Exploration

Exploration on the Plausibility of Digitizing Individual Self & Realization of Immortality

George G. Tumanishvili*

Ilia State University, Georgia & Masaryk University, Czech Republic

ABSTRACT

This paper presents a theoretical description of steps needed for digitalization and transfer of an individual's self, and a concept of practical realization of immortality of the individual self.

Keywords: Self, infself, memory, digitalization, immortality.

1. Introduction

The essence, nature and, consequently, the mortality-immortality of a person's "self" has been a challenging issue for the people for millennia. Existential questions, which the people ask in different ways depending on various stages of their development – who am I? where from? why? where to? what for? – are in fact related to an inexhaustible desire to understand one's own 'self'. The issue of mortality-immortality of the 'self' is directly linked to all the pagan or religious beliefs, which a person has in regards to the his/her association to the unknown, or to some part of the whole, where his/her 'self' is immortal at a certain extent, as far as it represents a part of the immortal transcendent whole, which the person believes in.

For many millennia, discussions about the person's psyche, cognitive processes, consciousness and his/her 'self' has been limited to the discourse in a so-called black box, which looked like a discussion about a certain subject. Whereas every doctor specialized in a narrow field would be able to directly observe a particular organ and study it, the human mind was a construct, which was not observable, with the direct meaning of this word. It was also complicated to perform other observations, inter alia, to measure various quantities.

Diverse approaches, which emerged and then developed in psychology, are linked right to the individual viewpoints of the author regarding the psyche and the nature of cognitive processes, and not to the particular measurable and observable experiments.

In regards to the question about what a thinking process is as such, and how the things existing in the outside world are transformed into the ones in the inner world (receiving-learning, coding of information), perception-identification of one's own 'self', storing and restoring information, the nature and function of neurons, features of mirror neurons – there is a possibility linked to the above-mentioned issues and achievements in contemporary neuroscience to make the discourse

*Correspondence: George G. Tumanishvili, Ilia State University, Georgia. E-mail: georgetumanishvili@gmail.com

associated with a person's 'self' go beyond the scopes of viewing this phenomenon by the authors, and to move it to an absolutely different stage of scientific discussion.

There are various terms to describe the 'self' in various languages, in a popular and scientific literature. The literature in English uses the terms - Self[1][2], Ego.[3] The word "Self" provides the ground for forming various words-terms,[4] and there are also many composite words with different contextual meanings.[5]

For the sake of accuracy of terms, there will be a term Infself used in this paper for defining the contents of 'self'. This is a term I have created and it represents information[6] accumulated from the respective stage[7] of an embryo and received in any form; and the perception/understanding of its wholeness (or its constituent) within the limits of time conditionality, provides a conscious feeling of one's self, as a carrier of this informational content and as a single continuous entity.

Correspondingly, when I have to express the whole contents of 'self' in this research, namely – "self" (with a lexical-contextual meaning of this word), where I first and foremost imply the information, using which makes one be conscious, I will be using the above-mentioned term – Infself.

Self-identity, from its side, is a union of two different words/terms, and bears a cumulative meaning of each word. In regards to 'identity', its etymological grounds are linked to the Latin phrase „Idem et Idem",[8] which by word means "same and the same", in other words – "one and

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[1] Old English self, seolf, sylf "one's own person, -self; own, same," from Proto-Germanic selbaz (cf. Old Norse sjalfr, Old Frisian self, Dutch zelf, Old High German selb, selbst, Gothic silba), Proto-Germanic*selbaz "self,"

[2] For additional reference see: Jung, Carl G, Thomas, and Marie-Louise von Franz. 1978. *Mysterium Coniunctionis*. Olten [u.a.]: Walter. compare: Jung, C. G, Sonu Shamdasani, and R. F. C Hull. 2010. *Four Archetypes*. Princeton, NJ: Princeton University Press. compare: Jung, C. G and Marie-Luise von Franz. 1964. *Man And His Symbols*. Garden City, N.Y.: Doubleday.

[3] We mostly find it in the texts, which are based on Sigmund Freud's Theory of Psychoanalysis. See also: Sigmund, Freud. 1933. *New Introductory Lectures On Psycho-Analysis*. London, L. and Virginia Woolf at the Hogarth Press, and the Institute of Psycho-analysis. See also Freud, Sigmund, James Strachey, and Angela Richards. 1984. *On Metapsychology*. Harmondsworth: Penguin.

[4] A combining form of self and variously used with the meanings "of the self" (self-analysis) and "by oneself or itself" (self-appointed); and with the meanings "to, with, toward, for, on, in oneself" (self-complacent), "inherent in oneself or itself" (self-explanatory), "independent" (self-government), and "automatic" (self-operating). "The Definition Of Self". 2016. *Dictionary.Com*. http://www.dictionary.com/browse/self.

[5] Self-control, self-posession, self-esteem, self-respect, self-consciousness, self-criticism, self-preception, self-attitude, self-regulation, self-actualisation, self-expression, etc.

[6] For information, frameworks of this definition imply any bit of information in binary system.

[7] Embryo development stage, when first electric impulses appear in the brain, among mirror neurons.

[8] Dictionary, identity. 2016. "Identity Meaning In The Cambridge English Dictionary". *Dictionary.Cambridge.Org*. http://dictionary.cambridge.org/dictionary/english/identity.

the same". In this particular case, 'identity' is a person's psychological viewpoint about its infself, as a subjectively perceived totality and individuality, by which it identifies itself with a certain typological category (the state, social status/role, culture, nationality, age, gender, profession, etc.).[9]

Like an infself, the conceptual content of memory has to be clarified for this paper, as far as the concept of memory is used with various contextual meanings in the current scholarly or popular literature. The term 'memory' in this paper has a meaning defined by the author: **a memory** – a biochemical, cognitive-electric process, during which information is coded**,**[10] stored, restored**.**

What is the linkage between "self" and "memory"? Are these concepts identical in the conditions when terminological contents of both terms are specified? Is it possible to digitalize the "self" and transfer it further to a certain mechanical (tangible) medium? Actually, possibility-inability to digitalize the infself depends on the answers to these questions. This is why we should follow each question and provide respective answers to them.

2. Infself and Memory

As it is clearly seen from the conceptual meanings of infself and memory, information is a necessary component for both terms, where the absence of information is perceived as the presence of information, because there is information about the absence of information.

Everything that exists in the world carries some information. When perceiving a certain object – an image, sound or event, a person receives various informational units, which becomes a part of infself right at the moment of perceiving it. It is important that an infself only exists and acts in the present.

How does information become a part of an infself? When we get certain information, despite its contents, meaning or medium of receipt, there are respective connections appearing in our brains,

[9] Compare: "feeling of selfhood, which a person develops while growing up, a relatively solid, continuous feeling of one's own 'self'. An important component of an individuals' self-consciousness – a system of perceptions about self and features, skills, appearance, social values' "Identity – Civil Education Dictionary". 2016. *Nplg.Gov.Ge*. http://www.nplg.gov.ge/gwdict/index.php?a=term&d=6&t=4368. Compare: Fearon, James. 1999. "WHAT IS IDENTITY (AS WE NOW USE THE WORD)?" *Stanford University*. https://web.stanford.edu/group/fearon-research/cgi-bin/wordpress/wp-content/uploads/2013/10/What-is-Identity-as-we-now-use-the-word-.pdf.

Also, for comparison: Dictionary, identity. 2016. "Identity Meaning In The Cambridge English Dictionary". *Dictionary.Cambridge.Org*. http://dictionary.cambridge.org/dictionary/english/identity. See also: Oyserman, Daphna, Kristen Elmore, and George Smith. 2012. *Handbook Of Self And Identity*. New York: THE GUILFORD PRESS. For the electronic version please visit:

https://dornsife.usc.edu/assets/sites/782/docs/handbook_of_self_and_identity_-_second_edition_-_ch._4_pp._69-104_38_pages.pdf

[10] Create-assign individual mental representation to the received information.

among neurons. This connection can be electro-impulsive, and biochemical as well. In other words, any received information represents a chain between neurons, which then create an information web of neurons as a whole.

Various activities of a person: ideas, actions, feelings, emotions create various types of neural connections. After neurons are stimulated, some connections get even stronger, and others – weaker. This is referred to as neuroplasticity.[11]

Neurons get information from one end and transmit it with the other end to the axon branches, which receive incoming signals via dendrites. The cell body, i.e. soma contains the nucleus and cytoplasm, which determine its viability. Soma is a place to integrate information received as a result of dendrite stimulation (or in some cases from another neuron), and to transmit it to an elongated fiber – axon, which transmits information all along its length, until the point where the neuron contacts another neuron, muscle or organ, with which excitement or inhibition is transmitted (synapse). It is important that excitement or inhibition is transmitted in one direction only, namely, from synaptic ending of the neuron (presynapse) to the body of another neuron, its axons or membrane of an effector organ (postsynapse). There is a synaptic cleft between presynapse and postsynapse membranes, and its width ranges from several tens to hundreds of Angstrom units in various synapses. Presynaptic ending of the synapse, usually consists of enlarged part of the neural axon. This is where a large number of mitochondria is gathered, which speaks about a high energetic activity of the processes ongoing here (Khechuashvili 2016). As we know, there are stimulating synapses, where postsynapses are polarized, and inhibitor synapses, where the postsynaptic membrane is hyperpolarized.

Axon – a long, slightly ramose projections, which transmit neural impulses from the cell of a nervous system. As far as it is concerned, a neuron can only have 1 axon, with the length of tens of centimeters, which ensures transmission of neural impulses to a long distance.

Synapse is a place where neural cells contact one another or tissue. It is a special type of contact between membranes. It consists of presynaptic and postsynaptic membranes and a synaptic cleft between them. There are vesicles at the end of axons, where neuromediators are contained, and they are the ones to transmit neural impulses.

There is a thick bulb-like structure at the other end of the axon, so called terminal branch, with which a neuron can stimulate adjacent glands, muscles and other neurons (Khechuashvili 2016).

Each neuron processes the received information together with many thousand neurons to "decide" whether to create a potential of a new action. Integration of such thousands of stimulating and inhibiting information creates the grounds of a person's experience (Gerrig and Zimbardo 2009).

Action potential in the neuron creates a neural impulse, and a contraction in the muscle cell, which is necessary for every type of movement (Gerrig and Zimbardo 2009). Stimulation wave is actively transmitted along the neuron or muscle cell fiber, and the potential speed of action ranges from 0.1 to 10 meters per second, depending on the characteristics of neural fiber and its

[11] "Medical Definition Of Neuroplasticity". 2017. *Medicinenet*. http://www.medicinenet.com/script/main/art.asp?articlekey=40362.

environment. Before stimulation, a neural cell and a muscle cell is characterized with a slight negative electric polarization[12]. Its content, compared to the external space of the membrane, is charged more negatively.[13] This polarized condition is created by a high concentration of positively charged sodium ions in the outside of the membrane, and a high concentration of negatively charged chlorine ions inside[14] (there are also positively charged potassium ions inside, with a relatively lower concentration). This condition is referred to a resting potential, and it usually equals 75 millivolt (mV), where „-„ is an indicator of negative charge. The action potential develops by stimulating the cell with neurotransmitters[15] or sensor receptor cells.

Every idea, image, information that we get in the present, represents an intraneural chain, a neural information web. This means that the thoughts, imaginations, images from the past, and actually all the mental processes known to us, are only the specific electric and biochemical impulses that exists only in the neural information web.

We may consider that a person's infself emerges from the moment when the neurons start to develop in a fetal brain, and when the first electric and biochemical impulses originate among them. Infself generation starts with first impulses and continues until the last impulse among neurons. This means that a person's infself does not equal the time section from birth of a person to its death in time. It always spans for a longer time period than this.

As I have mentioned above, a person's memory cannot exist without impulses among neurons, as far as the memory is a process, and neurons are participating in this process. For the memory, namely, for storing and restoring information, there should be a synaptic, electric and biochemical connection among neurons. In other words, if we imagine a person's brain with neurons in it, but eliminate connections among these neurons, then this way we also eliminate any process of storing and restoring any information.

At a various stage of science development there have been various attitudes towards memory as a process, and to its essence. Some part of researchers and experts considered that a memory represents a certain repository of information, where the latter is sorted according a particular attribute or characteristic feature.[16] The basic discourse is about an issue whether there is a memory in a material form in any part and/or section of a body, namely, in its brain. If memory

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[12] Chincharauli, Tiniko. 2016. "Action Potential | Dictionary-Guide to Social Sciences". *Dictionary.Css.Ge*. http://dictionary.css.ge/content/action-potential.

[13] Gerrig, Richard J. and Philip G. Zimbardo. 2009. *Psychology And Life*. 19th ed. Pearson.

[14] "Neurons & Synapses - Memory & The Brain - The Human Memory". 2010. *Human-Memory.Net*. http://www.human-memory.net/brain_neurons.html.

[15] "Communication Between Nerve Cells". 2017. *Cerebromente.Org.Br*. http://www.cerebromente.org.br/n12/fundamentos/neurotransmissores/neurotransmitters2.html.

[16] "How Human Memory Works". 2007. *Howstuffworks*. Accessed January 30 2017. http://science.howstuffworks.com/life/inside-the-mind/human-brain/human-memory.htm.

exists in material form[17], this means that there is a particular location/s of its placement. Based on studying these locations it will be possible to understand and study the material essence of memory[18], also to think about how it is possible to change its location, as far as it is virtually possible to change a location of any material essence if certain conditions are created or present, without affecting its attributes-features.

It is important to note that in the present situation, a subjective, sensory and abstract mental reflection of an outer world is impossible in the present situation. The ability to retain information about events represents a fundamental attribute of a living and non-living matter. We can provide an example of information storage facilities, such as a magnetic stripe, laser disc, also various internal and external memory devices in modern digital technologies, etc. Any of the above-mentioned things can store information and restore (transform) it into a sound, picture or any other image with the help of a respective tool or facility.

At the same time, memory is a process of organizing and retaining an experience, [19] which makes it possible to reuse it in any activity, or return to a field of perception. Here we should understand experience as any mental processes preceding the ongoing mental processes, regardless their perception level.[20]

The following findings were made during recent decades related to the human memory: so-called forms and types of memory were determined; with the purpose of retaining information at a biological level, the biological structures, e.g. DNA (LYR) and RNA (HYR) are transformed. At the physiology level, information is stored and transformed via dynamic physiological processes, which differ from biological processes with their functional nature,[21] or by involving in the ongoing information processes, for a shorter period of time. This way, the structure of neural impulses, which flow from receptors to the center with afferent fibers, is a place, which stores information about the structure of instant changes of the condition of receptors, which happened when they were exposed to stimulators.

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[17] Liu Xu, Steve Ramirez, Petti T Pang, Corey B. Puryear, Arvind Govindarajan, Karl Deisseroth, and Susumu Tonegawa. 2012. "Optogenetic Stimulation of A Hippocampal Engram Activates Fear Memory Recall". *Nature* 484: 381–385. doi:10.1038/nature11028.

[18] Anne Trafton, MIT News Office. 2011. "Neuroscientists Identify A Master Controller Of Memory". *MIT News*. http://news.mit.edu/2011/hippocampus-memory-genes-1222.

[19] Tulving, Endel and Fergus I. M. Craik. 2000. *The Oxford Handbook Of Memory*. 1st ed. Oxford: Oxford Univ. Press.

[20] Svanidze, Lia. 2008. "Memory – a person's essential cognitive mental process". *Nplg.Gov.Ge*. http://www.nplg.gov.ge/gsdl/cgi-bin/library.exe?e=d-01000-00---off-0period--00-1----0-10-0---0---0prompt-10---4-------0-1l--11-ka-50---20-about---00-3-1-00-0-0-11-1-0utfZz-8-00&cl=CL4.5&d=HASH01017f7b38bef47a985eeb8f.8.1&gt=1.

[21] Mastin, Luke. 2010. "Types Of Memory - The Human Memory". *Human-Memory.Net*. http://www.human-memory.net/types.html.

Considering these levels, there are mechanisms that participate in memory processes of a human being, from which only two fall within the competency of psychology – physical and psychological ones.

Together with these mechanisms, psychology studies three groups of events, which belong to the phenomenology of memory.

We may consider that the first group consists of qualitative characteristics that are present in various types of memory: 1. emotional, 2. image-related, 3. verbal-logical and 4. movement memory.

In regards to the varieties of memory, the second group categorizes information according to how long they are stored. The following forms were identified: instant (imagery), short-term (operative)[22] and long-term memory.[23]

The third group unites processes related to the transformation of information, namely, to remember, to keep, to forget and to restore experience, subjects and events.

There are important mechanisms for exchanging information among various types and forms of memory, which are activated if there are respective sensory-emotional connections towards certain information**.**[24]

Following types of memory have been identified throughout the last decades:

1. Emotions, as far as it is considered, play a role of signals about how our demands are or can be satisfied. As the emotion is a signal in this case, it can be stored in the memory, in the same or approximated form, which accompanied the events experienced for the first time. In case of perceiving or imagining a situation that has caused emotion, it is possible to evaluate it as a desirable, or, in the contrary, as a dangerous one, at the expense of an immediate appearance of emotion that has been stored in the memory. This evaluation lets us construct a respective action until this situation is thought out and analyzed by the thought.

2. Imagery memory stores experience in the form of images. Essentially, an imagery memory is the images that are stored in the memory not only as impressions acquired via the sensory bodies that are available for perception, but also in the form of unconscious images, etalons or patterns, which are involved in the perception process, for example – when identifying an image. There can be not only a tangible image of perception stored in the image, but also an intangible feature, which is related to the experienced feeling. For

[22] "Short-Term Memory". 2015. *Brainhq From Posit Science*. http://www.brainhq.com/brain-resources/memory/types-of-memory/short-term-memory.

[23] "Long-Term Memory". 2015. *Brainhq From Posit Science*. http://www.brainhq.com/brain-resources/memory/types-of-memory/long-term-memory.

[24] Zimmermann, Kim Ann. 2017. "Memory Definition & Types Of Memory". *Live Science*. http://www.livescience.com/43713-memory.html.

example, a person can imagine a color of blue, or a certain sound, feeling of pain or sour taste.[25]

3. Verbal-logical memory reflects our mental pictures (images) of our world, which are generalized in the form of categories, discussions, abstract-conceptual schemes, and eventually, in the form of world outlook. Besides, the verbal-logical form stores certain programs-chains of activities that have been planned intentionally.

4. Motion memory stores various motions and their system schemes, which ensure movement habits, automated nature of motions in repeated or typical situations. Thanks to the motion memory we can think about something in the moment when we are running down spiral staircases, or opening a door of our car. All types of the memory are tightly interlinked and represent components of one whole behavioral act. For example, we can cause a certain psychological condition with certain movements. A person may experience positive, negative or indifferent emotions with gestures and mimics or words.

In regards to the memory forms, three key forms of memory were identified during the recent decades: instant, short-term (operative) and long-term forms. They are different from one another in a way how external information is represented there, and for how long it is stored, also in regards to the functions each of them perform in the process of human memory. It is considered that the above-mentioned three forms also represent the stages of information processing while storing it.[26]

Instant or sensory memory – this is a memory of sensory organs, which are used for providing information. It has been studied best of all in regards to vision and hearing. An image (a picture), which is created as a result of stimulating the receptors by a single impact,[27] does not disappear immediately; it continues existence with the form it appeared with, and then gradually fades away for the vision system within the range of one second, and for much longer for the hearing system. As if the image is still in front of our eyes, and sound is still heard, despite the respective stimulus has already disappeared. Such an existence of the image after stimulation has a functional meaning. First of all, the perception system needs this time for identifying the picture (image). These seconds (even one hundredth of a second) can matter a lot in the body. If images were to disappear simultaneously with the disappearance of a subject, then it would be difficult to identify it, or it would be impossible to do it because of limited attributes of the speed of physiological systems. Inertness of sensory image leads us to the point when the perception

[25] Svanidze, Lia. 2008. "Memory – a person's essential cognitive mental process". *Nplg.Gov.Ge*. http://www.nplg.gov.ge/gsdl/cgi-bin/library.exe?e=d-01000-00---off-0period--00-1----0-10-0---0---0prompt-10---4-------0-1l--11-ka-50---20-about---00-3-1-00-0-0-11-1-0utfZz-8-00&cl=CL4.5&d=HASH01017f7b38bef47a985eeb8f.8.1&gt=1.

[26] Zimmermann,, Kim Ann. 2017. "Memory Definition & Types Of Memory". *Live Science*. http://www.livescience.com/43713-memory.html.

[27] Mastin, Luke. 2010. "Types Of Memory - The Human Memory". *Human-Memory.Net*. http://www.human-memory.net/types.html.

system necessarily combines some particular single sensory images in the perception image, which is continuous in time and space.[28]

It was regarded that a short-term memory represents a certain repository, where some operation (work) is performed regarding the information that was transmitted to it from sensory bodies, and also, from the information that was picked from a long-term memory.

A short-term memory is used for working with pictures (images), concepts and words, to work them out, sort and store for some time. Therefore, it is a so-called working memory, which contains some elements that are subject to various operations during some short period of time – structuring, repetition, etc. There is a process of recoding the information in the short-term memory – from imagery to verbal. Here the code is a form of presenting information.

The long-term memory includes a special model of the personified inner and outer world for every individual, which is presented in the form of abstract structures. In accordance with theoretical opinions, here the experience is gathered with its broad spectrum, including our reflections about ourselves, other people, social norms and life values, motor habits in vocal and written speech, dressing; problem solving skills, and habits and skills in various fields of activities.[29]

It is considered that information in a long-term memory is organized based on a certain rule: there is a difference in regards to organizing a private and abstract information. Other types of memory are also identified: so called episodic and semantic ones.

Episodic material contains codified data and events, which are related to a certain time, and information about what this or that item or object looked like when we were looking at them. All the autobiographic data is stored in such memory, who? when? where? what? to whom? with whom? for how long?

All the other remaining non-private data is regarded to be stored in semantic memory. First of all, this is knowledge and facts, which are not related to personal experiences, certain place and time and, on the other hand, everything that a person needs for the speech. The researchers think that the information, which is given in a long-term memory differs not only in regards to its nature, but also in regards to its tendency to forget. Episodic memory is in the mode of continuous change, because personal experience changes. This is why the information contained here can become inaccessible, but it does not disappear. Information is stored in a long-term memory with various codes: visual, acoustic, semantic and the time of storing such information is absolutely indefinite.

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[28] Svanidze, Lia. 2008. "Memory – a person's essential cognitive mental process". *Nplg.Gov.Ge*. http://www.nplg.gov.ge/gsdl/cgi-bin/library.exe?e=d-01000-00---off-0period--00-1----0-10-0---0---0prompt-10---4-------0-1l--11-ka-50---20-about---00-3-1-00-0-0-11-1-0utfZz-8-00&cl=CL4.5&d=HASH01017f7b38bef47a985eeb8f.8.1&gt=1.

[29] Svanidze, Lia. 2008. "Memory – a person's essential cognitive mental process". *Nplg.Gov.Ge*. http://www.nplg.gov.ge/gsdl/cgi-bin/library.exe?e=d-01000-00---off-0period--00-1----0-10-0---0---0prompt-10---4-------0-1l--11-ka-50---20-about---00-3-1-00-0-0-11-1-0utfZz-8-00&cl=CL4.5&d=HASH01017f7b38bef47a985eeb8f.8.1&gt=1.

In regards to memory, the researchers are familiar with a so-called associative form of memory. Referring to similarity, the association recognizes the impressions, impulses and signals that were acquired before,[30] which is one of the basic elements of acquiring experience and learning.

In the associative memory it is very important to have connections between imaginations, when one imagination in the perception is unintentionally followed by the other. Associative memory links the material to be memorized to the material that has already been memorized.

Currently the researchers are familiar with the four basic laws of associative memory:

1. Law of similarity. The experience or recall of one object elicits the recall of things similar to that subject. Reproduction is conditioned by similarity.
2. Law of contrast. The experience or recall of one object will elicit the recall of opposite things.
3. Law of frequency. The more frequently two things are experienced together, the more likely it will be that the experience or recall of one will stimulate the recall of the second.
4. Law of contiguity. The experience or recall of one object will elicit the recall of things that were originally experienced along with that object.

Memory process consists of the following: remember, store, forget and restore.

There are two types of remembering, as it is known to the contemporary science: involuntary and voluntary. When a person remembers information without any prior purpose to do so, this is an involuntary remembering, and on the contrary, when there is a certain goal preceding the moment of remembering, this is the case of voluntary remembering.

The process of remembering is an active process, when a certain action is taking place regarding the initial material. The process of remembering starts in a short-term memory and ends in a long-term one.

Theoretically it is known that storing information means its existence in a long-term memory, which is not always linked to how accessible it is for consciousness. Forgetting is an inhomogeneous process, and it can take various forms. A person, for example, may not remember what was happening in his/her early childhood, because what s/he has perceived in an imagery form, could not have been transmitted in a symbolic form for storage before s/he learned speaking. Forgetting also means that a person forgets to do something that s/he used to know. Forgetting can be related to the physical trauma of scull and brains, or to so called 'rejection', involuntary forgetting those events, which used to cause anguish.

Restoring of information depends on the processes of remembering and forgetting, but it has its own characteristics and mechanisms. It is acknowledged in psychology that restoration can take place in three ways: identification, recalling and remembering. Identification is directly related to the conscious identification of an image. Recalling – is a complex memory process, which means that a necessary material is looked for in a long-term memory. As far as it is acknowledged that the material in the memory is organized in a certain way, based on semantic signs, which create a

[30] Mastin, Luke. 2010. "Types Of Memory - The Human Memory". *Human-Memory.Net*. http://www.human-memory.net/types.html.

certain concept or image, it does not mean that one has to blindly ramble in the corners of memory for finding it, but rather to move in a certain way towards the required material with semantic network.

3. Location of Infself

Below is one of the most important questions, on which the key results of our research depend: in regards to any example, is there are a particular place in the human brains, where the contextual image(s) of this example is stored, so that to make it possible to exactly register/mark its location and which represents a unique tangible location of this particular image? In other words, where is a particular place, for example, of an image of a school building façade, where we started our studies, or any memory, which can be reduced to any type of an image, in a particular case, to a visual image?

Before answering this question it is important to ask a question: are each of the images material, which we get in our consciousness, be it a perception of reality, or recalling/remembering something? If there is a positive simple answer (yes), then today or tomorrow we can find and determine a precise location of a certain recollection/image, as far as there is a place for any tangible item in the dimensions where we live, and in this particular case – in spatial dimension.

In the spatial dimension, the precise location of a certain object depends on a reference point, also on whether this or that particular object is moving in regards to the reference or other points, and whether this movement follows certain logic. It is important that for any material object it is possible to determine the existence of its exact location, in a particular conditional period of time.

It is also important to answer the question about what we consider to be a matter. Within the frameworks of this research, the term 'matter' will be used with its classic understanding, as we have it in the classic physics "a matter is any thing, which has a mass and occupies some space". If a certain image, and in case of an above-mentioned example – 'a school façade', which 'we have in the memory' is material, it is possible to identify its specific location.

Any material thing consists of smallest units, which have properties of chemical elements (atoms) and subatomic particles. This means that on one hand it is possible to identify a precise location of a certain particle, and on the other hand it is possible to upload it / transfer it into a binary system and duplicate/replicate it.

If we initially consider a picture stored in the computer as an example, its particular location is determined by information placed in a particular cluster in the hard disk drive of this computer. i.e. specific bits, and the picture is nothing but the chain of these bits. To draw a parallel, the human consciousness represents an operating system of this computer, and short-term (operative) memory – the operative memory of the computer (CASH), where this information is stored until restarting the computer – in parallel – until the person goes to sleep (as known, transfer of information from conditionally short-term memory into a long-term one is related to sleep).

In the environment of knowledge and modern scientific and technological advances, until now it has been unknown if the image of above-mentioned example of 'school façade' exists in a material form in our brain, in any particular place.

This work aims to find an answer, and to present a coherent reasoning about the human's 'self', the memory and a possibility to transfer it in both options, which will be useful both in case when the memory exists in an uniform type and volume, in any particular place and at a particular time, also in case when it does not exist in an uniform type and volume in one particular place and at a particular time.

Definition of Terms

Infself – represents information that has been received in any form and accumulated from the respective stage of embryo; and perception/comprehension of its wholeness (or its constituent), in the frames of time conditionality, results in the perception of one's own self in terms of a carrier of such informational content, as an uniform and continuous entity.

Perception[31] - a cognitive process, simultaneous receipt/elaboration of sensory information as a whole, which enables a person to identify, interpret and understand the external reality.

Imagination – a creative ability to create images, during which it is necessary to receive sensory information/data.

Thinking[32] – a complex cognitive activity, a biochemical, informational and electro-impulsive process of multilateral processing of infself and external data

Opinion[33] **-** output of thinking.

Consciousness[34] - present state of infself, when thinking is taking place.

[31] (Latin: perceptio, percipio)

[32] The term 'thinking' has various content-filling components and definitions. Diversity of definitions derives from what kind of text we are dealing with. Thinking, in the light of terminology, is often encountered in psychology/psychiatry, philosophy, neurosciences and recently in IT (information technologies) science. There is no uniform and universal definition of the thinking process within the frameworks of current scientific knowledge. Different authors offer various content for the meaning of the concept. Among them, there are various approaches towards separation of the thinking process into its constituent elements (levels). For example, see: Anderson, Lorin W, Lauren A Sosniak, and Benjamin S Bloom. 1994. *Bloom's Taxonomy*. Chicago: NSSE. Compare: Williams, Frank E. 1969. "Models For Encouraging Creativity In The Classroom By Integrating Cognitive-Affective Behaviors". *Educational Technology* 9 (12): 7-13. Also, for comparison: Ginsburg, Herbert and Sylvia Opper. 1969. *Piaget's Theory Of Intellectual Development*. Englewood Cliffs, N.J.: Prentice-Hall.

[33] Opinion, idea, concept – can be used interchangeably, based on the context.

Memory – a biochemical, cognitive-electric process, during which information is coded,[35] stored, retrieved.

Perception, imagination, thinking, memory – represents an 'infself in action'

Factual circumstance: Infself receives information through so-called receptor-transmitters.

Options:

Option #1. Infself can exist in the form of a integral whole volume, in any particular conditional time and place;

Option #2. Infself exists only when and during that time period, when it is in action. It does not exist as an integral whole volume, in any particular conditional place and time.

In case of the first option, we have a case, when information - accumulated from a respective stage of an embryo, and received in any form – is localized, which will let us digitalize it in the future by coding. Due to the volume of information, it is possible to use various coding and decoding, which makes it possible to transfer information at the bit-level precision, to an artificial-synthetic, also to an organic medium.

Digitalization of infself's content is one side of the deal, because the information mass does not have an ability/characteristics of perception/understanding, which would result in perceiving its own self, as a medium of this informational content, as an integral indivisible entity. Information mass, taken separately, does not produce anything, such as a HDD in a computer, with many files in it. In order to use this information, there should be a respective environment, in other words, there should be an environment (a software) after transferring this information, which will have those tools-parameters, which were attributes of the environment, where this information used to exist before. Besides, it does not really matter whether this environment is organic or artificial-synthetic.

When I mention artificial-synthetic environment, I mean a new artificial-synthetic system created from the matrix of computer systems, also from a human being's biological, organic matter. We can also imply a biological, organic entity created based on the human's biological (DNA) material – clone.

In case of the second option, when infself exists only then and in the time period when it is in action and it does not exist in an whole volume, in any particular, conditional place and time, we are dealing with so-called transmission (streaming). In other words, the person's infself in action means a flow of impulses (streaming). Infself in action – perception, imagination, thinking,

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[34] The words-terms "conscious" and "consciousness" represents a certain umbrella for the terms that include/imply numerous cognitive processes, also see: Rosenthal, David M. 1986. "Two Concepts Of Consciousness". *Philosophical Studies* 49 (3): 329-359. doi:10.1007/bf00355521. Compare: Gennaro, Rocco J. 1996. *Consciousness And Self-Consciousness*. Amsterdam: John Benjamins Pub.

[35] Create-assign individual mental representation to the received information.

memory – represents interaction among neurons, which creates a web of associations or neurons. Every thought, association, image is nothing but an interaction among neurons in the neural network. In the environment of above-mentioned example (image of a school façade), it is nothing else but a connection among numerous neurons, which, in a figurative meaning, can be imagined in the form of a continuous uninterrupted chain among multiple neurons, a sentence where every neuron, conductor-transmitter ones, represent one of the links in this chain, and in case of a sentence – every letter-sound. Despite the simplicity of an image, the neural chain-sentence has a very sophisticated structure and is comprised of millions of neural connections.

Those images, often encountered-used in a daily life, for example, a face or name of a familiar person, create solid neural connections, which at the same time accelerates coding-decoding of an image and transmission of an impulse. The more recurring the neural connection, the faster and solid it is.

In case of the second option, there is a continuous information stream from sensory organs and feelings, which are transformed into neural biochemical and electric impulses, which create, replace or in some cases repeat neural chain-sentence. And overall, they create a unified neural association chain. The number of neurons is quite large. The estimated amount is more than 100 billion, thus, the neural chain-connections among these neurons are virtually infinite.

Whereas infself exists only in a time period when it is action, this means that 'infself in action' is specific, active neural chain-sentences existing in a whole neural web.

The number of active neural chain-sentences (image, thought) is very little in one particular time period, this is what represents infself in action, which means that it is impossible to have all the neural connections equally active in one time period. According to this model, it is impossible to determine the infself's specific location, as far as it does not have any particular location in human brain. It is a biochemical electric impulse, specifically, one or several active neural chain-sentence. It is possible to determine an approximate location according to brain sections, or based on the reaction to a certain stimulator, or to determine an approximate location of a particular neural chain-sentence, but it will not be possible to determine a specific location of infself's content, as far as it (neural chain-sentences) is dispersed throughout the whole neural web. Due to this reason, even it there were a map of neural web, its direct digitalization would not make it possible to digitalize the infself.

In order to make it possible to digitalize the infself, it is necessary to 'catch-digitalize-transfer' all the active neural streams in real time.

3. How is it possible to digitalize infself?

As mentioned above, infself in action is the contents that we are given in the consciousness, also the ingoing information streams that are changed, stored and eventually expressed. In order to get infself in action, it is necessary to have an infself, in other words, its content and information.

Neuroplasticity of human brain makes it possible to change the existing neural chain-sentences, also the mechanisms and schemes that participate in the formation of active neural chain-sentences.

It would have been much easier to actually digitalize the infself when it has a specific location, where everything is stored in a coded, encrypted form, which represents its content in its entirety. Without a specific location, it is necessary to catch-digitalize every flow (stream), which provides its content. How is it possible?

As I have mentioned in the beginning of this paper, the formation of human brain and, correspondingly, the origin of infself is related to the neural web, more precisely, to the first neurons and formation of connections among them. This means that this is the very moment when neural chain-sentences should be captured-digitalized. This will be possible in case if a special device is placed in the embryos brain as an implant, which will act as a catcher-recorder, or catcher-transmitter. In this case the information contained in the implant will be identical to the stream, which is taking place in the brain of an embryo, newborn, child or adult. In other words, information in the implant will be identical to those neural chain-sentences, which a person has in whose brain this implant is located, i.e. it will be a complete copy of an infself's content, which is already half the battle.

In order to digitalize an infself of an adult person, it is necessary that the adult "re-lives all his life". Neural association chain-sentences, from the very beginning until the digitalization moment, should be equally active for the sake of digitalization, which is impossible. However, in case of theoretical possibility, their alignment structure is lost in space-time, which makes it useless afterwards. In other words, it is only possible to digitalize the infself in action. As mentioned above, the infself in action is every idea, which is active in the present.

Complete digitalization and transfer of infself, thus the person's self can only be possible if there is 'catch-digitalize and transfer' of absolutely all the neural connections, which is possible by placing a respective implant in the embryo's brain in the future.

The implant can 'record all the streams of information-impulses' and the information contained therein will be identical to the neural web, which a person with an implant has. Together with recording, the implant can provide a direct information stream to a conditional information cloud on the server. The cloud can also act as a conductor-distributor of the received information-impulses, where from the streams will be transmitted to the object, which is a biological or biosynthetic continuator of a person with an implant. In other words, let us imagine that there is an embryo, with an implant in its brain, which a) records all the neural connections, which appears in the brain; b) transmits-streams all the neural connections to a system that stores and distributes it on the cloud, which is located on a certain server. It can be located in the human body, also beyond it, on an ordinary information server.

Information on the cloud (infself's content) can be merely stored, or transmitted:

a) to a 'vessel' created from the biological material (DNA) of the same person (clone);

b) to any biosynthetic, artificial-synthetic or special computer system, operating capabilities of which will at least correspond to that of the one used by the infself when the infself was in action.

In this case, we will get the following:

Neural connections of any person with an implant will be identical to the neural connection that an object-person has, where the respective stream-transmission has taken place.

This means that if transmission takes place in real time, the recipient (the person and/or object where stream-transmission takes place) 'lives the same life' as a person with an implant, considering the delay, which a stream objectively necessitates (ranging from one tenth of a second up to several seconds). This means that content of the infself in both persons, in real time, will actually be identical.

4. Bioethical and legal side of this issue, opportunities and challenges

Infself digitalization-transfer, and accepting infself in action in another bio, biosynthetic or even a digital 'vessel' implies immortality of this infself. In other words – this means immortality of a human being, as far as a human being is not a particular body or unity of bodies. First and foremost, a human being is an infself in action, i.e. each of us is an infself in action and nothing else.

Immortal infself = immortal human being.

Starting to work on the issues given in this paper is related to the whole range of bioethical issues, also legislation in a certain country, where legal norms actually offer a certain approach – it is prohibited to clone a human being, or to create a being like a human, which results in criminal punishment. There were respective experiments that preceded the inclusion of such norms at a particular time, and legislative bodies tried to use this clear norm to eliminate any possibility to work in this direction, or conduct respective experiments.

Surprisingly enough, it is a fact that actually no legislation of any country of the world provides a definition of a human being that would be close to reality. Majority of countries recognize that the death of a person is a moment when the human brain stops functioning, but they do not say anything about the moment when the human brain starts functioning.

Contemporary international, human rights and local law shares the approach (despite various approaches to time) that a human being is considered to be a human being when it is separated from the mother's body, from the moment of its birth. Before this, it has the right to be an successor, and at the embryo stage it is not considered to be a human being, thus it does not represent a subject of law.

Legislation of actual majority of countries of the modern world, like the human rights law, is not ready for the future, namely for the fertilization and fetus growth in artificial wombs. Neither are they ready to put equality sign between a human being and its infself. A human being is and stays alive until there exist its infself in action, and when the infself ceases functioning, it – the

human being - exists no more. Today this means that it is dead, but the threshold between life and death will shift to another prism in case if it possible to digitalize-transfer the infself and, consequently, transfer it to another medium, as far as at this time it is possible to put it (the infself) in action again, which will be just a continuation of the infself that has existed before, and nothing else. This is exactly how it is possible to make a human being immortal.

There emerge following bioethical and legal issues when talking about immortality: shall a human being have the right to determine when it ceases its existence in the material world it is living in? What should be the initial state: having a human being as a mortal being, or immortal? In the first scenario, it cannot make a choice, because, as mentioned in the paper, this is impossible in case of those individuals who have already been born (because the infself is not located in one particular place). In case when the human being is primarily immortal (when it has an implant and streaming-transmission is taking place), as soon as the first person with an implant dies, it is possible to activate the other (person or object receiving the broadcast) infself, which means that in fact, infself in action will be continued with the accuracy of seconds. Correspondingly, the 'last thought' of the first person will be the pre-thought of the first thought of the receiving person.

Neither science nor law, moreover the bioethics is ready for infself, therefore, for human immortality today. Despite this, if the respective research and works start in this direction (which is virtually impossible due to the existing legal, religious, cultural, bioethical pressures, regulations and frameworks), the issue of human mortality and immortality may become one of the issues in regards to which a human being can extend its own will. In other words, it will be up to the person's will to be mortal or not, and in case of staying mortal - when to decide to leave this material world.

Within the frameworks of generalized philosophical-mathematic-physical discussion, the human being will still decide to leave this material world, as far as in this world the distances between celestial bodies are very long, which means that a person's house can be on Earth and on several nearby planets. This means that, if we imagine our solar system or other systems near it as informational dimension where the smallest information unit is a bit, then the number of these bits, despite the infinite nature of the world, is finite for us, based on the distances that we can think of as a future home. In this context even if the human life lasts for an infinite period, the number of events, feelings, emotions, etc. which a person can experience – information that can become the infself's content - is still finite. Realizing this can make a person decide to leave the existing material world sooner or later.

5. Conclusion

Infself represents information that has been received in any form and accumulated from the respective stage of embryo, and perception/comprehension of its wholeness (or its constituent), in the frames of time conditionality, results in the perception of one's own self in terms of a carrier of such informational content, as an uniform and continuous entity.

Infself in action - perception, imagination, thinking, memory – represents interaction among neurons, which creates an associative, i.e. neural web. Every idea, association, image is nothing

else but interaction among neurons in the neural web. It is a place where every though, feeling, association-image is a uniform chain-sentence that exists among neurons, and where every neuron conductor-transmitter represents one of the links in this chain, and in case of a sentence – each letter/sound. An image can be very simple, but the neural chain-sentence has a very sophisticated construction and comprises millions of neural connections.

We may consider that the person's infself originates at the moment when the neurons are formed in the embryo's brain and when first electric-biochemical impulse emerges among neurons.

Infself emergence starts with first impulses and lasts until the last impulse among the neurons. This means that the person's infself does not equal the time period from the person's birth until its death. It always spans longer than this period.

If there is a special device placed in the embryo's brain as an implant, which will act as a catcher-recorder, or catcher-transmitter of neuron formation and biochemical and electric impulses taking place in seconds, then the information contained in the implant will be identical to the stream, which is taking place in the brain of an embryo, newborn, child or adult. Information in the implant will be identical to those neural chain-sentences, which a person has in whose brain this implant is located, i.e. it will be a complete copy of an infself's content.

The implant will be able to "record all the streams of information-impulses" and perform direct informational stream to so-called information cloud, which can be located in the person's body, also on the cloud outside the person's body that can be located on the server. The cloud will record the received stream and also transmit-distribute it into an object, which will be a biological or biosynthetic continuation of a person with an implant. Every neural connection of the person with an implant will be identical to the neural connection, which the object-person has, where the respective stream-transmission was performed.

The recipient (the person and/or object where the stream-transmission takes place) 'will live the same life' as a person with an implant, considering the delay, which a stream objectively necessitates (ranging from one tenth of a second up to several seconds). Immortal infself = immortal human being.

A human should have an opportunity to choose when to leave the material world. In case of an implant that will enable the stream of neural chain-sentences in every flow, when a person with an implant dies, immediately the other infself can be activated (person or object that is a recipient of transmission), which means that in fact, the infself in action will be continued with the accuracy of seconds. Correspondingly, 'last thought' of the first person will be the pre-thought of the first thought of the receiving person.

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