

Things that were once just fantastic fiction of science fiction make up many of today's technologies. Did you know that Jules Verne, who was a nineteenth-century science fiction writer, has already dreamed about devices such as fax machines, a worldwide network, and moon rocket ships? Although we accepted these technologies today, Verne's contemporaries, even the leading physicists, laughed them, convinced them to be impossible.

Even when you watch sci-fi movies that aren't that old, you can see that some of the technologies depicted today are considered rough, like large computers with lots of flashing bulbs. In some respects, the science of now has exceeded fiction yesterday, although it has not yet passed through other galaxies wearing catsuits.

And are you wondering about what will technologies that seem impossible today be? Which of these is going to be achieved in the future and how? You are going to discover if you keep reading.

Chapter 1 - There is found actual science after the opinions of force areas and invisibility cloaks.

Do you recognize the force fields applied in Star Trek? Challenging energy barriers that preserve starships from rockets and enemy fire? Imaginary, isn't it? The one, that is known in classical physics, is force fields.

As it understands, many objects can have an impact on other objects around them without direct contact with them. For example, a magnet pulls or pushes things in an exact field around it. In the nineteenth century, by Michael Faraday who was an English scientist named, it is told that uncovered the concept of force fields, invisible fields, or lines of force surrounding a magnet. Then, the concept extended to involve other forces, like the earth's gravitational field.

Of course, although these are not the force fields that we recognize from science fiction, we can create them with the help of them. It may even be likely to improve force fields that deflect rockets.

Here's what you need to do: When the gas is exhibited to excessive heat, plasma which is electrically charged mass that's neither solid, liquid or gas-free occurs. This plasma can then be formed with magnetic and electric fields to form an invisible layer or plasma window. This force field can then be strengthened with a carbon nanotube cage: nanoscopic cylinders made of thin rolled carbon layers. The thing that is stronger than steel is carbon nanotubes and these can deflect rockets.

But what if you desire to divert someone's attention with, for instance, invisibility cloak? This is not impossible either!

Our talent for seeing depends on the light reflected by objects. The more light that passes through the material instead of being reflected, the less visible the material, for example,

what happens with a gas or liquid. However, there is another way to make things invisible: In 2006, by scientists at Duke University, it was improved composite materials known as metamaterials including small particles that were deflected instead of reflecting light waves. Objects wrapped in this type of material are almost invisible.

Chapter 2 - Somethings that can appear outside the world of Star Wars can be phasors and death stars.

From the Greek mathematician Archimedes until the Star Wars movies, which fascinates us; the opinion was to use lasers or rays of light as weapons. So how realistic is it to imagine that one day we will fire handheld fighter weapons or use the planetary destructive power of George Lucas's Death Star?

With advances in nanotechnology, a hand-held laser gun may be likely in the not too far future. In point, a laser in missile defense systems has been already using by the army.

However, to create a compact laser gun with various firing capabilities, we require a portable power supply for lasers and we are not there yet. Although nanotechnology has created miniature batteries that can store enough energy for a laser gun working one day, we also require to discover a constant material that can resist that much energy.

So, whether you are lucky or unfortunate adequate to witness a first-hand laser gun in your life, there is one thing that cannot be never seen by you before you die: super-lasers destructing the planet.

It may take millions of years without finding a way to power these super lasers, but it's not really opposite the laws of physics.

Until this date, we know a kind of beam with almost unimaginable power: gamma-ray burst. Gamma-ray explosives are gigantic extragalactic radiation bursts that are thought to occur during the creation of a black hole.

It is theoretically likely that we can foresee a gamma-ray blaster and manipulate it to purpose in a particular direction, but it will be millions of years in the future.

Chapter 3 - Theoretically, although the probability of occurring teleportation has a real possibility, it is going to take years before we can teleport people.

Do you remember when was the last time you dreamed of "teleporting" to your destination when you got stuck in the last traffic jam? This opinion of teleportation includes transferring material, energy, or information from one place to another without passing through the physical location, and it is not as strange as you think.

In quantum theory, teleportation is known to always happen spontaneously. That is, electrons are constantly receiving "quantum leaps", that is, they can suddenly disappear and

reappear elsewhere in the atom, and even appear in many different places at the same time. So, it is theoretically likely that you can instantly reach a meeting, a party, or Mars where you need it one day.

When two electrons that vibrate at the same time are separated, there is also a striking phenomenon called quantum entanglement that occurs. Whatever is done to one electron, even if they are miles away from each other, it switches the state of the other. That is described that the information of one is transported to the other.

Even more charming is that by scientists, teleporting of objects has been already achieved. Using quantum mixing, physicists beamed trillions of atoms entangled with a beam of light over long distances.

What many do not recognize is that when an atom is "teleport" it is information about its transmitted state, for instance, the form of rotation. The atom itself is not physically transferred. In a point, teleporting a thing from location A to location B needs configuration at location B depends on the teleported data.

At remarkably low temperatures, most of the atoms are entangled, so experiments are carried out by scientists with a Bose-Einstein condensate, one of the oldest materials in the universe known for the hope of irradiating increasingly large objects.

However, given that teleportation can only occur under ultimate states, teleportation may take a little longer at the moment. Also, teleporting something as complex as a human body is tough as it may need quantum computer calculations and such technology yet is at a rather primitive stage.

Chapter 4 - Possible things involve reading the mind and relocating things with your mind.

Who doesn't desire to read minds? For more than a century, by scientists, these have been explored that the requirements of psychics and exploring technological possibilities that can allow other extra perception (ESP), including mind-reading and spiritual reading, that is, they can move objects with the mind.

Even if there is no solid proof that people can read minds, it makes leaps by technology when reading brain activity. Nevertheless, they cannot be read due to the very weak electrical signals emitted from the brain, and even if an antenna is connected to them, there is no way to decode the signals.

However, with MRI technology, by scientists, it is currently helped them identify human brain models. So far, a "dictionary of thought" has been compiled that can turn these patterns into human passions.

However, with MRI technology, it is far from being able to decipher the abundance of individual thoughts that a human mind can produce, or mapping hundreds of billions of

neurons in the human brain as it approaches the creation of handheld devices that can read small magnetic fields.

What about psychokinesis? The thing that is near to redesigning this phenomenon is that we communicate immediately to a computer through the electronic transportation of brain waves.

Thanks to modern technology, it has been made possible to use implanted chips to read brain waves and convert them into commands. This provides paralyzed people to not only check tools but also to accomplish complex duties and even play video games.

In the next century, with this technology, it can be improved to a point that can check nanotechnology through biofeedback and accomplish assignments that look like true magic today.

Chapter 5 - By science, it is still actually trying to improve smart robots or computers.

From Rosie in The Jetsons to Terminator, the purpose of robots and artificial intelligence for generations has been heavily influenced. However, thanks to modern computers, there are very basic things that they cannot do when they can make mind-blowing calculations in the blink of an eye.

Such as speaking a language. While machines can be processed to combine symbols and build grammatically true sentences, they cannot understand the meaning behind words, and it is claimed by many theorists that they will never want to. By computer scientists, common sense has not been programmed to machines so far, and pattern recognition in computers remains weak.

The opinion can be seemed implementable: identify the rules of general sense and turn them into an algorithm that can be fed into the computer. For example, "fire can be dangerous" can be a rule.

However, finding millions of orders is an issue.

As a result, in decades of programming, no victory has been seen in equipping computers with common sense. Similarly, good results have not been achieved with programming machines that recognize patterns. Let's say you desire to go to a room: you need to recognize barriers and find a proper route around them. Although people can do this immediately, by robots, it is only seen lines and curves and lags far behind to understand them.

However, with a new approach to creating artificial intelligence, it is provided robots to discover from experiences like animals and humans. We do not memorize the rules about common sense as a baby. On the contrary, our general sense appears from experience:

when by us, it is touched the water, we realize that it is wet. In this way, we learn while going to the rooms by trial and error, stumbling on the way, and by hitting the walls.

Inspired by this, insect-like robots were improved by MIT professor Rodney Brooks who found out to walk based on experience. This worked so great that some of his robots are now gathering data for NASA on Mars.

Chapter 6 - Although extraterrestrial life has not been found yet, by scientists, it has been continuing to research.

Are we the just clever beings in the cosmos? Although this question has been investigated for centuries, are we near to discovering an answer?

By scientists, steps are taken to find other forms of smart life: it is provided that our telescopes are getting greater, and our capacity to describe what they show us is also developing. So much so that a new extrasolar planet is discovered twice a month. Also, as we keep going to sending satellites, the probability of discovering signs of life elsewhere in the universe rises.

As 30 years of inadequate evidence have passed, by scientists who are in the Extraterrestrial Intelligence Search (SETI) project, their research is expanded, hoping to receive interstellar signals. By science, it is also found more and more criteria for habitable planets, which permits us to explore for life in the most promising places.

One thing that is known is that life in the world is unimaginable without water, and this can also apply to life forms on other planets. Therefore, a key indicator in determining whether a planet can survive is the presence of water.

However, over the years, other factors have been discovered to designate the viability of a planet. Such as, having a big moon for important to fix the axis of a planet is a factor. Without it, a planet becomes remarkably hesitant, which can induce ultimate weather situations and make it uninhabitable.

It can be also looked for the presence of a Jupiter-like planet in the galaxy of a planet, due to this assist preserve the planet from asteroids.

Still, despite the efforts, there are found inadequate proof of the presence of extraterrestrial beings. 95 percent of UFO views can be chalked up to natural incidents like atmospheric anomalies, scams, or sights of hidden aircraft projects.

Nevertheless, the remaining five percent have not yet been announced, like the sights of UFOs documented by the CIA in 1976 on Iran.

Chapter 7 - Space technology has been improving, however, there are still significant difficulties ahead.

In a few billion years, by the sun, it will be swelled and not consumed Earth. If humanity will survive, by us, a way to leave the solar system must be found. Therefore, how should we do it?

It begins with finding the appropriate fuel source to send a starship in the universe. Although not an easy success, different opportunities are already being explored by science.

Ion and plasma engines are two possibilities. Thanks to the plasma engines, the hydrogen gas is heated to one million degrees Celsius, at this point the plasma is formed and then the plasma is emitted by a powerful jet. Likewise, with ion engines, ion beams are removed to improve the spaceship. An ion engine was already applied by NASA in 1998 to feed Deep Space 1.

Using solar sails using low but constant sunlight pressure can be another approach to develop a spaceship. But for a sufficiently large starship, the sails would have to drive hundreds of miles. And unluckily, with our present technology, it is not sensible to build such a sail and put it into space.

Next, ramjet fusion rockets are found. They generate a tremendous amount of energy via triggering a thermonuclear reaction in hydrogen gas. This can allow a starship to travel at 77 percent of the speed of light, indicating it takes only 23 years for a crew to arrive at the Andromeda galaxy. One problem is that the space required to store fuel requires a very large ship to be built in space. Nevertheless, the sharp minds at NASA are already exploring the opportunity of a "space elevator" to bring building materials into space.

Making space travel less dangerous is another challenge. For starters, by us, it is required to preserve ourselves from radiation, as we are open to deadly levels, without the Earth's magnetic field and atmosphere. Then the problem of weightlessness is found. Unless there is no constant gravity, our muscles' atrophy and bones deteriorate. In case, after a year in space, astronauts are getting so weak so that they can't walk.

Chapter 8 - It was determined by Einstein that the speed of light is the boundary of human travel - but that may be incorrect.

It was theorized by Einstein that the speed of light was the highest in the universe, but by physicists, two possible gaps were found in her thought.

The first is space distortion. If you assume the area as a piece of paper and require to move from one end of the page to the other, the distortion area is like folding the piece of paper so that the two pieces meet. Einstein's equations state that space-time distortion can be calculated given a given mass or energy. However, if you begin calculating with negative mass or negative energy, you can get results faster than light and thus disclaims Einstein.

Miguel Alcubierre is a scientist physicist working on negative mass and negative energy calculations. By Alcubierre, the disk was proposed and would work as follows: First, you will require adequate negative energy to build a bubble in space-time to wrap a spaceship. Then, when this balloon moves from location A to location B, it will compress the space in front of it and extend the space behind it. If the maximum speed of passing an uncompressed route from A to B is the speed of light, you can arrive location B faster than light after the route is compressed.

Therefore, how is this negative energy found? Although it has been measured in a laboratory, until now, it has only been measured in small quantities.

Another gap in Einstein's theory is the wormholes in space. In Einstein's theory, short cuts known as wormholes are permitted between two points in space-time. If these were to be used, tremendous distances can be made when going freely back and forth from them.

Unluckily, a huge amount of negative energy is required to do this. It's the size of Jupiter. And it will be adequate to open just one meter of a wormhole. Besides, we are exposed to a fatal amount of radiation.

Chapter 9 - Time travel can be harsh and guide to paradoxes but the rules of physics are not violated.

The concept of time travel was made to fascinate science fiction. There is nothing about the idea that violates the laws of physics or quantum theory, despite the objection to the possibility of time travel because we haven't met a time traveler yet, by eminent physicist Stephen Hawking.

Indeed, although by people, traveling to the future have been already provided, albeit very small.

Time travel depends on Einstein's private theory of relativity, because the faster a rocket moves, the slower time will pass, for instance, for passengers in it. If you are moving fast adequately in space, you can travel to the future compared to those on Earth. This applies to the Russian astronaut Sergei Avdeyev, who has been rotating around Earth for 748 days and holding a world record of .02 seconds to travel to the future.

So, what do you think about going back in time? This is a huge challenge, but still possible. In Einstein's theory, time and space are closely related. Therefore, if a wormhole connects two points in space, it can connect both places over time. Like traveling faster than light, going back in time requires wormholes and enormous amounts of negative energy to create spacetime openings.

Sure, what comes with some contradictory paradoxes is time travel. For example, if you traveled to your past and killed your parents before birth, you wouldn't be there. But without you, you couldn't go back to kill your parents before birth, so you will be born! However, assuming that a parallel universe appears when you come back in time, this paradox can be resolved. So, the past you came from would be a different past than you travel, but it would

look the same, and your parents would be “genuinely” genetically alike to the parents you were born with.

Many of these technologies are within the limits of our present knowledge, and if we notice them, we require to write again some basic physical orders.

Chapter 10- For centuries, the dreams of inventors were the continuous motion machine.

What would be considered by both Leonardo Da Vinci and Nikola Tesla as the holy grail of the invention? Continuous motion machine - a device that can generate more energy than it consumes.

As our population grows, meeting our energy requirements is becoming a very important issue for today's many scientists, however, we can solve our problems with a continuous motion machine.

It is stated in the laws of thermodynamics that it is improbable to produce more energy than everything consumes. However, there are gaps in this law, and by scientists, it is continued to investigate the possibility of extracting energy from nothing or a gap. It was tried by Nikola Tesla using this point using what is known as zero-point energy, but it was not very successful.

However, in this theory today, it has been re-revealed thanks to the dark energy contained that is found in total vacuums. Thanks to the data analyzed from the satellites revolving around the Earth, it was deduced that 73 percent of our universe is built up of this dark energy.

Notwithstanding physicists' experiments demonstrating the presence of dark energy, they have not been able to define or calculate this energy so far.

Moreover, utilizing this energy is a quite various matter. So far, only the smallest amounts have been found on the world - not close adequate to power a continuous motion machine. However, if dark energy could be applied to power such a machine, it would create an unbelievable change in our world.

It has been already pushed the limits of technology and things that were once considered impossible are already used daily by us: the best example is the internet. But, making a continuous motion machine not only changes our world, but it also requires rewriting of physics, as it is known by us.

Chapter 11 - The thing that can be found leading-edge results in physics.

By Einstein, the last part of his life was spent chasing an ultimate aim: the theory of everything. That is, a unifying theory that can describe whole the basic forces of the

universe, involving gravity, electromagnetism, and weak and strong nuclear force. This theory will cover all physical laws and allow us to describe the origins of the universe. But he was not thriving.

However, today we are near to ever to acquire the theory of everything, with a stable search of space and the help of quantum physics.

Although some pieces of the puzzle are still missing by us, improvements in technology, such as radiation detector satellites, which can measure radiation only 300,000 years after the big explosion, indicate that we are approaching to uncover the origins of our universe.

Thanks to these radiation detectors, even progress has been made to track neutrino radiation, which are so challenging elements that were once considered impossible to find. Following these can take us in seconds without the big bang, and with all this information we can potentially be directed to a testable theory of everything. This testable theory can be string theory.

The string theory is not a new theme: since 1968 it has been attempted to link Newton's laws of gravity and Einstein's theory of relativity to the quantum theory, thereby creating an all-inclusive theory.

Thanks to the string theory, particles can be modeled as "strings" that vibrate and interact with each other. A particular vibrational state refers to a quantum mechanical particle called the graviton. In this way, string theory can link laws of gravity to quantum theory laws. It can also explain hundreds of subatomic particles that have emerged in recent years from particle accelerators because they are all different vibrations of the string.

It is hoped that by the team behind the Great Hadron Collider, will soon discover the superparticles that will be tested and supported indirectly as the unifying theory of the string theory. If this occurs, what is possible or improbable in this world of physics will be questioned once again.

Physics of the Impossible by Michio Kaku Book Review

The over-brought concepts behind our favorite science fiction books and movies are not just fun: they serve as a window to tomorrow's possibilities and remind us that the supposed impossibility in the world of science is just a challenge.

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