

# THE PERCEPTION OF TIME IN THE VIRTUAL SPACE: A CULTURAL- PHILOSOPHICAL ANALYSIS

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## ABSTRACT

In this article, we will present the key conceptions of time in Western culture, while observing changes in the perception of time in the context of virtual space. Among other things, we will examine the change in the Newtonian space-time concept. The Newtonian conception views a permanent system of space and time. Being in virtual space transforms us, it would seem, to the cultural conception of time presented by Einstein, which does not view time as an absolute measure, but rather as changing according to the speed of our movement. The faster we move, time speed reduces. It is not the objective of this article to probe the depths of physics, but to try and understand the cultural shifts in the perception of time in terms of existing physics models.

Moreover, we will explore the cultural return to “mystical time” in terms of the “divine gaze” – today, in virtual space, a new point of view enables us to observe existence from an external point of view. Changes also include the obstruction of the linear sequence of time due to the simultaneity of past, present and future in the Augmented Virtual Reality. In this article, we will attempt to understand experiencing virtual reality in terms of hallucination time, and will conclude with the virtual promise of eternal life – being in eternal time, which exists in the virtual space.

**Keywords:** eternal time, mystical time, hallucination time, simultaneity, relative time

# INTRODUCTION

The issue of time has interested scholars and thinkers in different fields of knowledge throughout the ages. Philosophy and Physics pondered questions such as, is time external to us, or do we move in it; when did time begin and what existed before it; is time independent and absolute, as Plato contended, or is its existence dependent on changes in motion, as described by Aristotle. (Schlein 2016). The great mythologies also dealt with the essence of time. For Chronos, the god of time in Greek mythology, time is eternal, sequential, complete, flowing and unstoppable. Questions such as “will time end and history come to an end” are probed in various religious contexts, based on verses from the Book of Daniel and the Revelation to John in the New Testament, or in response to global warming, as scientists predict (Sagiv 2016). For Christianity’s St. Augustine of the 4<sup>th</sup> century AD, time is deceptive: “What then is time? If no one asks me, I know what it is. If I wish to explain it to him who asks, I do not know” (Confessions, Book XI). Time, therefore, is not only a substantial, physical measure and scientific term, it is also a cultural term contingent on our perception of reality.

The perception of time in every culture dictates a form of thought. All knowledge is time, man lives in a framework of time (Krishnamurti and Bohm 2003). In different eras in the history of Western culture, different terms for time were set one against the other, sometimes contradicting, and sometimes complementing (Funkenstein 1991). Therefore, one should not ascribe discourse on the definition of “time” solely to scientific contexts, but also to cultural, political and personal contexts, however, without losing sight of understanding the dimension of time in its scientific contexts. Time is at the crux of our perception of reality. Reality, as Virilio contends, offers us different and varied levels of meaning, from which we extract personal and cultural significance (Virilio 2006).

The “long time,” according to Braudel, is time that undergoes slow changes – with almost no motion. It is the time of climate, the time of geography (Braudel 2005). Within “long time,” various times move, including economic-social and event-individual time. According to Sand, the “rhythm” in “long time” accelerated as scientific-technological instrumentation became more advanced (Sand 2015).

In this article, we explore changes that the concept of time is undergoing in the virtual culture of the digital age in which the perception of reality is changing. The digital age itself is undergoing fast and essential changes, each of which has bearings on perceptions of time and space. We will discuss the effects of cyberspace on the

perception of time. Cyberspace is a network of digital data bases accessible to its users for navigating and searching for broad knowledge “that exists in a certain space formed by an interaction between user and computer, and which requires navigation” (Rosen 2016, 21). In other words, the virtual, intangible space that developed due to computer usage.

## 1. SPACE-TIME

The first parameter we address is the term space-time. The Newtonian concept, which views time as separate from, and independent, of space (Hawking 1989), was the principal conception of time in secular Western culture for centuries (Nir 2015). The digital revolution, we will argue following Virilio (2006), carries – in social, cultural and personal contexts – Einstein’s conception of space-time.

Aristotle distinguished between the perception of time and space (Biletzki 1996). He provided the first systematic consideration of the term “external time” (Eyal 1996) and viewed time as an objective, external, physical, measurable and quantitative entity independent of man’s perception (Hagar 2004). Isaac Barrow, Newton’s teacher who operated in the 17<sup>th</sup> century, argued that time has no other dimension than length, that all its parts are similar and that it can be perceived as consisting of the simple addition of successive moments or as the linear flow of a single moment. Georg Cantor was the first to present a mathematical structure for the straight line’s continuousness, but it was Newton who attributed time its full independence and liberated it from motion (Miller 2008). While for Aristotle, time was always dependent on motion, for Newton, time is absolute, real, mathematical and flows in a unified fashion unrelated to anything external (Elitzur 1994).

Newton believed that there is a permanent system of space and time – absolute space and time exist independently. Newton based his ideas on the logical perception of the senses. One of Newton’s justifications for this was fundamentally mystical; he argued that space and time are a form of divine revelation (Shoshani 2008). Newton believed in an eternal and infinite god who determined the laws of the universe. A god manifests not only in his unique traits, but also in his substantiality; he is all power of sensation, comprehension and agency (Gleick 2007). In Newton’s view, space and time formed a system of absolute reference in relation to which the motion of all objects is measured (Kaku 2005).

Newton's mechanics was, and still is, in part at the basis of our conception of time. This is because our sensory experiences are founded on time's order. This order, Einstein argues, generates a thought structure of subjective time, and subjective time leads, through other terms such as material objects and space, to the concept of objective time (Einstein 2004). Inherent in classical, Newtonian mechanics is the assumption that material points and the forces that operate between them are unchangeable. Since changes in time are external to mechanical interpretation, we arrive at the atomistic structure of the matter. Newtonian physics attributes a substantial, independent existence to space, time and matter.

As mentioned, up to the twentieth century, physics referred to time as absolute. In his famous article of 1905, Einstein showed that if we accept equations of electrodynamics, we must relinquish the concept of absolute time. That is, the clock will measure different time spans from different points of view; time is relative. Time's relativity also applies to our biological clocks, and the explanation for this is given in the classic example of a twin who would look younger than his twin, if we could follow him as he passes by in a high-speed spaceship (Unna 1991).

Einstein contends that time can move in the universe at various speeds corresponding to the speed of our motion. The faster the motion, the slower time progresses. This means that events that occurred simultaneously in one frame of reference did not necessarily occur simultaneously in another (Kaku 2005). Einstein's definition of space-time at the beginning of the twentieth century, no longer appears only in the scientific context, but also in social, cultural, political and personal contexts (Virilio 2006). The change in this conception is linked to changes in the perception of reality in the digital age. **The electronic media destroy the uniqueness of time and space.**

Computer technology, such as the internet, changed the classical, Newtonian perception of reality and of absolute, independent time and space. In the age of digital information, a flow of information has formed a situation that engenders a culture characterized by time-without-time and space-without-space. The events occur here and now on the screen before us with the single click of a mouse. The slow and fragmented mechanical world is gradually disappearing, and instead a computerized, fast, simultaneous and unified world is growing, one which converges and compresses within the boundaries of our physical bodies and our consciousness (Rosen 2009). Cyber-space is a compressed space of enormous data that reaches us at the speed of light, but it is not a space independent of time. The

information is accessible and reaches the surfer's consciousness during his response time. In fact, while surfing, a "compression of space and time" occurs (Rosen 2016, 23).

This space does not operate in accordance with Euclidian rules of geometry. In this space, geometry is not linear. One of the aspects of space-time is simultaneity. Simultaneity constitutes a violation of logical continuity because in Euclidian geometry a point in space cannot inhabit two places simultaneously. In classical physics, events simultaneously perceived as simultaneous by one observer will also be perceived as simultaneous by a second observer who is moving toward the first at a steady speed. Contrarily, in terms of Einstein's theory of relativity, the events will not seem simultaneous to the second viewer – the more their relative speed comes closer to the speed of light, the time difference observed between them will increase. In the theory of relativity, time is relative and not absolute, and the time and space coordinates are intermingled when shifting between different observers' descriptions of events (Granot 2016). In fact, in high-speed motion in cyberspace, a flattening of the linear perspective takes place. The distance between the different objects that become two-dimensional gradually decreases.

Today, people live simultaneously in virtual and real-physical space. The digital revolution presents us with a reality in which one can no longer separate time from space as Newton did. The characteristics of the new media constitute a basis for the development of a "new space-time" (Moshe 2003). Time is not external to us and not separate from space, but rather, we move within it when we are in the virtual space, and we can "exit" from it into the "other" physical, classical Newtonian time.

In the Newtonian conception, there is one time axis. While in large software systems such as, Facebook, Twitter, etc., each computer has its own time axis and time is not absolute. As Lorenz and Rosenan (2016) exemplify using the hotel reservation site *booking.com* – two users in different parts of the world reserve the same room, but what occurs in the large software systems, is that the room is simultaneously both booked and available. In internet spaces, as in universal spaces, time is not absolute. For each computer, there is a unique time axis – that is, a separate time axis. Thus, although each computer acts as predicted, the entire system's behavior, from the point of view of the user, suddenly becomes unpredictable. The order of events may be different on each of the time axes, and it is difficult to synchronize them (Lorenz and Rosenan 2016). The axis of absolute time we are accustomed to, has been replaced with an infinite number of different time axes.

**Faster.** Time in the virtual space is linked to the speed of our motion within it. The faster we are, we absorb more, collect more, time slows its progression down in the sense that we have “accomplished” more in the same measurable Newtonian external time, and therefore, personally, we have “gained” time. In other words, in time external to us in the substantial physical space, a unit of time has passed, but at the same time, the duration of time spent by the fast individual is different; they have managed to learn, discover, and accomplish more, perhaps even “live” more, and in this sense, reduce speed in the same unit of external time.

The fast individual in the virtual space is different from the fast individual in the Newtonian space because the former’s speed is linked to knowledge and high competency, not solely to speed of motion. That is, output is not only linked to speed of motion but to competency in terms of accurate searching and gathering, and talent or the understanding of virtual space and its rules. Today, the individual exists in two different time dimensions – the individual determines the flow of time in virtual space, and in this sense, time is relative, whereas the individual has no effect on the flow of time in the physical space. In terms of our sensory perception of time outside the virtual space, it behaves according to Newton’s model.

Virilio (2006) conceived the science of speed, Dromology (from the Greek dromos, meaning high-speed acceleration). Virilio views the hyperactive individual as a contemporary version of the Nietzschean *Übermensch* – in his article “The Art of the Motor,” he discusses, among other things, the human body’s mechanization as derived from the need to expedite organic processes (Neuman 2006). If “time is money,” as Benjamin Franklin claimed in 1748 (Levine 2006), then it is possible to “gain time,” “save time” and “sell time” (Zakay 1998). Therefore, according to Virilio, “speed is power.” In a situation in which time is accelerated, the space collapses into a non-space and non-time. The faster individual rules in **space-time**, and is therefore the powerful one (Virilio 2006, 9). Virilio does not separate the dimension of time from Einstein’s scientific contexts and argues that we live the theory of relativity through cellular phones, real- time, live broadcasts, virtual reality or space travel. Therefore, one must understand the physical theory in the cultural and social contexts it creates and constantly apply it (Virilio 2006, 10). The condensing of time and space is a consequence of accelerating the speed of motion in space, as well as of technological and conscious changes (Rosen 2016).

## 2. FROM GOD'S POINT OF VIEW

In Western culture, which is based on the Judeo-Christian narrative, two principal themes existed concurrently. Eternal-mystical time that belongs to God, and worldly, linear time that flows from a beginning to an end. To understand the changes that occur in virtual space in the context of both mystical and worldly time, we need first to understand the historical and cultural significance of both mystical and linear time.

**Mystical time.** Mystical time is the time of the god who exists outside this time as an eternal being: "[In] the Eternal nothing passeth, but the whole is present" (St Augustine "Confessions" XI). In the Bible, the basis of the Judeo-Christian narrative, there is an essential difference between mystical, eternal, divine time, and worldly, human time. For the biblical man, worldly time is inherently linear and contingent on obeying God's commandments. God exists beyond this time as an eternal entity. In the Bible, time appears as belonging to God, as a resource he willingly gives to man, as Psalms' poet writes: "Yours is the day, yours also the night; you established the luminaries[d] and the sun. You have fixed all the bounds of the earth; you made summer and winter" (Psalms 74: 15–16).

Man is granted mystical time on special occasions when he leaves worldly time. The creator, the owner of time, expropriates the sabbath from worldly time and renders it holy, combining it with divine time. Linear time is a time of work, investment and laborious effort toward a purpose. Through the tangible marking of this day, which is essentially different from all other days, the sense of mystical-divine time is manifested (Shavid 1984). "Six days you shall labor and do all your work. But the seventh day is a sabbath to the Lord your God; you shall not do any work – you, your son or your daughter, your male or female slave, your livestock, or the alien resident in your towns" (Exodus 20: 9–10).

Man experienced mystical time in the Garden of Eden (Agur 1997, 213–215). From the time he is expelled from Eden, the possessor of mystical time grants him appointed times to commune with mystical time. The Garden of Eden is planted in mystical time (although there the Tree of Life is forbidden for human beings). Protection of the Tree of Life commences with the expulsion, with the beginning of human time: "He drove out the man; and at the east of the garden of Eden he placed the cherubim, and a sword flaming and turning to guard the way to the tree of life" (Genesis 3: 24). With the expulsion, the first rapture between divine and earthly time occurs. God exists above biological existence, biological time

and the governing laws of nature. Supporting evidence of this is in the etymological discourse on God's name, Jehovah, which is derived from the Hebrew root of present time, *hove*. The mystical God is an eternal being, described in terms of eternal time.

In the Christian West, mystical, divine time is linked to the religious experience. The Christian believes in the End of Days when humanity will unite with eternal-mystical time. In the Christian world, the prophecy of the King of End of Days first appeared in Abbot Adso Dervensis' treatise "*De ortu et tempore Antichristi*" (The Time and Place of the Appearance of the Antichrist), which he sent to the Frankish emperor, Louis IV's widow in 954 AD. The treatise conveys that at the End of Days the Frankish king will rise from the dead, unite East and West and conquer the Holy Land. As the end of miracles approaches, Gog and Magog will charge forth from the North, but they will be defeated by the Christian king. After the victory, the King will ascend the Mount of Olives, spread his arms out, place his crown on his head and return his soul to the creator. Thus, when all authority and license on earth are eliminated, the antichrist will be revealed and the events of the apocalypse will begin (Haran 2000). The church promised unconditional love to all who take refuge in its shadow, and offered men a way to believe that God forgives and loves them. Until the end of the Middle Ages, the universe was an easily conceivable place; man stood at its center and paradise or hell were his future places of residence – the promised mystical time (Fromm 1992).

**Earthly, linear time.** The Bible, upon which Western Christianity is also based, is the source of the concept of linear time. In deeply-rooted Western Judeo-Christian thought, time has a beginning, "In the beginning when God created [...]" (Genesis 1.1), and an end, "In days to come" (Isaiah 2.2). Earthly, biblical time is linear, irreversible and entirely directed toward the final event, the heavenly kingdom (Leibowitz 2002). The prophets promise that we have decisive influence on this end, "For if you truly amend your ways and your doings [...] then I will dwell with you in this place, in the land that I gave of old to your ancestors forever and ever" (Jeremiah 7.5–7).

This cultural conception of time that leads from beginning to end is at the cultural foundation of the West. Time is not circular, but one-directional and irreversible, whereas for Aristotle, time is a two-way, eternal entity because the world does not have a beginning, and therefore, an end is impossible. For him, the universe is and always will exist forever (Hawking 1994).

The biblical, linear conception leads from the creation to the End of Days, and history is manifested in this sequence. This linear conception of history and its division into sections, which aggregate toward the end, became dominant in all cultural domains for which the biblical basis constituted the foundation of their worldview (Dan 2000). Cultural domains marked by modernism, capitalism and democracy are founded on the Christian perception, which inherited its concepts of time and history from the Jewish Bible (Russell 2001).

With the enhancement of secularization processes in Europe, accompanied by a lack of faith in the soul's preservation in the eternal dimension, mystical time disappeared and the enrooting of worldly time began. At the end of the Middle Ages and during the Renaissance, the human longing for eternal time fades. Worldly, linear time becomes the only significant time (Debord 1992).

The change in the perception of time in the Renaissance is reflected also in art, and one can observe this with the development of the perspective methodology. The evaluation of perspective is chronological and consequential; when the viewer moves in time and space, their personal perspective shifts. Therefore, in every time unit, it seems as if reality changes. This is a shift from a concept of eternal time and mystical symbolism to a concept of time that is influenced, among other things, from the new scientific thought, subject to the control of logic and the viewer's individual experimentation within the system. Perspective is a graphic description of solid objects in a three-dimensional space, in accordance with one's individual optic perception of reality (Beckett 1994). This perception is in direct opposition to the pure symbolic description. Man is at the center of observation as a researcher.

**The return to the Mystic Time.** In the digital age, we wish to argue, there is a return to the simultaneous, mystical time – to the divine point of view from within mystical, eternal time. Cyberspace has returned us to mystical time and to God's divine perspective. Today, one can see or experience the entire world simultaneously, by means of enormous memory akin to the entire potential memory possible only in a domain of a superior power like God (Rosen 2016). Following are several examples:

**Google Earth.** Google operates a virtual, three-dimensional program named Google Earth by means of which the surfer can see everything from angles hitherto unavailable. The program enables one to "fly" anywhere in the world and it displays satellite images, maps, three-dimensional structures, etc. from space galaxies to ocean canyons. The program replaces substantial space-time and enables a gateway to interactive virtual worlds. One can navigate the site

and using a mouse, come closer or farther away; this is galactic navigation that includes images and information about outer space sourced from NASA or other space agencies (Rosen 2016). This is a point of view that is not based on the viewer's sensory experience and experience within the system, this is a comprehensive and general viewing position like the symbolism that characterized art of the Middle Ages, a view from divine, eternal time, from God's viewpoint. This new perspective, enabled by surfing the internet domain, leads us to Spinoza's conception. According to Spinoza, comprehensive, complete vision is achieved only through the viewpoint of eternity (Weinryb, Ramot 2011). When we observe things happening in time, we do not see them as they are. Only from the divine viewpoint will we obtain the complete picture because God, according to Spinoza, is eternal, in the sense that he is outside time and eternal. Complete comprehension is achieved only from the point of view of eternity (Spinoza 1985).

**Big Data.** Information in cyberspace exists in a super-space that can be navigated and surfed electronically. Big Data means a large amount of information from multiple sources (internet sites, social networks, cellular devices, sensors, security cameras, etc.). The information is stored without deletion and enables analytical capabilities in many content worlds such as, meteorology, trade, cyber warfare, military and police intelligence, etc. Speedy data retrieval and identification of different patterns and links, which are humanly unpredictable, among millions of pieces of data distant in time and space, leads us back to simultaneous view and agency from the divine, inhuman point of view.

Like the symbolism characteristic of Medieval art, a large and unified world picture comes into being, typified by strong linkages between all it contains. This is not only a comprehensive, virtual viewpoint, as exemplified by Google Earth, but the ability to make connections and predict a world picture fast, based on an enormous amount of information. This is a simultaneous form of observing everything. This picture coincides with Leibniz's metaphysics. In Leibniz's view, God created a world in which *a priori* there is full congruency between its elements; at every moment, all created monads are programmed to operate compatibly. According to Leibniz, only the divine, simultaneous, monad sees the world through universal formula, while we see the world in terms of a lacking, changing and transient formula (Rosen 2016). Contrary to Spinoza's point of departure in which the one entity includes everything, Leibniz's starting point is the existence of private things (Weinryb, Ramot 2011). The world is made up of individual and unique objects, but

between all monads a constant harmony operates *a priori* and they operate in congruence. Compatibility is whole despite the absence of reciprocity between the monads. Simultaneous congruity of this type between huge amounts of data, and the production of a unified picture based on details currently possible due to information in cyberspace, “super-space,” a harmony which, according to Leibniz, is reserved for God alone.

**Augmented Reality.** Instead of thinking about two extreme possibilities – one, the real world; the other, the virtual world –, in 1994, Paul Milgram first suggested thinking about a continuum that passes between these possibilities, thereby attaining different versions of mixed reality (Friedman 2006). This domain is referred to as enriched reality or augmented reality. In augmented reality, there is also a return to simultaneous time.

This is a space-time that includes everything – past, present and future; this conception of time is at the basis of modern physics, contrary to the linear continuum of Newtonian physics in which time flows from past to future (Hagar 2004). For example, in augmented reality, the present is enriched by the addition of a virtual dinosaur from the past whose existence seems palpable – this is simultaneous time in which we can find several realities side by side, past and present. The Newtonian linear continuum is broken, and augmented reality presents us with the co-existence of other times – a conception that is not possible in terms of Newton’s conception. Augmented reality is presented in a manner that seems palpable even though it is virtual.

### 3. VIRTUAL REALITY AND HALLUCINATORY TIME

The term “virtual reality” means a three-dimensional reality in which individuals can move while interacting with objects and other individuals. Virtual reality replaces the real world completely. When we are in virtual reality our senses are supposed to be attentive only to the virtual world instead of the real world (Friedman 2006). Virtual reality, as opposed to terms such as “virtual environment,” is an environment that the participant experiences by means of special equipment.

This is an intangible reality in which a private or shared illusion is experienced. The creation of a virtual environment is analogous to the creation of the world (Friedman 2006). When a virtual environment is constructed, it is not necessarily like everyday reality. The

virtual world can be very different from the real world, even in terms of its most fundamental axioms. Computers satisfy the sense of vision and hearing. To enable a total virtual reality experience, information must be provided to all the senses and needs to be as rich as possible.

"The future of virtual reality in Oculus technology is already here." This was announced by Mark Zuckerberg, founder and CEO of Facebook, at the world's largest mobile conference in Barcelona 2016 – Oculus technology (owned by Facebook) Gear VR goggles will be in the hands of millions who will be able to view 360 degree movies, in which they will be able to see and feel as if being inside the video. In virtual reality, real world spatial and depth perception is reconstructed, in addition to a broad field of vision. Obviously, hearing and touch (weight, texture, temperature, hardness, etc.) are also involved in the experience. The discussion on virtual reality takes us back to Plato's cave allegory in which a group of people in a cave see shadows projected on the wall before them, thinking they are real objects, however, this is a conscious experience and therefore closer to hallucination time.

Hallucination time does not adhere to the realistic rules of reality (in art, surrealism represents hallucination time). Hallucinations are defined as sensations or sensory perceptions that exist without an external reality (Sacks 2013). This is not a deficient sensory perception, rather hallucinations are "conjured" from nothingness. They are distinctively different from dreams and are a unique category of consciousness and mental life.

During a hallucination, the individual experiences an objective and substantial reality as Jung testifies on hallucination time from personal experience:

"I felt as though I were floating in space [...] Everything around me seemed enchanted [...] These were ineffable states of joy. Angels were present, and light [...] And what a contrast the day was: I was tormented and on edge [...] I would never have imagined that any such experience was possible. It was not a product of imagination. The visions and experiences were utterly real; there was nothing subjective about them; they all had a quality of absolute objectivity. We shy away from the word 'eternal', but I can describe the experience only as the ecstasy of a non-temporal state in which present, past, and future are one." (Jung 1961, 354–355).

In a dream, we may experience imaginary and surrealistic events, but we are willing to except them because we are enveloped in the dream consciousness. Hallucinations, on the other hand, may frighten us and we tend to remember them in detail, in the sense that being

in virtual reality is interfaced with hallucination time. Reality seems substantial and objective, exciting, eventful and real, unmeasurable in terms of time.

The extremization of virtual reality is demonstrated in the film "The Matrix" (1999), the Wachowsky brothers hit, in which the tangible reality that the characters experience and what they see around them is a virtual reality created and coordinated by a mega-computer they are all connected too; when the hero awakens into "real reality," he discovers a desolate landscape and smoldering ruins (Žižek 2002).

Hallucination time characterized experiences of time represented in texts of ancient cultures. During the ritual, concrete time was cancelled. In these texts, if time is disregarded during ritual, it does not exist (Eliade 2000). Primitive man lived in a continuous present. In cultures that lived in accordance with cyclical time, there were many instances of ritual time, festive time, game time and times of spiritual elevation – significant times that distinguish between daily activities and social, religious or sacred time.

Van Gennep, in his reference to rites of passage from one state to another – from a cosmic or social world to another world – calls attention to **liminal time**, defined as transitional time, twilight time. In tribal societies, in cultures that live according to cyclical time, liminal time is between sequential Time A to sequential Time B (Van Gennep 1986). This is contrary to rituals in modern society in which liminal times are artificial and fixed. In his research on game time in culture, Huizinga notes that in ancient societies, particularly in ancient Greece, games were limited in terms of time and place, time had a beginning and end. For the reduction of game time there was a permanent identifying mark, like in sacred worship ceremony (Huizinga 1966). Game time, like rituals, had a structured social role.

Today, being in virtual, insubstantial time replaces ritualistic hallucination time and game time. Being in this time cancels concrete time; the linear sequence and modern man's race against time are obstructed. As human beings, we require freedom – or at least the illusion of freedom – to reach beyond ourselves and wander to other worlds, to rise above the immediate world around us. Cyberspace becomes a refuge in times of stress in the substantial space. Virilio warns us against the day when virtual reality will become more powerful than substantial reality – that will be the day when, in his opinion, the integral accident will occur (Rosen 2016).

The desire to wander to other worlds by means of hallucination is described in Stanislaw Lem's book "The Futurological Congress"

(1981). Lem explores questions related to humans' capacity for denial and their desire to live in an illusion. In a chaotic world, the use of hallucination gas causes a group of people to experience day dreams about a utopian world that seems perfect, but in which humanity is in dismal condition. We need this type of disconnection as much as we need relationships and integration in our lives (Sacks 2013).

#### 4. ETERNAL LIFE

The digital revolution also carries the promise of eternal life and in this sense, there is a return to **eternal time**. In the past, eternal time characterized the monotheistic, religious perception of time that is different from the perception of time in modern, capitalist culture. In consumerist capitalism, time became a costly individual resource. Social or financial success was measured in terms of efficiency and optimal results within a framework of limited time; setting a schedule had become the norm in industrial capitalism, a system that fed on speed (Honore 2006). The desire to succeed in minimal time brought on various experiments in efficiency. Time became more tangible and material (Mali 1991).

To teach workers the significance of time in terms of modern capitalist demands, in the nineteenth century the ruling classes began regarding precision as a civil duty and moral trait. Contrarily, slowness and procrastination were considered a fundamental sin (Levine 2006). At the end of the nineteenth century, Frederick Winslow Taylor used a stopwatch and slide rule to calculate time, in fractions of a second, for each production worker. Taylor executed the experiment at Bethlehem Steel Works in Pennsylvania where he applied his scientific time management system. Many workers complained about stress and fatigue, and eventually resigned (Bluedorn 2002, 224–225). This was an era in which time was beginning to be thought of as a commodity, and in which life was organized around the clock.

On the personal level, Westerners live with the biological sense of life passing by, of death and personal extinction. During life, the personal perception of time changes. Time for youngsters in the West is not the same as “adult” or “elders” time. During adolescence, there is a significant change in the perception of time. At this time, one begins to see the sand clock slowly emptying. Again, we no longer ask how much time has passed, rather how much time we have left (Eyal 2004), and idioms such as “the biological clock is ticking” reflect an image of life as a type of organic clock whose

time is limited and predetermined. As of the 1960s, this image takes on a significantly tangible meaning due to an experiment conducted by Leonard Hayflick. In his experiment, Hayflick demonstrated that when cells harvested from a human embryo are enabled to divide freely, they divide approximately fifty times and then die. Apparently, this finding indicates that death is genetically prescribed, and that the biological clocks in our body cells begin ticking with our first heartbeat (Ashkenazy 1991).

In modern society, time is experienced as a gradually perishing resource. It is a value measure like currency for the merchant, a commodity for investment and consumption, and especially, an important resource for success. The Western myth expresses a chronic lack of time. Evidence of time becoming a rare social commodity is accumulating (Davidson 2004). In secular life in the West, where there is no belief in preservation of the soul, the overall sense of time is one of progression toward extinction – the future is obviously different than the past. Time is felt as flowing, one-dimensional and real. We believe that the future is different than the past in the sense that it can be changed, and therefore we know less about it than we know of the past. All our efforts to succeed are directed toward the future. Likewise, we witness irreversible phenomenon occurring daily, the most significant of which is our lives.

The digital revolution carries the promise of remaining in eternal time and of the illusion of eternal life. LivesOn is a Twitter application that guarantees you will continue to Tweet even after death: “When your heart stops beating, you’ll keep tweeting” (Tzezna 2013, 112). Lifonaut.com believes that in the future, it will enable its clients to transfer their consciousness to a new receptacle – whether it be a computer or substitute biological body. Company executives trust that future technologies will facilitate these goals, and therefore suggest transferring relevant information to the company now. The vast wealth of information accumulated in Facebook servers can bring humans back to life in a virtual version. Today, according to Tzezna, we are surrounded by Facebook ghosts – users who have passed away and whose profiles have become memorial profiles, but which, in a few decades, will become much more active (Tzezna 2013, 117). In the digital world, the promise of eternal life that appears in art and literature seems more probable today than ever. In digital space, there is the promise of exiting ever-diminishing linear time, and of “killing time” – turning it into eternal time, as Louis Carroll describes in “The Adventures of Alice in Wonderland” – the clocks stand still because the mad hatter “killed time” (Carroll 1954, 78–80).

## CONCLUSION

This article attempted to present some of the changes our cultural and personal perceptions of time are undergoing due to life in the virtual domain. Life in this new space has many implications for our lives. The rate of changes in this space is much faster than that attributed to “long time” (Braudel 2005). The overall “rhythm” is accelerated in accordance with the development of a more advanced scientific-technological equipment.

It is important to summarize and say that we did not intend to foresee Virilio’s Integral Accident, the day in “Matrix” in which virtual reality becomes more powerful than substantial reality (Rosen 2016). We do not wish to assume, as Tzezna (2013) does, that we are surrounded by ghosts of deceased Facebook users who will become more active in the future. And to whether we are experiencing a stage of evolutionary development, in which there will be no distinction between the mechanical and the biological, or between physical and virtual reality, as Raymond Kurzweil (2006) argues, we obviously cannot offer an answer.

In this article, we presented the changes in the conception of time aligned with a return to various conceptions of time in Western culture in the past. The Newtonian mechanics’ tangible conception remained in the three-dimensional world in which we live, but in life in virtual space, time becomes relative and it does not exist independently, as Newton demonstrated. In virtual space, we exist in relative time as presented by Einstein. In today’s secular Western world, the return to mystical time and to the symbolic viewpoint that characterized art of the Middle Ages, is made possible by means of big data and search engines. These enable us as a human society, an agency that in the past was attributed only to divine powers. We experience the virtual world from an eternal, divine perspective unavailable in the past. Moreover, today the obstruction of the linear sequence is feasible in a technically augmented reality – past, present and future exist in a simultaneous virtual world that seems real.

Today, we straddle two technologies: mechanical and virtual-digital, a circumstance that forces us to examine this distinctive cultural reality from various perspectives, and not only in terms of the conception of time. Our probing into changes in the cultural perception of time in virtual space is only at its beginning.

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