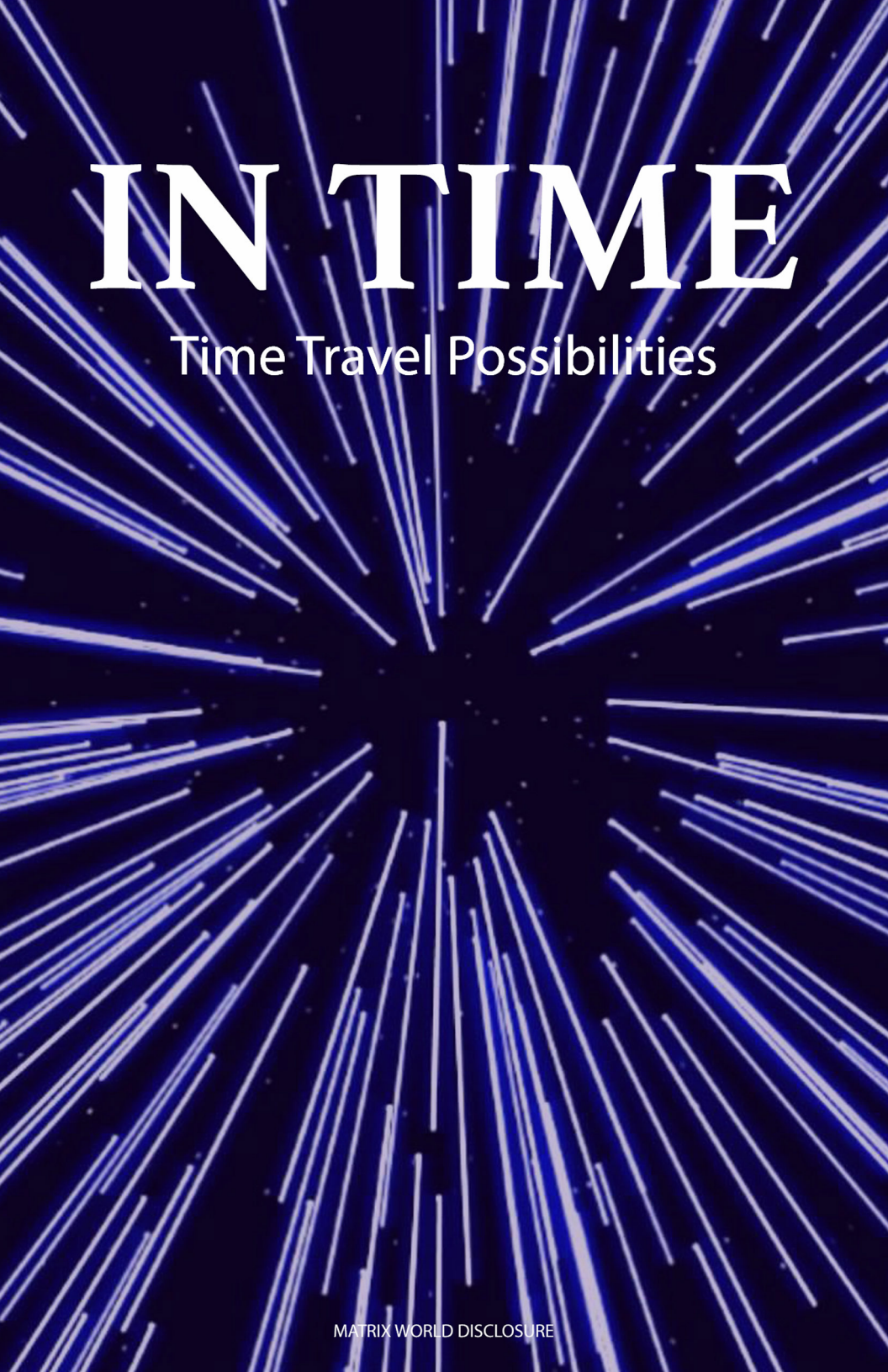
IN TIME
Time Travel Possibilities
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# IN TIME

Time Travel Possibilities

2018
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# Summary

# Chapter I - What is the time and what is its importance

*"Yesterday is gone. Tomorrow has not yet come. We have only today. Let us begin."*

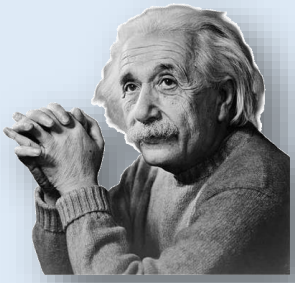
*—Mother Teresa*

*"Don't waste your time with explanations: people only hear what they want to hear."*

*— Paulo Coelho*

*"Time is the longest distance between two places."*

*— Tennessee Williams*



*“Time is an illusion.”*

*— Albert Einstein*

*"Time is a created thing. To say 'I don't have time' is like saying, 'I don't want to."*

*— Lao Tzu*

## What is the time

Time is one of the fundamental concepts of physics and philosophy. It is a measure of the duration of events and has different meanings depending on the context in which it is defined. In physics, time is a dimension of nature and can be seen as a measure of change. In terms of classical physics, time is a continuous one. Modern physics (more precisely quantum mechanics theory) disputes this quality, suggesting that there is only a continuous space-time. In philosophy, time is defined as an uninterrupted, irreversible flow that can only flow in one direction. It is, therefore, a "continuous" event in which facts follow from past and the present into the future. Defining time accurately is a difficult task both in philosophy and in science.

Traditionally, time is seen as measuring the distance between events. It is composed of past, present and future. The past is considered as something that has already happened and can not be changed. The future, on the other hand, is considered as being available for a multitude of possibilities. People

measure time using many units, some based on real events (rotation of the Earth, around the Sun), others are arbitrary. The classical description of Isaac Newton's "Principia" is that time is constantly "flowing", as is the case for all. That is, it is independent of the events taking place within it. This description of time was eliminated by Einstein and his theory.

The classic idea of time is biased because of the way people perceive the "passage" of time. We are aware of the events from a personal point of view and we assume that it is everywhere. The classic approach of time does not explain why we perceive time in this way, nor how this effect is gained. The other theories about the nature of time call into question the "roots" of this natural viewpoint.

In our days, we realize that time is the most important resource. One's wealth consists especially in the time he has and can dispose of as he wants. The way we invest time conditions the quality of life. The degree of development of a man or society can be read in the manner in which he is able to control his time.

Surely we all wanted to travel in time, whether forward or back. Everyone may have wanted to "give back time" to fix a mistake at some point. At other times, we would like to know what will be in the future in order to better guide our choices and decisions.

The nature of time is a subject that has concerned both scientists and philosophers. Considered once a frontier field of science, the journey in time has gradually become the playground of physicist theorists. Although time is one of the great mysteries of the universe and a fundamental dimension of life, no one has been able to define it. In principle, we can say that time is correlated with the notion of event. Time is a measure of the duration of an event and has different meanings depending on the context. There are several time types: solar time, atomic time, quantum time, relativist time, organic growth time, biological development time, historical time, subjective time, economic-social time.

Studies about time have taken such a magnitude, leading to assumptions, observations, experiences

and surprising results, but it has become very difficult to keep up with the information. Essentially, science admits two fundamental theories that seek to clarify the nature of time.

1. **The first concerns time as a linear phenomenon**, in which only the "now" moment really exists and can be experienced. The past is over and can only be "visited" than perhaps in imagination. The future does not yet exist, and when we live it already has become present. The hypothesis of linear time is all in our hands and after this, we guide our lives. We need a certain timeline of events, we need a calendar and a watch to put an order in the chaos of life. But if this hypothesis is correct, then time travel is impossible. Or is this just one of the constraints imposed by the human mind?

2. **The second theory says that all the moments of time exist in simultaneity.** Past, present and future becomes simple terms that depend on the moment of time we are reporting. We can represent our time as a continuous loop, a sort of Möbius band. If we accept this model, then it would

be possible to travel along the loops to a point, whether past or future. Time can be viewed from this perspective by analogy with images recorded on a video tape. Everything we would need to travel in time, in this situation, would be knowing the operation with the fast forward and backward scroll buttons. This second hypothesis may seem fantastic, but there is already plenty of evidence to support it, as well as a theoretical framework in relativistic physics.

## The importance of time and its impact on human nature

The impact of time on human nature is great because its absence would have caused total disorder in people's lives. They would not be tired of organizing their activities knowing that there was nothing to press them.

Until the beginning of the twentieth century, most people considered that the time is a universal element that manifests itself the same way anywhere and for

anyone. Albert Einstein was the one who radically changed the perspective of time, explaining that it is relative, not absolute, as Isaac Newton claimed. The experience of time is purely subjective, with every man perceiving it according to the speed with which he journeys through space and distance from a gravitational field (the further the clock is far from the source of gravity, the faster the time passes, the time flows faster on Everest than on the seashore).

Even though the world of physics has accepted from the beginning of the twentieth century the transition from the Newtonian perspective on time to that of Einstein, the reasons why time is perceived differently by each of us has not been studied in detail until the last few years. Today, specialists in neuroscience and psychology understand better than ever how people perceive the time and consequences this has on human reality.

An experience that many people have tried is the feeling of slowing down time in critical situations. Whether it is a moment when those people saw death

by their eyes or just a frightening incident, they all had the same sensation: time was "going on" slowly. Researcher David Eagleman has collected numerous testimonials from people around the world who have experienced this sensation. A testimony came from a motorcyclist involved in a road accident who was thrown into the road after a car impact and repeatedly he hit the asphalt with the helmet. At that moment, the biker had the feeling that time was so slow that he composed in his mind a song on the rhythm created by the repeated impact with the road.

To reproduce this sensation, the researcher turned to the Suspended Catch Air Device, a unique device in a fun park in Dallas. Hard-core seekers are raised to a height of 45 meters above the ground, then let them fall 30 meters, the fall being attenuated by a net.

How many times did we ask ourselves: "What time is it?" How many of us can answer this question? Forever, the time has been fascinating for mankind, something constantly researched. Man's relationship with time is very tight. We are born, we mature, we get old and we die. Maybe along a time that "flows"

only in one direction, never the other way round. We perceive time as a material entity. We all feel it, using the expressions "save time", "we waste time", "time is money". Thanks to time, everything has an identity, that is, present, past and future. In fact, time is eternal, we go through it. Time is changing us physically and mentally. The man of today is no longer the man of yesterday and never the man of tomorrow.

## The passing of time

"The passing of time" ... it was enough to say "passing". Time passes? Or are we going? It's like when the train leaves the station and you say "Look, the houses are moving!", But they actually stay in place and you are moving. It is a philosophical dilemma if events take place in time or if time is simply the unfolding of events. People delimit time in standard units: one day is 24 hours, one hour 60

minutes and one minute 60 seconds. However, we often perceive the passing of time very differently. We have the impression that the day "flew" simply without realizing it, and sometimes it seems that a minute is not over. Why do we feel that?

Michael Flaherty, professor of sociology at Eckerd College, explained to Live Science a strange, but very common phenomenon: abnormal perception of time.

After studying how people perceive the passing of time, Flaherty noticed two extreme situations: the time that seems "to fly" and the time that seems "to crawl."

People have the impression that time is passing very slowly when they have very intense sensations - such as pain or fear - when they take part in a sports contest or are on the battlefield. The athletes and the soldiers also reported extremely tense moments in which they felt that everything was taking place slowly as if the time was slower. Of course, it was just an illusion, through which their mind managed to cope with the extreme stress of those moments.

Interestingly, however, the impression of "creeping time" also occurs in the opposite situation: when we have nothing to do and we are very bored. The phenomenon also arises because of an extreme situation: our mind is not stimulated, and then we become practically obsessed with boredom, the passage of time, everything that is happening around us. With an abnormal attention to the environment, our brain feels shaken by information, becomes stressed, and then reacts as in the above-mentioned situation: "slows down" time so that it can cope with the intense experience it experiences.

On the other hand, time seems to "fly" when doing routine activities that do not involve a high intensity of experiences. For example, at work, in our daily activities, or at the wheel of the car, on the way home. We are not very careful about what we are doing because there is nothing new, we know all we have to do and act automatically.

Another situation when time seems to "flying" occurs because of the way our memory loses some information that is no longer important. If nothing

remarkable happened to us in the year that has just ended, we probably have the impression that it has passed very quickly.

In any case, the last twelve months seem to have passed faster than the last days in which we have had many challenges: we have changed our job and made new friends. In this example, the explanation is simple: we forgot most of the past years' experience because it was not intense. This phenomenon, called by experts "the erosion of memories," makes us have a false impression that a year or a month passed very quickly. At the same time, it clears our memory of unnecessary, banal, useless memories.

However, despite these somewhat unusual and extreme phenomena, people usually perceive the passage of time, Flaherty explains. So if we have to meet with a friend in 10 minutes, we will accurately estimate our activities to arrive at the right place.

We can do that even without looking at our watch. If you do not believe it, try it!

If you were of the opinion that only nostalgic people live in the past, you are wrong. In fact, every man

lives in the past, this being demonstrated for the first time in a 2000 study at the Salk Institute for Biological Studies.

According to this research, people live with at least 80 milliseconds in the past. "What you think you see at a certain moment is in fact influenced by the future," explained David Eagleman, author of the study. This is because we perceive things with a slight gap, the brain playing a role similar to what a TV producer broadcasts a live show with a short delay to edit in an unexpected event. "The brain does the same thing," Eagleman explained.

Researchers have identified this with the "flash-lag" illusion that was discovered in 1958. An example of illusion can be a moving circle in the centre of which a luminous flash appears. "Although the flash takes place in the centre of the circle, people perceive it a little behind the circle. This one illusion can be studied at night, observing aeroplanes flying over the sky - sometimes the bright lights of the aircraft seem to come with some delay after the plane, "explained Eagleman.

The reason why the brain reacts late is that the sensors through which the human body interacts with the outside world do not work at the same speed. This was first identified by the engineers involved in the first TV broadcasts and had the task of synchronizing the flow of images with the sound. Experimenting, they discovered that sync should not be perfect. As long as the sound and image streams are no more than 80 milliseconds, the viewer's brain will synchronize them without realizing it. This can also be tested by car owners: if the door is locked in force, the sound and the image will be perceived as simultaneous if the action is viewed from less than 30 meters away. If the distance is 30 meters or more, the image and sound will look unsynchronized, as the difference between the speed of the light and the sound will cause the two elements to perceive more than 80 milliseconds between them.

Researchers who studied the discrepancy between the moment when an event occurs and the moment the brain perceives it consciously concluded that this delay represented an evolutionary advantage for

man, facilitating his survival and reproduction. More precisely, by shifting the perception of visual reality by about 80 milliseconds, the brain can create a unitary picture of all the information received by the senses, which improves the ability to identify potential threats.

David Eagleman, one of the researchers who studied the different ways in which the human brain perceives reality, has identified other cases where the brain synchronizes the information perceived by the senses. "If someone touches your nose and your toe at the same time, the brain will perceive the two actions as simultaneous, although the nose signal reaches the brain much faster than at the end of the foot," explains the specialist. Eagleman believes that the time gap with which we perceive reality is essential because it allows the brain to create a unified perception of reality. This conclusion also has unprecedented consequences: it is possible for the taller people to live a little more in the past than the shorter because the time when the slowest signal

reaches the brain is higher because of the longer limbs.

Do you ever feel the time is going faster than when you were children? If yes, learn that this is a new aspect of the subjective way in which the brain perceives time.

In childhood, the summer vacation seemed to last for an eternity. Researchers have found that this is a universal feeling, with differences in time perception. When scientists ask a teenager and a 70-year-old to estimate, without counting, when a minute has passed, the younger person provides answers closer to the truth, while the old man gives a faster answer.

The reason why this effect occurs is not so much related to age as to how the brain is processing the information. "Time is very elastic," explains David Eagleman. "It stretches out when brain resources are being used intensely, but when the experiences we live in are not demanding, time is shrinking," the specialist added.

Steve Taylor, a professor of psychology at the University of Leeds, states that for a child 6 hours of play are the equivalent of a 20-hour day for an adult. "Children live for the first time, all their experiences are new. For them, time passes more slowly as a result of constantly perceiving new information about the world. As they age, people are experiencing less and less new experiences, becoming more accustomed to the surrounding world, which seems familiar. Thus, we see less information about the world, and time is no longer expanding, "explains Taylor.

The fact that new information has the effect of "dilating" time when perceived by the brain can be demonstrated by laboratory tests. A simple example is repeatedly displaying an image on a computer screen. In an experiment conducted by David Eagleman, the volunteers watched a screen that was displayed at a fixed interval of time a picture with a shoe that remained on the screen for an identical period of time. After the shoe image was displayed repeatedly, volunteers saw a new image with a

flower. Although the shoe image (with which the brain was already used) and the flower (containing new information) remained so long on the screen, the volunteers felt that the image containing the flower was displayed for a longer period.

For this reason, Professor Taylor recommends that people make an effort to seek as much new experience as possible. "If you live a routine-dominated life, then time will continue to accelerate, but if you make an effort to travel in new environments to expose yourself to new situations and challenges, even if it's a simple way of choosing a route we on the way to work, this novelty will slow down time," explains Taylor. "Many people try to prolong their lives by keeping fit and following a healthy diet, which is very good, but we have to realize that we can extend our lives by changing the way we perceive time, looking for more new experiences and spending more time living today, " concluded Taylor.

It is well known that when we feel good we have the sensation that time passes very quickly. Some recent studies have shown something surprising: When people are told that time has passed faster than it really did, they tend to think they felt very good.

This has been demonstrated by several experiments conducted by Aaron Sackett, a research psychologist at St. Thomas in Minneapolis, USA. In the first experiment, Sackett and his colleagues asked volunteers to temporarily give up their watches and mobile phones to focus on solving a simple task: reading a text and highlighting words with double letters (eg, vaccine).

All participants made this activity for 10 minutes, but they did not know that. Half of the participants knew from Sackett that the test would last 5 minutes, and the others knew it would take 20 minutes. When the participants were told that the experimental period had ended, the participants were surprised.

- ✓ Those who thought they were working on this 5-minute test thought "God, I had the feeling that it took twice as long".

- ✓ Those who thought the experiment lasted 20 minutes thought "Oh, how fast the 20 minutes passed, I felt the time is flying".

When the experiment coordinators asked participants to detail how much they liked to do the exercise, those who thought it took 20 minutes rated the experiment as much more enjoyable and fun compared to participants who thought their time elapsed slowly, despite the fact that all volunteers did exactly the same for the same amount of time.

To see if the effect is real, researchers have devised a new experiment in which to identify whether the already enjoyable activities can be made even more enjoyable. Scientists have asked volunteers to indicate their favourite song, and then they put that on a special musical player. It was equipped with a clock that counted the seconds of the song, a timepiece that had a secret: in the case of half of the participants in the study, it numbered seconds faster than normal, and in the case of others, the seconds passed a bit slower than in reality. The results were similar: volunteers who felt that time "flying"

reported that they had a more satisfying experience. In another test, Sackett and his team found that unpleasant experiences are easier to tolerate when accompanied by the feeling of "fast passing time".

The most important thing that Professor Sackett explained was that "manipulation of how people perceived time was extremely easy." The researcher's conclusion has been confirmed in the past few years by more and more studies, but the one who best explained it was the genius that shattered the illusion of the universality of time, Albert Einstein. Legend says that he was asked by students to explain in their meaning what relativity is. Nobel laureate's response went into history: "Put a hand on a hot plate for a minute and it will seem like an hour has passed. Stay near a nice girl for an hour and you'll have the impression that it's been one minute. This is relativity!"

## Chapter II – Can we travel in time?

*"Time travel used to be thought of as just science fiction, but Einstein's general theory of relativity allows for the possibility that we could warp space-time so much that you could go off in a rocket and return before you set out." - Stephen Hawking*

*"Time travel ... will never be impossible forever." - Toba Beta*

*"The milestones passing left and right,*
*They mark your flight through time...*
*So just relax, enjoy the flight.*

*Time travel's not a crime." - Robert H. Olander*

*"If we could travel into the past, it's mind-boggling what would be possible. For one thing, history would become an experimental science, which it certainly isn't today. The possible insights into our own past and nature and origins would be dazzling. For another, we would be facing the deep paradoxes of interfering with the scheme of causality that has led to our own time and ourselves. I have no idea whether it's possible, but it's certainly worth exploring." – Carl Sagan*

## What scientists say about the journey in time

Is time travel just a subject of science-fiction movies, or could it ever become a reality? Like many theories first presented in books and SF productions, this idea would be part of our everyday life. Because theoretically, time travel is possible, it does not contradict the laws of physics.

Moreover, the theory of relativity proclaimed by the famous Albert Einstein laid the foundation for principles that theoretically make this fantastic journey possible.

As the physicist has shown in a work published in 1905, space and time are bound together. Charles Liu, an astrophysicist at City University of New York, explains: "Space and time form a space-time continuum that is a kind of four-dimensional fabric." An object that has mass, whether it is a man, a star or a planet, will deform this fabric, make it curve to some extent, and objects will move on a slightly

curved trajectory. This curve of the space-time continuum is called gravity.

Therefore, time travel is actually a journey into the fourth dimension of space, says physicist Stephen Hawking, one of the scholars who believe that at some point the journey in time will be possible.

Our space, which has three dimensions (length, width, height) may have shortcuts between certain points, making travel easier. Are there such shortcuts in time to get from a point of time to another point, past or future?

Time has a paradoxical nature. We would be tempted to say that time cannot be possible since the past has disappeared, the future does not exist, and the present escapes through our fingers. In relation to the present moment, the past is behind, but it is actually present in us with the help of memory. As far as the future is concerned, it is a projection of the present, but also a memory response. If we admit that the past and the future do not exist, then the present cannot exist either. One of the basic features of time is the

sequence by which it always follows a movement that contains, in its past, the previous movements.

This can be considered a box whose content is made up of all the previous moments. Any present knowledge has its roots in the past. The present does not seem to know himself because it takes a moment to be registered and to become a part of thinking and knowing. Time has this fractal nature, temporality is included in one moment. Just as the whole is in one part, and the whole oak in the acorn. The meaning of the whole is correlated with the behaviour of the parties.

Around 400 AD. St. Augustine wondered if God was constrained by the passage of time. But if God is omnipotent, yet He cannot be constrained by time. So God is somewhere out of time. The idea of being out of time seems absurd, but this emerges as a hypothesis in modern physics studies.

It is known that we live in a three-dimensional universe. These three dimensions are space-specific. Time is said to be the fourth dimension of the universe. An event takes place when it occurs, both

in space and time. This is called continuous space-time. This makes us ask ourselves the following: if in space we can move back and forth, why could not we do that with time? If we can have as much control over space why we can not control the time too? If we can create shortcuts between two points in space, why can not we create shortcuts and between points of different times?

Is easy to believe that time is linear, harmonious and stable, that time must flow smoothly forward with a steady speed. We also believe there is no evidence that the speed of time could accelerate or slow down. From the point of view of science, time travel is impossible in Newton's universe where time is seen as an arrow that once triggered can not deviate. One second on Earth is considered the same second that passes for the whole universe. This idea was contradicted by Einstein, who saw time as a winding river accelerating and slowing down in his meanders through the universe. Einstein also believed that when you move in space, you do not move through an empty space that has no effect on you. Instead,

when you move through space, you also move in time. That is, time is not self-contained and unconditional. Time is actually related to a certain form of energy that fills all the space. Hence the idea that faster movement through space means faster movement through time. It is assumed that our temporal experience remains stable and consistent due to the relatively constant Earth and Sun movement.

Time travel raises all sorts of technical, moral, legal and ethical issues. A technical problem would be energy. Where do we find enough energy enough to make a hole in time or to shape the space so hard that we can go back in the past? We can think of the Earth's temporal evolution: it rotates around the Sun, which rotates around the centre of the galaxy, and it moves away from the centre of the Big Bang. The earth describes a spiral trajectory. To reach a certain point in the past, it is not enough to go back the time axis because we will reach an empty point in space where the Earth was at that time.

As for social issues, Larry Dwyer formulates: "A time traveller who pulls a fist on his younger self (or vice versa) must be accused of aggression? Does a traveller who kills someone and then escape in the past to hide is to be judged for the crimes he committed in the future? If he marries in the past, can he be judged for bigamy, although his other wife would have been born only in nearly five thousand years? "

A possible backward journey in time would affect a very important part of our physical universe called causality. An event happens in our universe and it leads to one more and another one in an endless series of one-way events. An extreme case of the causality principle is the so-called "butterfly effect": blowing butterfly wings can trigger a hurricane in another part of the Earth! In each case, the cause appears before the effect.

If we want to travel back in time, we must find ways to prevent causality. In an attempt to find new ways to travel, scientists have tried to reproduce possible parts of travel activity over time starting with atomic

elements. Reversed causality was one of the most common results of these experiments. The experiment of Lijun Wang (2000) is one of the most convincing because, through it, whole packets from where they were sent through a cold caesium gas lamp and appeared to come out of that "container" at 62 nanoseconds before entering.

The paradox of the grandfather is a hypothetical paradox of travel over time, being first described by fiction writer René Barjavel in his 1943 book Le Voyageur Imprudent. The paradox involves the hypostasis of a man travelling back in time and killing his biological grandfather before the latter meets the traveller's grandmother. As a result, one of the traveller's parents (and by extension, the traveller himself) will never be conceived. This implies that he can travel back in time, which in turn implies that his grandfather is still alive and that the traveller succeeds in being conceived, allowing him to return in time to kill his grandfather. Thus, every possibility seems to imply its own denial, a kind of logical paradox.

But if there are cars of natural time? From a spiritual or esoteric point of view, the journey in time is related to those kinds of experiences called mystical, occult, magical or paranormal. Specifically, this experience is called transpersonal experience, a concept that refers to transcending normal personality boundaries. Someone who ventures into the subconscious could be called a psychoanalyst. A psychologist must make a rigorous training for both the mind and the body as a preparation for any circumstance he may encounter in the realms of the subconscious mind. Any spiritual practice can be used as a method in exploring the subconscious mind: yoga, zen practices, tantric traditions, rituals, mantras, austerity and media techniques, shamanic traditions. Their purpose is to act like keys that open various portals of the mind.

The question that is asked: Old spiritual writings are bohemian, diaphanous and pious issues, or are the technologies in the true sense of the word? We suspect that all these writings are transferring know-how. They say more or less veiled that the laws of

the universe are holographic in ourselves. This leads both to psychosomatic control (self-control) and to direct access to external technologies and to all the secrets of the universe. The ship with which we can enter any existential level, parallel to ours (any other dimension) or with which we can reach anywhere in the universe, may even be our body.

The key to temporal travel is the ability of the being to resonate with a stable frequency of time. Being must be able to perceive the energy of time. The high vibration frequencies of the energies in our being allow us to perceive time as a continuous stream of "present moments". The quantum of energy thus becomes a quantum of time.

Quantum physics is the one that highlighted the deep of the correlation that exists between science and spirituality. Most descriptions of the quantum physics behaviour approach are much closer to the concepts found in traditional yogic writings. Yogis did not have the current devices and techniques, but they did not need it either because they had another method of study - profound meditation.

In fact, the smallest units of time were found in the Vedic writings. Their necessity in those times was not understood until now. After long research, physicists have found that certain subatomic particles had a measurable lifetime with those units. Just as in antiquity, current yogi masters talk about time and space in terms that seem to be extracted from a physical book.

## By what methods we can travel in time

**Reaching very high speeds**

Speed is the easiest and most practical way to reach the distant future. According to Einstein's limited relativity theory, when an object travels at relativistic speeds, close to the speed of light, time slows down relative to the object in comparison to the time of the reference means. This is not a simple experiment of thought, it was measured using two atomic clocks. One of the clocks flew on a jet plane, while the other clock remained stationary on Earth. Thus, physicists

have been able to show that a clock that moves at high speed slows down.

Obviously, in the case of jet aircraft, the effects are tiny but still measurable. But if the clock were in a spacecraft capable of travelling 90% of the speed of light, the time for the crew of the ship would be 2.6 times slower than if it were on Earth.

In addition, the closer we are to the speed of light, the more extreme the journey becomes over time. The highest speeds achieved with the technology we currently have are those with which the protons circulate inside the LHC particle accelerator near Geneva - 99.9999991% of the speed of light (299,792,458 meters/second). By resorting to limited relativity we can calculate that 1 second for such a proton is equivalent to 27,777,778 seconds for us - that is about 11 months. In other words, protons are sent to CERN in the future.

Physicists must keep in mind this time expansion when studying particles that decompose. In the laboratory, muons (elemental particles with an electric charge equal to the electron but with a much

larger mass) usually decompose after 2.2 microseconds.

**The gravitation**

This method is also inspired by Einstein's studies: the more gravity is stronger, the longer the time dilates. As we approach the centre of the Earth, gravity grows. It would be said that time passes harder for the feet than for the head.

So to travel in the distant future we have to find an area of the Universe with extremely strong gravity, like a black hole. The closer we are to the event's horizon, the slower the flow of time. Obviously, however, we should first be able to survive such a rapprochement and it is important not to go beyond that barrier because then we can not go out.

However, the temporal expansion effect would not be so strong. If we assume that we have the technology to travel to the nearest known black hole, about 3,000 light-years away, the time dilation resulting from this journey would be much greater than the dilation obtained thru the orbiting of the event's horizon. In fact, this situation is also

described in the Interstellar film, where an hour spent on a planet near a black hole is equivalent to the passage of seven years in time on Earth.

**Suspended animation**

Another way to travel in the future is suspended animation or slowing down the perception of time by slowing down or stopping metabolic processes and then restarting them. Spores of bacteria can "live" in this state for millions of years until the right conditions of temperature and humidity are met to restart their metabolism. Some mammals, like bears, can slow down metabolism during hibernation, substantially reducing the need for nutrient and oxygen cells.

Will people ever be able to apply this existing strategy in nature? Although the complete cessation of metabolism is at least far above our technological capabilities, some scientists are already working on inducing a brief hibernation that lasts at least a few hours - enough to save a person in a medical emergency, such as a cardio-respiratory arrest, until it reaches a hospital.

In 2005 a team of American researchers demonstrated a way to slow metabolism in mice (non-hibernating animals), exposing rodents for one minute at doses of hydrogen sulphate that activate the same cellular receptors as oxygen. Rodent body temperature dropped to 13 ° C and their metabolism decreased 10-fold. Six hours later, mice could be reanimated without negative side effects. Unfortunately, however, similar experiments on sheep and pigs did not have the same success, suggesting that this method is not functional for larger mammals.

**Wormholes**

General relativity also allows for the existence or generation of space-time shortcuts commonly referred to as "wormholes", which could theoretically link two points located at light-years distances.

Many physicists, including Stephen Hawking, are of the opinion that wormholes appear and disappear constantly from the Universe, but on a quantum scale - much smaller than an atom. It would be interesting

if scientists could identify and isolate such a wormhole and then grow it up to the human scale - for such a thing would need a huge amount of energy but, theoretically, it is not an impossibility.

# Chapter III - Reincarnation or travel in time?

*"Our Lord has written the promise of the resurrection, not in books alone but in every leaf in springtime… In our sad condition our only consolation is the expectancy of another life."*
*- Martin Luther*

*"The souls must reenter the absolute from where they have emerged. They must develop all the perfections; the germ of which is planted in them; and if they have not fulfilled this condition during one life; they must commence another… until they have acquired the condition that fits them for reunion with God."*
*- Kabbalah (Zohar)*

*"Reincarnation is not an exclusively Hindu or Buddhist concept, but it is part of the history of human origin. It is proof of the mindstream's capacity to retain knowledge of physical and mental activities. It is related to the theory of interdependent origination and to the law of cause and effect."*

*- The Dalai Lama (Preface to "The Case for Reincarnation")*

## Karma and reincarnation

People have always wondered what is beyond the tomb - if there is anything. Is death the end of existence or entry into eternity or a pause between many lives on earth? Some say the soul is reincarnated several times in different bodies, and about 25% of Americans believe this. Why are so many people attracted to reincarnation?

Reincarnation gives hope to many people. If we do not do the right thing in this life, we still have a chance in a later life. However, even those who believe in reincarnation admit that the vast majority of people do not remember their previous lives. Then how can we learn from past mistakes if we can not remember them? We seem to be making the same mistakes again and again. Taking into account the rate of moral mistakes in human history, do we have any reason to hope that in a future life we will do the right thing?

Reincarnation also claims to provide justice. According to the karma law (an impersonal and

inflexible law of the universe), in every life, we get what we deserve. Our good deeds attract good results after them, and our evil deeds attract bad results from one life to another. According to karma law, no suffering is unjust, because no man is innocent. Any suffering is well deserved on the basis of bad karma. The child born without feet deserves this, as is the woman who has been raped. We each carry karma from one life to another. There is no grace, forgiveness or mercy. Not only is this not good news for those burdened with a loaded conscience, but karma conflicts with our moral sense, which tells us that some suffering is not deserved, that we must be merciful to the sufferers, and that we have to do something to relieve the pain.

Can reincarnation give realistic hope and a sense of justice to a world in trouble? What comfort does she offer for the nagging problem of death? The law of karma is relentless. However, the message of Jesus Christ is different. Jesus did not deny that there are unrighteous sufferings. He gives forgiveness to those

who bring this suffering and relief to those who experience it.

Jesus said that no one can respect the moral law. The heart of man is devoid of purity, inclined to wrong attitudes and deeds, which are offensive to a loving and good God.

Since ancient times, people believed in their previous lives, karma and reincarnation. Many ancient peoples believed that the soul was on a spiritual journey, and the physical body is only a means to reach the destination.

The idea of the existence of previous lives occupies an important place in ancient cultures. It is believed that the spirit always returns to life, in one form or another, until it fulfils its purpose. Some people accept this theory and are mindful of details, while others consider that they only live once.

No one has been able to prove the existence of previous lives, but there are some signs that can be identified and can strengthen the belief that the soul is on a spiritual journey.

Experiences already may be the inexplicable evidence that indicates the existence of a previous life. They are totally unexpected, I take you by surprise and give you the feeling that you have lived that feeling, that you have done a certain gesture or have spoken to the person in front of you, even though it is the first time you know it. Some moments I can already create a feeling of peace, I can give you a good feeling and I can charge you with positive energy, while others may make you sad or make you think something is going to happen to you.

Some people may have very vivid, very specific memories about certain people or events, but no one can confirm that those events really happened. It can be false memories because our minds are playing. However, depending on the intensity of the feelings and emotions, it can be memories of another life.

The subconscious works intensely, and it can reveal certain things while sleeping and dreaming. People in antiquity thought that those nightmares that were still repeating themselves were actually memories of a previous life. Even the most pleasant or bizarre

experiences a person might have had to relate to the evolution of his soul or his previous lives.

We have an affinity for a foreign culture, although we can not find a logical explanation, many people are attracted to cultures of other peoples. Starting from traditional foods to lifestyle or national ports, those people want to study the history of those peoples, learn the language, travel in those areas, and why not for life there.

Moreover, there is also that sense of familiarity when these people come into contact with any element of that culture they are attracted to. So, it may be a sign that the individuals have lived in a previous life in that culture, and this is probably the experience that has most marked their soul.

## Evidence of reincarnation or time travel

Some researchers claim yes, there is evidence of reincarnation. The concept of reincarnation returns to all cultures throughout the history of mankind. The

Egyptians, Romans, Greeks, Aztecs were convinced of the migration of the soul from one body to another after death.

This concept is the foundation of Hinduism. It is not surprising that we can live after death in another body, possibly of the opposite sex, or materialize a special life situation. Several scholars have come up with evidence to support this theory.

*Hypnotic regression*

The practice of reaching past lives is controversial. The most well-known case is Ruth Simmons, who in 1952 underwent a hypnosis session. She began to talk about a previous life, lived in the nineteenth century in Belfast when she was called Bridey Murphy.

He searched in Belfast's archive and found a person with that name who lived at that time described by Ruth. He mentioned the name of two groceries from where he made his purchases. Documents talked about the two groceries and mentioned the names of the groceries, which were identical to those mentioned by Ruth.

*Illnesses and physical suffering*

There are researchers who claim that these diseases can come from a previous life. It is a case of a patient who is accused of acute back pain. Subjected to hypnosis, he said that in a previous life he died falling downstairs, fractured his spine. The Dexter Therapist talks about these cases with great influence on the psychological behaviour.

*Appearance*

Jeffrey Keene issues an exciting theory. A man is very much like the one who hosted his soul in a previous life. He claimed to be the reincarnation of General Gordon, dead in 1904. Physical and behavioural equations are obvious.

Artist Petru Teekamp claims to be Paul Gauguin's reincarnation. Both are painters, and physical resemblances are also obvious.

*Spontaneous memories and special knowledge*

Many children claim to remember previous lives. They suddenly recall a social life they did not know, given the young age and the impossibility of accessing information in this regard. There are cases

in which they speak a completely foreign language to their parents. It is known the case of an 18-month-old girl who began to talk about a monastery and happenings from there.

Another case is a child named Tommy. He began to stitch a button with great precision, and he reasoned that in the past, being on the sea all the time, he had to do this very often.

*The handwriting*

We are talking about a child born in India who was telling very precise happenings about another child who had died some time ago. The parents of the deceased child confirmed what the little boy was saying. Moreover, the specialists subjected him to a test and discovered that his writing was identical to that of the deceased.

*Birth signs and congenital malformations*

Doctor Stevenson, from the University of Virginia, tested 800 people with birth defects or congenital malformations. Subjected thru hypnosis, 300 of them said that in a previous life they had accidents that led to such signs or malformations. Signs or

malformations were exactly in the area where the wound occurred.

Is famous a child who was born many years after his father's brother died as a result of an accident. He had suffered some very large wounds. Years later, this child was born, his scalp has scars similar to those of his uncle. What should we do? Should we investigate or remember?

There is a multitude of cases documented by children who have remembered previous life experiences. One of the best-known researchers in the field was Dr Ian Stevenson who studied over 2,500 such cases. According to its findings, at least 1,200 cases out of 2,500 have sufficient evidence to validate without any doubt. Dr Stevenson studied the phenomenon in areas where the belief in reincarnation is extremely strong (Asia, India, etc.). In over 40 years of research, Dr Stevenson has succeeded in highlighting seven common features of this unique phenomenon:

1. The child begins to describe the experiences of the previous life as soon as he is able to communicate with others;

2. The child recalls perfectly the circumstances that led to his death in a previous life;

3. The child is able to provide sufficient descriptive elements about the family in the past life so that it can be identified without any doubt. There are cases where the child offered details that led Dr Stevenson to a family who recently lost someone dear. There was no connection between the two families (the new family where the soul reborn and the old family), and the two families lived hundreds of miles apart;

4. Dr Stevenson observed a certain continuity along several successive reincarnations, continuity reflected in the habits, preferences, hobbies and personality of those studied;

5. The genre of the person being retained in over 90% of cases;

6. Physical traits tend to be very similar;

7. Reincarnation brings together family ties or social ties. For example, there are several documented cases in which a family has tragically lost one of the children. After a period of time

(whether it be months, years, or even decades), the family members get in touch with a new person, a reincarnation of the spirit of the lost.

Another issue that has been raised by experts in the field is traumatic experiences or extremely violent deaths.

Scientists have studied the possibility that memories are transmitted through genes. In a study published in the "Nature Neuroscience" journal in 2013, scientists have determined a guinea pig to fear a certain flavour by applying electrical shocks whenever the flavour was present. Scientists then noticed how the guinea pigs presented the same fear of the smell, although they were never subjected to electrical shocks. Following the experiment, the researchers concluded that a certain amount of "genetic memory" is transmitted from one generation to the next.

It is very likely that such genetic memory will be present in humans as well. How many times have you not felt an irrational fear of a particular situation, an object or a life? Many of us face an irrational fear of

insects, snakes, rats, etc., even though they have never faced these things.

On the other hand, there are many voices fighting the theory of reincarnation. These voices argue their point of view on some very simple elements.

In some abnormal circumstances, some individuals suddenly abandon their usual personality and acquire a completely different personality. The character is transformed, memory disappears, names change, and ideas and trends are different. The new person can recognize the old one but speaks of it as a stranger, sometimes as an enemy. This alteration may occur spontaneously or may be suggested. It can take a few moments or years, and it's not a simulation, it's a perfectly authentic phenomenon, known from antiquity.

Reincarnation itself is a hypothesis that must not be excluded from the question. But the children's clairvoyance capacities, as well as this possibility of convincing a person that he is someone other than in reality, are solid premises, which at any rate attest to

paranormal manifestations, but at least partially combat the theory of reincarnation.

Travelling in time or in parallel worlds are two major attractions in the vision of any scientist. Even though there have been various theories about what would involve a journey in the future, there are many people who claim that by different methods they have managed to leave their present time and have travelled in the future.

Time is a dimension of the Universe and, because it is not static, we can easily move forward in it. Professor Brian Cox, of the University of Manchester, claims in one of his works that we can only travel in one direction, that is to the future. Once there, the man would have complete freedom of movement and could meet himself or even his followers, but the only problem is that he would not be able to return.

*The journey in the past*

This is an interesting theory, but there are many people who challenge it through their stories. One of them is the American prosecutor Andrew Basiago.

He made a shocking statement by showing public opinion that during his childhood he volunteered to participate in the Pegasus program. American secret services trained both children and adults to send them on various trips in the past. The device used to travel was based on a teleporter that had been designed after some sketches that Tesla had left. Basiago claims to have been sent to several missions, including in 1863 at the Gettysburg meeting, or the time when Abraham Lincoln was assassinated.

*The Swedish who visited the future*

Nordkvist says he was awake in the future and was face to face with his person. They compared their tattoos and talked for several hours. To have clear evidence, Nordkvist shot the entire story with the mobile phone. More details are not known about Nordkvist's journey in the future, but there are many suspicions about the veracity of his story.

*Sir Victor Goddard visits the future*

In his book, Time Travel: A New Perspective, JH Brennan tells a strange story about how Marshal Goddard has the chance to see the future. Goddard

was sent to inspect an airfield out of operation near Edinburgh, called Drem. It was in a very poor condition, the buildings were dilapidated and the tracks were cracked. The man decided to fly an aeroplane to see from the perspective of things. A torrential rain began suddenly and only a few minutes later the plane started to tremble. Goddard thought he would collapse, but a miracle happened. The rain stopped, and when it looked down the aerodrome was renovated.

Four years later, Goddard was able to decipher the mystery of his occurrence because he returned to Drem and found that everything had been upgraded as he had seen four years ago.

*The highway that leads to the past*

In 1988, the American magazine Strange publishes an impressive article about a person called LC that has managed to travel in the past. After dining with his business partner, LC boarded in his own car and headed for Louisiana on the 167th highway. It was October 20, 1969, around 1:30 AM when LC and his business partner climbed into the car to go to their

homes. Highway 167 was empty, traffic was virtually non-existent. Suddenly the two saw a red car that appeared to be breaking off from another era. There is a blonde woman in the car and a rather small child. The two men slowed down and asked the woman if she needed help. The two of them repeated the words several times, but it seemed that the woman did not hear them, although she saw them.

The two men realized that something strange was happening, but they could not explain what. Because the woman did not answer them, they continued their way to home. After a few miles they realized that the incident was not normal, so they returned to search for the car. In the place where they saw it, there was no car and no traces that it had been parked there.

## Last Words

So the conception of a unique, absolute time, in a continuous direction towards the future and coming from the past, has been the subject of numerous polemics during the 19th and 20th centuries. Albert Einstein has reduced time to the condition of a "simple" dimension, which can be manipulated depending on various factors. Since then, in many scientific papers, physicists treat time as something relative and variable. Therefore, it is not excluded that in the near future the journey in time will completely come out of the umbrella of paranormal phenomena and be accepted and studied as any scientific experiment.

Time travel is the concept of movement between different moments of time. Considered once to be a frontier field of science, time travel has suddenly become a playground for theoretician physicists. Physicist Kip Thorne from Cal Tech wrote: "Time travel was once just the field of science fiction writers. Serious scientists have kept it out of pestilence, even when writing fiction under a

pseudonym or reading such literature in privacy. How the times have changed! Now you can find traditional analysis of time travel in serious scientific journals written by eminent theoretician physicists ... How did this change happen? Because we physicists have realized that the nature of time is a matter too important to be left only in the hands of science fiction writers. "

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