentally change its course and bizarre things may happen. Humans will able to travel back and forth through like space, visiting events that are yet to happen or could happen in the future. Physical time travel to the future is a possibility today. If spaceship travelling at the speed of light revolves around the sun in a minute and comes back to the earth, a minute would have passed on the spaceship but an entire year would have passed on the earth. However, humans are far from reaching the speed of light, but when astronauts come to the earth after a long time, they are actually younger than they would be on Earth.

The current record of travelling into the future is held by Sergei Aydev, a Russian Astronaut who travelled 0. 03 seconds to the future while orbiting the earth. Basically, if a rocket leaves the Earth and revolves around the sun faster than the Earth would, he/she would have travelled into the future. Travelling to the past yet remains an intriguing mystery which is currently being explored by scientists. Though future time travel may resemble a type of form in this decade, past time travel may not develop till the next century. In the process of achieving the above impossible technology, scientists are

guaranteed to explore and discover some other mysterious characteristics of Physics, and one day when your son travels into the future or teleports to Mars or lives in a building which is crafted from force fields, don’t be surprised because nothing is impossible in physics.