

Time and Eternity in Science, in General Culture and in the Christianity

Olkhovsky VS^{1,2*}

¹Institute for Nuclear Research of NASU, prospekt Nauki, 47, Kiev, Ukraine

²Institute of the life and Universe Genesis in the Ukraine, Kiev, Ukraine

Abstract

The problem of time and eternity in science (physics and natural sciences), culture and in the Bible is profoundly discussed. In the Bible, unlike to all European languages (except old Greek), there are two words for time-chronos and kairos. Their meaning is explained. In conclusion it is discussed what the Bible says on that how it is necessary to use time of our life.

Keywords: Time; Eternity; Past, Present and future; Time irreversibility; Chronos and kairos

Introduction

What is time? This question had posed and now poses to themselves many men and women, may be, since then when they had studied to reason about the abstract notions of their being. There had been existed and now there are exist the various relations to this fundamental notion. Just time is divided in science and more widely in the culture onto different categories: the physical time, the historical time, the psychological time etc.

Before the discovery by A. Einstein the relativity theory, science, and on the base of science the philosophy and the culture represented time as some absolute quantity, having a number of characteristics, namely:

- the sequence and duration, i.e. every physical process and every completed event has a certain sequence of its stages and happens during a certain time interval;
- infiniteness, i.e. with the absence of the beginning and the fine (the time is represented in the form of the direct line which does not have the beginning and the fine);
- the directedness, i.e. the time moves always in the same side and, as a consequence of that,
- time has the irreversibility (it is impossible to return or change its direction);
- the uniformity, i.e. time flows linearly and uniformly under the different conditions. But the modern physics seriously changed our knowledge on the properties of time because of its dependence from the velocity of the system and from the gravitational fields.

The particular relation to time, exceptionally important for the sense of the human life, we find in the Bible. And what is the eternity and how is it connected with time? These questions are often appearing in the art (in the literature), in philosophy and in all the religions. The various worldviews and the various authors with the same worldviews reply to these questions in a different way. And to these questions we find the particular relation in the Bible and the different approaches from different Christian philosophers and theologians reasoning on the base of the Bible.

Time

On the past, the present and the future. On time we speak in our life constantly. We measure it and we know that there are the past time, the

present time and the future time. The past time is that which did already pass, and the future time is that which did still not come. But that passed time does not already exist, and the time is in the future did not still come, as Augustin argues [1]. It is real only that which exists in the present. But if the present time could not pass in the past, then it could transform into the eternity which cannot be. Nevertheless, we measure time. What time can we measure? It turned out that we can measure the past time and the future time but the present time we cannot measure. The past time we can measure because it did already pass and we know how much it lasted, and the future time we can measure presumably as our expectance, partly basing on the laws of the nature, partly basing on the revelations of God in the Bible. The present time we cannot measure because it does not have the duration. The present time is the imperceptible face between the future and the past. Augustin proves it by the following convincing reasoning. Can be a certain separated interval of time, for example 100 years, in the present? No, in the present it can be only one from 100 years. And can be this one year all in the present? No, now in the present can be only one month from 12. And from all the month in the present it can last only one day. And so on till the infinity, subdividing a certain separated current interval of time, it is natural to come to the conclusion that the present time is the infinitesimal moment without having any duration. And we obtain the surprisingly paradoxical thing: the past time and the future time do not exist but the present time is infinitesimally small, and, thus, it is also does not exist. → How then we speak on the past which does not exist? And how we speak on the future? Unless can we truly say on the non-existing? Then, do the past and the future somewhere all the same exist? Reasoning in such a way, Augustin comes to the thought that the past exists only as the present in our memory. And also the future, on which we have the courage to say, does also exist as the present in our mind, as the thinking over that must happen.

“It is completely clear now one thing, -Augustin says, -there is no future, there is no past, and it is incorrectly to say on three times; the past, the present and the future...there are three times—the present of the past, the present of the present and the present of the future.

***Corresponding author:** Olkhovskiy VS, Institute for Nuclear Research of NASU, prospekt Nauki, 47, Kiev, Ukraine, Tel: 0287-67-3111; E-mail: olkhovskiy@mail.ru

Received July 03, 2014; **Accepted** August 18, 2014; **Published** August 25, 2014

Citation: Olkhovskiy VS (2014) Time and Eternity in Science, in General Culture and in the Christianity. J Mass Communicat Journalism 4: 222. doi:[10.4172/2165-7912.1000222](https://doi.org/10.4172/2165-7912.1000222)

Copyright: © 2014 Olkhovskiy VS. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Certain these three times exist in our soul, and nowhere we see them: the present of the past is the memory; the present of the present is the direct contemplation; the present of the future is its expectance”.

And how we do nevertheless measure time? Indeed, the past is already no, the future is still no, and the present has no duration. And, nevertheless, we measure time, according to Augustin, namely in the present, till it flows, till we feels it, till it flows from the past through the present into the future. Augustin, stressing on the spiritual aspect of the feeling of time, considered that time exists only in the spiritual human world which is divided by a man on to the past, the present and the future. He writes that it will be more correctly said on three times: the present of the past, the present of the present, and the present of the future. The present of the past is the memory; the present of the present is the direct contemplation; the present of the future is the expectance [1, book 11, chapter XX, page 297]. Although time is connected with the motion but it does not coincide with the motion and the moving (on this Aristotle had been written), rather it is belongs to the soul.

Here one can add the following. Between the true duration of the events and representations on the durations of these events there exists such the dependence. If we recall the day during which many events happened, and compare the duration of this day with another day, during which there were few events, then we see that the remembrance on the first day is more “long” than the remembrance on the second day, since the information on that day, during which there are happened more events, is richer. But in those historical period when Augustin wrote his works, there was not known the notion of information in that sense in which this notion is used in the modern science. Bertran Russel, expressing the partial disagreement with the theory of Augustin, all the same noted that it is “the great step forward in comparison with all, that one can find for this topic in the Greek philosophy” [2]. However, when Russel further proclaims that Augustin proposes more thoughtful and clear exposition of the subjective theory of time than that was proposed much later by I.Kant, then this statement (although may be partially faithful) in a certain degree misleads. “May be, that Augustin’s theory anticipates in the new philosophy is not so kantian theories how the interpretations of time, proposed by such philosophers as Haidegger and Sartr” [2].

Time and causality. The causal conditionality of the events consists in that

- any phenomenon has the cause (and in that sense the causality is universal),
- the cause happens before the consequence,
- the causality is necessary in those sense that the complete assembly of the causes makes the appearing of the event to be inevitable etc.

In [3] it is assumed that the demand of the causality follows not from the empirical “external” reality but from the universal activity orientation of the human thinking, since, according to the statement of the author of [3], any act of the activity demands the presence of the causal connection and every act of the activity establishes in the world of the events the objective vector, directed from the cause to the consequence, including, in particular, from the past to the future, and, being related to the world as a whole, it forms the idea of time-absolute time, unified for the world as a whole. It is universal, since it fixes inside itself the universal moment of the being which is necessary for any act of the activity. It is *a priori* in the sense that it is formed directly in the acts of the activity without the connection with any

reality, concreted by any empirics observed by a man. It is true that, instead of the universal definition of the causality, including all purely empirical manifestations of it even without the activity’s orientation of the consciousness [4], the definition in [3] relates only to the universal activity orientation of the human thinking. However, as to my opinion, it can be easily widened in the theological creative approach before the activity of God in the creation and supporting of the universe till up the creation and supporting the universal cause and effect connection and without direct human activity and out of the human thought.

Time in natural sciences. In the modern science (physics) time is the attribute of the visible, physical, material world and it speared with the appearing of our universe. Absolute everything, which it is going on in this world and in the life of every man, takes place in time or, in other words, is subordinated to the strict currency of time in the correspondence with the nature laws. Before the revelation by Einstein of the relativity theory the mankind represented time as a certain absolute quantity with five characteristics, described in the introduction.

After the creation of the relativity theory it was become clear that the physical time is the quantity *relative* and in the different systems of reference, which are moving with the different velocities, flows differently: more slowly in the systems, moving with the larger velocities. And, besides, it was found that time flows differently also in the different gravitational fields. The events, simultaneous in one system of reference, can be not simultaneous in another system, i.e. the simultaneousness happens to be relative. In the relativity theory, both special and general, time and space are seen as the whole (unit, or the various projections of the same four-dimensional vectors). Besides that, it was proved that to the uniformity of the currency of time it is correspondent the law of the energy conservation. In this it is the essence of the known theorem of E. Noetter.

The modern quantum theory brought its contribution in the deepening of the understanding the time properties: the probabilistic sense of the durations of the microscopic processes and the time decays of the radioactive nuclei, the uncertainty relation of energy-time, the rigorous absence of the rest states for the microscopic systems and particles etc. [5-10].

Nevertheless, in [3] it is assumed: independently from the concrete physical applications, time in a priori sense as the general aspect of the activity connection of the events remains as before absolute.

The irreversibility of time. In a huge list of unresolved problems of the modern physics Ginzburg [11] indicates on one problem (between three great problems): the problem of the physical justification of the entropy increase, irreversibility of time *and* “the arrow” of time not only on the earth and in the near cosmos, but in all the universe. And indeed, the problem of time irreversibility is one of the most old and difficult physics problems [12]. A number of physical and philosophical reviews are dedicated to this problem [13-15]. Certainly, it belongs to one of the most fascinating problems. For example, in it there are following intrigued questions:

- Why in all the parts of the observed universe time flows irreversibly only in one direction – from the past to the future?
- Are inevitable the aging and the death of all alive organisms?
- If are programmed genetically the aging and death of the alive organisms and if is it possible, although in principle, to change artificially the internal program of the organism. Transforming it in the immortal (by the internal program)?

Usually under the time direction one is implied synonymically its flow from the past to its future. In the Newton physics the propriety of the time irreversibility had been considered as evident. Now in all regions of the modern physics (classic, non-relativistic, relativistic, quantum), biophysics and all the natural sciences it is usual connected with the action of the second law of thermodynamics.

And someone [3] connects the flow of time with the principle of *causality* (namely: real cause always makes the consequence (the result) and certainly proceeds the latter in time) or even with such integral characteristics as development (*evolution*). In the sense of the activity, the past and the future are absolutely divided as the events, principally accessible (future) and the events indubitable were out of the possible influence (past). I.e., the regions of the past and future are principally asymmetric in such sense that our activity does always flow on the line from the past to the future but not vice versa. And in this plan the irreversibility of time signifies the representation on the asymmetry of the causality connection, conditioned the activity's nature of thinking. However, it is evident that such asymmetry cannot resolve the problem of the origin of the irreversibility of the physical time, observed purely empirically even without including the thinking on the causal connection.

In some later approaches to the interpretation of the quantum measurement theory [16,17] someone connects the irreversibility of time, conditioned by the quantum measurements, when from the total spectrum of the probabilistic events there are realized only some or even single events (that automatically introduces the real irreversibility in the evolution of quantum phenomena), also only with the manifestations of the human thinking (or conscience): Namely someone assumes that in the quantum world of the unconscious matter time is reversible and the notions "the present," "the past" and "the future" do not simply exist and at the interactions between the micro-objects and the classic measuring apparatus all the alternatives of any measurements in the unconscious nature really exist, and in the human conscience it is appears the feeling of the flaw of time and the difference between the present, the past and the future namely in the quantum measurement, when it is violated the description by only quantum equations and it is inserted the human conscience, which divides the alternatives of the quantum measurements and then so that it is including the irreversibility in the observed world. However, also in this case the asymmetry, introduced hypotetically only by the human thinking in quantum measurements, also cannot resolve the problem of the origin of the irreversibility of the physical time, always really observed in the region of classical (non-quantum) physics, in the macroscopic and cosmic processes.

Then it is known that in the Newton mechanics, in relativity theory, in quantum mechanics, in quantum electrodynamics equations of the microscopic motion particles and photons are symmetric relative to the changing of sign (the direction) of time and describe the processes which can take place in the both directions of time. More strictly, the physical laws do not changed after the combined operation *CPT*, where *C*, *P* and *T* signify respectively the changing of particles for anti-particles, the space mirror reflection (the right and the left are interchanged) and the reversal of time. The physical laws do not practically changed (with the accuracy up to 10^{-10}) in the combined action of two operators *C* and *P*. And with the same accuracy (10^{-10}) the laws of physics do not changed under action of the operator *T*. However there is a huge difference between the directions forwards and backwards in time in our everyday life on the macroscopic and cosmic levels which cannot be explained by the extremely small (10^{-10}) violations of the *CP* and *T*-invariance in the weak (super-weak) interactions between elementary particles.

Thus, what are the causes of the irreversibility in time of the real macroscopic and cosmic processes which we can often observe every day? Before that we try to clear up this question, let us consider some typical empirical (and not depending from the human thinking) examples of the asymmetry of time [17,18]:

- The heat passes from the hot bodies to the cold ones.
- Any perturbation is extended with time and is weakened in all the spatial directions.
- All macroscopic processes, with the exception of the phenomena superfluidness and superconductivity which are observed under the particular conditions during the limited intervals of time, are dissipative (i.e. the kinetic energy of all particles during their motion without especial "make up" is gradually decreased).
- Any macroscopic body loses its energy of motion and finally stopped.
- We can see how the cup falls from the table and breaks by splinters on the floor but we cannot see how the splinters of the cup gather together on the floor and jump back on the table.
- We see many changes of the biological character. In particular, any alive being, including a man, is born, grows and develops, then ages and finally dies.
- Many manifestations of the earth history have the character of the written information but the every concrete information is wiped with time.

In all these examples the disordine is growing with time and respectively the ordine is decreasing with time. In this there is the essence of the second law of thermodynamics. Someone says that this law defines the thermodynamic arrow of time, i.e. the direction of time, along which the disorder grows, and the order decreases.

The modern thermodynamics and statistical physics use the notions entropy and information. The entropy is defined mathematically as the degree of the disorder. If the system has well-ordered structure, then its entropy is small. And on the contrary, systems with large entropy are chaotical and disorganized. Information (on the statistical level) is connected with entropy by the simple mathematical way: information is identical to the negative information and therefore it sometimes is called by negentropy. When entropy grows, the information loses. The high-ordered system contains a lot of information. The disordered system contains very small information. In the correspondence with the second law of thermodynamics, entropy of the isolated (closed) system does not decreases but can only grow till the maximum value in the state of the heat equilibrium (which is called by the heat death for the all the system as a whole). Those processes inside the isolated system, for which the total entropy remains constant, are called to be reversible. They can take place in the both directions of time. And the processes, to which the growth of entropy accompanies, are called by the irreversible. Namely these irreversible processes, accompanied by the growth of entropy, are connected with the irreversibility of time, or, more precisely, with the thermodynamic arrow of time. Such processes can happen both in the closed and open processes [19].

The second law of thermodynamics is well-known from our everyday practice: it is much more difficult to reach the high system order that to destruct it. And this law acts without any exception, in spite of that, the strictly speaking, there is no system, strictly isolated from

the real material world. Moreover, all the known macroscopic systems, which are the better ordered, that their environment, were created or separated from the universe not simply as a result of the rare casual fluctuations but directly under the external action (on these systems or on their predecessors) or as a result of the bifurcations, caused by the nonlinear effects and the external influence on the opened systems [20]. And for every created macroscopic system there is always, at least, the weak background of the continuous “cosmic noise” (the exchange by heat, gravitational interactions etc) which causes the violations of the reversal of the processes and, consequently, the growth of entropy inside this system (and also inside the larger system, containing the given), and also the asymmetry of time.

There were proposed [18], at least, two more arrows of time: the biological (the direction of aging) and cosmological (the direction, along which the universe is extended). Sometimes someone speaks also on the psychological arrow of time (the direction, in which we feel the passing time and remember the past but not remember of the future). These opinions born many new questions:

- If does the thermodynamic arrow of time define the biological and psychological arrows of time?
- If does not practically the same thing the biological and the psychological arrows of time?
- If does not indicate to the same direction all these arrows?
- What is the connection between the thermodynamic and cosmologic arrows of time? etc.

And to-day all these questions are open.

Returning to the thermodynamic arrow of time, we note one more circumstance. According to the general Poincaré theorem, practically all isolated (closed) dynamical systems, which are known in classical physics, and later generalized in quantum mechanics [5,20] return in the initial states (or to the states which can be defined as the initial with any degree as the initial) independently from entropy and after the certain periods of time (the so called the Poincaré periods). By some preliminary calculations, for the typical macroscopic systems these Poincaré periods are much more than the age of our universe even in the typical for the evidently excessive values (in the standard physics). Of course, we assume that the entire universe as a whole can be considered as a closed system and hence someone can apply to it the Poincaré period.

Nevertheless, the modern scientific analysis [21] permits to conclude on the inconsistency of the every version of the stationary or of the cyclically developed system. And moreover, even the exceedingly small violation (of the order 10^{-10}) of the T-invariance in the weak interaction between elementary particles of the spatially very huge universe is incompatible with neither its cyclicity, nor its stationarity. Therefore it is remained to study only in the limits of the irreversibility of time those versions of the non-stationary universe when the second law of thermodynamics acts.

In some approaches the asymmetry of time is in fact introduced, at least, partially even in the microphysics, in spite of the time symmetry of the microscopic dynamical equations, with help of the correspondent initial and boundary conditions, or the causality condition [3]. Someone consider them as a reflection of “the background” macroscopic and even cosmic environment for every microscopic system. Comparatively recently (during last 35-40 years) there are appeared also such approaches to the description of the irreversibility of time on

the microscopic level, in which there are introduced new parameters (of disordering or dissipation) unto the microscopic dynamics (i.e. the guidance of the bridges between the microscopic structure and the macroscopic characteristics [22-29].

Passing to the analysis of the biological and psychological arrows of time we meet from the just initial with the natural question: if are sufficient the known laws of physics for the explaining of the biological *and psychological) phenomena or not? Up to now it is an open question in science. And nevertheless, paradoxical problem of the supporting the evidently high level of the organization in the alive beings (of course, when the aging and the illnesses can be temporally neglected), from one side, and the second law of thermodynamics with the correspondent tendency to the disorder, from the second side, is already decided [17,30]: the order (the ordering) in the organism supported by the outflow of entropy (the wastes) in the environment. And if we shall isolate the organism together with the environment, which is necessary to its existing, entropy in the complete isolated system is grows. Moreover, after some limited time every alive organism begins to age, with increasing of its entropy and respectively losing its information and finally die. And it is quite possible that the biological arrow of time is defined by the thermodynamic arrow of time. And even the psychological arrow of time someone partially explains by the second law of thermodynamics: When the memory (of the human brain) passes from the disordered state in the ordered one (the registration of something in the memory), for the organism it is necessary to increase the disorder in the universe (to select entropy outside).

Now on the cosmologic arrow of time. In classical general relativity theory it is known several possible versions of the universe behavior in the space and in time:

- In particular, it could exist the infinite time in the past. But such possibility is deleted by the theory of Big Bang, in which the majority of physicists believe.
- Therefore the universe could appear in a certain initial moment of time.
- And it can be periodical in time. Besides that, it is necessary to take into account that even without inevitable quantum effects the universe can appear or to finish own existing in the state of the order or the disorder. That will, in its turn, define if the clearly defined thermodynamic arrow of time will be constant for the universe as a whole, for all its existing and if it will coincide with the cosmologic arrow.

There are known also such types of the time asymmetry which, for the first sight, have not the thermodynamic nature. For instance, we can observe only delayed electromagnetic waves, outgoing from moving charged particles to the infinity and during its radiation the decreasing of their kinetic energy with time. Basing on the theoretical microscopic reversibility of time, we could represent ourselves the advanced electromagnetic waves, ingoing from the infinity to the charged particles, with the increasing of the kinetic energy of the latters after the absorption of the electromagnetic waves. However, nobody did not observed ever such processes (by the way, also in quantum processes too, that evidently does not eliminate the irreversibility of time in pure quantum processes due to the supposedly real existing of all the possible alternatives of any measurements in the unconscious nature in accordance with the hypothesis from [16,17], because such the alternative with the advanced waves, ingoing from the infinity, nobody did not observe ever in any measurements). Some physicists

assume that it is impossible to base the explanation of such processes, considering the only local processes and it is necessary to consider the large-scale (cosmological) properties of the universe, which is now extending, together with the manifestations of the second law of thermodynamics during the dissipation of the electromagnetic energy due to the processes of photon scattering and absorption by particles on large distances.

And in this the seriousness and mysteriousness of the problem *how* is appeared the irreversibility of time during the passing from the micro-world to the macro-world and what are the real causes of the real irreversibility in time of all the empirical and cosmic processes? And now the seriousness → mysteriousness of the problem how does still originate the irreversibility of time with passing from micro-world to the macro-world and cosmos and what do still causes of the real irreversibility in time of all the empirical macroscopic and cosmic processes?

That we can state with the certainty now is that the observed arrow of time does not defined by any one physical process or by the only activity's orientation of the human thinking, but the existence of the direction of time is it general propriety which has a lot of manifestations! We can also conclude that now between physicists the opinion dominates on that the second law of thermodynamics is universal for all the closed systems, including all the universe as a whole and hence "the heat death" of the universe is inevitable in somewhat form.

The especial interest is connected with the question on what if the irreversibility of time before the creation of a man in the world and if it will be in the future Divine Kingdom.

Let us bring the theological analysis of this question. Apparently, the second law of the thermodynamics and, may be, the universal cause-effect connection in nature had been created by God during creation of the universe. Before the sin fall of a man the activity of the Saint Spirit regenerated the order in nature and ensured the physical immortality of a man not by the cancellation of the second law of the thermodynamics and the universe cause-effect connection but the bringing by His creative activity namely the organize-ability and supporting of life. But after the human sin fall (i.e. after the separation of a man from God) the non-separable connection of the order and life with the Saint Spirit vanished (although a certain support remained), and a man loosed his physical immortality on the earth and, although he does not in a notable degree govern the creation but continues to influence on it. Only after the second coming of Christ, when it will be created a new universe, the Saint Spirit will again begin to act and the repented and accepted the espy-able sacrifice of Christ saved man find the physical immortality and together with Him will eternally govern the creation. And, as the Bible says, in a new universe *there will not be already time: "And the angel which I saw stand upon the sea and upon the earth lifted up his hand to heaven, and sware by him that liveth for ever and ever, Who created heaven, and the things that therein are, and the earth, and the things that therein are, and the sea, and the things which are therein, that there should be time [in Greek: chronos] no longer"* (Revelation, 10:5-6).

If are the general characteristics reduced only to the physical characteristics? In the modern science and culture still more frequently and more widely it is said on the biological, cosmic, psychological, aesthetical etc problems of time. It is interesting, for instance, problem of the biological watch in the organisms of plants, animals and a man. The results of many investigations are agreed with the rather

convicting on that all the processes in the earth biosphere are ordered in time in a correspondence with the unified rhythmical principle, and the synchronization of the bio-rhythms and their agreement with the geophysical and the cosmic rhythms takes place through the very weak electromagnetic connections. Its own specificity is inherent to time also for the human psychology. If in physics it is possible to call the arbitrary moment of time by the word "now", then to a man it seems that "now" is constantly moving from the past to the future. With this, there were never been the physical experiments which would directly establish the currency of time. Between the aesthetic characteristics of time one can mark one particularity, revealed in some psychological and nervous human processes, and also in the dynamics of the best compositions of the music, theater art etc. It consists in that there is a certain proportion between the duration of the first part of the duration or of the duration from the beginning till the culmination and the duration of the second part from the culmination till the finish – the first is more slow and long than the second (something of the kind the space "gold cross-section" in the products of the architecture).

Chronos and kairos [31,32]. In the difference from the Russian (and, by the way, many other languages-Ukrainian, English, German etc), in the ancient Greek of the time of the antiquity there were used two words for time-chronos and kairos [unfortunately in the translation of the New Testament to Russian and many other languages the words Chronos and Kairos are translated by the single word *time*. The first related with the chronological or sequential time when time lasts from the past through the present in the future, occupies somewhat measurable interval of time and describes the sequence of events in time; the second signifies a certain moment in time interval "between the beginning and fine of somewhat process", that moment from the indefinite period of time when "anything" particular happens. The first is the quantitative characteristics, and the second is the qualitative one. Sometimes in a simplified way chronos and kairos are described thus [33]: chronos is the physical time (in space-time of the special and general relativity theory), and kairos is metaphysical time (the ordered but non-measurable time out of the space-time) or even: kairos is the main (fundamental) time and chronos is the derivative time.

In details, *Chronos* (χρόνος) deals with the linear measurable sense of time, which is current from the past through the present in the future. In the Greek mythology *chronos* is personified time, originated from the primary chaos, in a certain sense identified with the titan Chronos, devouring his own children. And also in our earth life time is invariably finished for us, as if killing us. And, in fact, time itself, in the sense of chronos, dealing with the past and the future, approach on to the non-existing, to the image of the eternal death (to that is in the Bible called by hell, - to the kingdom of the death in the eternally continuing time succession). And in order in our life at least partially to control time-chronos and to control it rationally, it is necessary to measure chronos. And chronos in the modern generalized interpretation and in the biblical theology is the physically measurable time, time of our watch and chronometers, the history time in the chronology. Every process occupies a certain time and many events in the life of a man happen in the destined time. Everything is subordinated to the current of time, and everything in this life-both good and bad passes: *"To everything there is a season,*

- *and a time to every purpose under the heaven;*
- *A time to be born, and a time to die;*
- *A time to plant, and time to heal;*
- *A time break down, and a time to build up;*

- A time to weep, and a time to laugh;
- A time to mourn, and a time to dance;
- A time to cast away stones, and a time to gather stones together;
- A time to embrace, and a time to refrain from embracing;
- A time to get, and a time to lose;
- A time to keep, and a time to cast away;
- A time to rend, and a time to sew;
- A time to keep silence, and a time to speak;
- A time to love, and a time to hate;
- A time of war, and a time of peace. (Ecclesiastes, 3:1-8).

Sometimes in our time someone says that there are existing two types of the measurable time: the cyclic time which is time of our everyday life (many nature cycles: in the motion of planets, stars, galaxies etc, cycles in the living organisms, cycles of the watch mechanisms and the linear time (after the origin to the fine of the existing of the universe, of the life, of any natural or artificial process,...). But to differ the cyclic and linear time is by far not always simple. In strictly physical sense time is one-dimensional and linear in our earth life (it described by the one-dimensional axis with the initial point of the counting out and the homogeneous scale). In the New Testament *chronos* has the fine in the future:

...Heaven and earth shall pass away... (Matthew, 24:35);

...But the end of all things is at hand... (1Peter, 4:7);

...there should be time (*chronos*) no longer (Revelation, 10:6) etc.

Kairos (καιρός) in the Greek deals with the non-linear sense of time, formally near on the signification to the sense "state". Strictly speaking we cannot measure *kairos*, because this time always signifies the present, and the present is in-divided evidently. This time is too short to be measured and analyzed by its duration. In the difference from the past and the future, the present does really exist. And *kairos*, just namely that is the present, is the image of the eternal life. In order to be in the present, we must be alive. The deads know nothing on the present. In the Greek *kairos* signifies "true time", the moment which is full of the contents and the meaning.

In the New Testament *kairos* is time, chosen by God, time of our decisive choice and our decisive actions. "My time is not come", Jesus had said (John, 7:6), and then it came: it is *kairos*, the moment of the fullness of time. Not all is possible in any time, not all is true in any time and not all is necessary in any time. In various times the world is in the power of various cosmic and human forces, but God rules over everything and everyone in the fulfilled by the dramatic time between the Sunday and the Second Incoming – "the present time", which is in its essence different from any other time in the past. In this dramatic realization of the history is rooted the idea of *kairos*.

Kairos of God is time accomplished, in which there is no place for such limited human notions as the past and the future. *Kairos* of God can be represented as the eternal present, where the principle of the sequence of our time *chronos* is not valid. *Kairos* is the highest dimension of the Divine time, in which God sees everything and everybody, in which all already to Him is accomplished and in which He has presented Himself.

Kairos and chronos in the history of creation. Time as the attribute

of our material world appeared with the appearance of our universe. From the Bible we learned that the beginning of time had put by God when He had begun to create the universe. That moment the Bible declares by "the beginning": (Genesis, 1:1) – "In the beginning God created the heaven and the earth".

God is the Spirit and as a Creator of all, He is not bound by time and space. All the axis of time is before Him and for Him there are no unknown intervals of time. He simultaneously sees any separate day and thousand years. "For a thousand years in thy sight are but as yesterday when it is past, and as a watch in the night" (Psalms, 90:4). Unfortunately, to this verse someone often resort for the incorrect interpretation of the creation history from the book of Genesis 1, erroneously seeing in it the affirmation of the evolution doctrine with its millions and billions years. In the reality, according to the Bible, with the creation of matter (Genesis, 1:1) there was created also time, and all creation passed in chronological limits of day-night cycles. The system of the measurement for it is described in (Genesis, 1:14) – "Let there be lights in the firmament of the heaven to divide the day from the night; and let them be for signs, and for seasons, and for days, and years. This is the most ancient method of the measurement of time. The creation process passed in the limits of *chronos*, i.e. the creation had been during 6 days of "our" time.

The main the New-Testament's meanings of the term "*chronos*", rather, are related to the everyday and calendar spheres, where the accent on the duration and processuality of time. This, as a rule, is a certain interval of time, for instance, of the actions of Jesus Christ (εν αντι χρονω, i.e. in all the time-Acts, 1:21) or some chronological period (εν οσον χρονον, i.e. as long as he liveth-Rom.,7:1; 1Cor., 7:39), duration (χρονον τινα, i.e. to tarry a while-1 Cor., 16:7; Επι πλειονα χρονον, i.e. to tarry longer time-Acts, 18:20). Sometimes it is directly indicated duration of some chronological period (for instance, in Acts, 7:23-τεσσαρακονταετης χρονον, i.e. (in time) forty years. Time "*chronos*" can be in the given context "small" (μικρος-Revelation, 6:11; 20:3; John, 7:33; 12:35), "sufficient" (ικανος-Acts, 8:1; 14:3; 27:9), not small (ουκ ολιφος-Acts, 14:28), "tantum" (ποσος χρονος-Mark,9:21). It is said also on long (literally "many") time (πολλοις χρονοις -Luke, 8:29; πολυν χρονον-John, 5:6; μετα πολυν χρονον (after a long time)-Matthew, 25:19). *Chronos* contains also the idea of duration (εγενομη χρονον -Acts, 19:22; τον παντα χρονον εγενομη -Acts, 20:18; δια τον χρονον -Hebrews, 5:12), pastime (ποσειν χρονον τινα -Acts, 15:33; 18:23). That, that the category "*chronos*", in the difference from the above considered terms (and before all "*kairos*"), does not bring the "point" connotation, forces (when it is said about some moment of time "*chronos*") to introduce various explaining words. "Momentariness" is expressed by the combination εν στιγμη χρονου (Luke, 4:5). The category of time-"*chronos*" in the form of the plural number (χρονοι) has mainly theological sense, marking a certain period—epoch (ουχ ημων εστις γωνια χρονους η καλιρους οθς ο πατερ εθετο εν τη ιδια εξουσια, i.e. it is not for you to know the times or the seasons-Acts, 1:7), all the before-Christ period of time, contrasted to the recent times (τους χρονους την αγνοιας, i.e. the times of this ignorance-Acts, 17:30), finally "secular times" in the future (χρονοι αιωνιοι: 2Tim., 1:9); the combination of the categories "*chronos*" and "eon" in this expression is sufficiently eloquent. With the Second Incoming there are associated "the last times" (επ εσχατον χρονων, i.e. in these last times-1Peter, 1:20), "the last time in the flesh" (τον επιλοιπον εν σαρκι-<...> χρονον, i.e. the rest of his time in the flesh-1Peter, 4:2), contrasted with life-"the past time" (παρεληλως χρονος, i.e. the time past of our time-1Peter, 4:3). The calendar significance of the category "*chronos*" is the most often (17 times) met in the book "Acts of the apostles" (for instance, εν το

χρονω τοῦτω, i.e. *at this time*-Acts, 1:6). With this value is connected almost one third of all the cases of the utilizations of this term in the New Testament.

The completed response to the question if someone could transform the time of God in the human time and vice versa, one can find in (2 Peter, 3:8)-“*But, beloved, be not ignorant of this one thing, that one day is with the Lord as a thousand years, and a thousand years as one day.*”, i.e. there is no any formula for the transformation of time *kairos* into *chronos* and vice versa.

In fact, *kairos* is time of the salvation. We as men are functioning more in *chronos*, i. e. in the chronologic time, and in the Divine plan of the salvation we are functioning more from the perspective of *kairos* in the Mind and the Heart of God. In fact, God created time in order a man on the earth can turn to God and prepare as a collaborator of God the incoming of His Kingdom. And we need to use time as a talent, given by God to any of us. The Bible appeals us to esteem time and use it for the perception of the will of God: (Ephes., 5:15-17)-“*See then that ye walk circumspectly, not as fools, but as wise, redeeming the time [kairos], because the days are evil. Wherefore be ye not unwise, but understanding what the will of Lord is*”. And the will of God consists in that the Lord desires that every man will repent: (Acts, 17:30)-“*And the times [chronos] of this ignorance God winked at; but now commandeth all men every where to repent*”. It reechoes with the sense of the human life, which consists in the search of God: (Acts, 17:26-27)-“*And hath made of one blood all nations of men for to dwell on all the face of the earth, and hath determined the times [kairos] before appointed, and the bounds of their habitation; that they should seek the God, if haply they might feel after after Him, and find Him, though He be not far from every one of us*”.

The most frequently meeting in the New Testament notation of time is the word *kairos* in the sense “moment”, “date”. It is met 84 times. The central for its semantics is the representation on a certain time point, moment, event (cf. *Εν εκείνω τῷ καιρῷ* — Luke, 13:1; *ἐν αὐτῷ τῷ καιρῷ*—Luke, 13:1, *κατ' ἐκείνω τῶν καιρῶν*-Acts, 12:1; in spite of the noted above the difference of the notions “*chronos*” and “*kairos*”, these expressions are traditionally translated as “in that time”). *Kairos* is used also in the sense of the nearest oncoming (*παραβολὴ εἰς τὸν καιρὸν τὸν ἐνεσθηκότα*, i.e. *A figure for the time then present*-Hebrews, 9:9, *ἐνεσθησονται καιροὶ καλεπο...*, i.e. *perilous times shall come*-2 Tim., 3:1). The mostly strikingly image of “*kairos*”- “term” is revealed in the utilized in (2 Cor., 1:2) formula *καιρὸς εὐπροδεκτοσ*-time auspicious, playing the role as the synonym of the expression “Day of Salvation”. Generally for New-Tetament’s image of “*kairos*” is the mostly characteristic connection with the moment of the Second Incoming and the Last Judgement (1Peter, 4:7; Revelation, 1:3; 22:10). Apocalissei the meaning of this “point” time is beautifully illustrates the combination of “performance of times (literally- “terms”) *πεπληρωται ὁ καιρὸς καὶ ἤγγικεν ἡ βασιλεία τοῦ θεοῦ*-*The time is fulfilled, and the kingdom of Gpd is at hand* (Mark, 1:15); *Ὁ καιρὸς ὁ ἐμὸς οὕτω παρῆστιν, ὁ δὲ καιρὸς ὁ ὑμετέρος παντοτε εἶστιν ἐτιμος*-“*My time is not yet come: but your time is alway ready*” John, 7:6). And finally *kairos* of God as time of God we can represent as the eternal present, where the principle of sequence of our time *chronos* is not valid. *Kairos* in the modern theology is the highest dimension of the Divine time, in which God sees everything, in which everything is already for Him completed and in which He is presented Himself.

The Eternity

The ephemeral-ness of beings and the things, early or lately

vanished in time, forced in the antiquity, represent us this last as a breaking and destructing force, as some monster, devoured any life and anything, according to this the large duration of some objects was represented as their successive opposition to this force, and hence those objects, the duration of which was assumed without finish, must be represented as finally won the force of time as inaccessible and not subject to its action. And from this it is natural more late passage to the metaphysical notion on the eternity as on the sign of the transcendental being, undoubtedly over-temporal. We meet even in the antiquity such a notion not only in the Revelation on the Eternal God in the Hebrews, but also in some upanishads in the Indian philosophy and in Indian theosophy, in Greek philosophy and, in particular, at neo-platonics.

The notion of *the eternity* evidently and directly does not utilized in science (only in mathematics it is used the notion of the infinity which is connected with one of the conceptual characteristics of the eternity as the infinite existing in time). In general human culture, philosophy, religion the notion of the eternity is utilized in two different senses:

(1) It signifies the propriety and state of a being which is out of time, i.e. it has neither the beginning, nor the continuation, nor the finish in time, but contains at once, in one non-separable act all the completeness of its being. Such is the eternity of the being absolute.

(2) Under the eternity it is understood also the infinite continuation or the repetition of the given being in time. Such is accepted in the many worldviews and philosophical systems the representation on the eternity of the world which is sometimes (for instance, at stoics) appears as a simple repetition in the innumerable cycles of one and the same cosmic and historical contents.

Partially it does adjoin to (2) as also such special comprehension of the eternity in the human culture [34]: The human being, which puts together the contents of the culture, is in non-separable way connected with time, is the being in time.

Therefore also the culture is non-separable from time. Incarnating in itself the human being, it incarnates in itself time. As also the being of the humanity, the culture is connected with all the forms of time. The human being, as Heidegger assumes, does presuppose the unity of three forms or modes of time: the past, the present and the future [35]. The past, the present and the future are the inseparable characteristics of the human life. In turn, they reveal also in the culture. Besides that, the being and the culture are belonging to the eternity. The past, the present and the future are the various hypostases (images) of the eternity, its different faces. All they are relative, only the eternity is absolute. The essence of them is opened as they express by themselves the eternity. And, adjoining with the past, the present and the future, the culture with this also penetrates into the region of the eternal.

The eternity is the flesh of the culture, that material from which its building is constructed. But the past, the present and the future are that necessary without what it is impossible. They contain the basis, the top and the contours of the culture.

It is justified that the existing of the eternal unchanging God before the creation of the universe (world) signifies His existing out of time, i.e. the complete absence of time *chronos* at all. But after the creation of the world, if God supports the relations with the world, the coexistence of God and the world signifies His existence also in time (both *chronos* and *kairos*).

And what the Bible says on the eternity? In the Bible very often there are appeared the words on the eternal life and on the eternal God. So, how it is possible to interpret this eternity? First of all, from the

Bible it follows that God created the universe together with the space and time (chronos) (Genesis, 1:1) (Titus, 1:2), (Hebrews, 1:2).

Before the creation of the world with space and time, God existed eternally (and continues eternally to exist in the spiritual dimension out of the physical space and time. Namely therefore someone says that God exists out time (chronos) [1,30], and also says that God exists in His time— namely in kairós [31,32]. God is the Spirit (John, 4:24). So God is usually directly inaccessible to the usual material world: God-Father is completely transcendent, other two persons of the Tri-unity can be in both transcendent world and in immanent world which they created, and continue to save it (i.e. return it to the eternal intercourse with Himself after the acceptance of the expiatory sacrifice of Christ), appearing to men rather rarely, in the chosen by Them time.

And a man is created for the eternity, where his existing will be without finish. In the Bible (Ecclesiastes, 3:11) there are the wonderful words:

“He hath made everything beautiful in his time: also he hath set the world [literally in Jewish the eternity] in their heart...”. On this the art says, the poets write which express not the biblical faith but their grief for the eternity. There are also in the Bible indications on two forms of the eternity for the people after their physical death. The theme on two forms of the eternity (on the hell for the people without God and on the paradise for the people with God) is not simple, demands the particular time and the particular analysis.

Conclusion

Thus, the notions *time* and *eternity* have many different aspects and, moreover, there are different points of view and approaches to them in science, culture and Christianity. I made the review of the modern data for a numbers of them, and I made my own reasonings and results (in quantum theory of time, on the time irreversibility, on the aesthetic characteristics of time).

And the most principal:

- What the Bible says on that how it is necessary to utilize time of our life? How someone must relate to the tempered to us time on the earth and how it use?

The Bible appeals us to manage wisely time:

- (Psalms, 90:12): *“So teach us to number our days, that we may apply our hearts unto wisdom”*.

The Bible appeals us to esteem time and utilize it for perceiving of the will of God:

- (Ephes., 5:15-17): *“See then that ye walk circumspectly, not as fools, but as wise, redeeming the time [kairós], because the days are evil. Wherefore be ye not unwise, but understanding what the will of the Lord is”*.

And the will of God is that the Lord desires that every man will repent:

- (Acts, 17:30): *“And the times of this ignorance [chronos], God winked this at; but now commandeth all men everywhere to repent”*.

This reechoes with the sense of the human life which consists in the search of God:

- (Acts, 17:26-27): *“And (He) hath made of one blood all nations of men for to dwell on all the face of the earth, and hath determined the times before appointed [kairós], and the bounds of their habitation; that*

they should seek the Lord, if haply they might feel after Him, and find Him, though He be not far from every one of us”.

What the Bible says on where you will be in your eternity: Indeed, “to all its time is, and time of any thing is under heavens”. This signifies that if you sometimes appeared in the world, then you sometimes will die. And after the death you will be in the eternity in which there will not be time. The Bible says that after the death a man will be or in Hell (the eternity without God), or in Paradise (the eternal life with God):

- (Daniele, 12:2): *“And many of them that sleep in the dust of the earth shall awake, some to everlasting life, and some to shame and everlasting contempt”*.

- (Matthew, 25:46): *“And these shall go away into everlasting punishment: but the righteous into life eternal”*.

Where you will be in your eternity? With Whom: with God or without Him? If does not come time to make this choice directly now, while there is still time for you?

References

1. Августин А (1999) Исповедь, изд-во «Азбука», СПб.
2. Рассел Б (2000) История западной философии М.
3. Перминов ВЯ, Вестник Моск (2003) университета, серия 7, Философия, №5 с.3-21.
4. Философская Энциклопедия (1967) т.4, изд-во «Сов.энцикл.» М с.370-376.
5. Olkhovsky VS Sov (1984) J.Part.Nucl, 15:130-148.
6. Olkhovsky VS, Recami E (2007) Recent Developments in the Study of Time as a Quantum Observable, International. Journal of Modern Physics A 22: 1-25. Olkhovsky VS (2011) Physics- Uspekhi 54: 829-835.
7. Olkhovsky VS (2012) Time as a quantum observable. Lap Lambert Academic Publishing, Germany.
8. Olkhovsky VS, Recami E (1992) Recent Developments in the Time Analysis of Tunnelling Processes. Physics Reports 214: 339-356.
9. Olkhovsky VS, Recami E, Jakiel J (2004) Unified time analysis of photon and particle tunneling. Physics Reports 398: 133-178.
10. Ginzburg VL (1999) Physics-Uspekhi 42: 353-373.
11. Ольховский ВС (1981) Проблема времени в современной физике (на укр. языке). об-во “Знание УССР”, Киев.
12. Olkhovsky VS, Tchinarov VA (1993) Fundamental Problems of Time in Physical and Biological Systems. In Proceedings of the Academy of Peloritana Pericolanti, University of Messina 71: 53-69.
13. Hawking S (1987) The direction of time. New Scientist.
14. Hawking SW, Laflamme R, Lyons GW (1993) The Origin of Time Asymmetry. Phys.Rev, D47: 5342-5356.
15. Everett H (1957) Rev.Mod.Phys Quantum Theory and Measurement, Princeton Univ. Press, Princeton, NJ.
16. Менский МБ (2007) Успехи физич. наук 177: 415-425.
17. Prigogine I, Stengers I (1984) Order out of Chaos. Man's new dialogue with nature. Heinemann, London.
18. Nicolis G, Prigogine I (1989) Exploring Complexity. W.Freeman and Co,N.Y.
19. Ольховский ВС, Савощенко ВС (1989) Изв.вузов СССР. Вып 10: 58-61.
20. Adams FC, Laughlin G (1997) A Dying Universe: the Long-Term Fate and Evolution of Astrophysical Objects. Rev. of Mod. Phys 69: 337-372.
21. Prigogine I (1980) From Being to Becoming: Time and Complexity in the Physical Sciences. Freeman, S.F.
22. Kostin M (1972) J.Chem.Phys 57: 358.
23. Albrecht K (1975) Phys.Lett B56: 127.

-
24. Hasse R (2005) J.Math.Phys 16: 2005.
 25. Caldirola P, Nuovo Cim (1941) 18: 393.
 26. Kanai E (1948) Progr.Theor.Phys 3: 440.
 27. Gisin N (1982) Physica 111: 364.
 28. Exner P (1983) J.Math.Phys. 24: 1129.
 29. Caldeira A, Legget A (1983) Ann of Phys. 149: 374.
 30. Schroedinger E., What is Life?, Macmillan, N.Y., 1946
 31. Тиллих П, Кайрос, рус.перевод, Tillich P, Kairos (1957) The protestant era. Гитт В, Время и вечность, Симферополь, Chicago.
 32. Stone AP (2004) Time as Chronos And Kairos Physical and metaphysical time, 20 Harding Close, Redbourn, St Albans, Herts, AL3 7NT, UK.
 33. Меликов ИМ, (1999) Вестник Московского университета, серия 7, Философия 2: 94-104.
 34. Хайдеггер М. Бытие и время М (1997).
 35. Craig WL (1979) God, Time, and Eternity. Religious Studies 14: 497-503.