THE ILLUSION OF TIME

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PREFACE
Why do we hate time?

Tick-tick, tick-tick! Time devours our lives. Look! Our childhood and freshness of young dawns disappeared without a trace. Death rushes in a chariot drawn by the black horses of minutes. How can we not hate Time? At first it streaked with wrinkles and killed our grandmother, then mother, and the other day time doused our hair with gray paint. We tried to wash it off, but no shampoo can wash off the stubborn paint of gray hair.

Time torments our troubled spirit with persistent echo of the frosty forest, and there is no point to pray for mercy, because everything has already passed and there is nothing more to ask the cunning nature. "That's all!" - says she and twists the wheels of her crackling doom-clock, swinging with a knife of its the pendulum-guillotine.

Time is associated with death, aging, it feels like acidic resentment for not living up to our expectations, not achieving what we could and should have achieved ... Time is prettymuch a synonym for death and this fact drives us crazy because we never got the answer to the ultimate question: "Why is all this necessary?" Why do we have to exist as a fragile microscopic speck of dust in the Grand Scheme of the Universe?

If time is an illusion, as some physicists and philosophers argue, and if there is another timeless reality, why it is needed to torment myriads of generations dying from the fear of nothingness, hiding from them this simple, like a daylight lamp, fact that they did not live in vain!

Time is a very burning substance when you touch it with your bare hands and souls ...

If time is an illusion, at least in its brutally murderous form, no death is relevant. It is not the bony skeletons that kill, but these very innocent ticks in the corners, which we routinely call seconds, minutes, hours ...

The fact is that it turned out: Time not only eats our flesh all the time, but with age this process accelerates!

Time kills every second of our lives, it also passes faster and faster.

My research center discovered a phenomenon that we called “age-related acceleration of chronoperception”, which in simple terms means that with age it seems to us that time runs faster, and therefore we have a persistent feeling of disappointment with respect to the present and the future.

Based on results of our study we have published the article "Metabolic model of acceleration of chronoperception due to process of biological regression".

We defined chronoperception as a process of time perception by the central nervous system of a person. The study of this property of the central nervous system is necessary both to identify the causes of age-related psychological crises, and to determine the early symptoms of neurodegenerative diseases. Like any brain function, chronoperception undergoes certain changes associated with age-related regression of the body. The purpose of this study was to establish the nature of age-related changes in chronoperception and build a biophysiological base for explaining this phenomenon.

The main method for studying changes in chronoperception was surveys of various age groups aimed at assessing changes in the parameters of subjective perception of time. The survey participants were randomly selected.

The phenomenon of acceleration of chronoperception with age was found in 95.2% of the respondents. The acceleration of chronoperception for a short period of 10 years was observed to varying degrees in 33.3% of the respondents. The picture changed with a survey aimed at comparing two ten-year periods in adolescence and adulthood. The phenomenon of acceleration of chronoperception was observed in almost half the cases of 47.5%. Thus, the effect of acceleration of chronoperception increased with increasing estimated time intervals.

A feeling of being «robbed of time» in relation to the time actually spent was noted in 71.4% of the respondents. At the same time, 52% believed that if the general pattern of changes in the perception of time with age were established, it would become easier for them to plan their lives, and this would

probably prevent age-related psychological crises.

The biophysiological basis of the phenomenon of age-related acceleration of chronoperception is based on our model of feedback between the intensity of the metabolism of hippocampal neurons and the speed of the chronoperception process. As age increases, mitochondrial metabolism slows down, resulting in decreased ATP production and thereby increased production of gamma aminobutyric acid GABA, which is responsible for impaired activity of hippocampal neurons. The activity of the temporal-septal axis, which is responsible for the process of time perception, decreases. Fewer episodes are encoded and decoded by this part of the brain. Thus, for equal periods of time in the young brain, the process of encoding and decoding episodic memory proceeds faster than in the brain of an older individual.

Since the perception of time is based on the number of episodes that undergo coding and decoding in the temporal-septal axis of the hippocampus, a young individual saturates each period of time with episodic memory to a greater extent than an older individual is capable of. Thus, identical periods of time are perceived differently by individuals in different periods of life, and with increasing age, the perception of time is accelerating, in simple terms - “the passage of time is accelerating”.

Based on the data obtained as a result of the discovery of the phenomenon of age-related acceleration of chronoperception, it is possible to develop the new methods for the early diagnosis of neurodegenerative diseases, developing therapeutic methods for psychological age-related crises associated with changes in chronoperception, developing a system of relationships between biological age and age based on individual’s chronoperception, publication of popular science material and carrying out preventive explanatory work in risk groups aimed at reducing risk factors for the development of age-related psychological crises and related depressive states.

So, the fact of the acceleration of the passage of time with age has been clarified. Along the way, we came to the realization of the fact that time is subjective perception, and therefore an illusion.

Stephen Hawking said that imaginary time is indistinguishable

from space. If someone can go north, and then turn around and head south, then in imaginary time it should be possible to turn around and head back. This means that there can be no significant difference between the forward and reverse directions in imaginary time. However, when we look at "real" time, there is a very big difference between the forward and backward directions, as we all know. Where does this distinction between past and future come from? Why do we remember the past, not the future? And these are not words of an insane person. These are the words of a person who occupied a faculty chair in Cambridge, which was previously occupied by Isaac Newton himself.

Let us turn to the book by John William Dunn "Experiments with time" *.

J.W. Dunn was not a professional philosopher, he had a technical education and was an aviator. Nevertheless, he went down in the history of twentieth-century philosophy as the creator of a multidimensional time model. After analyzing the phenomenon of self-fulfilling ("prophetic") dreams, Dunn came to the conclusion that in a dream a person moves into his future along a fourth spatially similar temporal dimension. Later, having experimented with time with himself as a subject and other people, Dunn wrote a book that had qyite an effect on the public of that time - during the 1920s it was reprinted six times.

The origins of Dunn's philosophy are found in general theory of relativity and psychoanalysis.

CHAPTER 1
Time is Our Greatest Enemy

All human misfortunes and sorrows can be traced to passing, merciless, all-devouring time. "Men don't kill time; time kills men." "Time is the best teacher. It's a shame it kills its students." "All seconds wound, the final one kills." These are just a few examples of what man has said about time, his frightening, deadly, and uncompromising enemy. Time is always associated with death, and as Ralph Waldo Emerson correctly noted, "The blazing evidence of immortality is our dissatisfaction with any

other solution." But while man meets his own death only once, he runs up against time at each passing second.

Few conceptions in man's consciousness can be decoupled from time. Even on this printed page, it is impossible to get by without a concept of time, for anything that presents itself as a succession of ideas is firmly yoked to it. Without time, there can be no succession; without succession, there is no logic; without logic, there is no thought; and without thought, there is no existence. "I think, therefore I am." Existence as man conceives it cannot be without time. The thought of time's absence is more distressing than the reality of its presence. Time is like a splintery, floating log that overturns the moment a drowning person reaches for it, entombing the pour soul beneath it in the abyss of nonexistence.

It would seem that the sharp, wounding sensation of time passing communicates itself to us by way of our mature consciousness' understanding of the meaning of time. One might suppose that he who doesn't reflect on the meaning of time and lives without counting the days is happy and invulnerable. William Ernest Hocking expressed the idea thus: "Man is the only animal that contemplates death, and also the only animal that shows any sign of doubt of its finality." While watching a cat comfortably sprawled out in the sun, lazily pawing the air with closed eyes, one unwittingly begins to envy the unconcern and happiness of its existence. It's doubtful that man alone can become distraught over the thought of his own death, but never having been an animal, it's hard to judge what one feels in relation to its life and time.

Children in the most carefree stage of their life, who do not yet comprehend the concepts of "today" and "tomorrow" subconsciously feel the painful melancholy associated with the passing of time. A child parts with a toy reluctantly because he feels he may never see it again. The fear a child feels when his mother leaves the room is associated with the dread that she will disappear forever. What a child doesn't see and touch is nonexistent for him in his early years. The most vivid manifestation of the feeling is the universal reluctance of practically all children to go to sleep. It's more than a desire not

to miss interesting events in the world of wakeful souls. It is the feeling of irretrievable loss that will occur when the child is asleep. Most likely, a mature consciousness protects us from childish fright before irretrievably passing time. The reluctance to discard papers and broken toys has, at its base, nostalgia for that which has past irretrievably and a fear of loss, subconsciously communicated to us by the irreversibility of time. It often seems that small children are privy to knowledge that we have long ago forgotten. It's as if they bring something from the other side—from nonexistence or life before birth. Seneca compared the act of birth to death. He characterizes both as an entrance into a new world.

Man has always tried to prove that his existence is not meaningless. This is the essence of the eternal battle waged with time. Primitive cave drawings helped to halt the flow of time, serving to remind viewers of particular hunts and actual events. The preservation of amulets made from the bones of slain animals also served as a reminder of past events. When a person is not able to keep track of time, he is defenseless, as if living blindfolded in an infinite abyss of being. Winters, droughts, and old age occur unexpectedly, and in order to gain a measure of control over what is going on, man invents simple calendars and primitive clocks based on the sun, moon, and stars.

The ability to draw and record enables memory to return to the past, helping man cope with irreversibly flowing time. Books have become the most important man-made instrument with which to preserve time. Their construction is the first model of time as it truly is. The beginning, middle, and end exist simultaneously. This simultaneity, however, is accessible only to the creator. The first creator (man) paints vases and carves bas-reliefs, in which he depicts events sequentially, as in comics. The nature of this medium allows the end and beginning to exist simultaneously. If the heroes of these scenes were endowed with consciousness, time for them would have the same irreversible progress. The further the technical abilities of man develop, the more closely his creations model time. Photographs freeze time so exquisitely that we can now observe with the highest degree of reality ancestors who died a hundred years ago. Finally,

photographs begin to move. A film creates a live reflection of time, where for its creator the heroes are immortal and the beginning and end exist simultaneously. Even though the creator and the viewer cannot see all of the film's scenes simultaneously, the reality of the existence of the beginning and end on the celluloid film isn't disputed. The heroes of the film, as before, appear to suffer from the irreversibility of time, even though the reversibility and repeatability of time in the film is obvious to viewers.

CHAPTER 2

The Commonly Accepted Conception of Time is Wrong

In a letter of commiseration to the loved ones of his deceased friend Besso, Albert Einstein wrote, a month before his death, "The separation between past, present, and future is only an illusion, however tenacious, and death is no more real than the life that it concludes."

Time is a stubborn illusion within which our entire existence passes. We wouldn't be able to imagine anything without time. Yet time is a deception of our senses. Evidence leads us to believe that fear and worry experienced in connection with passing time is naive. This does not mean, unfortunately, that this worrying is less agonizing. In Lewis Carroll's *Alice's Adventures in Wonderland*, the heroine cries when she is told she is unreal and simply dreaming. To her response that if she is crying she is real, Tweedledum answers, "I hope you don't suppose they are real tears." The same can be said of us. No matter how we may persuade ourselves, no matter how many philosophical arguments for the reality or unreality of time are made, we remain human. We are burdened with the baggage of our illusions and delusions. Copernicus didn't displace man from the center of the universe; Darwin didn't make man the descendant of apes; Freud didn't diminish man's intellect by elaborating on the chaos of the subconscious. Man will always be man, philosophical outlooks, and scientific discoveries aside. However, if we come to see that time, which causes us tremendous grief and dooms us to nonexistence, is an illusion

(albeit a stubborn one), perhaps we will look upon the world with a relieved smile. We will sense our eternal connectedness with creation and in this feeling lays our immortality. The thought that time is nothing but a stubborn illusion leaves us a ray of hope that our sentence in this life isn't final and immutable. Freud wrote in *Civilization and Its Discontents*:

> *I had not properly appreciated the true source of religious sentiments. This, he says, consists in a peculiar feeling, which he himself is never without, which he finds confirmed by many others, and which he may suppose is present in millions of people. It's a feeling he would like to call a sensation of eternity, a feeling as of something limitless, unbounded—as it were, "oceanic." This feeling, he adds, is a purely subjective fact, not an article of faith; it brings with it no assurance of personal immortality, but it is the source of religious energy which is seized upon by the various Churches and religious systems, directed by them into particular channels, and doubtless also exhausted by them. One may, he thinks, rightly call oneself religious on the ground of this oceanic feeling alone, even if one rejects every belief and every illusion. I cannot discover this "oceanic" feeling in myself.*

It's possible that Freud got by without this "oceanic feeling"; many of us, however, cannot. Without it, we are insignificant creatures tormented by the apathy of time.

The ideas presented here are invoked to prove that what we consider time does not exist. At first, that assertion sounds paradoxical to the point of banality. It seems it should be grouped among such declarations as Nietzsche's "There is no God," Solvyov's "God exists," or "There is no such thing as motion" from Zeno. It's a pity that only through the categoricalness of declarations one can attract attention to one's work in the hope that one's lines will be read by someone besides their author.

Philosophical literature has proven its abstruseness and baroque style to the extent that it's impossible to expect any sort of interest towards a new philosophical work, even if it addresses the questions most stirring to thinking people: life and death or the hollowness of existence or its possible meaning. Philosophers

have forgotten that man needs philosophy. Philosophy without man has no value. If a person can't use philosophy to make sense of his life, what is its use? Therefore, stepping back from the "language of tiresomeness" in which philosophical works are written; stepping back from opaque citations, meaningless words and academic fame, I turn to the ordinary person, the person who has sought but not found the answers to eternal questions, the person who is frustrated not to find at least a partially satisfying answer to his questions.

If we investigate all of the emotional stresses of life, it's not hard to see that the cause of suffering is time, or more precisely, what we understand time to be. Time carries away life irretrievably. It consumes our flesh, leads us to our inevitable death, and deprives our life of meaning. Numerous unfounded, philosophical and religious concepts promising us "eternal life" and "immortal souls" don't satisfy us. Such is also the case with materialistic worldviews, which reassure us that the meaning of life is based on the utility of our biological existence from the point of view of our species. We participate in the process of generational change and the creation of posterity; therefore, our lives have meaning. Assurances by Schopenhauer that if we are living we don't have any relationship to death because we are still living, and if we are not living we don't have any relationship to death, are none too helpful. This is so despite the long intellectual pedigree of this idea, which reaches back to the time of Epicurus and Seneca. Much has been said by wise men of humanity, but their postulates don't help the average person find answers to his eternal questions, questions that arise because of time. In the absence of time, all of these questions lose their meaning.

In this essay, I attempt to demonstrate the flawed basis of our current understanding of time and expose all of the undesirable consequences of the delusion of human intellect in connection with the mistaken understanding of time. Further, I reconsider the fundamental aspects of creation and world perception from the standpoint of the negation of the concept of time.

What can a close reading of this essay yield? The ability to completely reconsider man's view of creation and his role in it. This new perspective, which will leave a believer a believer and an atheist an atheist, frees us from the fear of death, the feeling of the emptiness and senselessness of existence, and the pain of loss and misfortune. It can positively affect our understanding of justice, happiness, and self-actualization through debate and reason in the arena of contemporary physics, astronomy, biology, and psychology.

What will not reading this essay give us? Possibly a short-lived satisfaction of our feeling of superiority over the next "Messiah" that the author portrays himself to be. But the question of unhappiness, death, the emptiness of existence, the irreversible passing of life, and time lost forever will go without a reasonable solution, regardless of whether the potential reader is an atheist or a believer. For not one of today's faiths or conceptions fully satisfies the inquiries of a contemporary person, if only because the major religions are poorly adapted to everyday reality. But our focus isn't shifting to religion. We shall attempt to find, study, and eliminate the source of our problems, which is the human mind's incorrect conception of time.

Time, or what we name as such, is no more than a perception. Before we begin to support our argument with scientific fact, we should make the proviso that human language cannot be used to discuss concepts that aren't discoverable though our sensory organs. (Further on, we will evaluate separately the question of the inadequacy of the resources of human intellect to interpret creation.) Therefore, we must analyze time in terms of space. At first, this may seem like nonsense, but as we will show later, our senses represent reality not as it really is; they are mistaken time and time again. We will show that it's up to us whether these delusions cause us to suffer.

Our consciousness is organized in such a way that we apprehend the world with respect to temporal sequences. That's not surprising. We can't think several thoughts simultaneously, and we can't make multiple mathematical calculations at the same time, despite the fact that computers capable of executing several actions at once were long ago invented. Our cognition has

evolved the ability to process only one thought at time. (Those who consider themselves capable of doing many things simultaneously are simply very adept at switching from one thought to the next, returning easily to the former thought without losing track of the next one.) Because thoughts don't occur simultaneously and are dependent on preceding ones, a chain or succession of thoughts forms when we think. Consequently, our perception of time is based on a succession of thoughts connected with the intake and processing of impressions taken from the surrounding world. How did the brain's way of functioning come about, and why is it so limited in comparison to artificial intelligence, which is man's creation? The cause of thought's asynchronism lies in the asynchronous way events transpire in the universe. A glass falling from the table breaks. It never spontaneously reassembles itself from glass shards, and it never rises back up to the table. A glass is never in the form of a glass and glass shards simultaneously. The consecutive way in which events unfold in nature is directed along the thermodynamic arrow of time, along which entropy, or the dissipation of energy, increases. This directionality of events in nature is reflected in the process of human cognition. Which phenomenon drives the other? Is our consciousness capable of determining the sequence of events only along the arrow of time? Or is creation imperfect, foolishly squandering its energy into space, infinitely expanding towards its own destruction? Before we charge the universe with imperfection and profligacy, let's evaluate our abilities, the abilities of the descendants of primates, realistically. We note that our inability to perceive events simultaneously does not necessarily entail that these events do not exist simultaneously.

No matter how intensely we peer at the horizon, what lies beyond it remains unseen. What is beyond may as well not exist with respect to our sensory organs. Our knowledge of the physical world doesn't allow us to assert that it does not exist in reality, however.

We don't think when we are reading a book that the read pages have disappeared irretrievably when they are no longer directly in view. Similarly, we don't doubt the existence of the pages ahead because we don't yet see them.

We can't read all the pages of a book simultaneously; however, a book exists as a whole entity independently of whether we desire it to or not. Our experience teaches us this, but we may also verify it by jumping ahead to later pages or by returning to ones previously read. It's not so easy to do this with a presentation when slides are shown to us in sequence. An image on the screen appears and disappears. We can neither go back nor jump ahead, because another person controls the slides. In this case, as well, experience teaches us that all of the slides exist simultaneously, though we view them sequentially.

We turn now to events we can observe, events with which we have no direct experience, and the occurrence of which does not depend on us. One such event is the sun's rising. For the greater part of his existence, man believed that the sun "sank in the sea" when it set. Later on, man decided the sun revolved around the Earth. It was only fairly recently that we discovered that Earth revolves around the sun. Nonetheless, we stubbornly persist in saying (and thinking) that the sun "rises" and "sets," despite what academics tell us. And all the more rightly, because with these words we reflect our impressions of the sun more precisely. It is a fiery ball, which gradually falls and becomes obscured, or appears, rising above a line dividing Earth and sky. Mankind eventually discovered his perception of the sun's rising and falling was an illusion. Similarly, we may discover our perception of other universal things is equally illusory.

There were faiths built on people's fear that once it had set, the sun would never again rise. Prayers and ceremonies of ancient peoples were often rooted in this fear. Now, using the facts that science gives us, only a madman could doubt the sun's persistent motion and become distressed that it may not reappear in the morning.

In the *Critique of Practical Reason,* Immanuel Kant writes:

> *Two things fill the mind with ever new and increasing admiration and awe, the oftener and the more steadily we reflect on them: the starry heavens above and the moral law within. I have not to search for them and conjecture them as though they were veiled in darkness or were in the transcendent region beyond my horizon; I see them*

before me and connect them directly with the consciousness of my existence. The first begins from the place I occupy in the external world of sense, and enlarges my connection therein to an unbounded event with worlds upon worlds and systems of systems, and moreover into limitless times of their periodic motion, its beginning and continuance. The second begins from my invisible self, my personality, and exhibits me in a world which has true infinity, but which is traceable only by the understanding, and with which I discern that I am not in a merely contingent but in a universal and necessary connection, as I am also thereby with all those visible worlds. The former view of a countless multitude of worlds annihilates as it were my importance as an animal creature, which after it has been for a short time provided with vital power, one knows not how, must again give back the matter of which it was formed to the planet it inhabits (a mere speck in the universe). The second, on the contrary, infinitely elevates my worth as an intelligence by my personality, in which the moral law reveals to me a life independent of animality and even of the whole sensible world, at least so far as may be inferred from the destination assigned to my existence by this law, a destination not restricted to conditions and limits of this life, but reaching into the infinite.

The star-filled sky above our heads has not ceased to be a symbol of eternity and immutability. When it comes to moral law, alas, it is not necessary to prove its relativity; with respect to the star-filled sky, one can say it doesn't exist in reality. What we see gazing upward into a dark, clear night is the same deception of our senses as the rising sun. The truth is that all stars are located at varying distances from us. When we observe two seemingly adjacent stars, we don't realize one may be located twenty thousand light years from us and the other a million light years more distant. Their light reaches our retinas simultaneously, but the stars could have long ago ceased to exist. They could have exploded as supernovas, changed in size, luminosity, or temperature. They could have even changed their relative

positions in space. This doesn't at all correspond to what we observe. What kind of picture is developing of the heavens above? It's like all of the train schedules for the last hundred years, if all of the entries had been mixed up. Would one find such a chart useful? What we observe in the night sky does not correspond to reality.

Here's a much-cited example. A station platform begins to depart when the train starts moving. Of course, this does not occur in reality. Before we begin to feel the jolt of the carriage's acceleration, it seems to us that the platform is moving as we remain in place.

And if we propose that we have just such a false impression with respect to time? What if it just seems to us that time "flows," but in reality, it's the same deception of our senses as the sun's rising, the stars in the night sky, and the station platform?

Let's examine man's earlier attempt to understand the essence of time. The feeling of conditionality and limitation in our intellect's understanding of time has long since been noted. Kant, in *Critique of Pure Reason,* draws conclusions that do not contradict the assertions in this essay:

> *Time is nothing else than the form of the internal sense, that is, of the intuitions of self and of our internal state. For time cannot be any determination of outward phenomena ... It [time] determines the relation of representations in our internal state. And precisely because this internal intuition presents to us no shape or form, we endeavor to supply this want by analogies, and represent the course of time by a line progressing to infinity, the content of which constitutes a series which is only of one dimension; and we conclude from the properties of this line as to all the properties of time, with the single exception, that the parts of the line are co-existent, whilst those of time are successive ... Time is not an empirical conception. For neither coexistence nor succession would be perceived by us, if the representation of time did not exist as a foundation a priori. Without this presupposition we could not represent to ourselves that*

things exist together at one and the same time, or at different times, that is, contemporaneously, or in succession. Time is a necessary representation, lying at the foundation of our intuitions. With regard to phenomena in general, we cannot think away time from them, and represent them to ourselves as out of and unconnected with time, but we can quite well represent to ourselves time void of phenomena. Time is therefore given a priori. In it alone is all reality of phenomena possible. These may all be annihilated in thought, but time itself, the universal condition of their possibility, cannot be so annulled. The infinity of time signifies nothing more than that every determined quantity of time is possible only through limitations of one time lying at the foundation. Consequently, the original representation, time, must be given as unlimited. But as the determinate representation of the parts of time and of every quantity of an object can only be obtained by limitation, the complete representation of time must not be furnished by means of conceptions, for these contain only partial representations. Conceptions, on the contrary, must have immediate intuition for their basis.

CHAPTER 3
The Absurdity of Time

"It is my supposition that the world is not only queerer than we imagine, but queerer than we can imagine," said John Scott Haldane. And he was absolutely correct. Recent centuries have seen the concepts of space and time dethroned. Once clear, tangible, familiar, and constant concepts have been relegated to the realm of the ambiguous and indefinite. The curvature of space and slowing of time at speeds approaching the speed of light became banal truths. Few understand these truths, however. Since this is the case, there's no need to spend much effort proving that man's perception of time, far from corresponding to the state of affairs in reality, is in fact very much at variance with it. And it's not necessary to prove that man's perception of time differs from the generally accepted, everyday understanding of time. The astrophysicist Steven Hawking, whose genius is compared to that of Albert Einstein, establishes in his scientific work that time has some properties of space, and at every point in it, physical laws and constants are uniform. Based on his conclusions, one can imagine the universe as a sphere in time. We can conceptualize the universe's space as an infinite many cuts in the sphere, all of which are perpendicular to the arrow of time. The arrow of time is directed from the pole of the sphere (the big bang, the start of the universe) toward its center. Further, it appears there will be a tipping point, where the arrow of time will continue to the other pole of the sphere (the end of the universe). A theory such as this solves both the problem of the singularity of the big bang and the problem of preserving physical constants at the beginning of time. In the conditions existing at the time of the Big Bang, it would have been impossible to preserve the physical constants known to us. In this way, the phenomena of the expansion of the universe and the recession of galaxies are explained. We are capable of observing time only when it is directed along the thermodynamic arrow. It's as if we as observers are located at an angle below the pole of the sphere of time, viewing the recession of galaxies from this vantage. It's as if we are moving through an extended tunnel with torches along its walls. If we were, we

would have the impression that a torch travels away from us at a speed directly proportional to the speed at which we move through the tunnel. Not delving too deeply into the laws of astrophysics, it should be pointed out that the phenomenon of galactic recession, which is based on the Doppler Effect, or the shift in m spectrum of the light emitted by receding objects, could be explained by yet unknown properties of large expanses of cosmic space. The presence of masses of invisible matter in these expanses could be capable of distorting the spectrum of light passing through them. If the only evidence for proposing the phenomenon is based on the Doppler Effect, it is possible galactic recession does not exist. We will not assert that other evidence of the mutual recession of galaxies will be determined equally untenable, but it can be proposed that the theory of the "big bang," which is founded in part on the phenomenon of Doppler shift in the spectra of receding galaxies, could be called into question when other facts emerge. Such facts may be the striking homogeneity of background radiation in all directions. If the beginning of the universe really occurred with the big bang, one would expect this background radiation to be distributed non-uniformly. It's possible that the theory of the big bang will crash just as Ptolemy's geocentric model of the universe did, though to this day, when we observe the rising sun, we say "the sun is rising" instead of "we are rotating," referencing the motion of the sun with respect to ourselves.

There is a certain absurdity in the theory of the "big bang." As the theory goes, all of creation is an unstable system, with matter flying about in different directions as a result of a gigantic explosion, which occurred after all matter was concentrated at a single point. The absurdity of this is patent, just as it is in the model of creation where the entire universe rotates around us. Intuition, however, never served as a reliable guide in the world of science, especially of contemporary science. Anyhow, we do not aim to disprove this model. We accept Stephen Hawking's point of view, which presents the universe as a sphere of time in which we, by virtue of our intellect, travel in the same direction as the arrow of time. What effect can this model have on the metaphysical level of time's perception? Time

exists simultaneously from its beginning to its end, much as the beginning and end stations of a railroad line coexist. Intellect, whose system is built on consecutive perception, cannot exist and therefore, cannot recognize itself in any other direction besides the one moving with the arrow of time.

In order to illustrate this limitation of our perception of time, we can create a hypothetical intelligent being that is even more limited than are humans. We create conditions in which this being will experience the same limitations with respect to space that we experience with respect to time.

If a subject spent his entire life in a moving train without the ability to communicate with those leaving the train and could not see oncoming trains, what would he feel? Undoubtedly, the subject would develop a relationship to the space outside the train's window that resembles our psychological perception of time. In the first place, everything flashing by outside would, from the perspective of the subject, disappear irretrievably and cease to exist. Our passenger would perceive any person departing the train as lost forever and having ceased to exist. Second, the individual would perceive his own departure from the train as death, with all of its accompanying psychological stresses. Even if the subject were endowed with a normal intellect, his existence in such constrained circumstances would make it impossible for him to imagine that the places he passed would continue to exist and that the departure of his fellow passengers could be anything but a fateful event. We imagine that we are the same way. Repeatedly, we are deceived by our senses. We move through time in only one direction, perceiving each past moment as irretrievably lost and each future moment as non-existent. The real picture could be different. A section of our life could be an insignificant slice of Hawking's sphere of time, a slice the thickness of a lifetime, in which everything exists simultaneously.

Stars influence everyday things, such as our kitchen pots and pans, little. This influence is imperceptible. Therefore, my fanatic interest in all that is located beyond the limits of Earth's gravity can appear eccentric and unnatural. It is inexplicable that I can read the most sophisticated astrophysics articles for hours

and repeatedly flip through popular astronomy magazines, absorbing facts I assimilated long ago, facts that remain contradictory. No other area of learning arouses in me such a tragically all-encompassing interest.

Perhaps there is some explanation of this. I can pontificate endlessly on the fact that the solutions to age-old philosophical questions can be found in the cosmos. I can talk big about how everything in the world comes from stars and will end in stars. Stars are the source of all elements heavier than hydrogen. The origin of every atom in every molecule of the fingers that are typing these lines can be traced to the nucleus of a giant star.

It's generally accepted that most elements (including inert gasses) originate from the nucleosynthesis of star material. Nucleosynthesis occurs in the center of a massive star when thermonuclear reactions of hydrogen are accompanied by increases in pressure and temperature. This creates the conditions necessary to synthesize C_{12} and He_4. Because of the release of energy, the process of compression ceases, allowing the syntheses of heavier elements in the star mass to begin. Strange as it may be, the whirlwind heads of Earth's population didn't assimilate this simple truth, even though it became known in the middle of the 20th century. Yes, exactly. We are all star children. We feel a certain familial connection with proud Sirius or Aldebaran, rising up above the horizon.

I didn't have the opportunity to observe stars directly until recently, when a cozy little telescope shop in a neighboring town went out of business. I indulged myself in the purchase of a rather large reflector telescope, which was romantically named "Genesis." On the first night, I observed the blindingly bright moon, and like all newbie astronomers, I was completely overwhelmed by its majestic, glowing beauty. I tried to find the place I was viewing on a globe of the moon, but I apparently suffer from topographical ineptness not only with respect to Earth. In the darkness, the moon globe slipped out of my hands and rolled onto the recently frozen pool, leaving me to strut and maneuver through the fragile ice sheets. Maxine soon came to the rescue with a skimmer, and on the seventh try, she fished the

moon from the pool, thereby saving the wonderful heavenly body.

Other stellar objects did not make a proper impression on me. Mars in my telescope was no more than a slight red disk, and it's not even worth mentioning the rest. The joy of warming one's frozen limbs on a cold December night can't compete with the domestic comfort offered by an astronomical computer program, which allows one to view detailed images of the surface of most of the planets in the solar system and their satellites. I spent several evenings crawling over the entirety of the photographed parts of our galaxy and other galaxies, and then I became bored. I named one distant star cluster that had a colorful appearance "Maxine's Treasure Box" and was satisfied.

I was astonished at how insignificant a part of our galaxy contains practically all of the stars that form the familiar constellations. The distance to many distant stars has been determined with an accuracy of up to fifty percent. Therefore, their mass can also be determined, though inexactly. Astronomy is not such a respectable exact science as it may appear to an outside observer.

My nature is remarkably predictable: as soon as a strong desire is satisfied, I lose interest in the subject that initially excited me. I looked over the entire collection of images several times, but it seemed like there was nothing at all to view with the telescope. Jupiter would be rising over the horizon only in January. There was nothing to do with my gigantic tube in the snowy December yard.

Why didn't I make astronomy my life's work? Well, in school, I had a reputation for being a fool. I maintain this reputation to some degree even today. And as my mom explained, you need to have strong math and physics skills to excel in astronomy. I was disgracefully weak in both of these subjects. Only approaching thirty I understood that neither math nor physics present much difficulty to master, but alas, it was too late for me to go back to school. Upon the attainment of the age of Christ, there comes an inescapable desire to teach, and the instruction of another mentor is received poorly at this age. Of course, I'm kidding. I study constantly, but I couldn't imagine

going to university again. Why would I go back? To sit again in a classroom with a bunch of brats? To be spoon-fed by pompous turkey-professors and receive a doctorate in astronomy at age fifty? And after that try to win grants so I can look through a bigger telescope? That's a joke.

I dealt with my heightened passion for astronomy much more simply. If you want to research something, you don't have to be a specialist. I hired a couple of first-class scientists to help me solve one theoretical question in astrophysics that had been bothering me. It was my attempt to explain the paradoxically high speed of the rotation of stars on the peripheries of galaxies.

Curve A on the graph reflects the speed of a galaxy's disk rotation as a function of its distance from the center, as predicted by Kepler's laws of planetary motion and Newtonian mechanics. Curve B represents what is observed in reality. This phenomenon spurred the invention of the theory of the mysterious and invisible "dark matter," which allegedly composes most of the universe's material. It's true that in time the theory of dark matter was also used to explain other problems that arose in astrophysics.

I attempted to take into account the interaction of a gravitational field on the flow of time at a point in space where a source of radiation is located. In this way, I intended to calculate the differing characteristics of gravitational fields directly adjacent to the center of a galaxy, at the point of observation and on a galaxy's periphery. I hypothesized that this could explain the effect depicted by Curve B. I won't get into the technical details, but thirty pages of correspondence with one Canadian astrophysicist explained my question conclusively. I was satisfied that, first, my question was legitimate and, second, it is impossible to answer my question given the current state of observational technology. It would require a device equivalent in length to the distance between Earth and the moon to study the question.

Now I was set ablaze by a new idea. The task was no more and no less than to kill cosmology, and please, don't confuse this science with astronomy, astrology, cosmonautics, or cosmetics. Don't be dim like the primordial dark matter that fills

our unhappy universe, slandered repeatedly by scientists. One way cosmology is described is “the study of the universe as a whole, of the contents, structure, and evolution of the universe from the beginning of time into the future.” Notice that the description itself smacks of charlatanism. You probably noticed it annoys me that scientists create theory after theory, while the universe, according to their quackish views, migrates from the backs of turtles to various other absurd places. The basic tenant of my idea is that cosmology is a false science. How can one trust a science that has deceived us throughout humanity’s history? In our day and age, research into perpetual motion machines and alchemy is not a respected endeavor. It would behoove science to cease creating all-embracing models of the structure of the universe, for we will always experience a shortage of information and are eternally doomed to failure. Even if one of these days an astronomer peers though a telescope and sees that the edge of the universe is a brick wall—even that would not put the question of the end of the universe to rest decisively. Scientists would immediately begin to construct theories on who built the wall, what exists beyond it, and other such baseless speculation. Contemporary physics and cosmology are increasingly speculative sciences. Specifically, the conclusions from these theories are extrapolated beyond the bounds of the area where they can be reliably applied. Newton made this mistake when he extrapolated the action of his law of the composition of velocities to infinite speeds. And today, the very same mistake is made again by the most venerable physicists, who talk up the “big bang” and forget that at such great depths of time, these models become less reliable. They forget that the concept of time lacks a reliable physical basis and that the flow of time not only varies in different epochs but also in various positions in space. Thus, there isn’t any sense in pontificating on the age of the universe.

This position in cosmology has changed little in recent decades. The discrepancies are many, and they crop up faster than cosmologists are able to explain them. For example, now theories about multitudes of universes are fashionable. This is nonsense by definition. Many authoritative authors write, “The universe is all matter,” “There is but one universe,” “Other

universes, by definition, cannot exist," "The universe encompasses everything that exists. Outside the universe, there is nothing. Moreover, not only galaxies and other matter are absent, but there's nothing at all—no space, no time." "The universe is everything that exists; outside of it, there is nothing—not even emptiness." The phrase "multitude of *theoretically possible* universes" is blasphemous. In contemporary cosmology, the word "universe" is used to mean what in dialectical materialism is called objective reality or matter. And it's not just that some author or even a majority of authors persist that there is only one universe. It is common knowledge that when one creates a theory or mathematical model of an object, it's essential to give the boundary conditions of that object. These boundary conditions reflect the interaction of that object with its surroundings. Not a single cosmological model gives these conditions for the universe. In cosmology, the universe is viewed as an object with no surroundings or boundaries. Even learned philosophers say the universe is infinite.

In cosmology, there are not only firmly established conclusions like the ones described above, but also unresolved problems. If one doesn't consider specialized problems, such as the origin of galaxies, the rest of the problems relate to one of two types. First, there are problems related to the "very beginning."

What caused expansion to begin? How did the world expand in the very beginning? Was the density of matter infinite at the beginning of expansion? What was there before observable expansion? How reliable is the conclusion about the beginning of expansion, about the state of the huge density of all matter (as they say—the singular state), what processes were occurring in the super-dense matter, what caused the material of the universe to expand and finally, what was before expansion, before the moment of singularity?

Beginning in the 1980s, the genesis of the universe was discussed within the framework of the "scenario of the inflatable universe." According to the inflatable universe scenario, the entirety of the universe visible today formed from an area smaller than a Plank length. This makes it possible to consider the origin

of the universe (or its visible part) a result of initial quantum fluctuations. Such a universe initially had a small size and expanded exponentially. In this process of inflation, it reached its present size. All matter contained in the observable universe came into existence as a result of work done by gravitational forces inside an area which initially contained no more $1x10^{-5}$ grams of material.

The second problem that is often addressed in cosmology is the problem of the geometry of the universe. It turns out that the curvature of three-dimensional space may be similar to the curvature of a sphere. It can close upon itself, becoming borderless but finite, like a sphere. It's unknown whether our universe is open or closed.

We note that in his time, the answer to that question wasn't a riddle for Albert Einstein. In 1917, in the section entitled "Considerations on the Universe as a Whole" of the work *Relativity: The Special and General Theory*, he wrote:

> *It follows from what has been said, that closed spaces without limits are conceivable. From amongst these, the spherical space (and the elliptical) excels in its simplicity, since all points on it are equivalent. As a result of this discussion, a most interesting question arises for astronomers and physicists, and that is whether the universe in which we live is infinite, or whether it is finite in the manner of a spherical universe. Our experience is far from being sufficient to enable us to answer this question. But the general theory of relativity permits of our answering it with a moderate degree of certainty … The results of calculation indicate that if matter be distributed uniformly, the universe would necessarily be spherical (or elliptical). Since in reality the detailed distribution of matter is not uniform, the real universe will deviate in individual parts from the spherical, i.e. the universe will be quasi-spherical. But it will be necessarily finite. In fact the theory provides us with a simple connection between the space-expanse of the universe and the average density of matter in it.*

It is likely my book will be ignored and not cause a scandal. However, by writing it, I can check off the part of my existential project called "Try to Undermine a False Science that Has Enabled Religion and Politicians to Pull the Wool over People's Eyes for Centuries."

CHAPTER 4

Limitations in the Perception of Time

"With the exception of the edge of the present moment, the entire world consists of that which does not exist," said King Izhikovsky, expressing a widely held view of man's perception of the world. One can speak of the ability of human consciousness to perceive "real existence," which lasts for a few seconds. Our sensation of reality is a manifestation of the conventional way our consciousness works, not the negation of the existence of all events that came before the present moment. We have spoken repeatedly of the tendency of consciousness to distort the real world for the benefit of our feelings. Why couldn't we propose that in our perception of time, too, we observe the same phenomenon?

Speaking of the perception of time, we find it insightful to cite the position of Descartes:

> *Let us grant that there is no God, no earth and that that we ourselves have no body. We cannot suppose, nonetheless, that we do not exist … It is senseless to propose that which thinks does not exist. For more clarity we examine the opposite position: our cognizance of our own existence is the result of an internal awareness of our cognitive activity, which consists of the receiving of inputs from our sensory organs and the comprehension and processing of these inputs. If we didn't feel the cognitive process in ourselves, we would not notice the absence of a like feeling. If one accepts that man's understanding of existence is a direct result of thought, then only the subject himself can say with certainty whether or not he exists. It is like, for example, when a subject awakens*

> *after feinting. He has no recollection of his thought processes while he was unconscious. He cannot confirm that he continued to exist when he was unconscious. If this subject were in the presence of onlookers, however, these people would observe the feinting and would confirm with absolute certainty that during the period of unconsciousness the subject continued to exist—at least physically.*

The existence to which Descartes refers is not physical in the everyday sense, but the result of the presence in the subject (more accurately, in his intellect) of self-sentiment. Adopting a similar position, stating that only reason itself is able to establish the fact of its own existence, we can easily agree with Kant: "If I remove the thinking subject, the whole material world must at once vanish because it is nothing but a phenomenal appearance in the sensibility of ourselves as a subject, and a manner or species of representation."

Since time, like other manifestations of the physical world, has only the meaning a thinking intellect attributes to it, one cannot assert that time can identically manifest itself as a phenomenon (that is, something perceived by a person) and as a noumenon (the thing in itself), the manifestation of which is not comprehensible our intellect. In any event, we cannot agree with the generally accepted view of the objectivity of time, which holds time is a phenomenon perceived by a subject. Further, we cannot accept the view of the uniformity of the flow of time if we view time as a phenomenon perceived by a rational being. Using an opportunity to conduct a survey among subjects of varying ages, we were able to establish the existence of an acceleration of the perceived flow of time with age. Attempts were also made to establish a biophysiological basis of this phenomenon (KMR, Oct-Nov 1999). The surveyed individuals noted that with age, the rate at which they perceive time to pass increases. Moreover, the respondents answered that the process can be quantified: time passes two to three times more quickly as age increases. In reality, the prevailing method of keeping time based on the periodicity of day and night and seasonal climate changes has nothing in common with how the human intellect perceives time

to pass. This results in a serious inconsistency between astronomical intervals of time, which are of equal durations, and periods of time as they are perceived by sentient beings. Mention of this inconsistency is found everywhere from literature and art to everyday conversations among people of varying ages who express a feeling of loss in relation to passing time. Most often, this feeling of loss relates not to physical wealth and achievements, but to the metaphysical understanding of self-awareness and maturity. “I’ve lived life, and yet I haven’t understood a thing in this world”—the basic tenor of this feeling of loss is concentrated in this phrase. The onset of the feeling of “having lived life” and the rapid acceleration of the perception of the flow of time does not occur in old age or even middle age; it occurs early in life. A person’s acquaintance with such a phenomenon, as was the case when Freud’s subconscious was introduced, could alleviate the suffering of many individuals caused by the acute awareness of elapsing time. Legitimizing the phenomenon of the subjective perception of time and refuting the postulate of the uniformity and objectivity of time’s perception, one can alleviate the suffering of individuals who believe that these feelings are their personal tragedy. For these individuals, the feeling of loss results from their nervous and unwise use of time in the spiritual sense. Giving the subject knowledge of the metaphysical property of time to accelerate, we give him the ability to measure his time more reliably. For example, if you take the average coefficient of the acceleration of time to be 1.5 and measure biological age and the psychological equivalent, then at age twenty, the individual’s perception of his age may correspond to the psychological age of thirty. Between thirty and forty, the psychological age is forty to sixty. (It is possible the fantastic ages of biblical prophets were based on their psychological age.) Counting the number of years remaining in a person’s life instead of the number of years lived, and assuming an average life expectancy of seventy-five to eighty years, it’s not hard to calculate that the remaining years of a twenty-year-old is not fifty-five, as is true according to biological age, but forty years. At age thirty, the remainder is thirty-three years. That is the middle of a person’s life. In certain cases, the scale becomes

even less optimistic. This discrepancy between the self-sentiment of the subject's age and the generally accepted opinion that a thirty-year-old is a young person, having lived only a small portion of his or her life, leads to the psychological suffering of the individual and an acute feeling of the loss of time. This feeling lies at the base of typical age-related crises.

Now that the limitations of the perception of time in the context of age have been discussed (we will return to this idea in the continuation of this essay), we should like to address the question of the capability of perception to distinguish reality from unreality. We are referring not to the simple deception of our senses, as in the case of the rapid advancement of film cells that gives rise to the illusion of motion. Here, at least among educated people, arguments about the reality of what appears on a movie screen do not arise. We are referring to a more subtle deception of the senses, when life's considerably removed and insignificant events mesh and become indistinguishable from memories of dreams. We are discussing insignificant events that have had real consequences and influence on the course of our lives—rather, insignificant events, or impressions of things that have or have not been seen in reality. If we rummage around in our memories and consider insignificant worries, events, and images, we find we often cannot clearly distinguish events that have occurred in reality from those we have dreamed. We attempt to conduct a search for evidence of the reality or unreality of these events by identifying their connections to events reliably known as real to our memory. If we're not able to find this confirmation of the reality of trivial events, they retain the status of half-real, half-dreamed events. Incidentally, this does not bother us at all. In the preceding example, we see that in our consciousness, there is no great difference between the real and the imagined. If our dreams flowed in a ceaseless succession and were completely subject to the logic of evolving events, as are events in real life, we would be unable to distinguish dreams from real life.

One more conclusion can be drawn about the merging of dreams and reality in our memories. Dreams are just as meaningful a component of our lives as reality, and if they had a

direct and manifest continuation in our real life, they could attain a status equal to that of reality.

In any case, taking dreams as examples, we may analyze the mechanisms of our perception of reality in their pure form, when the focus is directed inward toward the depths of our consciousness. How is time perceived in dreams? Its role in sleep is much less significant than in real life. It's as if we find ourselves in reality, and the logical connections that lead us there completely agree and exist as if they were an independent block. When we recall the source of the situations in which we find ourselves while dreaming, we invariably find in our memory (the pseudomemory of the given dream) logical confirmation of the reality of our existence at that moment in the dream. While we're in the thick of the events of a dream, we often do not doubt the reality of what is occurring. We awaken when our attempts to remember preceding events encounter obvious contradictions with our "real memory," and when, through willpower, we interfere with the flow of the dream. Subordinating a dream to your will, one disturbs the "real" logic of the flow of events in the dream. This makes a dream unreal, and its further serious perception is impossible.

Time in dreams is easily compressed and stretched both in relation to itself and in relation to real time. The phenomenon of pseudomemory, which exists in dreams, is very interesting. Our consciousness, asking itself in a dream how it ended up in one or another situation, obligingly furnishes explanation after explanation drawn from the pseudomemory, where situations and sensations that connect us with our real life are stored. But this process of verification does not occur constantly. Rather, it is replaced by a general feeling of certainty in the reality of our present situation. As in real life, we don't give way to the constant thought of how we ended up in the present moment; rather, we are satisfied with the general feeling of the undoubtedly logical coherence of the events proceeding the present moment. In a dream, we're not made uneasy by manifestly illogical (from the point of view of our real memory) inconsistencies in circumstances, events, and the environment. Hybrids of houses and apartments and various cities where we

have lived, admixtures of countries and times, these do not make us uneasy. We're not disturbed by the presence of people who could not have been brought together in space and time. Sometimes our dreams bring together people whom we met at various periods in our lives even though they could have changed altogether or even have ceased to exist. In sleep, we don't think about this since we are captivated by the events of the dream. And the moment we fall into thought, our consciousness tries to corroborate and resolve the conflicts of the dream with its pseudomemory. When the futility of this task is exposed, we awaken. Fears and worries in dreams can often be intense, and the moment we experience them, they can be perceived as more real than those we experience in real life. In view of the linearity of the progression of thoughts, we, absorbed by the development of events in a dream, are not capable of always maintaining a critical eye on what is transpiring. We can easily become a victim of the deception of our own consciousness. Time in dreams doesn't flow backward, nor does it stop or slow down, for we would be unable to imagine it. But dreams allow us to experience events as if outside the frame of real time, not so much by traveling backward to the past or forward to the future, but by experiencing existence in a certain world that lacks time altogether. Even though fears and worries in dreams resemble real ones and all events transpire in alignment with the arrow of time, restrictions are more flexible. Looking at our life in dreams as one global experience interrupted only by wakefulness, we can firmly assert that our existence blends both a real and an imagined life, one flowing into the other, with the boundary between the two weakly delineated.

What is the quantity of experiences in dreams? If one tries to measure the information that flows through one's consciousness as we do with computers, measuring memory in bytes, kilobytes and megabytes, one can say with confidence that the informational burden of dreams is perhaps greater than that of real life. The fact that we recall only a small portion of our dreams (and only very dimly and in the context of a reappraisal by our waking consciousness) tells us the world of our dreams can be no less extensive, and possibly more extensive, than the

world of our real life. That we remember only a fraction of our dreams is counterbalanced by the fact that in a dream, we remember only a fraction of our real life. Further, one can assert that most often we remember those dreams that directly precede our awakening, and with respect to narrative structure and logic, these dreams always remain unfinished. Just when one begins to make connections between the real world and the imagined dream world, one's waking consciousness becomes aware of the dream and the dream is remembered. What is remembered is not so much the dream itself as the evaluation of the dream, plus a few visual-sensual images. The remainder of the dream is completely cleared from our "real" memory, and emerges from the subconscious under hypnoses during psychoanalysis.

What can we say about the discontinuity of our life in dreams? It's possible that if we could remember all of our dreams and comprehend the logic of the atemporal development of events in dreams, we would realize we live a parallel life in sleep. For while we sojourn in the world of dreams, we perceive our real life to be just as disjointed and illogical as our dreams seem to our waking consciousness. Interpreting our life not as a chain of consecutive events, but as a unified whole or a repository of feelings and perceptions, we see practically no difference between dreams and reality. Further, the relationship to real life, like the relationship to dreams, can give us unlimited freedom of enjoyment of the infinitely many variations on the ways events, feelings, and perceptions can develop. It frees us from the physical bonds of time, and legitimizes the feeling of eternity, to which many of us feel a latent connection. "You live gloomily within me, like a secret premonition of immortality." In the words of Yuri Vizbor, we fumble for the feeling of the vast depth of our existence as it appears to us from an everyday perspective.

Therefore, we don't find proof of the evenness of the flow of time in our perception, and we can't reliably sense its continuity, which is interrupted by dreams differing from reality only insignificantly. What is reliable in man's perception of time? Can one call the commonly accepted opinion of the perception of time anything but the rudest of assumptions, necessary for the sequencing of certain unimportant events in our life? Time,

whose passing so dispirits us, is possibly nothing other than the result of our habit to interpret the flow of certain events in one of the "real" variations of the development our lives, which is no less real than other variations that exist in parallel.

The human memory records individual episodes and erases the unimportant intervals between them. Our perception of life always occurs in episodes, not in a consecutive, uninterrupted flow. Insignificant events are quickly forgotten, forming a memory of a string of episodes. It's not a coincidence that art, attempting to reflect life through the prism of human perception, also records individual episodes, omitting the connecting routine of unimportant events. A picture records an event. A narrative consists of episodes flowing in parallel and in sequence. A film shows us individual episodes, sometimes using the devices of "two hours later," "the next day," in "twenty years" and "at the same time in a different place." That approach isn't by chance. It completely reflects the mechanism of human memory, segregating a chain of episodes to recognize and remember from a vast quantity of other unimportant connecting episodes, which are temporarily or even completely forgotten.

We also perceive dreams as episodes with the loss of connecting links that we're not able to recollect. These links are considered absent when analyzed by the waking consciousness. While sleeping, however, we don't perceive the fragmentary nature of the episodes we experience, and therefore, while dreaming, we don't lose the feeling of realism, without which would make lengthy continuations of dreams impossible. This means that memories of real events, like those of certain fragmentary visual-sensual episodes, hardly differ from memories of dreams, which are characterized by episodes just as fragmentary. If one proposes that we remember only a small portion of dreams, one can assert that during a single dream, one can experience an almost infinite quantity of episodes with links assumed forgotten or omitted from the frame of reference of the sleeping consciousness. These links are only forgotten and omitted on the level of a dream. In many cases, awakening in the middle of the night and falling asleep again, we encounter the continuation of the plot of the same dream, or we encounter a

new dream with a different plot. One cannot say that one can dream several dreams at once; however, we understand time in the usual sense, which we have convinced ourselves is false. Can the multitude of dreams not be considered a certain model of the multitude of simultaneously developing logical lives, whose echoes we attempt to capture upon waking, and only due to an abrupt transition to a new stream of events a dream seems to us inconsistent and therefore unreal? Sometimes we experience a multilayered dream when we dream that we're dreaming and dream that we awaken. Only when we awaken in reality do we realize that the awakening in the dream was false. What do we dream in dreams that occur when we dream that we fall asleep? Do the intervals between episodes of that dream vanish? Isn't what we feel as real life one of the possibilities of a set of dreams existing in parallel? Are our dreams real lives passing in parallel? Are you reading these lines in one of these real lives? Don't dreams command respect and consideration equal to that commanded by real life? Or is it the opposite? Are we justified in relaxing our psychological exertion, approaching real life a little more as we approach dreams, where, from the point of view of waking consciousness, events are reversible and not so decisive? After all, events of our real life seem to our dream-seeing consciousness not so decisive and reversible. In one way or another, the proposed model of a possible parity between the realities of dreams allows one to alter one's perception of the flow of time, with its imaginary limitations, and declare the flow of time illusory.

CHAPTER 5

Limitations of the Human Language and the Consciousness

"The world does not exist, but rather is constantly occurring. Its continuity is the result of a lack of imagination." In his brilliant aphorism, Stanislaw Jerzy Lec expressed the limitedness of human reason in its attempts to comprehend and describe the elements of creation. In the words of Protagoras, "Man is the measure of all things." Unfortunately, we don't have

access to another thinking being's perceptions and comprehension of creation. And although "out of the crooked timber of humanity, nothing straight was ever made" (Immanuel Kant), we don't have at our disposal any other object or observer besides human consciousness.

It's hardly possible for one to understand creation on one's own. No, this doesn't contradict the image of the lone philosopher, disengaged from the bustle of everyday life. By this, we mean that a person who doesn't find himself in direct and prolonged contact with like beings and who doesn't study the language and logic of thought isn't capable of developing his consciousness to the level necessary to question creation. As numerous cases have demonstrated, people who become excluded from human society at a young age fail to develop interpersonal skills. The ability of these people to interact with other humans in later life remains at the level of an animal. But even for a person who possesses a normally developed human consciousness, it is insufficient to accept an unsubstantiated opinion that could not be understood and accepted by another person. And though objectivity is merely the sum of subjectivities, any knowledge outside of objective analysis is subject to scrutiny.

Human language, undoubtedly, is the primary means by which this understanding is realized. The flow of thoughts is based on language. Even if it seems to us that some thoughts fail to find expression in words, it's impossible to imagine a proper cognitive process without verbal language. At the inception of a thought, a concept or feeling arises in our consciousness. This thought is expressed, often imperfectly, in words. For convenience, when complex thoughts are processed, we mentally express them in words. For those who speak several languages with equal ease, the language in which the ideas find expression does not matter. Thus, we can speak of language on two levels. It is not necessary for the language of consciousness to consist of grammatically well-formed words and sentences as human language does. The language of consciousness consists of completely defined and mutually distinct concepts and cognitive

images, which may or may not have verbal analogues in human language.

The richness of the verbal trove of a language and a person's ability to utilize his innate linguistic resources significantly influences the exactness with which he expresses his cognitive images. "The worse you speak a language, the harder it is to lie in it," (Christian Friedrich Hebbel). Often, the richness of a language's resources is used not with the intent of expressing thoughts more exactly, but in order to avoid the decisive formulation of a thought. This distorts the cognitive image or replaces it with another one. According to Talleyrand, "Language is given to a person so he may conceal his thoughts." In reality, many people do not attempt to reflect their cognitive images accurately. Often, a subject's goal is to hide his incomprehension of something when he lacks a precise understanding of it. Or he may have an altogether different and selfish goal, which has little in common with the attempt to express the cognitive image precisely. A similar situation is encountered in discussions of philosophical and abstract subjects. This is an additional serious limitation of language as a means to acquire knowledge and describe creation.

In addition to the obstacles mentioned above, it's necessary to note the frequent non-correspondence in the meaning of one and the same word, which different subjects can imbue with different meanings. "You can converse with those who speak a different language, but not with those who place entirely different senses in the same words," as Jean Rostand observed. It's also impossible to give an object an exhaustive description. Followers of Socrates very skillfully practiced a rhetorical method whereby they asked their interlocutors to provide a description of what they were talking about. The philosophers would find something unaccounted for in the description, and in doing so undermined it, proving the impossibility of defining a concept with infinite precision. People relate even limited descriptions to different concepts, and therefore it is impossible to achieve an exact expression of a cognitive image. In other words, not only the source of the thought suffers from its imperfection, the listener to whom the

thought is expressed also suffers because of the limited and often incorrect decoding of the expressed thought.

Before we discuss the imperfection of verbal human language, it's necessary to determine whether the language of our consciousness, which is based on cognitive concepts and images, is perfect in itself. Undoubtedly, this language of images and concepts has as its first principle the language of concepts and images of higher mammals, which for a variety of reasons is expressed with gestures, body movements, and sounds. At present, we cannot equate these means of communication with articulated human language. Is this language of consciousness intended to comprehend creation deeply? After all, any attribute that has developed as a result of the process of evolution has a distinct goal. Does human consciousness have the goal of understanding creation? The process of evolution is well understood. If, over the course of hundreds of thousands of years, the individuals who out-competed their peers were those who could comprehend creation more lucidly, perhaps man would have evolved a consciousness more adapted to the comprehension of creation. However, natural selection didn't follow this course. In fact, quite the opposite happened. The survivors were individuals who commanded more concrete and limited intellects. They lived more successfully and were more successful in creating posterity. If natural selection based on man's ability to understand creation did occur, if anything, the trait was disfavored. One could suggest that modern humans are no more capable of understanding creation than was primeval man or even animals. The creative process, or, as Engels called it, "labor," wasn't saved, either. The fact of the matter is that the process of creating and the process of understanding creation are not at all the same thing. As Anatole France justly remarked, "It is easier to create the world than to understand it."

Is man a perfect instrument of learning? The question can be put another way: Is man the final product of evolution? Is the comprehension of creation one of the goals of the development of the biological world? If you accept that this is truly the goal of evolution, then most likely, man is not its final product. Friedrich Nietzsche echoes this idea: "Man is a rope, stretched between a

beast and a super-human—a rope over an abyss. What is great in man is that he is a bridge and not an end." If this is so, one shouldn't be concerned that our consciousness is imperfect. Somehow, evolution, either on its own or with the help of man, will eventually reach a higher level of intelligence. Perhaps computers will be the continuation of evolution. And if one believes Lawrence Peter, who said, "The devil can change again. Once he was an angel, and maybe he will continue to evolve," we should hope that the further evolution of man will not see him become more like the devil.

Taking into consideration the limitations of the base cognitive language of consciousness, formed from cognitive concepts and images, it's not hard to imagine that the second system of signals, which is ordinary, segmented human language, is an even less effective instrument for the description of abstract concepts. This is not so. On one hand, language consisting of words limits the expression of cognitive images. On the other hand, language creates new cognitive images when a word acts as the object of expression in the cognitive sense. For example, the word "galaxy" calls up in our consciousness an expansive image of a colossal aggregation of stars. Telescopic photographs seen previously support this image visually. In this case, the word along with the earlier seen representations initiates the image, not the other way around. It is upon this effect the co-development of consciousness and language is based. Consciousness generates new images for which new words are created. These new words, in turn, form the basis for new images. And in this ability, we observe an advantage of modern man's consciousness compared to that of primeval man. However, along with the benefits of an articulated language come certain disadvantages. Often, incomprehension and the absence of a precise cognitive image lurk behind difficult words.

One must point out that languages based on ideographs are closer to the basic language of consciousness. And a thought is even more vividly expressed by way of a proverb, which is a search for an analog of complex concepts in everyday situations. This is the language in which the New Testament is written, if

what is written in it truly reflects what the son of Christ said and is not a distortion.

"The most incomprehensible thing about the world is that it is comprehensible," was the opinion of Albert Einstein. Comprehensible—if we're talking about the process of comprehension and not the result. For example, it's like measuring Earth with a ruler. We could easily imagine using a ruler to measure the circumference of Earth. We could even begin doing it. It's exceedingly improbable, however, that one could finish the task. And the main problem wouldn't even be the gigantic size of Earth. Most places on Earth can't be measured, due to the presence of mountains and oceans. Attempting to understand the fundamentals of creation is like using a ruler to measure Earth. And taking the analogy a step further, we're not even measuring Earth with a ruler; we're measuring centuries with a ruler. In this way, we're attempting to measure time with an instrument intended to measure length.

"The universe is a thought of God," said Friedrich Schiller. And within this thought there is a certain confirmation of our idea: The thoughts of God are incomprehensible, for one who can think as God is God.

It's not surprising that no matter how we try, the resources of the human language are insufficient to express concepts man doesn't encounter in concrete form, and the more removed a concept is from a concrete event, the less likely it is possible to express it precisely using language.

Often, words acquire such importance for our consciousness that many philosophical works engage in a sly substitution of words that denote the same concept. This work of consciousness is often found, for example, in the pages of Kant. It appears to the author himself that he is creating a new concept or category when searching for a denotation of a new word or phrase.

It's clear that the limitations of consciousness and language mentioned above don't allow us to define our concept of time with precision. Furthermore, language fetters our consciousness, forcing it to express what we perceive of the simultaneity of time, eternity, and the limitlessness of life using

inexact words and expressions meant to describe entirely different concepts. Therefore, our words and expressions often assume the form of a banality, simplification, or absurdity, and are inexactly interpreted by the reader or listener.

CHAPTER 6

In the End of Time

In his book *In the End of Time: The Next Revolution in Physics*[1], first published in 1999, Julian Barbour asserts that the existence of time is an illusion. Barbour begins by describing the evolution of his view of time. After taking physics courses in graduate school, Barbour became obsessed with the idea that time is nothing but change. During his studies, he encountered the work of Paul Dirac, which turned his attention to the results of quantum physics. Working as a translator of Russian scientific articles, he was able to pursue his research freely.

Despite the counterintuitive nature of his central claim, Barbour attempts to persuade the reader that our experiences are, at the very least, consistent with a timeless universe. He does not explain, however, why one might seek to exclude time from his or her view of the universe.

Barbour points out that some sciences have long ago done away with "I" as a persisting identity. To take atomic theory seriously is to deny that the cat that jumps is the cat that lands, to use one of Barbour's illustrations. The seething nebulae of molecules that make up humans, cats, and all matter are constantly rearranging themselves at incomprehensibly fast speeds. The microcosms metamorphose constantly, which motivates the idea that one must deny that a cat or person persists through time.

Barbour addresses the charge that writing with tensed verbs disproves his claim of a timeless universe. The next

[1] Julian Barbour. *The End of Time: The Next Revolution in Physics*. Oxford University Press, 2001

revolution in physics will undermine the use of tense in speech, according to Barbour, who adds that at present there is no way to speak or write without using tense.

If the universe is composed of timeless instants and non-enduring configurations of matter, one could nonetheless have the impression that time flows, Barbour asserts. Consciousness and the sensation of the present, which lasts about a second, are just in our heads. Information about the recent past is indeed in our brains, but it is not there as a result of a causal chain leading back to earlier instants. Rather, it is a property of sentient beings, perhaps a necessary one, to begin thinking in the first place. Brains are "time-capsules," in Barbour's words. He investigates configuration spaces and best-matching mathematics, fleshing out how fundamental physics might deal with different instants in a timeless model of the universe. He calls his universe, absent of time and fixed positions, Platonia after Plato's world of eternal forms. Barbour's Platonia consists of an infinity of "nows."

Why is the true frame and object of the universe the instant in configuration space, and not matter in space-time, as traditional cosmologists believe? Barbour marshals as evidence a non-standard analysis of relativity, the many-worlds theory, and ADM formalism. The ADM formalism developed by Arnowitt, Deser, and Misner is a Hamiltonian formulation of general relativity. The formalism supposes that space-time is foliated into a family of space-like surfaces. Using the ADM formulation, it is possible to construct a quantum theory of gravity in the same way that one constructs the Schrödinger equation corresponding to a given Hamiltonian in quantum mechanics.

Since he believes we should be open to physics without time, we must re-evaluate physical laws such as the Wheeler-DeWitt equation without respect to time. In theoretical physics, the Wheeler-DeWitt equation is a functional differential equation. It is ill defined, but very useful, especially when solving equations involving quantum gravity. It is a functional differential equation on the space of three-dimensional spatial metrics. The Wheeler-DeWitt equation has the form of an operator acting on a wave functional (the functional reduced to a function in cosmology). Contrary to the general case, the Wheeler-DeWitt equation is

well defined in mini-superspaces like configuration space in cosmological theories. An example of such a wave function is the Hartle-Hawking state, named after James Hartle and Stephen Hawking. It represents the wave function of the universe, a notion meant to figure out how the universe started, calculated from Feynman's path integral.

These laws take on radical but powerful forms when time is excluded. Barbour writes that our notion of time and insistence on including it in physical theory has held science back. A scientific revolution awaits, he claims. Barbour suspects that the wave function is somehow constrained by the "terrain" of Platonia.

Barbour ends with a short meditation on some of the consequences of "the end of time." If there is no arrow of time, if there is only being and no becoming, creation is equally inherent in every instant.

AFTERWORD

Why this all should matter to us?

This book, more or less, has demonstrated that time is most likely an illusion, and that its speed depends on age, and that from a physical point of view, time as such may not make sense. Why should all this matter to us? As people suffered and died, they will continue to suffer and die. I have nothing to say to that. It's true. And nothing can be done about it.

No matter how painfully regrettable it is, such is the invariable nature of time and our world, and how we are able to perceive them.

Why did we need philosophizing on this subject? It is possible to understand the obvious flaws of human nature. If it comes to our minds to create worlds (even virtual ones), we should not introduce time into them in such an irreversible and deadly form. In another author's book, Creation Guides, he discusses such possibilities.

Time, alas, is invincible, although all our life efforts are aimed at overcoming the disastrous essence of time.

The realization that time is an illusion is the first step in recovering from a ruthless deadly disease, which we call the simple word "life." Perhaps there is no life after death, perhaps our whole existence is nothing more than an illusion, but at least we tried to realize this. Will it make it easier for us? Hardly ... Although maybe ...