

The Information Theory and Consciousness

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Abstract: Life after death theme attracted people attention for ages, being a question of faith or religion. Now the science tackles the matter in real earnest because of the so called “observer problem”. The study is devoted to the demonstration that consciousness remains alive continuously. Mathematical tools applied to the information phenomenon are used to prove this statement. During research, I made a conclusion that the number of information could be used as the characteristic of all the object and phenomenon and the number of information always larger than zero. Also, I agree that all our knowledge about any physical object are based only on its interaction with other objects include the light and our sense organs. As a mechanism of a eternal preservation of the man’s consciousness, I expect this is a nonlocal interaction. Yet to be explored, how the nonlocal interaction with elements of human body effects on the human self but even there are just has no effect, anyway there are impossible situation the man’s consciousness absolutely ceases to exist including the body’s physical death.

Key words: Information, information theory, life, consciousness, death, life after death

INTRODUCTION

The human being possesses an abstract mind which allows imagine something that is not visible just here in this moment. But every living creature dies sooner or later. This fact raises a very serious question about our imagination. This question is possible to describe as follows.

A human being dies. What does it mean? The eyes die and the ears die and the brain dies. Therefore, no sky, no earth, no thought, no object exist. Nothing exists. Even vacuum does not exist. It seems to be consistent but likely understandable for our consciousness and likely “visible” for our imagination. A serious contradiction appears. Consciousness does not exist from the physics and biochemistry point of view but it is impossible for consciousness not to exist because there is no imagination to imagine that it is not exist.

Of course people came across this question many times and usually they looked for the answer far from science. Here we should pay attention to religion. Usually faith helped people to accept phenomenon which can not be rationally explained. This idea was discussed by Andrew Lang (1844-1912) (Andrew, 2011).

For example Ancient Egypt, Greece and Rome religions explained weather, thunderstorms, sun motion as some pantheon god’s will. Now the mentioned phenomenon is explained and forecasted by science. But, still there is no explaining and forecasting for life after death. There is no any life after death from the materialist’s point of view but the most of people is not

satisfied with this explanation because man or woman can not imagine absence of himself or herself. That is why, many pseudo-scientific theories appeared.

MATERIALS AND METHODS

For a long time, science ran about the life after death theme. But in the XX century, this question touched the so called exact sciences. The following phenomenon was found out. Photon can behave as a wave or as a particle in dependence of the way of observing it. So, it is impossible to conclude if photon is a wave or a particle.

So, if the way of observing is so important, hence the exact observer is important. Usually, the observer is imagined as a living creature, a man for example. So, this question connects the actual physics and the human life.

Usually, the observer is a person who watches the monitoring devices and writes out some figures. It is proved that photon behavior depends on this person. Can photon behave in another way after observer’s death? The “dead observer” must be excluded from the system but at the same time he can not be excluded because the system depends on him and consequently the system can not exist without him. How can we answer this question?

RESULTS AND DISCUSSION

The observer can not be excluded from the observed phenomenon description (Wilson, 1998). So it’s time to emphasize the goal of my investigation.

The article's goal is to solve the observer's death indeterminacy and to introduce the scientific point of view for the consciousness existence after the biological death of the owner's body.

Joseph (1965) "The Quantum theory" compared the calculated energy conversion probability with the statistical probability which is used for price calculation by insurance companies. But this idea was far from the human being investigation and nobody continued it.

Wilson (1998) "The Quantum theory" made one of the most valuable investigations where the human psychology is connected and compared with the quantum theory. This book is based on the postulate that every knowledge about this world is subjective and at the same time, the knowledge about the world can help every person in his or her ordinary life. For example, the book contains practical tasks such as one thing description made by different people or conclusion about some statement if it is true or false or indeterminate.

I think that stochastic photon behavior and human behavior similarity is something more than curious coincidence.

The first important conclusion for the observer postulate is the following. The consequence 1: Let T be a closed system (the Universe) which has N space and time dimensions and includes an observer A. Then every physical body or any part of T the same as T a whole and A himself are imagined as the A observer's information set.

Astronomy can help us to prove this consequence. Astronomers described the so-called "dark matter" which does not take part in the electromagnetic interaction. This "dark matter" emit no electromagnetic waves, so it can't be observed. For example, this conclusion was published by Reshetnikov (2012). Reshetnikov wrote history of the all observations about the "hide mass" in part mentioned that the galaxy edge star's velocity appears much greater than it should be according to weight calculation.

Let's continue the argumentation. Suppose, a system named O which does not take part in any interaction including electromagnetic, gravitation, strong or weak nuclear interactions. What is possible to know about it?

Is it possible to say where it is in the space and time coordinates? We can not observe it, so we can not get any information about it, consequently we can imagine this system to be in every point of the space with equal probability. This O-system is not localizable, it can be called an infinitely large and infinitely long point. In another words, it always exists everywhere.

David Bohm used the implication order term. I consider this term be more or less equal to the term "O-system".

We can make an intermediate conclusion. Any physical body can be localized only if it takes part in the interaction with another physical bodies including devices and sense organs.

That is why, the O-system existence can be neither proved nor denied. But, there was a purpose for putting forward the O-system hypothesis. Today, it is known about photon nonlocal interaction. One photon change leads to another photon change with a velocity greater than light velocity. But, according to the classical physics some force is needed to change the body's characteristics including its velocity. Every fundamental interaction is local (it depends on the distance between the bodies), so this nonlocal photon change can't be a result of any fundamental interaction.

Further, we can find some more arguments. The energy conservation law is true for the quantum physics also. According to this, law the body change including a photon or a stone is a result of energy delivery.

Consequently, according to the energy conservation law only bodies which have their own power are able to change their characteristics and take part in the nonlocal interaction. This bodies must possess power from the beginning. So this body can be photon but not stone. For example, if a boy breaks a stone on the beach and throws one part into the water, the other part will not fall into the water by itself. But, probably the boy decides to throw the other part of his own free will. It's possible to conduct an experiment.

Unexpectedly, we have found a similarity of photon and a person. Both have energy which allows to take part in the nonlocal interaction without breaking the energy conservation law. Photon is a basic energy possessor but a person possesses chemical processes energy. I won't consider photon to be alive but I would like to mention the similarity.

So what is the "nonlocal interaction"? It takes place without energy exchange, so we can conclude that it happens due to information exchange. Now, let's compare this statement with the consequence 1.

Now the O-system can be called "The nonlocal informational universe". It exists so far as nonlocal interactions exist. We can consider the O-system to be the observer's database.

After the biochemical processes' termination only substance disintegration can happen. Nothing else remains. But people don't like this idea, they look for unscientific answers for the question of what remains after the body's death. Now, we have a measurable value and we can create a mathematical model.

Let the closed system exists in the zero-infinite time interval. The system includes an observer who was born at the t1 time and died at the t2 time.

All processes in the system can be described as the information changes with the time increases. So, the system evolution can be described as function with the time argument:

$$I = f(t)$$

Let's imagine that the system is equal to zero in the t0 zero point: $f(t_0) = 0$, $I(t_0) = 0$. But the expression " $f(t_0) = 0$ " is some information by itself. The base information unit "1" is the information that it is not 0. The information that there is no information is some information also.

The conclusion 2: any event information quantity is always positive (>0). It is impossible for the information to be equal to zero. $I(0) > 0$, or we must have some information to say that there is no information. The statement "No information" can be used only if someone knows what is the information which can exist.

According to Claude Shannon's equation the event information quantity is logarithmically connected with the event's probability (Brillouin, 1960):

$$I_a = -K \ln P_a$$

Then, $I_a = 0$ when $P_a = 1$, this means that the event's probability is 100% and the event is certain. Consequently, there are no absolutely certain events. If we say that the A event leads to the B event, we mean that sometimes A event can lead to something else. We can use the term "certain event" only speaking about a mathematical model.

We can say the same about the observer's information. It is never equal to zero. But, when the observer being an alive creature dies, the information disappears or becomes equal to zero. So, we come across a contradiction.

A sleep without dream can be the analogue. Moody (2001) criticized this idea in his "Life after life" book. For the long time the death and sleep comparison was used to eliminate the death fear. From the informational point of view, the sleep continues for a short period and it is easy for us to imagine it. But in the case of death, we have very little information about a very long period. This leads to ∞/∞ indeterminacy. The observer's life L can be determined as an information obtaining process during the life period:

$$L = \frac{dI}{dt}$$

According to the equation, there is a nonzero finite L result for every time moment $t(0; +\infty)$. Consequently, the

observer exists forever as the information receiver and it is impossible for him to disappear. So the information receiver or an observer exists continuously in the system. Any information always includes the event time moment information:

$$dI = R dt$$

Where:

R = The information comes at the same time moment

t = A time axis point

According to Max Planck's hypothesis, the interaction energy is transmitted by portions or quanta. Now let's remember that all information about any object can be received due to the interaction with this object.

That is why, the information quantity can be calculated as received quant's number for a discrete random value:

$$R \sim -K \ln \frac{1}{n_i}$$

Where:

n = The quant number

i = Freedom degrees quantity

Let's mention that $n = 0$ is not legal argument for this expression because it leads to the $0 \cdot \infty$ indeterminacy. Also $n = 1$ is not legal according to the consequence 2. That is why, $n \geq 2$.

The quant number is inconvenient for practical calculation. But, information quant is connected with energy quant. The energy and oscillation frequency are interrelated also according to the formula:

$$E = nh$$

Where:

h = The Planck's constant

Consequently:

$$E = \frac{n}{h}$$

So, we can see that everything we know about this world is nothing more than quantum frequencies distribution. Let's use weight-average quantum frequency value instead of the quantum frequencies distribution function integrating. Then the quantum frequencies are divided out:

$$R = -\left(\frac{K}{h}\right) E \ln \left(\frac{h}{E_i}\right)$$

Consequently:

$$dI = -\frac{K}{h} E t \ln \frac{h \bar{\nu}}{E_i}$$

Now let's see what we gain when $t > t_2$, this means after the observer's death. If there is nothing after the death, then $E = 0$. But, we have already made a conclusion that it is impossible for information to be equal to zero. Let's take the life information function limit for the system which exists after the moment t_2 :

$$D = \lim_{t \rightarrow +\infty} \left(\frac{dl}{dt} \right) = \lim_{t \rightarrow +\infty} \left(\frac{-\frac{K}{h} E t \ln \frac{h\bar{v}}{E_i}}{t - t_2} \right)$$

$$= -\frac{K}{h} E \ln \frac{h\bar{v}}{E_i} = \text{const} > 0$$

We can see that consciousness exists forever, including it exists after the physical death. Let's pay attention to the fact that the formula remains true independently of the death way. The observer's information remains even if the body is completely destroyed.

Now let's imagine that the mentioned above observer is a cosmonaut found himself in a black hole. He has "return ticket". His body will be broken into atoms. And if his "soul" or his informational "nature" are material they will "fall" into the black hole with the body. But, we have proved that it is impossible for the information to be equal to zero.

Our hypothesis solves this question. I mean the hypothesis about the information nonlocalness and about the O-system which does not take part in the fundamental interactions and that is why it can't be observed.

For ages people were looking for the life after death confirmation. Plato (428-348 BC) supposed the soul to travel and to develop itself. In the XX century, there was a lot of attempts to prove or to reject the life after death. At first the investigators looked for some "soul" which can be seen as a physical body. In the early 20th century, Duncan MacDougall measured the body weight at the moment of death. He discovered that after death the body weight reduces for 20 g. He made a conclusion that soul leaves the body and this is soul which weights 20 g. But later this weight loss was explained by the body chemical processes which happen in the body.

Later with the electricity technique development there were attempts to find soul as an accumulated energy clot. The investigators tried to find the aura of a person or some living beings or even things. There were attempts to watch some spherical or similar to the body "glowing body" around the physical body. Such investigators gave no significant results for the life after death question.

We have made a conclusion that everything we might know about the body is a result of body's taking part in

some interactions. But, if the soul is pure information then it does not take part in fundamental interactions, so it is impossible to observe it in any way.

The other investigations seem to be much more significant. That was the stories of people who experienced apparent death investigations.

Such stories gave a lot of significant information for the life after death question. The famous book by Moody (2001) collects >100 stories of people experienced apparent death. The stories include some common features, for example, pleasant sensation, bright light, dead relatives' appearance, spiritual beings and some others. Some people described the so-called "out of body experience" when the story-teller watches his body from the outside and listens to the physicians who are discussing his death. In some cases, the story-teller finds himself in another room or house where he has never been alive and describes the interior in true detail. Many scientists considered this stories to be the possible proof for life after death existing and tried to check this stories. For example, Sam Parnia placed some text near the operating room ceilings. But nobody mentioned these texts in the apparent death stories.

Today many scientists agree that apparent death experiences and their similarity can be explained with the similar processes happening in the dying brain. That is why there is not enough information to say "yes" to the life after death (Negovskij, 2001).

Let's pay attention also to the so-called "early events" which are considered to be the events of the past lives. The psychological, psychiatric and parapsychological therapeutic methods lead to the stories about the early life events which people tell being in trance. Sometimes, these events contain negative sensation, that is why people recover after these events are brought into consciousness.

Michael Talbot (2004) summarizes the stories about such experience in his book "The Holographic Universe". He gives many examples when patients describe events happened many years before their birth. These stories were told in detail and usually on behalf of the story-teller if the last was not made to look from the outside. The story-tellers repeat one and the same stories for many times. The patient's problems correspond to the stories which they tell their therapist. The stories also correspond to the history.

Different authors give the same results in their works about the early life moments. One can call in question the ethics and validity of these early life stories but there is no reason for doubt about them. These stories become the most important argument for the observer's informational "soul" existence after the death of his body.

CONCLUSION

- Information can be considered as a thing or event numerical characteristic
- The system information can not be equal to zero Information is always positive
- It is impossible for the observer to observe nothing or to have nothing for observing. So, the scientists should imagine the observer to collect information during a very long time more then the physical body life period
- The information about a physical body is based on its interaction with the other ones
- The statement “B is the consequence of A” assumes that it is possible for B not to be the consequence of A and possible that the observer does not know that B is the consequence of A. Otherwise the statement “B is the consequence of A” is nonsensical and can’t be expressed by words

The following conclusions are still hypothetical and should be investigated further (at present I can’t consider them to be proved):

- An observer appears to be the receiver and the source of information only if he has the physical body. This statement corresponds to the reincarnation theory. But I can’t make the final conclusion. It is possible to choose the next life
- The information delivery happens such a way that it is impossible to loose the information even if the physical body is absorbed by the black hole. The information is transmitted nonlocally through the so-called O-system which does not take part in the fundamental interactions and that is why, it can’t be observed
- There exists a part of the Universe which does not take part in the fundamental interactions (the so-called O-system). It is present in every space-time point (it is unlocal). The unlocal interaction is the informational interaction with this system
- The quanta behave stochastically because they behave similarly to the living creatures
- The life is the result of physical body’s taking part in the nonlocal interaction. The spontaneous action is the life imperative condition. This action includes the physical processes in the body which stop after death

- The information can not be equal to zero, consequently the person’s memory has unlimited capacity and it is unlocal. Today nobody managed to dispose this statement although there were many investigations of memory. The hypnotic sessions show that a person can remember everything about every moment of his life in detail including if the person’s central nervous system is damaged. Michael Talbot summarizes the other scientist’s works and makes a conclusion that memory is distributed. But, this can’t be proved analytically
- The living being life sense is cognition
- Any system restriction collects the same amount of information as the decrease of the information about the system

ACKNOWLEDGEMENTS

Nikonova Anna Petrovna, Ustinov Georgy Mihailovich-mathematical teachers from the 5th gymnasium and the Urals Federal University in accordance for the knowledge which helped to write the article.

Borisihin Yuri Sargeevich, Shteka Tatjana, Yaroshevskij Alexander Anatolievich, Antsireva Olga for the mass media support. Petlitsin Andrey, Zulin Sergey, Kijanov Michail for the support while writing the article.

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