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The annual “DIALOGO” CONFERENCES promote reflection and research on important public issues to which Christian theology can make a constructive contribution and is essential in the relation between science and religion in this era; scientists are also invited to manifest their ideas/theories on the topics in a constructive manner. This virtual conferences series gives you a great new way to participate in the fully fledged, scientific and professional conference without personal participation.

The dialogue between science and theology has always existed whether it led to agreements or controversies.

The desire to demonstrate the richness of such a dialog has given birth to our Research Center on the Dialog between Science and Theology, whose mission is to stimulate interdisciplinary scientific research in the above-mentioned fields, as well as in compared and apologetic theology, resulting in solutions regarding the greater issue of today’s society on a par with Christian` spirituality and faith.

The 1st Online International Conference to be held in November 2014, marks the first anniversary of the opening of RCDST which calls for papers that explore both paradigms and engage in a constructive dialog between science and theology.

The purpose of the DIALOGO CONFERENCES: Fundamental or experimental research and theoretical papers describing original, previously unpublished work in all the scientific fields that could be involved into the dialogue with theology are solicited. We were honored by receiving top rated papers from distinguished scholars from all over the world. Despite excellent work of scientific committee, not all submitted articles were published. Prospective authors were invited to submit papers in any of the three sections of the conference asked in 2014 - Cosmology, Life & Anthropology. Altogether 136 articles were presented by the scientists from 29 countries, but only these 25 papers were accepted after a triple peer review process by the international Reviewers Committee, and precisely checked by the Technical Committee, to maintain the highest standards. Also, we didn’t recommend all these papers, but those with high visibility, most liked and commented papers from all.

All these papers were presented into the first edition of this international, multidisciplinary conference (November 2014) on an honest and fruitful dialogue between any scientific domain and any theology. All the papers received and accepted for the presentation into the conference were peer-review by at least three scholars. We give you here their extended versions so that you can enjoy reading them in order to receive more observations on our email address for a better improvement and pursuit of our purpose.

Fr. Lect. **Cosmin Tudor CIOCAN**, PhD
CEO of *The Research Center on the Dialogue between Science & Theology* (RCDST) of „Ovidius” University of Constanta (ROMANIA)
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A DISCUSSION ABOUT THE ‘DEATH GENE’ FROM THEOLOGICAL AND GENETIC’ POINT OF VIEW

Tudor Cosmin CIOCAN¹
Alina MARTINESCU²

ABSTRACT:

THIS PAPER IS TRYING TO PUT TOGETHER TWO DIFFERENT RESEARCHES, FROM THEOLOGY AND FROM GENETICS, ABOUT A GENERAL AND UNDETERMINED TOPIC, DEATH. IT IS UNDETERMINED BECAUSE NO ONE CAN SAY SOMETHING DEMONSTRABLE AND UNIVOCAL ABOUT IT, SINCE NO PERSON ALIVE CAN CROSS OVER THE EDGE OF LIFE AND COME BACK FROM THE DOMAIN OF DEATH WITH INFORMATION ABOUT IT. BUT WE CAN DISCUSS, NEVERTHELESS, THINGS THAT ARE OBVIOUS AND POSSIBLE TO BE REASONABLY INFERRED ABOUT DEATH EVEN BY LIVING BEINGS. IN THIS REGARD, THEOLOGY WILL PROVIDE THE MAINLINE OF WHAT IS TO BE KNOWN AS DEATH FOR RELIGION IN GENERAL, WHILE GENETICS WILL TRY TO COME WITH ITS RESEARCH TO SUSTAIN OR CONTRADICT THE GENERAL PREMISE: DEATH IS NOT AN ONTOLOGICAL BEHAVIOR OF LIVING MATTER, BUT AN IMPOSED ATTRIBUTE AFTER THE SIN OCCURRED INTO THE WORLD.

KEYWORDS: LIFE SPAN, CONSEQUENCE, IMPRINTING, TELOMERES, SENESCENCE, IMMORTALITY, DEATH, GENES.

INTRODUCTION

The present issue is usually regarded with fear, or at least respect, due to the fact that nothing over the edge of it is possible to be known or demonstrate. As a matter of fact, we cannot ‘know’ for sure anything about it since we do not possess the ability to cross / see on the other side.

The reason for taking this topic under a dual perspective, genetic and theological, is because both have something to say about this unseen reality that nobody knows anything about it and, in the same time everyone fears it unequally. We believe that, if we raise the right questions in this matter, we might get the correct attention over death from our readers.

The theological perspective approaches death with interest on questions like, what is death?, how could the living matter change into dead matter?, is death a permanent or a reversible stage? Death – a quality of living matter or an accident that will pass away? Do we really want death to be removed? Trying to answer these questions, our research aims to create

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a logical explanation for the reason of death to exist, and, perhaps, the most important thing said here is that death has a purpose, as everything else does in the Creator`s plan.

DEATH FROM A THEOLOGICAL POINT OF VIEW INTRODUCING THE "THEOLOGY OF DEATH"

For the Christian theology death is always in connection with two fundamental aspects: *Fall of Adam* and *the crucifixion and resurrection of Christ*. Only in the context of these two historical-biblical moments death can be explained, interpreted and conceived; more than that, those two events are always taken together as a whole, being regarded as a hole: Christ's death is a consequence of Adam's sin and the resurrection undo the effects of the sin committed by Adam, without which, the Resurrection would not have been necessary.

The concept of death, between these two beacons of the Christian faith, it receives different interpretations and approaches. E.g. It appears as **divine punishment** occurred from the sin of Adam and directed both against Adam who committed this sin and somehow, against all his descendants; for this imputation directed to the whole human race there, are many theories that attempt to explain reasonably this imputation without exhausting the resources to answer all the theological or emerging issues. And although there is often this acceptance of death, the Bible says bluntly that "For God made not death: Neither hath He pleasure in the destruction of the living" (The Book of Wisdom 1.13), and the reason is very plausible and fall very well with the divine plan of creation ... "For He created all things, that they might have their being: and the generations of the world were healthful" (vs. 14). Beside punishment, death is also a redemption method and not a vengeance of God as St. Irenaeus said³.

Another relevant explanation is that death was brought by God in human nature as a consequence of sin and for that matter it does not lasts (being a **preventive measure**); it cannot be contained, changed or removed by a 'natural' course of action. Death received a temporal-spatial determination beyond which it cannot pass⁴. This explanation is most often found in Christian theologians and, it has a profound scriptural justification:

An interesting point laid down in the Bible referring to death is located in the Book of Revelation, 9.6, *during those days people will seek death but will not find it; they will long to die, but death will elude them*. It is a unique text, without any other correspondent Bible, which shows that the death penalty is not imposed forever, with no possibility of escape from it.

In another vein, death is a **psycho-pedagogical approach** of God for man's disobedience and transgression of the divine command. Without smuggle the penalty of sin - "For the wages of sin is death ..." (Romans 6.23) - it is often interpreted by the Fathers of Holy Church as a result of God's nurturing and as a measure for straightening the humankind, goal that is, in fact, in everything God does by and for men after the original sin, "I take no pleasure in the death of the wicked, but rather that they turn from their ways and live" (Ezekiel 33.11). We are told that "**death is at work** in us" (2 Corinthians 4.12), so it must be something specific, like a being, not an attribute. Death is something relative to living matter, because the image created around it gives to death this posture.

Can we segregate a gene of death by the living nature? If "death is at work" it can only means that it is something that performs a function, either biological, or pedagogical, or both. In this case death is "alive" and this interpretation has gained anthropomorphic significance from ancient times just because this understanding of death as something alive

³ M. L'abbé Migne. Encyclopédie théologique ou, Série de dictionnaires sur toutes les parties de la science religieuse. Paris: Migne au Petit-Montrouge, vol. 3, 929.

⁴ Migne. Encyclopédie théologique ou..., 929

exists everywhere, as something that works, something that fulfills a function, transforms, consumes living matter etc. According to most religious traditions, death is not an object or just a state of life, but a subject that can talk, negotiate and so on. However, the vitality of death means probably the biological binder, with living matter, binder through which it could influence it after the program he has. In this sense, death can be understood as a biological virus that is reprogramming the information of living cells, and this because, observing the natural evolution of a cell compared with one attacked by death viruses (e.g. cancer), cell information changes in the sense that the "normal" life span shortens dramatically. We can extrapolate in this sense that there is a gene of death virally forwarded to the whole creation and that rescheduled the information of living matter.

CASEWORK OF DEATH

An appropriation of death emerging from all theological writings that approach this matter is its universality; there is no one and nothing (among living) which can escape from the incidence of death. It cannot be known the exact method by which, because of Adam's sin, death spread virally upon all mankind ("so death passed onto all men, for all have sinned" Romans 5.12), to the whole nature. The question is, how did this transmission of death has occurred? How could death enter onto living matter? The Bible says that "sin came into the world through one man, and death through sin, and so death spread to all men" (Romans 5.12). If everything was created to live, was it possible that all what was alive received the stigma of death? Many theologians suggest that the figure of the heavenly fruit is a figurative one and that, even if there was a physical fruit, death has not come because of it. There are other theologians who distrust the spiritual command of God, and propose that God's words are more as a warning given to man, not to touch a fruit able to cause death. But this assumption is rejected by Lord's words occurring after man's disobedience and says bluntly "Because you have listened to the voice of your wife and have eaten of the tree of which I commanded you, 'You shall not eat of it', cursed is the ground because of you" (Gen 3.17). That means that death is the penalty of death" (Romans 6.23).

Demarcation between life and death is categorical, without exception; all man are subjects of death. What appears to be an exception, the case of Enoch, the seventh man, as well as Elijah - both caught up to heaven before death holds any effect on them - are no exceptions at all, because the Bible picks up their life from where their left (Genesis 5.24, 2 Kings 2) and finishes it in the same manner as any other human life: with a physical death (Revelation 11.7). In other words, death is inexorable, no one can escape; is therefore a *sine qua non* condition of life. It cannot be deceived, planned or deferred; because of this almost everyone is inclined to say that "you can't cheat death", meaning that the death is the natural end of any biological existence, more or less predictable. However "everything longs for permanent existence"⁵.

Predictability of death is only effective under "abnormal conditions" when the death can be diagnosed, but even then the percentage of occurrence of the death is not 100% sure, sometimes, beings encountered exceptions due to "miraculous" and especially unexpected healing. Generally, it operates with approximations to decades and that shows the age limit a certain organism can reach (e.g. for human max. age is 122 years, for cats 38, for dogs 29, 62 for horses, elephant 86, Koi fish + 200, or for the *ocean quahog* (*Arctica islandica*, aka *Ming*) a marine bivalve mollusk for 500 years). **Maximum life span** is a measure of the maximum amount of time one (or more) members of a population has been observed to survive between

⁵ John Calvin. *Institutes of The Christian Religion*, Book III, Chapters VI – X: *On The Christian Life*. (USA: SAGE Software Albany, 1995), 40.

birth and death. For this definition, accidents which resulted in death, are not taken into account,

From a theological point of view, the irreversibility of death is not a feature of it, although for all scientists this dimension of death is naturally impregnated to all living things; it is an impregnable reality to which any living being obeys unconditionally. Nevertheless, for the theological world the picture has a completely different manner. We do not approach here the issue of reincarnation because it does not regard directly the reversibility of biological death, of living matter, but it is a theory that relates exclusively to the soul, not the body. The presumption of universal resurrection, stemming from historical and religious reality of the resurrection of Jesus Christ, is a direct and unequivocal reference of the reversibility of the biological death. The sea gave up the dead that were in it, and death and Hades gave up the dead that were in them” (Revelation 20.13). The abolition of death is a natural consequence, both for the Christian theology - entitled to regard this as an undeniable reality, because it is based on the reality of death and resurrection of Christ, Who, by the grace of God, He might taste death for everyone (Hebrews 2.9) - as well as for many other theologies, and this universal aspect of belief of resurrection also of the body along with the spirit, is closely related to the logic and the rationality of creation which, with in the perspective of permanent death, there would has no teleology. More than that, as has been shown in the beginning of this text, we can probably conclude our presentation saying that death has a reason to exist, and, perhaps, the most important thing we can say here is that **death has a purpose**, as everything else does in the Creator’s plan; “by death we are recalled from exile to inhabit our native country, a heavenly country”⁶. There is no sick, perverse or insane statement that we wish for death to come, we embrace death for it will reunite us with the Lord and not because we want to give up this life and ask for a sooner, irrational or self-inflicted death (cf. 2 Timothy 4.18; Titus 2.13).

About this irreversibility of death many theologians have written and they have based their writings starting from promise “the LORD Almighty...will swallow up death forever” (Isaiah 25.6, 8). Every author talking about this issue tells us not only will God relieve the hurt caused by life’s suffering (‘wipe away tears’, cf. Mt. 5.4), but He will remove those factors which brought about the suffering. By John’s day the abolition of death in the new age was a fairly standard feature of Jewish and Christian eschatology, with Isaiah 25.8 forming the central proof text”⁷.

We talked until now about biological death occurred by the degradation of the living cell, by achieving the final threshold of genetic information. The same logical argument can be said and speculated about the accidents that interrupts life without a prior genetic programming (suicide, homicide)? Perhaps the case of suicide could be caught in this genetic program, if we say that our behavior is included in our genetic material, and in that case we can extrapolate that the failure of personality and the tendency of suicide are all printed and determined as genetic information. But if so, then the problem of determinism would suppress any chance of man's free choice. Then what happens with accidents and the death caused not by aging, but in various circumstances? This dilemma is not the subject of our research, it exceeded the area of genetics, and any solution we would provide, probably would be contrary to the information gathered in the dialogue with genetics.

⁶ Migne. Encyclopédie théologique ou ...40.

⁷ Jan Fekkes, *Isaiah and Prophetic Traditions in the Book of Revelation: Visionary Antecedents and their Development*. (Sheffield: JSOT Press, 1994), 254.

THE THEOLOGICAL PROBLEMATIZATION OF IMMANENCE OF DEATH

Can genetics understand, starting from a primordial, edenic genetic code, before sin, whether our hereditary legacy encompasses or not imprinted death?

From the religious perspective, man was created by God in an indefinite state (not final) – in regards of the end of the body (death). He was quoting from St. Augustine, "*posse non peccari et mori*" (you are *able not to sin or die*) and not "*non posse mori*", namely *he may not die*, but not that *he could not die*. In this case we need to understand that the disease, death, the disintegration of matter in general was not, according to the theological teachings (at least after the three monotheistic religions – Judaism, Christianity, Islam), an attribute, a constitutive acquiring of the flesh (human, in particular).

Secondly, after the original sin, committed by Adam and Eve, man receives a provisional and final state of decay, death being included as the final stage of bodily degradation. Moreover, this original sin, with all its effects and consequences, is transmitted – we don't know for sure and absolutely *how* (there are only theological theories so-called theologoumena⁸ debating, but do not define this aspect) – to descendants of Adam and Eve until today and beyond. Words said to Adam, "the day you eat you will die" (Gen. 2.17), did not suggest an instant death, but the loss of innocence and of the state of no- death; man becomes *the subject of death*, because Adam lived for 930 years. On the other hand the Christian Church condemned Pelagius who claimed that Adam, even if he had not sinned, he was dead in its natural condition⁹.

What are the genetic implications of this problem so far?

That would somehow mean that there is, on the one hand, in the genetic code of living matter the information that the degradation and death, finally, are correct, efficient and ultimately natural. The first conclusion that follows from the fact that now, after the original sin, this is the definitive state of living matter; because of the sin, but that's it! We do not have access to a primordial genetic code, a pre-sin one, a Adamic or heavenly one and therefore our inherited legacy now includes imprinted the death.

On the other hand, this could also mean that the pattern of death is not written in the genetic code of any creature - human or bacteria - and that this ***imprinting*** would have followed to be made post-creationist - a) by the direct work of the Creator, although not a single word of Genesis would make us take this imprinting with the death gene (of bodily degradation) as the "act of God": "cursed are you above all livestock and above all beasts of the field... cursed is the ground because of you" (Gen. 3.14, 17); b) or by the will of Creator and His indirect work. Like a trigger set as a backup in the genetics of living matter, since the creation of it and which it may be elicited by the sin in the event that this was obviously activated ; if it was not triggered, the genetic trigger of death remained passive, and the state of non-death may have perpetuated equal as natural as death, now, after-sin. This explanation may be based on the scriptural statement made to Adam by the Creator: "I have set before you life and death, blessing and curse. Therefore choose life, that you and your offspring may live" (Deuteronomy 30. 19) Jean Calvin says that "death was inflicted for the

⁸ Theologoumena exist on different teachings (e.g. the "nature" of evil, the relationship between the many demons and the one devil, the way in which demons tempt man, the "abode" of the demons, their situation at the Last Judgment, the question of the relationship between individual man and the tempter, compared with the individual guardian angel, the way original sin is transmitted to all and every human being and so on) which have been unable to go beyond this stage of development because there is no strict theological point of departure for this further development. Karl Rahner (editor), *Encyclopedia of Theology: A Concise Sacramentum Mundi*. Mumbai, India: Continuum International Publishing Group Inc., 2004, P. 334.

⁹ M. L'abbé Migne. *Encyclopédie théologique ou...*, p. 928.

very thing which deserved the highest praise”¹⁰, letting us know that the other part of Christianity also believe in the accidentally of death.

The first conclusion drawn here is that the attempt of scientists to seek removal of the death in the genetic code, finding of a concrete solution, achievable, the "youth without old age and life without death” becomes appropriate. There can only be meaningful such an attempt like that as long as we believe it is valid the earlier inference: *death is not natural, but a genetic mutation occurred in the process*. Vice versa, if the natural death is a link of the genetic chain, whether it is passive, then, along with the triggering / activation of it, it cannot be torn away from the genetic chain of living matter without destroying it. In this case, death occurred not naturally, but artificially, before the natural stop of the biological clock, and therefore useless.

What would be, in this regard, the intervention of geneticists and the conclusions reached by their research? Other scholars or researchers may intervene at any time and to clarify this issue.

GENETICS APPROACH OF DEATH IN GENERAL WHAT IS LIFE SPAN?

In Greek myth, the amount of time a person spent on earth was determined at birth by the length of a thread spun and cut by the Fates. Modern genetics suggests the Greeks had the right idea—particular DNA threads called telomeres have been linked to life expectancy. But new experiments are unraveling old ideas about fate¹¹.

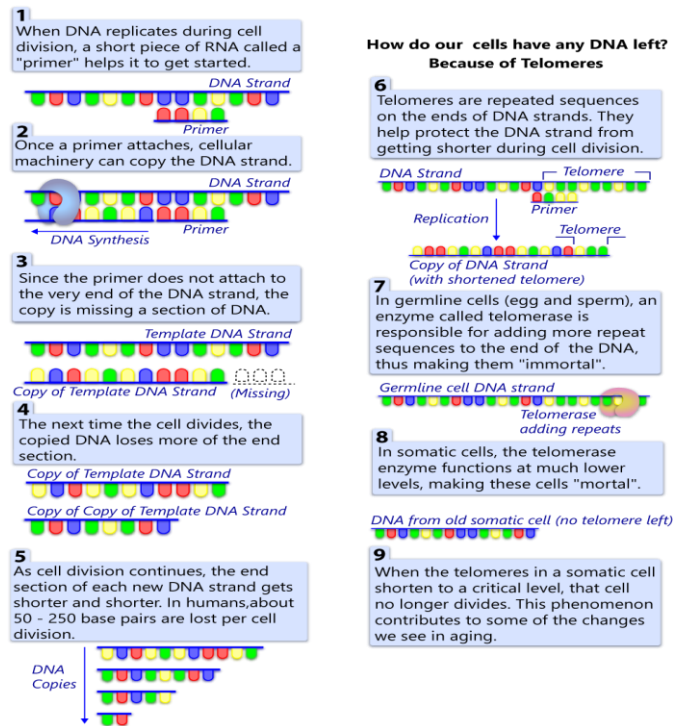
WHAT ARE THE TELOMERES?

A telomere is a repeating DNA sequence (for example, TTAGGG) at the end of the body's chromosomes. The telomere can reach a length of 15,000 base pairs. Telomeres function by preventing chromosomes from losing base pair sequences at their ends. They also stop chromosomes from fusing to each other. However, each time a cell divides, some of the telomere is lost (usually 25-200 base pairs per division).

¹⁰ John Calvin. *Institutes of The Christian Religion*, Four Volumes In One Digital Library Volume. (USA: SAGE Software Albany, 1996), 33.

¹¹ Joseph Stromberg. Can Your Genes Predict When You Will Die? New research suggests we can defy genetic destiny. *Smithsonian Magazine*, January 2013. web: <http://www.smithsonianmag.com/science-nature/can-your-genes-predict-when-you-will-die-164511528/?no-ist>

Figure 1. Relation between telomeres and DNA



Telomeres appear to protect and stabilize the chromosome ends, like the tabs on the end of shoe laces which prevent them from fraying. Without telomeres, the main part of the chromosome — the part with genes essential for life — would get shorter each time a cell divides. So telomeres allow cells to divide without losing genes.



Photo 1. Telomeres (tinted red) protect chromosomes like the plastic tips on shoelaces. The length of telomeres may be a marker for longevity. (Carol and Mike Werner / PHOTO RESEARCHERS, INC)

Without telomeres, chromosome ends could fuse together and corrupt the cell's genetic blueprint, possibly causing malfunction, cancer, or cell death. Because broken DNA is dangerous, a cell has the ability to sense and repair chromosome damage. Without telomeres, the ends of chromosomes would look like broken DNA, and the cell would try to fix something that wasn't broken. That also would make them stop dividing and eventually die.

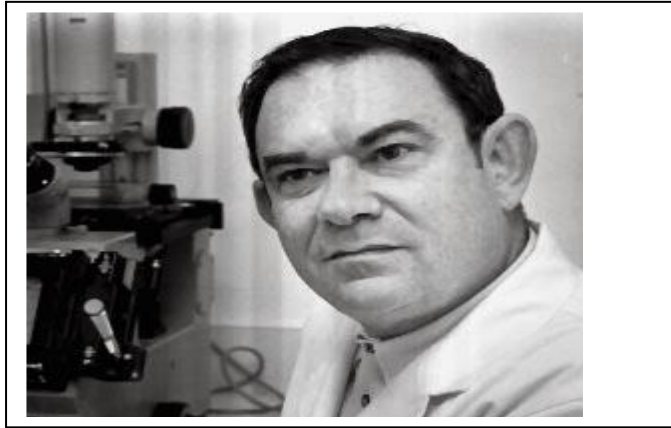
Over time the telomeres shorten and provide less protection, making cells more vulnerable to degenerative age-related diseases.

Telomeres are quite long at birth and shorten a bit every time a cell divides; ultimately, after scores of divisions, very little telomere remains and the cell becomes inactive or dies. And because elderly people generally have shorter telomeres than younger

people, scientists believe that telomere length may be a marker for longevity as well as cellular health.

Almost 40 years ago, Leonard Hayflick discovered that cultured normal human cells have limited capacity to divide, after which they become senescent — a phenomenon now known as the ‘Hayflick limit’¹².

Figure 2. **Leonard Hayflick** in 1988. (Photograph: Peter Argentine.)



The **Hayflick limit** (or *Hayflick phenomenon*) is the number of times a normal human cell population will divide until cell division stops. Empirical evidence shows that the telomeres associated with each cell's DNA will get slightly shorter with each new cell division until they shorten to a critical length and can no longer replicate. This means that a cell becomes "old" and dies by a process called apoptosis. Telomere activity is controlled by two mechanisms: erosion

and addition¹³. Erosion, as mentioned, occurs each time a cell divides. Addition is determined by the activity of telomerase.

WHAT IS TELOMERASE?

Telomerase, also called ‘*telomere terminal transfers*’, is an enzyme made of protein and RNA subunits that elongates chromosomes by adding TTAGGG sequences to the end of existing chromosomes. Telomerase is found in fetal tissues, adult germ cells, and also tumor cells. Telomerase activity is regulated during development and has a very low, almost undetectable activity in somatic cells. Because these somatic cells do not regularly use telomerase, they age. The result of aging cells is an aging body. If telomerase is activated in a cell, the cell will continue to grow and divide. This "immortal cell" theory is important in two areas of research: aging and cancer.

IMMORTALITY

If telomerase makes cancer cells immortal, could it prevent normal cells from aging? Could we extend lifespan by preserving or restoring the length of telomeres with telomerase? If so, would that increase our risk of getting cancer?

Scientists are not yet sure. But they have been able to use telomerase in the lab to keep human cells dividing far beyond their normal limit, and the cells do not become cancerous.

If we used telomerase to "immortalize" human cells, we may be able to mass produce cells for transplantation, including insulin-producing cells to cure diabetes, muscle cells for treating muscular dystrophy, cartilage cells for certain kinds of arthritis, and skin cells for healing severe burns and wounds. An unlimited supply of normal human cells grown in the laboratory.

¹² Jerry W. Shay and Woodring E. Wright, *Hayflick, his limit, and cellular ageing*- www.nature.com.

¹³ Facts about Telomeres. Web: <https://freeantiagingtips.wordpress.com/> (26 July, 2013).

SENESCENCE

Senescence is considered the last step of the complex process of development of all organisms. This refers to a series of changes resulting in decreased body homeostasis and increased vulnerability.

Although cellular senescence can be induced by various causes, senescent cells display a number of characteristics that allow their identification both *in vitro* and *in vivo*.¹⁴

Some of these biomarkers reflect the activation of mechanisms contributing to cellular senescence program: telomere shortening and cell cycle arrest, increased oxidative stress, chromatin remodeling, products secreted by senescent cells, autophagy activation and morphological changes.

There is ample evidence that the maximum duration of survival of each species is under genetic control. However, the heritability does not exceed 35%. Despite the relatively low levels of genetic factors, a number of mutations can dramatically affect the senescence.¹⁵

Average lifespan has increased at a steady pace of almost 3 months per year in both males and females since 1840¹⁶.

Centenarians now constitute the fastest-growing segment of the U.S. population, increasing in number from 3,700 in 1940 to roughly 61,000 in 2006¹⁷.

Finding differences in genes between centenarians and average-aged individuals may point to molecular pathways important in the ageing process. Yet, little is known about specific genes that affect the rate of ageing or human lifespan.¹⁸

The only two genes associated with human longevity that have been replicated in multiple populations are FOXO3A and APOE¹⁹. The effect sizes of these two genes for longevity are small with odds ratios of 1.26 and 1.45 for survival to age 100 in replicate studies for FOXO3A and APOE, respectively²⁰. These genes account for only a small portion

¹⁴ Thomas Kuilman, Chrysiis Michaloglou, Wolter J. Mooi, et al. "The essence of senescence" *Genes Dev.* 2010 24: 2463-2479.

¹⁵ Mircea Covic, Dragos Stefanescu, Ionel Sandovici, "Genetica medicala" Edit. Polirom 2011.

¹⁶ Oeppen J, Vaupel JW. Demography. Broken limits to life expectancy. *Science.* 2002 May 10;296(5570):1029-31.

¹⁷ Sonnega A. The future of human life expectancy: have we reached the ceiling or is the sky the limit? *Research Highlights in the Demography and Economics of Aging.* 2006 March 2006;8.

¹⁸ Heather E. Wheeler and Stuart K. Kim, *Genetics and genomics of human ageing*, review 2010.

¹⁹ Kervinen K, Savolainen MJ, Salokannel J, Hynninen A, Heikkinen J, Ehnholm C, et al. Apolipoprotein E and B polymorphisms--longevity factors assessed in nonagenarians. *Atherosclerosis.* 1994 Jan;105(1):89-95.

Schachter F, Faure-Delanef L, Guenot F, Rouger H, Froguel P, Lesueur-Ginot L, et al. Genetic associations with human longevity at the APOE and ACE loci. *Nat Genet.* 1994 Jan;6(1):29-32.

Willcox BJ, Donlon TA, He Q, Chen R, Grove JS, Yano K, et al. FOXO3A genotype is strongly associated with human longevity. *Proc Natl Acad Sci U S A.* 2008 Sep 16;105(37):13987-92.

Anselmi CV, Malovini A, Roncarati R, Novelli V, Villa F, Condorelli G, et al. Association of the FOXO3A locus with extreme longevity in a southern Italian centenarian study. *Rejuvenation Res.* 2009 Apr;12(2):95-104.

Flachsbart F, Caliebe A, Kleindorp R, Blanche H, von Eller-Eberstein H, Nikolaus S, et al. Association of FOXO3A variation with human longevity confirmed in German centenarians. *Proc Natl Acad Sci U S A.* 2009 Feb 24;106(8):2700-5.

Li Y, Wang WJ, Cao H, Lu J, Wu C, Hu FY, et al. Genetic association of FOXO1A and FOXO3A with longevity trait in Han Chinese populations. *Hum Mol Genet.* 2009 Sep 29.

Pawlikowska L, Hu D, Huntsman S, Sung A, Chu C, Chen J, et al. Association of common genetic variation in the insulin/IGF1 signaling pathway with human longevity. *Aging Cell.* 2009 May 31.

²⁰ Corder EH, Saunders AM, Strittmatter WJ, Schmechel DE, Gaskell PC, Small GW, et al. Gene dose of apolipoprotein E type 4 allele and the risk of Alzheimer's disease in late onset families. *Science.* 1993 Aug 13;261(5123):921-3.

of the genetic contribution to longevity measured through family heritability studies^{21 22}. Therefore, much of the heritability of lifespan remains to be explained.

I. CONCLUSION

Death is the termination of all biological functions that sustain a living organism. So any factor, genetically or not, that disrupts these functions is causing death.

There is no “death gene”, but cells have a limited number of divisions by the repetitive DNA sequences of telomeres, so it can multiply indefinitely. The absence of cell division will lead to cell death, thus unable to renew tissues and aging, as an irreversible process.

Obviously, when cell division could be controlled *in vivo* only then we can ask whether death is or not reversible?

The application of new human genetics technologies to the study of ageing has just begun and may lead to additional breakthroughs in human ageing in the near future.

The proposal of theology about death is that this is not an ontological attribute of living matter, but an immanent accident of it, that was established over all creation as a result of disobedience of “the crown of creation”, man, but it is also to be removed by the One Who established it as a temporary law of living matter. For the foundation of this we have plastic assertions, that "Then death and Hades were thrown into the lake of fire" (Revelation 20.14), and also clear, direct and unequivocal expressions, "The last enemy to be destroyed is death" (1 Corinthians 15.26). We thus learn that death will eventually be abolished, because its nature is immanent provisional until some point.

The approach of this issue seems to be useless as long as the specifications formulated both theological and of genetics are identical and lead to the same conclusion: death is relentless, universal, and no one can escape it, and more than that the existence of an after-life is not something that can be certified by anything concrete and tangible. Death ends, beyond the control of anyone, any lifetime and cannot be determined or stopped by anyone. However, our conclusion is one able to give us hope of the fulfillment of words like “death will be destroyed”. Knowing that death was not a plan into our gene or in any living material from the beginning, which leaves us with an uncertain hope that death is merely a stage, a provisory and accidental ‘gift’ that might be, someday, taken back. We might not have said all things about death, even some important information as *there is something worse than death; spiritual death; there is something called undead etc.*, but we considered that, due to the mutual approach, what was said is more important than other knowledge about it. We come with a theological assertion that death has a purpose to exist, therefore, death has a purpose to exist in man’s life in particular because of this. What is it then, because, as science can say about it, death has no meaning for us to end other than to become part of “food chain”, a meaning that has no power to convince us to live as we do and, in the same time, to live with this idea that we are merely food for something else like a fish, insects or worse! “Death is not something which happens to a man alongside much else. Death is the event in which the very man himself becomes his definitive self”²³. In other words only in the light of death we can understand and cherish life itself, and through the “eyes” of death we can consider ourselves in a realistic evaluation, how much we really value; “Come, brethren, to

²¹ Herskind AM, McGue M, Holm NV, Sorensen TI, Harvald B, Vaupel JW. *The heritability of human longevity: a population-based study of 2872 Danish twin pairs born 1870-1900*. Hum Genet. 1996 Mar;97(3):319-23.

²² McGue M, Vaupel JW, Holm N, Harvald B. *Longevity is moderately heritable in a sample of Danish twins born 1870-1880*. J Gerontol. 1993Nov;48(6):B237-44.

²³ Karl Rahner, *Encyclopedia...*, 329.

the pit to see the dust and the dirt from which we were built. Where are we going now? What we have done? Who is poor or rich? Who is the master? Who is free? They are not all the dust? The beauty of face had rotted and the flower of youth had withered by death” (Song from orthodox funeral).

On the other hand, scientifically speaking, if somehow we could solve the problem of death and come to a solution to eliminate from the equation of life, we would really want to live forever in these conditions that we have built? Judging by the wrong that humankind has done, would we really want to preserve this for eternity, or are we ourselves the mere judges of life and we would want to put an end of it eventually? Man is now free to imagine any scenario with us being immortals in this world with this kind of life we have built!

DOES DIVINE ACTION REQUIRE DIVINE INTERVENTION? GOD'S ACTIONS IN THE WORLD AND THE PROBLEM OF SUPERNATURAL CAUSATION

Juuso LOIKKANEN¹

ABSTRACT:

THE BELIEF THAT GOD ACTIVELY ACTS IN THE WORLD HAS BEEN FUNDAMENTAL TO CLASSICAL CHRISTIAN THEOLOGY THROUGHOUT THE HISTORY OF CHRISTIANITY. SINCE THE RISE OF MODERN SCIENCE, HOWEVER, THIS TRADITIONAL UNDERSTANDING OF GOD'S ACTIONS HAS ATTRACTED MORE AND MORE CRITIQUE. FIRSTLY, IT HAS BEEN ARGUED THAT GOD CANNOT ACT IN THE WORLD WITHOUT VIOLATING THE ALLEGEDLY ALL-ENCOMPASSING LAWS OF NATURE, AND, CONSEQUENTLY, BECAUSE THE LAWS OF NATURE CANNOT PRESUMABLY BE BROKEN UNDER ANY CIRCUMSTANCES, IT IS CONSIDERED ABSOLUTELY IMPOSSIBLE FOR GOD TO INFLUENCE THE PHYSICAL WORLD IN ANY WAY. SECONDLY, IT HAS BEEN CLAIMED THAT EVEN IF BREAKING THE LAWS OF NATURE WAS NOT, IN THEORY, IMPOSSIBLE, IT WOULD STILL BE, IN PRACTICE, IMPOSSIBLE FOR AN IMMATERIAL ENTITY SUCH AS GOD TO INFLUENCE THE MATERIAL WORLD BECAUSE NO MECHANISM OF SUPERNATURAL CAUSATION EXISTS. IN THIS ARTICLE, I ARGUE THAT THE FIRST OBJECTION, I.E., THAT GOD CANNOT ACT IN THE WORLD, HOLDS PARTLY TRUE. I MAINTAIN THAT GOD CANNOT ACT WITHOUT INTERFERING WITH THE PROCESSES OF NATURE (ALTHOUGH SOME RECENT ATTEMPTS OF BUILDING NON-INTERVENTIONIST THEORIES OF GOD' ACTIONS HAVE BEEN MADE). NEVERTHELESS, I DO NOT SEE HOW GOD'S INTERVENTION WOULD CONSTITUTE A PROBLEM FOR MODERN PHYSICS, AS HAS OFTEN BEEN PROPOSED. MOREOVER, THE SECOND CLAIM, I.E., THAT IMMATERIAL ENTITIES CANNOT AFFECT MATERIAL ENTITIES, IS NOT BASED ON EVIDENCE BUT ON AN UNFOUNDED ASSUMPTION THAT BECAUSE WE DO NOT KNOW THE MECHANISM OF CAUSATION BETWEEN IMMATERIAL AND MATERIAL ENTITIES, THIS CAUSATION IS NOT POSSIBLE.

KEYWORDS: GOD'S ACTIONS; CAUSALITY; DIVINE ACTION; DIVINE INTERVENTION; DIVINE CAUSATION, DIVINE PROVIDENCE, MIRACLES, LAWS OF NATURE.

INTRODUCTION

DOES GOD ACT IN THE WORLD?

Does God interact with the world? Does he influence all or some of the events occurring in the universe today? Or, did he just create the cosmos billions of years ago and leave it to evolve on its own?

The answer traditionally given by Christian churches is quite straightforward. The belief that God actively acts in the world, "sustaining all things by his powerful word"², has

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² *The Holy Bible: New International Version*, Hebrews 1:3.

been fundamental to classical Christian theology throughout the entire 2000-year history of Christianity. Christians of all denominations have regarded their God as a loving and caring being who engages in personal relationships with his creatures, a being who answers petitionary prayers and brings about miracles in order to steer our lives to the direction he decides to, and who – on a wider scale – steers the entire course of history.

Also today, Christian churches all over the world declare that God is present, moment by moment, in all of our lives. The Catechism of the Catholic Church, for example, teaches as follows: “God does not abandon his creatures to themselves. He not only gives them being and existence, but also, and at every moment, upholds and sustains them in being, enables them to act and brings them to their final end.”³ The catechism of the Evangelical Lutheran Church of Finland, in turn, puts it like this: “God is not merely some remote initial cause or non-personal force, but he works in creation and history, encountering us personally.”⁴

The same understanding is expressed even more clearly and elaborately in the Heidelberg Catechism of the Reformed churches (as an answer to the question “What do you understand by the providence of God?”): “God's providence is his almighty and ever present power, whereby, as with his hand, he still upholds heaven and earth and all creatures, and so governs them that leaf and blade, rain and drought, fruitful and barren years, food and drink, health and sickness, riches and poverty, indeed, all things, come to us not by chance but by his fatherly hand.”⁵

HOW DOES GOD ACT IN THE WORLD?

Traditionally, it has been customary to differentiate between two different ways of God's acting in the universe: general divine action and special divine action (or, *providentia ordinaria* and *providentia extraordinaria*). The term “general divine action” refers to God's acting generally through the regular structures of the universe, which God has created in the beginning of time and continues to sustain. The term “special divine action”, in turn, is used to describe the particular actions (for example, in the miraculous acts depicted in the Bible) that God performs in order to achieve specific purposes and to make a “sudden impact.”⁶ In this article, the focus is on special divine action, although, generally speaking, the discussion about the distinction between general divine action and special divine action is beyond the scope of the paper (according to some philosophers of religion, the distinction is not even justifiable⁷).

Regardless of how one chooses to classify God's actions (whether it is general versus special divine action, or miracles versus non-miracles, or something else altogether), the

³ *Catechism of the Catholic Church* [*Catechismus Catholicae Ecclesiae*]. Citta del Vaticano: Libreria Editrice Vaticana, 1993. English Translation available at http://www.vatican.va/archive/ENG0015/_INDEX.HTM, accessed October 15th, 2014.

⁴ *Catechism: Christian Doctrine of the Evangelical Lutheran Church of Finland* [*Katekismus: Suomen evankelis-luterilaisen kirkon kristinoppi. Hyväksytty kirkolliskokouksessa vuonna 1999*]. Helsinki: Evangelical Lutheran Church of Finland, Church Council, 2000. English Translation available at <http://www.evl.fi/english/catechism.pdf>, accessed October 15th, 2014.

⁵ *Catechism, or Christian Instruction, according to the Usages of the Churches and Schools of the Electoral Palatinate* [*Catechismus, oder christlicher Vnderricht, wie der in Kirchen vnd Schulen der Churfürstlichen Pfaltz getrieben wirdt*], 1563. English Translation available at <http://www.heidelberg-catechism.com/pdf/lords-days/Heidelberg-Catechism.pdf>, accessed October 15th, 2014.

⁶ P. Dwyne, *Special Divine Action: Key Issues in the Contemporary Debate (1965–1995)*. *Tesi Gregoriana, Serie Teologia 12*. (Rome: Gregorian University Press, 1996).

⁷ N. H. Gregersen, “Special Divine Action and the Quilt of Laws: Why the Distinction between Special and General Divine Action Cannot be Maintained”. In: R. J. Russell, N. Murphy & W. R. Stoeger, S. J. (eds.), *Scientific Perspectives on Divine Action. Twenty Years of Challenge and Progress*. Vatican City & Berkeley: Vatican Observatory & The Center for Theology and the Natural Sciences, 2008, 179–199.

starting point for my analysis is that there exists a God who acts – and it is therefore reasonable to talk about God’s actions in the world. Indeed, worshipping some deistic God who would choose not to – or, in the worst case, was not even able to – interact with the creation and with humans would certainly be a distortion of real Christianity. It would merely be “watered-down theism”, as biologist and popular scientist Richard Dawkins has fittingly described.⁸

So in order for God to be the God that Christianity claims him to be, he must be able to influence the world, to really make a profound difference to what goes on in the world. But how exactly does God do the trick? How does he act in the world? Most Christians, including Christian scientists, are very puzzled by this question. What could possibly be the mechanism through which God influences the events occurring in the universe?

DIVINE ACTION THE DETERMINACY OF NATURE AND MIRACLES AS VIOLATIONS OF THE LAWS OF NATURE

In the discussion between natural sciences and theology, it has traditionally been customary to assume that in order for God to affect what happens in the world and to make “miracles” (or any “non-natural” events, whatever one wishes to call them) happen, he needs to be able to interfere with the processes of nature. Already in the eighteenth century, philosopher David Hume declared famously that “a miracle is a violation of the laws of nature.”⁹ Likewise, according to Hume’s contemporary, philosopher Voltaire, “a miracle is the violation of mathematical, divine, immutable, eternal laws.”¹⁰

The view of Hume and Voltaire still appears to be the consensus view today – at least in public discussion. If God wishes to act in the world, he needs to intervene, to override the existing natural laws in some miraculous, supernatural way. This understanding is based on the widely held perception of 19th and 20th century physicists and philosophers of science that the laws of physics provide all-encompassing deterministic rules for what goes on in the universe. The course of nature is seen to be completely regular and exceptions to the natural order are regarded as impossible without an intervention of a supernatural agent.

(At this point, as a clarifying remark, it must be noted that although, in the context of Christian theology – and in this paper – the supernatural agent is usually identified as God, theories of divine action can also be developed in other philosophical and theological frameworks, even without explicit reference to any particular deity.)

Of course, since the latter part of the 20th century, physics has introduced randomness as a constitutive feature of the universe; the Newtonian picture of the universe as a deterministic cosmic clockwork machine now only serves as an approximation on a limited scale. (I will discuss randomness more thoroughly later in the paper.) Nevertheless, in the minds of average Western citizens – both Christian and non-Christian – the deterministic pattern of thought still dominates.

THE DETERMINACY OF NATURE AND THE ALLEGED IMPOSSIBILITY OF DIVINE ACTION

In fact, many philosophers, and even many modern theologians, have come to an even stronger conclusion – the conclusion that exceptions to the natural order are not only impossible in an absence of a supernatural interventionist being, but that they are altogether

⁸ R. Dawkins, *God Delusion*. (London: Bantam Press, 2006).

⁹ D. Hume, *An Enquiry Concerning Human Understanding*, ed. T. L. Beauchamp. Oxford: Oxford University Press, 2000 [1748]

¹⁰ Voltaire, *Philosophical Dictionary* [*Dictionnaire philosophique*]. Paris: Garnier, 1947 [1764].

impossible. One of the pioneers of the 20th century discussion between science and theology, physicist (and Manhattan Project participant) William G. Pollard, sees the interventionist understanding of God's actions unbiblical because it "inevitably places God and nature in opposition to each other in the sense that they represent two alternative causative agents" and unscientific because "anyone who has had the privilege of having the whole marvelous structure of mathematical physics unfolded before his imagination and experienced the thrill of it cannot fail but find the thought of such intervention shocking."¹¹

Consequently, many academics (and many laymen alike) maintain that it is simply not possible that God would be able to act in the world. Some go even further, deducing that since God cannot act in the world, there is no reason to entertain the idea that God even exists. Instead, all that we should be concerned with is the physical universe. Many agree with astronomer Carl Sagan's opinion that "the Cosmos is all that is or ever was or ever will be."¹² World-renowned physicist Stephen Hawking puts it as follows: "Before we understand science, it is natural to believe that God created the universe. But now science offers a more convincing explanation. (...) Religion believes in miracles, but these aren't compatible with science."¹³

Of course, if we take for granted the claim that "breaking" or overriding the allegedly all-encompassing laws of nature is completely impossible, it is a natural conclusion that it is impossible also for God. But are there really good reasons for accepting such a claim – from the point of view of Christian theology, at least? If we base our worldview on the Christian understanding of the world, why should we think that God, who – allegedly – is omnipotent and the creator of the whole cosmos, could not intervene with his creation and the natural order in any way he wishes to? I argue that that the belief that God actively acts in the universe does not need to contradict the current theories of physics. I will return to this question in later chapters. Before that, I will briefly examine another modern strategy of reconciling God's actions with the laws of nature.

THE INDETERMINACY OF NATURE AND NON-INTERVENTIONIST THEORIES OF DIVINE ACTION

Not all scholars (especially those who are trained in both natural sciences and theology) are willing to accept the idea that God would have no room to act in the world. Instead, they have made some serious attempts of accommodating God's actions with the theories of science in a non-interventionist way. It is claimed that, at least as far as human observers are concerned, nature is indeterministic, thus offering God "gaps" in which he can act without violating the laws of physics. In other words, even though many physical phenomena appear totally random, it is thought that God still controls them in some hidden way.

According to this view, the apparent randomness of the world is just "God's way of staying anonymous," as Albert Einstein allegedly said (although the quote is very likely wrongly attributed to him¹⁴). According to theologian Vern S. Poythress, the most fundamental mistake that anyone can make – and that, according to him, many modern

¹¹ W. G. Pollard. *Chance and Providence: Gods Action in a World Governed by Scientific Law*. New York: Charles Scribner's Sons, 1958. Available at <https://archive.org/details/chanceandprovide028224mbp>, accessed October 15th, 2014.

¹² C. Sagan, *Cosmos*. New York: Random House, 1980.

¹³ C. Matyszczyk, "Stephen Hawking makes it clear: There is no God". In: *CNET* September 26th, 2014. Available at <http://www.cnet.com/news/stephen-hawking-makes-it-clear-there-is-no-god/>, accessed October 15th, 2014.

¹⁴ *Wikiquotes*, *Talk: Albert Einstein*. Available at http://en.wikiquote.org/wiki/Talk:Albert_Einstein, accessed October 15th, 2014.

scientist have indeed made – is to think that chance is some sovereign creative force which can independently bring about events in the world. Poythress argues that “the word chance is properly used to describe the limitations of human knowledge, not the limitations of God’s power.”¹⁵

In my opinion, two of the most credible contemporary non-interventionist approaches to divine action are concerned with chaos theory and quantum physics. In chaos theory, certain physical systems (non-linear dynamical systems) are described by functions that are extremely sensitive to initial conditions, which usually makes the behaviour of these systems impossible to predict. Almost infinitely small differences in the initial conditions of the systems can lead to extreme effects on a larger scale. To be sure, chaotic systems are usually considered to be fully deterministic, but nevertheless unpredictable and this way “seemingly random.”¹⁶

It has been proposed, however, that although it is impossible for human observes to perceive any predictability in chaotic systems, God still holds all strings in his hands, adjusting the initial conditions appropriately to yield significant effects on a wider scale. Furthermore, since many of our mathematical models depicting chaotic systems are necessarily only approximations of real world phenomena, it has been suggested that this prevents us from obtaining the full complexity and subtlety – perhaps even some “hidden” indeterminacy – of these systems. This line of thinking has been promoted most famously by physicist and theologian John Polkinghorne.^{17 18 19}

Physicist and theologian Robert Russell^{20 21} and philosopher of religion Nancey Murphy²², among others^{23 24 25}, have advocated the so-called quantum divine action theory, according to which God controls a multitude of seemingly insignificant and indeterministic quantum events and this way brings about desired large-scale effects. This theory is based on the Copenhagen interpretation of quantum mechanics, which asserts that the state of a physical system cannot be predicted in advance by humans; there exists numerous possible physical states of which only one, an arbitrary one, actualizes. So it is suggested that the laws of nature might not be completely deterministic after all. According to the proponents of the quantum divine action theory, God, however, might be able to steer the course of history through deciding in a hidden way which one of the possible states gets actualized.

¹⁵ V. S. Poythress, *Chance and the Sovereignty of God: A God-Centered Approach to Probability and Random Events*. Wheaton: Crossway.

¹⁶ K. T. Alligood, T. D. Sauer & J. A. Yorke, *Chaos: An Introduction to Dynamical Systems (Textbooks in Mathematical Sciences)*. New York: Springer, 1997.

¹⁷ J. Polkinghorne, “Note on Chaotic Dynamics”. In: *Science and Christian Belief* 1 (2), 1989, pp. 123–127.

¹⁸ J. Polkinghorne, *Reason and Reality: The Relationship Between Science and Theology*. Philadelphia: Trinity Press International, 1991.

¹⁹ J. Polkinghorne, *Quarks, Chaos and Christianity: Questions to Science and Religion*. London: Triangle, 1994.

²⁰ R. J. Russell, “Divine Action and Quantum Mechanics: A Fresh Assessment”. In: R. J. Russell, P. Clayton, K. Wegter-McNelly & J. Polkinghorne (eds.), *Quantum Mechanics: Scientific Perspectives on Divine Action*. (Vatican City & Berkeley: Vatican Observatory & The Center for Theology and the Natural Sciences, 2001), 293–328.

²¹ R. J. Russell, *Cosmology from Alpha to Omega: The Creative Mutual Interaction of Theology and Science (Theology and the Sciences Series)*. (Minneapolis: Fortress, 2008).

²² N. C. Murphy, “Divine Action in the Natural Order: Buridan’s Ass and Schrödinger’s Cat”. In: F. L. Shults & N. C. Murphy & R. J. Russell (eds.), *Philosophy, Science and Divine Action*, (Leiden: Brill, 2009), 325–357.

²³ K. Ward, *Divine Action*. (London: Collins, 1990).

²⁴ K. Ward, “Divine Action in the World of Physics. Response to Nicholas Saunders”. In: *Zygon* 35 (4), 2000, 901–906.

²⁵ T. F. Tracy, “Particular Providence and the God of the Gaps.” In: R. J. Russell, N. Murphy & A. Peacocke (eds.), *Chaos and Complexity: Scientific Perspectives on Divine Action*. (Vatican City & Berkeley: Vatican Observatory & The Center for Theology and the Natural Sciences, 1995), 289–324.

DIVINE ACTION WITH A TWIST: THE THEORY OF INTELLIGENT DESIGN

One peculiar (and certainly highly controversial) recent attempt of detecting divine action is the theory of intelligent design. The logical foundations of the theory have been laid by mathematician and philosopher William A. Dembski, who (like Russell and Murphy) finds appealing the thought that the world of quantum physics would somehow accommodate the hidden actions of God. Dembski, however, goes much further, asserting that it is actually possible to empirically detect exactly where God has acted and which objects he has decided to bring about through sudden input of information.

Dembski holds that God controls events occurring in the universe by entering information at convenient times and places (in this regard, Dembski's views of God as an information inputter are similar to those offered by Polkinghorne). By using the so-called criterion of specified complexity, Dembski claims to be able to differentiate between objects – or events – that are designed and objects that are caused by natural causes. In Dembski's theory, when God acts, he always inputs information, and this information usually takes a special form. Dembski calls information created by God “complex specified information” and objects manifesting such information “designed”. In order to qualify as designed, an event needs to be, firstly, highly improbable (complex) and, secondly, definable as a separate pattern without reference to the actual event (specified).^{26 27 28}

Although the idea of being able to reliably determine where God has acted – and, consequently, being able to prove the existence of God! (of some kind) – sounds very intriguing and revolutionary, in reality, it has been revealed that the theory of intelligent design is not a well-founded theory. Several critics have pointed out, for example, that neither of Dembski's central concepts, “specification” and “complex information”, is particularly well defined.^{29 30 31 32} Therefore, it seems rather obvious that Dembski's theory based on the notion of specified complex information is not sufficient to establish itself as a credible scientific theory and does not constitute a reliable method for detecting divine design – or any other kind of design, for that matter.

THE PLAUSIBILITY OF THE NON-INTERVENTIONIST THEORIES OF DIVINE ACTION AND THE NEED FOR AN INTERVENTIONIST THEORY OF DIVINE ACTION

Nicholas Saunders (who, just like Polkinghorne and Russell, is a physicist and a theologian), has questioned both chaotic systems and quantum events of their ability to actually produce the alleged large-scale effects. According to Saunders, in the real world, phenomena are not as chaotic as they are thought to be in mathematical models. Chaos is

²⁶ W. A. Dembski, *Being as Communion: Metaphysics of Information*. Farnham: Ashgate, 2014

²⁷ W. A. Dembski, *The Design Inference: Eliminating Chance through Small Possibilities. Cambridge Studies in Probability, Induction, and Decision Theory*. Cambridge: Cambridge University Press, 1998.

²⁸ W. A. Dembski, *No Free Lunch: Why Specified Complexity Cannot Be Purchased without Intelligence*. (Plymouth: Rowman & Littlefield, 2002).

²⁹ W. Elsberry & J. Shallit, “Information Theory, Evolutionary Computation, and Dembski's Complex Specified Information”. In: *Synthese*, 178 (2), 237–270.

³⁰ M. J. Murray, “Natural Providence (Or Design Trouble)”. In: L. P. Pojman & M. C. Rea (eds.), *Philosophy of Religion: An Anthology. 6th Edition*. (Belmont: Wadsworth, 2012), 596–612.

³¹ B. Fitelson, C. Stephens & E. Sober, “How Not to Detect Design – Critical Notice: William A. Dembski, *The Design Inference*”. In: *Philosophy of Science*, 66 (3), 1999, 472–488.

³² R. D. Pennock (ed.), *Intelligent Design Creationism and Its Critics: Philosophical, Theological and Scientific Perspectives*. Cambridge: Massachusetts Institute of Technology Press.

merely “a minor background phenomenon and in no way implies whole-scale disorder.” In the case of quantum theory, the situation is even more problematic. Saunders notes that “on the terms of our current understanding of quantum theory, incompatibilist non-interventionist quantum SDA [special divine action] is not theoretically possible.”^{33 34}

Saunders is also extremely sceptical of the possibility that quantum chaos³⁵, where quantum events get “amplified” by chaotic phenomena, could add anything new to theories of divine action (this is, to start with, due to the fact that no detailed theory of quantum theory exists), although many contemporary theologians and philosophers regard it as the most promising way of connecting divine action with the theories of physics. So, in practice – to cite philosopher Jeffrey Koperski – it appears that “God can alter the arrangement of bubbles in the crest of a tsunami but not redirect its course.”³⁶ Saunders even goes as far as to assert that contemporary theology is “in crisis” since it cannot in any credible manner account for how God could act in the world. Saunders reminds that, at the moment, “such a wide range of doctrine is dependent on a coherent account of God’s action in the world,” but “we simply do not have anything other than bold assertions and a belief that SDA [special divine action] takes place.”³⁷

I find Saunders’ arguments extremely well-founded and convincing – or, in any case, much more credible than the opposing views. The randomness and indeterminacy present in chaos theory and quantum physics just seem not to be enough to accommodate the actions of God. In addition to the two approaches mentioned above, no other credible non-interventionist theories of combining divine action with the theories of modern science have been presented. (Of course, if the progress of science in the future offered new theories that could be reconciled better with non-interventionist actions of God, such theories should be considered carefully.) Therefore, it must be deduced that in order to make room for God’s actions in the world – actions that can actually make a difference and change the course of history – we need to accept the view that God is able to intervene with the processes of nature. In other words, divine action necessarily requires divine intervention.

But how could this happen in practice? If God is the cause and some particular event occurring in the world is the effect, what is actual the mechanism of causation?

DIVINE CAUSATION

MATERIAL AND IMMATERIAL ENTITIES AND THE PROBLEM OF DIVINE CAUSATION

One of the most convincing (and, historically speaking, certainly one of the most enduring) arguments against divine intervention is based on the deep-rooted perception that the material world and the immaterial world are completely different and completely separate and cannot affect each other in any way. This, of course, can be seen as one of the various versions of the classical problem of substance dualism (or, mind-body dualism). As philosopher David Corner writes, “if the realm of supernatural becomes radically different from that of nature, the supernaturalist encounters a problem similar to that encountered by substance dualism; it becomes difficult to say how there can be any causal interaction between nature and the supernatural.”³⁸

³³ N. Saunders, “Does God Cheat at Dice? Divine Action and Quantum Possibilities”. In: *Zygon* 35 (3), 2000, 517–544.

³⁴ N. Saunders, *Divine Action and Modern Science*. (Cambridge: Cambridge University Press, 2002).

³⁵ H.-J. Stöckmann, *Quantum Chaos: An Introduction*. (Cambridge: Cambridge University Press, 2007).

³⁶ J. Koperski, “God, Chaos and the Quantum Dice”. In: *Zygon* 35 (3), 2000, 545–559.

³⁷ D. Corner, *Acts of God: An Essay on Miracles*. Dissertation, University of California, Santa Barbara. 2006.

³⁸ A. Peacocke, *Theology for a Scientific Age: Being and Becoming – Natural, Divine and Human*. (London: SCM Press, 1990).

One of the most prominent figures in twentieth century dialogue between science and religion, biochemist and theologian Arthur Peacocke, formulates the problem as follows: “It is indeed difficult to imagine *how* God might be an agent in a world conceived of as ruled by deterministic laws at all levels when the only analogy for such agency has itself been formulated in dualistic terms that involve a gap dividing action in the ‘body’, and so in the natural world, from intentions and other acts of the ‘mind’. This is an *ontological* gap between two kinds of entities across which it is difficult to see how in principle a bridge could be constructed.” (Peacocke’s italics)³⁹

THE MECHANISM OF CAUSATION: NATURAL VS. SUPERNATURAL CAUSATION

To be sure, it is quite difficult to imagine the exact mechanism through which immaterial entities could affect material entities. However, when one really comes to think about it, is it not just as difficult to imagine the mechanism through which a material entity could affect another material entity (or, how an immaterial entity could affect another immaterial entity; this seems even more difficult to grasp)? Logically speaking, if we deny the possibility of divine causation because we cannot see the mechanism behind this causation, we should also deny the possibility of “natural” (material) causation because we cannot see the underlying mechanism there, either. Surely, not many of us are willing to go that far and abandon the entire concept of causation.

Naturally, we can – and do, with good reason – talk all the time about the causality present in the world at many different levels. We do know, for instance, that the strong nuclear force causes quarks to hold together so that hadrons are formed. Still, at the most fundamental level, we do not really know what constitutes this or any other form of causality. There is always something that is so elementary that it cannot be characterized by its being a part of a causal structure. Of course, regarding the previous example, it has been established that the strong nuclear force is “carried” by gluons, but it is unclear what actually initiates or terminates this process of “carrying”. The deepest core of causation always remains out of our reach.

Philosopher Brian Ellis notes, rightly, that “sooner or later, in the process of ontological reduction, we must come to events and processes that are not themselves structures of constituent causal processes.” Ellis goes on explaining that “the identities of the basic causal interactions that initiate and terminate elementary causal processes, and the energy transmission processes that connect them, cannot depend in turn on their causal structures. For, by hypothesis, they have no causal structures.”⁴⁰

To sum up, the mechanism of causation is no more a problem for divine causation than it is for “natural” causation. In both cases, the fundamental mechanism of causation is unknown, and we are willing to accept that causal relations exist, we simply have to accept this without knowing all the details.

DIVINE INTERVENTION

THE COMPATIBILITY OF DIVINE INTERVENTION AND THE LAWS OF NATURE

Based on what I have discussed above, it is now rather obvious that I am heading towards an interventionist view of God’s actions. This view, however, has been rejected by the majority of contemporary scientists and philosophers, mainly because God’s interventionist acts would allegedly distort the course of nature. It is argued that the laws of

³⁹ B. Ellis, *Scientific Essentialism*. (Cambridge: Cambridge University Press, 2001).

⁴⁰ C. S. Lewis, *Miracles: A Preliminary Study*. (London: Geoffrey Bles, 1947).

nature need to be all-encompassing and unbreakable, or else we would lose all predictability in science, and in everyday life, too. No “divine” or other kinds of interventions can be allowed. But why, I ask again, should we accept such a picture of nature? In my opinion, there is no compelling logical reason why we could not adopt the opposing view.

Indeed, I am inclined to regard the theory of God’s miraculous actions proposed by world-renowned novelist C. S. Lewis as far more appealing. Lewis states the matter rather eloquently as follows: “If I knock out my pipe I alter the position of a great many atoms: in the long run, and to an infinitesimal degree, of all the atoms there are. Nature digests or assimilates this event with perfect ease and harmonises it in a twinkling with all other events. It is one more bit of raw material for the laws to apply to, and they apply. (...) If God annihilates or creates or deflects a unit of matter, He has created a new situation at that point. Immediately all Nature domiciles this new situation, makes it at home with in her realm, adapts all other events to it. It finds itself conforming to all the laws. (...) If events ever come from beyond Nature altogether, she will be no more incommoded by them. Be sure she will rush to the point where she is invaded, as the defensive forces rush to a cut in our finger, and there hasten to accommodate the newcomer. The moment it enters her realm it obeys all her laws.”⁴¹

THE NECESSITY OF DIVINE INTERVENTION AND “INTERVENTION MIRACLES”

To put the same thing more straightforwardly: miracles can happen. Moreover, miracles are necessary for divine action. In yet other words, divine action does require divine intervention. Today, however, the majority of philosophers of science are extremely skeptical towards this view. There are some exceptions, though, like philosopher and theologian Keith Ward, who believes that “God sometimes acts in ways that transcend all the natural powers and dispositions of objects – miracles do occur.”⁴²

Of course, the term “miracle” is here defined in the sense of Hume and Voltaire and used to refer specifically to an “intervention miracle”. Philosopher James Kellenberger divides miracles into three classes: “contingency miracles”, “natural miracles” and “intervention miracles”/“violation miracles”.⁴³ In my opinion, however, an intervention miracle is the only type of miracle that actually deserves to be called a miracle, since neither contingency miracles nor natural miracles (as they are defined by Kellenberger) are instances of God direct action but merely vastly rare natural coincidences that are interpreted to have spiritual significance within some particular religious context.

Regardless whether we choose the option that God cannot act in the world because the laws of nature cannot be broken, or the option that he can “create new events” in the universe which are then immediately accommodated by the laws of nature, we cannot prove our view to be correct (or the opposing view to be incorrect) by scientific means. It is always a metaphysical stance that we have to take. As far as Christian theology is concerned, I hold that the view of God’s actions proposed by Lewis is much more credible than the (naturalistic) alternative.

⁴¹ J. Kellenberger. “Miracles”. In: *International Journal for the Philosophy of Religion* 10 (3), 1979, 145–162.

⁴² R. J. Russell, *Cosmology from Alpha to Omega...*

⁴³ R. J. Russell, *Cosmology from Alpha to Omega...*

CONCLUSION TOWARDS A CREDIBLE INTERVENTIONIST VIEW OF (SPECIAL) DIVINE ACTION

In this article, I have examined how it is possible for God to act in the world. I have argued, firstly, that if we take the theories of modern science seriously, we necessarily come to the conclusion that God cannot act to any significant extent in the world without interfering with the processes of nature. The most promising non-interventionist theories of divine actions, based on quantum physics and chaos theory, are, in their current form, not quite convincing enough. They can only lead to a conception of a God who “can alter the arrangement of bubbles in the crest of a tsunami but not redirect its course.”

Secondly, I have argued that it is quite possible to develop a credible theory of divine action based on divine intervention. This is possible because the idea of divine causation is no more problematic than the idea of “ordinary” causation, and because the view that God can act in the world by “creating new situations” which are then instantly accommodated by the processes of nature is at least as plausible as the view that God cannot act at all – at least in the context of classical Christian theology. I think that this kind of perspective might offer a fruitful ground to more balanced theories of divine action in the future.

Obviously, the purpose of this paper has not been to develop a fully-fledged theory of interventionist divine action, but rather to point out that

- the current “mainstream” non-interventionist theories (based on chaos theory and quantum physics) are not sufficiently convincing options,
- and that divine intervention is not as dead an option as it has often deemed to be.

Indeed, I argue that divine intervention is a phenomenon well worth taking seriously and deserves more attention than it has attracted in the contemporary literature.

DIVINE ACTION AND SCIENCE: FUTURE DEVELOPMENTS AND UNCERTAINTIES

With the progress of science, some gaps in our understanding of the world will probably close and new ones are likely to emerge. Consequently, new theories of reconciling divine action with the findings of the natural sciences will be developed. Regardless of what the scientific theories of the future will be, I am somewhat sceptical of us ever being able to decipher exactly how God acts in the world. Just as a God who would not interact with the world would not be much of a God, I believe – and I think most Christians would agree – that a God who would not conceal his actions from humans would not be much of a God.

If indeed, as the Bible tells us, “God’s ways are higher than our ways”⁴⁴, I we should probably maintain a certain humility in asserting what God does or does not do. Perhaps we can never fully “fathom the mysteries of God”.⁴⁵ This, of course, does not mean that we should stop searching. Although I am of the opinion that the future theories of divine action will show that divine action necessarily requires divine intervention, I must admit that, in the end, the truth might be something completely different, something beyond our imagination. At the same time, I believe that there is no reason to doubt that in whichever way God decides to act, he knows exactly what he is doing. I think English poet William Cowper puts it quite fittingly in his poem “Light Shining Out of Darkness”:

*God moves in a mysterious way,
His wonders to perform;
He plants His footsteps in the sea,*

⁴⁴ *The Holy Bible: New International Version*, Isaiah 55:9.

⁴⁵ *The Holy Bible: New International Version*, Job 11:7

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And rides upon the storm.

(...)

Judge not the LORD by feeble sense,

But trust him for his grace;

Behind a frowning providence,

He hides a smiling face.⁴⁶

⁴⁶ W. Cowper, *Olney Hymns and Other Sacred Works*. Minneapolis: Curiosmith, (2010 [1779]).

STUDY OF IMPACT OF CULTURE ON WOMEN THROUGHOUT THE WORLD

Manisha MATHUR¹

ABSTRACT:

THIS ARTICLE REVIEWS THE IMPACT OF CULTURAL FACTORS ON MENTAL HEALTH OF AN INDIAN WOMEN. MARKED GENDER DISCRIMINATION IN INDIA HAS LED TO SECOND CLASS STATUS OF WOMEN IN SOCIETY. THEIR MOBILITY, WORK, SELF-ESTEEM AND SELF-IMAGE, IN FACT THEIR WORTH AND IDENTITY, SEEM TO DEPEND UPON THE MALE MEMBERS OF A PATRIARCHAL SOCIETY. WOMEN'S LACK OF EMPOWERMENT AND BOTH FINANCIAL AND EMOTIONAL DEPENDENCE HAVE RESTRICTED THEIR SELF-EXPRESSION AND CHOICES IN LIFE. THIS, ALONG WITH FAMILY, SOCIAL AND WORK PRESSURES, HAS A DEFINITE IMPACT ON WOMEN'S MENTAL HEALTH. THIS PAPER DISCUSSES SOME RECENT ADVANCES IN THE AREA OF MOVEMENTS THAT HAS GAINED TREMENDOUS IMPETUS IN THE HUMANITIES AND SOCIAL SCIENCES IS THE REDISCOVERY OF THE ROLE OF WOMEN IN HISTORY AND THEIR CONTRIBUTIONS TO HUMAN CULTURE. THESE DIVERSE COLLECTIONS DEMONSTRATE THE FAR-RANGING IMPACT WOMEN HAVE HAD ON ALL ASPECTS OF CULTURE. FROM INNOVATIVE WOMEN ARTISTS AND PIONEERING SCIENTISTS AND TECHNOLOGISTS TO THE WOMAN WHO CAMPAIGNED FOR UNIVERSAL SUFFRAGE AND SOCIAL EQUALITY, THEIR STORIES PROVIDE A WINDOW ON TO WOMEN'S MULTIFACETED CONTRIBUTIONS TO OUR SHARED HERITAGE.

KEY WORDS: WOMEN, CULTURE, ANTHROPOLOGY, MENTAL HEALTH; CULTURAL VIOLENCE.

INTRODUCTION

India is facing enormous social, economic and health challenges, including inequality, violence, political instability and high burden of diseases. Women continue to experience systematic violations of their human rights and to be largely excluded from decision-making². In situations of war and military occupation, women are to an alarming degree the victims and targets of atrocities and aggression³. To combat war as the ultimate expression of the culture of violence, we must address issues such as violence against women in the home, acts and reflexes of aggression and intolerance in everyday life, the banalization of violence in the media, the implicit glorification of war in the teaching of history, trafficking in arms and in drugs, recourse to terrorism and the denial of fundamental human rights and democratic

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² See Crawford, Philip Charles. "An Enlightening Look at the Feminist Ideals that Informed This American Icon". School Library Journal. Retrieved 13 October 2011.

³ T.J. Demos, Dara Birnbaum, Technology/Transformation: Wonder Woman, MIT/Afterall Books, 2010, p1. ISBN 1-84638-066-9.

freedoms⁴. When women's health has been addressed in this region, activities have tended to focus on issues associated with reproduction, such as family planning and childbearing, while women's mental health has been relatively neglected.

A culture of peace requires that we confront the violence of economic and social deprivation. Poverty and social injustices such as exclusion and discrimination weigh particularly heavily on women. Redressing the flagrant asymmetries of wealth and opportunity within and between countries is indispensable to addressing the root causes of violence in the world⁵. Efforts to move towards a culture of peace must be founded in education; as stated in UNESCO's Constitution: since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed. Even in the new millennium, women in South Asia are deprived of their socio-economic and legal rights⁶. They live in a system where religious injunctions, tribal codes, feudal traditions and discriminatory laws are prevalent. They are beset by a lifetime social and psychological disadvantage, coupled with long years of child bearing. They often end up experiencing poverty, isolation and psychological disability. In some urban regions of South-Asian countries, women's social roles have changed to some extent. They have now comparatively more opportunities for education, employment and enjoyment of civil rights within society. However, the de-stereotyping of the gender roles which have been traditionally assigned by our society is still far away.

In India, most of the societies the customary thought of people is that "girls are born to be fed throughout their lives" and "boys are born to earn and support the whole family". This thought is reflected through certain discriminative behaviors of people. Sex selection during pregnancy is still rampant in India, where women are forced to abort a female fetus. The birth of a baby boy is celebrated with great enthusiasm even in very poor families, and they look for every possibility for celebration on the occasion of birth of a male child. On the other hand, the birth of a baby girl is not welcomed. The situation is even worse in some rural areas of India where the girls are even deprived of their right to live. In one of the rural areas of India, it happened that, when a woman came home from hospital cradling her newborn daughter, her mother-in-law mashed a poisonous coriander into the dollop of oil and forced it down the infant's throat. The reason behind it was that sacrificing a daughter guarantees a son in next pregnancy. The couples are often forced by elderly members of family, particularly mother-in-laws, to keep on taking chances for the birth of a baby boy, which in many cases results in the birth of five or six girls.

Non-governmental organizations, women rights movements, Amnesty International and human rights workers periodically manage to follow-up the victims of violence and bring the culprits to justice. In India, some ancient traditions and customs are still followed promoting various forms of violence against women. These include honor killings, exchange marriages, dowry, female circumcision, questioning women's ability to testify, denying their right to choose the partner, confinement to home. The most frequent causes for acts of violence are domestic quarrels due to the inability of a woman's family to make dowry payments at time of marriage. In some rural areas of India, girls are deprived of their marriage rights only to keep the property in the family. In India, very often young unmarried girls and women suffer tremendous physical and psychological stress due to the violent

⁴ 'Lasso of Truth': The curious tale of Wonder Woman's creator". Retrieved 24 March 2014. Comics Sightings in TV and Film. Marvel Masterworks.com. Retrieved 13 October 2011.

⁵ Wertham, Frederic (1954). *Seduction of the Innocent*. New York: Reinhart & Company. 192, 234–235. ISBN 1-59683-000-X.

⁶ Robbins, Trina. "Wonder Woman: Lesbian or Dyke: Paradise as a Woman's Community". Papers. Girl-wonder.org. Retrieved 13 October 2011. And: DiPaolo, Marc (2011). *War, Politics and Superheroes: Ethics and Propaganda In Comics and Film*. McFarland & Company. 14. ISBN 9780786485796.

behavior of men. The nature of violence includes acid throwing, rape, wife-beating, murder of wife, kidnapping and physical. Besides that, many women and young children from South-East regions are trafficked and forced into prostitution, undesired marriages and bonded labor. Illiteracy, political forces, a feudal and tribal culture, misunderstanding and misinterpretation of religious principles, and above all a girl's low status in the society encourage and sustain sexual exploitation of women. The trafficked victims face violence, intimidation, rape and torture from the employers, brothel owners and even law enforcement agents. This sexual servitude is maintained through overt coercion, physical abuse, emotional blackmail, economic deprivation, social isolation and death threats. Customs and traditions are often used to justify violence. The present scenario in India is still dramatic particularly in the rural areas, where the tribal chief remain in command.

An analysis of various studies in different regions of India revealed an overall prevalence rate of mental disorders in women. Women had significantly higher prevalence rates for neuroses, affective disorders and organic psychoses than men. A study carried out in India⁷ showed that factors associated with depressive disorders in upper and middle class women were marital conflicts conflict with in-laws (13%), financial dependency (10%), lack of meaningful job (14%), and stress of responsibilities at home and at work (9%). Another study conducted in India revealed that the most frequent factors forcing women to commit suicide were conflicts with husband and in-laws. The women who face domestic violence from husband and in-laws have no way out, because the system considers these acts of violence as acceptable. The police and law enforcement agencies are normally reluctant to intervene, considering it a domestic dispute. If the woman abandons her marriage, she has to face innumerable problems, like non-acceptance from society, financial constraints and emotional problems of children growing up without father. The tendency of women to internalize pain and stress, and their lower status with less power over their environment, render them more vulnerable to depression when under stress.

Now a days, almost 80% females are into jobs. But along with them they have to fulfill all the requirements of the family members. Have to perform all the house hold jobs along with the job where as men only do the job and dominate on females and force them to do all house hold activities. In some regions of India violence has reached staggering levels; in a recent population-based study from India, nearly half of women reported physical violence. In India, only women are thought to be responsible for producing the next generation, and the blame for the absence of the desired number of children is unquestioningly placed on them, leading to a destabilization of their social status. Studies have revealed that severe emotional harassment is experienced by a large number of these women in their marital homes in the form of ostracism from family celebrations, taunting and stigmatization, as well as beating, and withholding of food and health care⁸. A study carried out in Karachi explored the experiences among women suffering from secondary infertility: 10.5% of them reported they were physically and verbally abused by husbands and 16.3% by in-laws. Nearly 70% of women facing physical abuse and 60% of those facing verbal abuse suffered severe mental distress

There are several types of violence against women, not all of which take the form of brutal assaults. Demands by society on widows, however young they were, to lead a rigidly austere life, socially isolated and without any access to men, have been condoned for ages as necessary measures to keep them from temptation and sin. The practice of "sati" in certain parts of India, by which the wife threw herself into the funeral pyre of her husband, has been

⁷ "Lasso of Truth". Retrieved 24 March 2014.

⁸<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1525125/#B12>
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1525125/#B13>

documented in the not too distant past. Such behaviors of self-denial, torture and even death are indeed sanctified and glorified and there are even temples erected for the goddess of sati

The rate of mental distress has been reported to be high also in working women in India, and cultural factors are among the contributing variables. This mental distress usually remains unacknowledged. Finally, the recent economic reforms in India have been accompanied by a rise in the incidence of reported domestic violence, rape and alcohol abuse. In ancient India, Vedic people established a social system in which father, instead of mother became the head of the family. Throughout ancient history, women were obliged to abide by the laws made by men.

However, it is also true that Vedic society had a number of women in key positions and that certain austerities could not be performed without their wives even in the early ritualistic period. In fact according to legends Lord Brahma was forced to take up a girl named Savitri as his consort for a special worship, in the absence of his wife Saraswati. The ritualistic Vedic culture was indeed male dominated. Women folk only helped in the preparation of things for the rituals and fire sacrifices and did not conduct rituals themselves. Intellectual revolution followed as the fire sacrifices of the Vedic culture was challenged by thinkers including women, who speculated on the nature of religion

Independence of India heralded the introduction of laws relating to women. The Constitution provided equality to men and women and also gave special protection to women to realize their interests effectively. Special laws were enacted to prevent indecent representation of women in the media and sexual harassment in workplaces⁹. The law also gives women equal rights in the matter of adoption, maternity benefits, equal pay, good working conditions etc. At the international level, the UN Charter, the Universal Declaration of Human Rights and Convention on Elimination of All Forms of Discrimination against Women (CEDAW) sought to guarantee better legal status to women. However, certain contentious issues like the Jammu and Kashmir Permanent Resident (Disqualification) Bill 2004 (which deprived a woman of the status of permanent residency of the State if she married an outsider) and the Supreme Court judgment in Christian Community Welfare Council of India (in an appeal over the Judgment of the High Court, Mumbai). The latter has permitted, under certain circumstances, the arrest of a woman even in the absence of lady police and at any time in the day or night. These instances have once again brought to the forefront the traditional male domination¹⁰, who speculated on the nature of religion. Despite major changes that have occurred in the status of women in some parts of the world in recent decades, norms that restrict women to the home are still powerful in India, defining activities that are deemed appropriate for women¹¹. They are, by and large, excluded from political life, which by its very nature takes place in a public forum. In India, an important mechanism of male dominance is the propagation of gender ideology through sanctions of religious practices and their gender-selective interpretation by the community leaders. Moreover, increasing exposure to violence through popular reading, theaters, film and TV shows, satellite culture, etc. directly or indirectly encourage men to commit offences like rape. Theoretically Government of India regards man and women as equal. However, the states concern to preserve the existing patriarchal social order is clear from the ways laws operate in respect to violence against women.

⁹ Bullough Vern and Bonnie Bullough (1987), *Women and prostitution. A social history*, p. 94, New York: Prometheus.

¹⁰ CEDPA & PRIDE (1997), *Devadasi system continues to legitimize prostitution: the Devadasi tradition and prostitution*, India: Annual Report.

¹¹ "AIDS catastrophe", en *The Nation*, New York: The Nation Associates. Giri, V. Mohini (1999), *Kanya: exploitation of little angels*, New Delhi: Gyan. International Labour Organization (ILO) (2000), "Globalization's losers become its movers", en.

CONCLUSIONS

The cultural and religious practices in India give the Indian women a low position in the society, where the male dominates them. Though, during the last few decades many reforms have been taken place to improve the women status in the society but still the Indian women are standing behind the male. Every year, thousands of young girls offer to God by their parents to escape from the poverty across the India and later on these young girls serve as prostitute in their village and community. Though this practices existed in rural India, as the demand of prostitutes (in their community) has declined over the year, which is affecting to their family income, so to get the high income the parents are selling their daughter with the permission of the temple priest to the traffickers and afterwards these women brought to big cities and forced to work as prostitutes. Information stated that every year thousands of women are entering to the prostitution and subjected towards the exploitation. Though, gender-based violence and sexual exploitations, in various forms including rape, domestic violence, honour of killings and trafficking in women leading to a heavy toll on mental and physical health. This increasing gender based violence and sexual exploitations are recognized as a major public health concern and a serious violation of basic human rights.

In the last few decades a lot has been done in legal aspects to improve the women status in Indian society but still Indian women has no independency. Every day at least 12 women are dying because of violence and nearly thousands of Indian women are exploited by this patriarchal society through various ways, where flesh trade is one of them (UNICEF, 1997). Apart from this the constitution of India proclaims the equality between men and women, but in reality still Indian women are remain a sub-ordinate position in this patriarchal society, where they are treated as subjects to serve men's desire. This whole process is now an issue of global dimensions but it requires an urgent and concerted response. The gravity of the situation has sent shocks waves in Indian societies due to the AIDS pandemic. A comprehensive approach is essential to address the economic, social, political aspect of women trafficking. It is necessary to deal with the perpetrators, as well as assist the victim of trafficking. To combat of women trafficking the following aspects are most essential to achieve:

- Prevention in terms of addressing the issues of poverty, access to education, employment opportunities, programs for sustainable livelihood and poverty alleviation.
- Special attention for education of the tribal people and financial upliftment through agriculture.
- Abolish of the cultural practices like Devadasi, Basavi, Jogin, and Bhavin and the social milieu like dowry, and widow from the Indian society.
- Promoting gender equality.
- Mobilizing the concerned business communities against commercial sexual exploitation.
- Migrant women in search of employment, who are run away or driven away from their homes or, those who are lost are in danger of falling prey to commercial sexual exploitation. Contact centres will be establish in major cities at near the railway station and bus station to give guidance and information to women in need of temporary shelter about equality, development and peace are inextricably linked. There can be no lasting peace without development, and no sustainable development without full equality between men and women. The new millennium must mark a new beginning. We must dedicate ourselves to averting violence at all levels, to exploring alternatives to violent conflict and to forging attitudes of tolerance and active concern towards others. Always provided it involves the full participation of women, action to

remedy a pervasive culture of violence is not beyond the capacity of the people and governments of the world. Women's capacity for leadership must be utilised to the full and to the benefit of all in order to progress towards a culture of peace. Their historically limited participation in governance has led to a distortion of concepts and a narrowing of processes. In such areas as conflict prevention, the promotion of cross-cultural dialogue and the redressing of socio-economic injustice, women can be the source of innovative and much needed approaches to peace-building. Women bring to the cause of peace among people and nations distinctive experiences, competence, and perspectives¹². Women's role in giving and sustaining life has provided them with skills and insights essential to peaceful human relations and social development. Women subscribe less readily than men to the myth of the efficacy of violence, and they can bring a new breadth, quality and balance of vision to a joint effort of moving from a culture of war towards a culture of peace. Girls and women constitute a large majority of the world's educationally excluded and unreached. Ensuring equality of educational access and opportunity between the sexes is a prerequisite for achieving the changes of attitudes and mind-sets on which a culture of peace depends. Even in the new millennium, women in India are deprived of their socio-economic and legal rights. They live in a system where religious injunctions, tribal codes, feudal traditions and discriminatory laws are prevalent. They are beset by a lifetime social and psychological disadvantage, coupled with long years of child bearing. They often end up experiencing poverty, isolation and psychological disability. In some urban regions of India, women's social roles have changed to some extent. They have now comparatively more opportunities for education, employment and enjoyment of civil rights within society. However, the de-stereotyping of the gender roles which have been traditionally assigned by our society is still far away. In regard of the violence against women we must take a day out to judge analyse and eliminate any caused violence on them. And internationally it is celebrated on 25th November every year as "white ribbon day" also.

From the Indian history, it has always been proved that a woman is always been torture physically, mentally and sexually. Always, she is treated as a doll which looks nice when being inside the four walls of house and till time do everything as per the instructions given to her. If she forbids being a doll, then her dignity is violated by others and violence on woman takes place. it's the time to form such society that reassure women that violence is unacceptable and that no woman deserves to be beaten, sexually abused, or made to suffer emotionally. As someone saying that "compassion is going to open up the door. And when we feel safe and are able to trust, that makes a lot of difference." it's time now, to take initiative to stop violence against women to provide a world where every woman will think of her not a doll but a woman. We feel happy to be a part of this mission for stopping violence against women, and proudly able to say we are not alone but many are with us. As a famous saying says that cleanliness starts from home!

¹² Chakraborty, Kakolee (2000), Women as Devadasis: origin and growth of the Devadasi profession, New Delhi: Deep and Deep.

ANTHROPOLOGICAL STRUCTURES OF THE RELIGIOUS IMAGINARY IN SANDU TUDOR'S NORM – POEM

The Akatist of Our Allpious Father St. Demetrius The New, Keeper of oxen in Basarabov

Carmen CIORNEA¹

ABSTRACT:

THE PRESENT STUDY PRESENTS SOME ASPECTS OF THE LITURGICAL COMPOSITION - THE AKATIST OF OUR ALLPIOUS FATHER ST. DEMETRIUS THE NEW, KEEPER OF OXEN IN BASARABOV –AND IT IS BASED ON THE ASSUMPTION THAT THE GREATNESS OF LITERATURE MUST BE DETERMINED BY THE „DIALOGUE” WITH DIVINITY. THE POETRY SEARCH A REFERENCE POINT IN THE TRANSCENDENT AND THE MOST SEQUENCES IN THE AKATIST OF SANDU TUDOR IS IMPOSED BY THE GRAVITY OF EMOTION, BY PURITY AND THE ARDOUR OF THE FEELING. THE PATHS CREATED BY MYSTICAL AND ICONIC ANTHROPOLOGY DEVELOPED IN ITS AKATISTS REQUIRE A THOROUGH UNDERSTANDING, COHERENT WITH THE CHURCH TRADITION AND THE CHRISTIAN VISION OF THE DYNAMICS OF ITS TRANSFORMATION INTO WORDS.

KEYWORDS: SANDU TUDOR, POETRY, AKATIST, THEOLOGY, LITHEATURTHEOLOGIE, THEOPOSIE, ANTHROPOLOGY.

INTRODUCTION

The paper “*Anthropological structures of the religious imaginary in Sandu Tudor's norm-poem*” focuses on a segment of Romanian literature less discussed, namely, Sandu Tudor's religious poetry seen from the viewpoint of iconic anthropology structure, of coagulation of religious images in his first liturgical composition - *The Akatist of Our Father St. Allpious Demetrius The New, Keeper of oxen in Basarabov* - in theological epistema. Structural analytical method applied in our research was designed to track the main nucleous religious pictures, images related to the archetype, constitutive chronotop, myth, but the intention was also to emphasise some significant ideas on the reflection of some mystical images in his poetic work. The explanatin of this type of analysis in terms of literary theology represented the element of originality. Author's mystical vocation requires the application of some terminological indicators – *Litheraturtheologie*² and *Theoposie* - two unique concepts in the Romanian critical space, theories taken from Karl-Josef Kuschel German writers,

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² Vezi Ernst Josef Krzywon, *Möglichkeiten einer Literaturtheologie*, în „Der Evangelische Erzieher. Zeitschrift für Pädagogik und Theologie”, 28, Jahrgang, 1976, 21;

Gisbert Kranz, Georg Langenhorst, etc., which focuses on the anthropological structures of the religious imaginary.

Since the interwar period in American and English space, attempts were made in addressing profane literature with the critical tools in the theological field, especially when it was implicit or explicit texts with Biblical references, and conversely, Biblical interpretation with literary criticism tools. The studies T.S. Eliot, Stanley Romaine Hopper, Amos N. Wilder, Northrop Frye, John Breck, and others, the establishment of a special department („Theology and Literature”) and the emergence of interdisciplinary journals on the subject developed the idea that there should be a discipline and a special method analyzing religious texts, whether they belong to religious authors or areligious. A relevant criticism can not be achieved only by entering into question the religious, claims T.S. Eliot: „*Literary criticism should be completed by criticism from a definite ethical and theological standpoint [...]. The greatness of literature cannot be determined solely by literary standards; though we must remember that whether it is literature or not can be determined only by literary standards*”³.

Regarding Theopoetia, two are the established meanings of this term, by American and German criticism: teopoetics would be the poems approaching prayer and transposing the divine mystery in some intelligible images, as much as possible, and that claim, both the poet and the reader, a certain kind of preparation for decoding the sent message.

Literary Theology - *Literaturtheologie* – has as a research method the transcendental analysis and can be applied to Sandu Tudor’s norm-poem because it is directly focused on the religious norm, the trend being to consider the Christian element not only in form but rather in spirit⁴. By the theology literary term does not takes into account moving from literature to theology as to a totally different subject, but the term should be understood as being theoretical part from the literature for the purposes of transcendental analysis.

The analysis from the perspective of *Theopoem* is justified, on the one hand, by the poet Sandu Tudor’s intention to implement the divine mystery in some intelligible images as much as possible, which require a minimum theological culture for decoding the message of the pray-poem and by focusing on the tension between the word and the Word or between the non-word and Logos. We analysed Allpious The Akatist of Our Father St. Demetrius The New, Keeper of oxen in Basarabov through these innovative research methods, based on theological and literary skills, trying to separate the terms "*anthropological comprehension*" of the religious images in daytime and night time registers- and in two types of structures of religious poetry- ekstatic and enstatic, and finally, to follow the theme of human deification seen as overlapping of human and divine nature.

In presenting the structure of enstatic type I considered the inner lyrical images based on religious phenomena, how the image is built inside the religious sentiment. The focus moves from the escape image of self-lyrical to learning of oneself as a result of a revelation, of internalizing of a sense / religious act. In the tudorian lyrics we intuit, for example, an ekstatic momentum, through the light image, used as expressions of love and thirst for knowledge which, similar to the vision of Blaga, can kill and an enstatism withdrawal to the contemplation of self-materiality.

³ T. S. Eliot, Religion and Literature, 10

http://books.google.de/books?id=kIivP2b5l0wC&pg=PA10&lpg=PA10&dq=When+was+write+the+essay+Religion+and+Literature+from+T.S+Eliot?&source=bl&ots=peoQ67p1WI&sig=ozPQ_VbEv3NqXu2LhYPTzrLYo&hl=d
e&ei=dQNETeGWNMvvsGayvfHPDg&sa=X&oi=book_result&ct=result&resnum=5&ved=0CEAQ6AEwBA#v=o nepage&q&f=true, accesat la data de 12.08.2014

⁴ „Literary theology is, in this sense, a special theology but a theoretical part of literature that borrows the subject and working methods " (Ernst Josef Krzywon, Möglichkeiten einer Literaturtheologie, în „Der Evangelische Erzieher. Zeitschrift für Pädagogik und Theologie”, 28. Jahrgang, 1976), 21

Revelation of the Christ is an anthropological revelation and religious consciousness of man is meant just to reveal the Christian consciousness of man.

THE AKATIST- ECCLESIASTICAL SACERDOTAL POETRY

The Akatist of Our Allpious Father St. Demetrius The New, Keeper of oxen in Basarabov emerged from poet's desire to dedicate to the saint patron of Bucharest - his relics are in the Patriarchal Church - a beautiful poem of spiritual comfort for the believers. This Akatist will be the only one – from the five of the author - published during his lifetime, in 1942, at the Royal Foundation for Literature and Art, Bucharest, the edition being accompanied by a preface - "*Some words*" - signed by Sandu Tudor, which contains some clarifications on the importance and the role the Akatist plays in the spiritually journey of every believer: "*The greatness and its mastery is doubled: one, outside, sound and color well measured; other, inner, of discovery and dogmatic meaning*"⁵. In *Foreword* he tells the readers some biographical details that generated composing this Byzantine poem: "*I started this akathist in the twilight of the Dead people's Saturday, the eve of Holy Sunday of Pentecost. There are fifty days after the passing away of my youngest. A repentant prayer to the Saint Lord, The one with the name of mystery, the one who is above our thoughts, the Hope from age to age. It was created in order to settle in a quiet place the soul of my brother, Eugene.*"⁶

The term akatist comes from the Greek "*akathistos*" which means "*holy song standing*" and is an old hymn to a holy person. Fixed form poem, specific to Byzantine cult, consists of a series of twelve Kontakion and canticles, its structure following, at the symbolic level, the evolution of a cycle of the year, that is twelve steps, spiritual poetry cores, in the natural evolution of the subject for the twelve calendaristic months. The only deviation which is permitted in the architecture of the poem lies in the ability to vary the cycle, the process that Sandu Tudor uses and expands akathist to thirteen episodes, the second part of the last song being not developed. The Akathist has, however, as a whole, the roundness of a circle, being a hymnic prayer that is perpetuated infinitely for the anthem is meant to be restarted from the beginning, in his natural utterance at the end of its gradual cycle: "*Anthem of a wide vision or better, a whole hymnology, the Akathist is a fulfilled cycle of religious poetry. It is like a total, gathered as a continuous chain of songs, and returns itself to flow endlessly, revealing one by one: dramatic songs which are overlapped with other epic hymns and linked with purely lyrical litanies.*"⁷ The word "*kontakion*" used to designate in the old times the stick on which the paper or parchment manuscripts were wrapped on, and in Greek has the meaning of "*boudoir*", and take the form of a private prayer, "*that is always a dramatic dialogue with God*"⁸. The term "*oikos*" - means in Greek "*monument*" and entailed summarizing the life of the praised saint "*hymnal largest and narrative piece, which in turn ends with a litany, song of praise*"⁹. If in the kontakion the structure is accomplished dramatically, as a consequence of the intimate dialogue with God, in case of the canticle the organisation is somehow more narrative, it meaning a description of the glorious moments of the honoured person's life, in this case St. Dimitrie the New Basarabov, which in turn divides, the final part being a litany, a song of praise, easily recognizable by resuming obsessive

⁵Sandu Tudor, *Seamă de cuvinte*. Introducere la *Acatistul preacuviosului părintelui nostru Sf. Dimitrie cel Nou boarul din Basarabov*, în Ieroschimonahul Daniil de la Rarău (Sandu Tudor), *Acatiste*. Prima ediție integral, îngrijită de Alexandru Dimcea, Gabriel Moldoveanu, Editura Christiana, București, p.10.

⁶Tudor, *Seamă de cuvinte*..., 13.

⁷Tudor, *Seamă de cuvinte*..., 9.

⁸Tudor, *Seamă de cuvinte*..., 10.

⁹Tudor, *Seamă de cuvinte*..., 10.

leitmotif: "Rejoice ...". The care to elaborate a text according to Orthodox teaching and traditional ritual is even certified by the author, after the first moment of the broad composition, which poem consists of thirteen Kontakions and twelve canticles, each having a particular number of lines, reviews and completes the work in 1928, adding the metric and the rhythm of the old Byzantine Akathist. At the same time this submits to approval of the Holy Synod of the Romanian Orthodox Church of the blessing to print it: *"Your Holy Highness, with deep humility I am adding, along with it, the attached "The Akatist of the Holy New Dimitrie Basarabov "written by me in lyrics after metric and rhythm of old Akatist of Byzantine rhythm, adding extra modern rhythmic, asking you to kindly arrange to be examined and approved by the Holy Synod and possibly to be used by the pious believers in their readings and spiritual consolation without fear of heresy or inappropriate innovation of the teaching of our Holy Orthodox Church. May 28th, 1928, Bucharest, Sandu Tudor, writer* ¹⁰.

The work, published in the journal lines *"Thought"* is perceived by the readers at that time as a composition quite demanding that revives old language sermons. The paper did not leave indifferent upper bodies and so, after reading it in the meeting of May 20th, 1928, obtained the blessing of the Holy Synod of the Romanian Orthodox Church for the publication:

"To Mr. Sandu Tudor. In response to the petition you submitted, we have the honour to let you know that the Holy Synod, in the meeting of May 20th, 1928, reading your paper entitled "Akathist of St. Demetrios the New Basarabov" and appreciating its value both in terms of literary and of the keeping intact of the true teachings of our Holy Church praises approved printing of this work. July 13th, 1928, Bucharest, President Pimen, Metropolitan of Moldova ¹¹.

Thus the poem, Byzantine type, falls within the tradition, improving with its value of prayer. Writer innovations consisted of the construction of new metaphors with symbolic value and caring to support lyric musicality without affecting classical structure.

Therefore, the text lends itself to an analysis from the perspective of literary theology - *Litteraturtheologie* - because it does not priorily subordinate to aesthetic purpose, but wished to be valuable for the orthodox literature, the Christian element being observed both in *form* and especially in *spirit*. Akathist-Hymn is one of the many forms of lyrical genre, a text which is primarily a cultic role, invokes and honours the holy person. Unlike other traditional species of laic expression, – sonnet, washers, triolet, gazelle – which, over time, were subjected to thematic level, multiple metamorphoses and retained only the formality versification - which sometimes, was passed through a process of renewal. The Akathist, promoted especially by the church leaders, taken into account the spiritual needs, did not turn over time and did not accept structural changes, but with very few exceptions, proved itself a model in which form and content can and must achieve a perfect unity of ideas and poetic expression.

Therefore, this text-norm did not supported structural changes, but with few exceptions and proved rigorously conservative. Moreover, the place and role determined for the Akathist in the consecrated ritual system religious processions in the liturgical calendar year and the economy's joint of liturgical Administration determines this configuration. Sandu Tudor's Akathist is kept within these classical frames of a worship song that gravitates around the life and work of a saint, whose evoked personality is ruled by a strong and humble emotional feeling, in a discovery approach, an emphasis of a dogmatic meaning, embeded in

¹⁰Mitropolitul Antonie Plămădeală, *Rugul Aprins*, (Sibiu: Editura Arhiepiscopiei Sibiului, 2002), ediția electronică, 7.

¹¹Plămădeală, *Rugul Aprins...*, 8.

an oratorical musicality which at first glance may seem austere, but with this melodic cold enciphers mystical solemnity. This cultic production, "*brilliant exactly because of the absence of superficial subjective lyrical originality*" identifies itself with the collective objective lyric of the Church Tradition, with the "*assuming and creative varying of the motifs, of its symbolic and archetypal images of great religious depth is transfigured in prayer, and art in spirituality.*"¹².

Sandu Tudor's preoccupation to recover archaic vocabulary and syntax of old Romanian language – which we admit that untrained readers – justifies the application of hermeneutics from the perspective of *Theopoem*, the poet being concerned, on the one hand, to recover the sacred aura of prayers uttered with the same words able to translate divine mystery in some understandable pictures to a person who has a minimum initiation into the mysteries of the Christian vision and so to restore the authentic dialogue between ancestors and descendants. **The word**, the soul expression, manifests the image and the relationship between complete units, between faces that communicate with each other. Poetic identity is grounded at a prereflexiv, preanalytical level, within the pure act of own utterance of the soul. The Auroral Status of the poetic utterance points to the first state of the soul in the theological sense. In the poet's akathist-hymns the creative act of writing is put into service of the *discovery* of the transcendent, toward it aspires to, but also the unsuspected inners of the heart, in which God makes He present. Writing, in his view, is not only a path to the core of things and creatures, but becomes a proof of the presence of God in the human heart. In this context, the poet's options for religious hymn, litany, text-norm are justified¹³: "*The Akathist is a great spiritual canticle typical of Eastern Christian piety. Of all the great solemnities of Constantinople, perhaps the greatest, most impressive was just the sermon of <<the Prayer>> which in Greek means <<holy song standing>>(...) When hearing it, you need to remain steadfast as a candle burn in frozen glory*"¹⁴.

So the semantic level of the Akathist has tripartite functionality: dogmatic, historical regarding the mentioned saint and liturgical: "*Akathist is part of the liturgical mystics of what is known in Orthodoxy as <<Uninterrupted Worship>> or <<constant glorification>>. Akathist supposedly never stops and is always renewed (...)* Akathist hymn is one of those stairs in spirit that gives the possibility to climb up there to the horizon where you can be covered by the Vision without breaks and without blemish through this"¹⁵. Invoking the Holy New Dimitrie Basarabov does not have only a *latreutic* role, for worship, but also allows the creation of a spiritual *channel*, needed for education and sensibilisation of the soul. Moreover, Sandu Tudor himself defines his own creation using a term - "*icon hymnal*" which Pr. Constantin Jinga writes that "*is original capitalization in a unique context, typological reading as hermeneutic approach*"¹⁶.

¹²diac. Prof. dr. Ioan I. Jr.Ică, *Daniil Sandu Tudor-poet, schimnic, neoimnograf și martir*, în „Revista Teologică”, anul I, Sibiu, 1991, nr. 2, 110.

¹³ Laura Bădescu, *Sacris litteris. Încercare de sistem*, în „Viața Românească”, XCIV, Ianuarie-Februarie, București, 1999, nr. 1, 18.

¹⁴Ieroschimonahul Daniil de la Rarău (Sandu Tudor), op. cit, 10.

¹⁵Ieroschimonahul Daniil de la Rarău (Sandu Tudor), op. cit, 10.

¹⁶ Pr. Constantin Jinga, *Ieroschimonahul Daniil Sandu Tudor – omul și opera*, în colecția: Corifeii Rugului Aprins, (București: Ed. Christiana, 2005), 201.

POETIC ASIDE: The link between DIURNAL and NOCTURNAL IN THE RELIGIOUS IMAGINARY

The perspective that Gilbert Durand opens in *Anthropological structures of the imaginary*¹⁷ suggests a suppression of the limit between rational and imaginary and the presentation, structuralist, of the anthropological "paths" of the imaginary¹⁸. The basic components of general human imagination are, in his vision: **diurnal and nocturnal**. In religious poetry, light symbols, numinous and sofianism are categories of emphasizing the divine epiphany either in the form wisdom, either in the light flowing and intelligible level, through the thoughts or feelings revealed. Light is special attribute of the rise, which has no direction as the arrow or the bird, for example. It's more a presence felt, which reveals one thing, a being, which refers to someone and, more rarely, something. In the context of Romanian poetry religious poet who has the merit of play style transcendent lands indigenous descent, using the images transcendental Sofiane, is Nichifor Crainic and remember some of his poems developing this technique: Unparochialism, Falcon over the precipice, Prayer in the twilight, Praise, Vespers or Jesus through the wheat. The Sofianic embrace this intimate nature, transfiguring it, "*making her theater biblical legend, always repeated*"¹⁹.

Looking from this point of view, The Akatist of Our Allpious Father St. Demetrius The New, Keeper of oxen in Basarabov we note how significantly the internal structures of the Tudorian imaginary are organized because in the early lines of the Kontakion I, the poet's creativity seems to enroll into light: "*O Thou, Father, old, you hold the world in your hand! / blaze without shade, I only can see Your halo, / guess as in a mirror! Face of dazzling confusion!*"²⁰. It is the implicit light, uncreated, it is what Testament texts call "Divine Glory" worn by Persons of the Trinity, which becomes visible, perceptible by categories of analytical thinking, discursive just in the process of transfiguration and deification of human nature, like Moses on Mount Sinai. Intention to recover the anthropological dimension of light is emphasized by the poet himself: "*Locked in a rough canon pattern and determined in the smallest details, the cold formal transformation, like the accuracy of a mysterious crystal is, in fact, only one way to rule and order the spiritual flames, which must light in our hearts. But, at the same time, the akathist hymn is shown as a circle of fire and flames of all our strained booms, through which godliness is written and always grows around a holy life, which was chosen from the niches of the calendar to stand in front of us as izvodite of deification*"²¹. The concept of Weltanschauung in the tudor poetry appeals to the type of biblical images, transferring a biblical reality really poetic. So-called biblical symbols are the basics of building a poetics of verticality, and the merit of the poet is to find a daily theodicee, Theodizee im Alltag²², a specific state lyrical been in a long process of being overcome, being convinced of the divine existence, despite the emergence of evil in the world.

Sandu Tudor expresses this uncreated light by mystical experience and not common knowledge, so that his akathist poems mark a level of deification of the material by light

¹⁷ Gilbert Durand, *Structurile antropologice ale imaginarului. Introducere în arhetipologia generală*. Traducere de Marcel Aderca. Postfață de Cornel Mihai Ionescu, București, Editura Universul Enciclopedic, 2000.

¹⁸ Durand, *Structurile antropologice ale imaginarului*..., 19

¹⁹ Ovid. S. Crohmălniceanu, *Cercul Literar de la Sibiu și influența catalitică a culturii germane*, (București Ed. Universalia, 2000), 96

²⁰ Sandu Tudor, *Acatistul preacuviosului părintelui nostru Sf. Dimitrie cel Nou boarul din Basarabov*, în *Ieroschimonahul Daniil de la Rarău* (Sandu Tudor), *Acatiste*. Prima ediție integrală, îngrijită de Alexandru Dimcea, Gabriel Moldoveanu, (București Editura Christiana), .16.

²¹ Ieroschimonahul Daniil de la Rarău (Sandu Tudor), op. cit, 10.

²² Martin Nicol, „Living with the Hidden God. The Individual's Suffering in Modern Poetry”, în vol. *But vindicate the Ways of Got to man. Literature and Theodicy*, (Rudolf Freiburg. Susanne Gruss, Tübingen, 2004), 448.

"seen unseenly and known incomprehensibly"²³: "But our eye does not see the wonder, / our mind, blind, the mystery does not believe. / Surely, Holy your mercy for man / Make that the holy light to bind us, / to sing to you in the Lord - God / the clean music, in slender singing" (Canticle III)²⁴. These Tudorian suggestions send to the immanence of Divine Transfiguration light: "Apparent shadow you gone through life / until the moment of Divine Transfiguration." But the Big Transfiguration on Mount Tabor may also connote the transfiguration of the apostle-poet who acquires "by divine grace, the faculty of seeing Jesus as He is in his light"²⁵. It is relevant in this regard, the construction of the symbolic images, the final theological episteme in the final part of Canticle II of the *Akathist of St. Demetrios the New Basarabov* designed to glorify the saint: "Rejoice, the best part of the divine love", "Rejoice, mirroring of celestial stars", "Rejoice that you keep Christ into your heart core", "Rejoice that birth and death you have won", "Rejoice, from the coffin with bright relics"²⁶.

Phenomenology of the Tudorian light would remain only a simple statistical exercise unless the perspective and the senses towards the light and the light of the celestial stars river, Numinous, did not flow into the "black night": "And in the third evening when from the heavenly hive / the stars swarm as gold bees, / the black flower night, it was buried / your hermit body without coffin / (...) / local people, seeing you playing spin fire over the light" (Canticle III)²⁷. The image of the Virgin Mary is presented as a means of potentiating the numinous, which sends to the divine protection and ascensional projection. The image of women in religious poetry migrated from the carnal and the symbol of temptation (*Eve*), to nurturing the virgin image (V. Voiculescu, *Praise, Soft Light*), image of the Virgin Mary is shown as a means of potentiation of the numinous, referring to divine protection and upward projection. The image of the numinous woman usually contraries the female archetype who, after Gilbert Durand, belongs to terrestrial elements, "the eternal feminine and the feeling of nature go hand in hand."

At Sandu Tudor, the Virgin meets cosmic role of Mother Earth looking at Heaven, she represents "earth element in terms of nurturing motherhood, in terms of cosmic soul that feeds the worlds"²⁸ "Oh You, wise Mother, godly choice, / O ! You blessed and bright Bride / (...) / A! You, Holy Mother of Light-without-shadow / clear darkness from my blind wandering / make me see the holy pledge of your host / all the embodiment of Christ, I break the crooked path" (Kontakion IX)²⁹.

The reader of the *Akathist to St. Dimitrie the New Basarabov* "lives" metaphorically in the aesthetic ideas world, participating, by reading, in the process of sacralisation of the world by the light of love. God is revealed through *light* and Sandu Tudor customizes this situation by lighting effects that enlighten the nocturnal nature of spirituality. We note that the religious approach to poetic requires double attention: on the one hand, it is the way of reporting to divine and comprehension of divine authority which the poet addresses, on the other hand, is relevant to uptake this imaginary dialogue by lyrical ego. Both assertions imply a dyads, which in bachelardian language would translate through dialectic hardness and

²³Dumitru Stăniloae, *Viața și învățătura lui Grigorie Palamas*, (Sibiu: Seria Teologică, 1938), 79.

²⁴Ieroschimonahul Daniil de la Rarău (Sandu Tudor), op.cit., 27.

²⁵Mircea Eliade, *Istoria credințelor și ideilor religioase*, Editura Științifică și Enciclopedică, București, 1988, vol. II, p. 230. A se vedea și prima parte a volumului *Mefistofel și Androgenul*, Editura Humanitas, București, 1995, pp.11-70. Ea este consacrată experiențelor luminii mistice în mai multe religii, inclusiv în creștinismul isihast.

²⁶Ieroschimonahul Daniil de la Rarău (Sandu Tudor), op.cit., 20.

²⁷Ieroschimonahul Daniil de la Rarău (Sandu Tudor), op.cit., 27.

²⁸Paul Evdokimov, *Femeia și mântuirea lumii*. Traducere de Gabriela Moldoveanu, (București: Asociația Christiana, 1995), 228.

²⁹Sandu Tudor, op. cit., 67.

softness. All images are required through this dialectic of yes and no, the invitation and exclusion³⁰, descent and ascent³¹. The ekstastic type formula handlers image type which does not emphasize on the internalization of religious sentiment, but on his explanation, the conceptualization. Ekstastic type formula handlers with the image type which does not emphasize the internalization of religious sentiment, but on his explanation, the conceptualization. Sandu Tudor refuses the sterile word and has the ability to develop the **ekstastic mystics** in his texts. Understood by Christianity as the pinnacle of lucidity the ekstastic state is the way the mystic is revealed both to the outer world and also to the inner world. The imagistic scenario develops the state of ekstastic mystics, the exit out toward divinity. The Akathist-hymn poet, recipient of a profound inner metamorphosis is concerned with the change of material he works with - word - which he illuminates from the interior. Therefore Sandu Tudor conveys the mystical experience meaning in poetic experience, transfiguring the latter, until the discovery of its mystical dimension³².

His poetry is important by deciphering of its mystical significance, identifiable by its living research. Openings created by reflections, mystics and iconic anthropology developed in his akathist propose a model and a coherent analysis with Church Tradition and a genuine Christian vision of transposition dynamics in the word. The conventional image, even if it differentiates from Archetype, it still maintains a connection with him through a minor structure of meanings. In this type of image "*there is a homogeneity of signifier and signified*"³³, the picture representing a response, imagination, energy. This process that the poet Sandu Tudor uses, which we might call the "manipulation" of diurnal / nocturnal regimes, where the simple oxymoronic relationship is converted to total replacement, connotes a mystical transfiguration. Gilbert Durand ranges it among his favorite rhetorical techniques, calling it *double negation*. The changing process consists essentially in the fact that the affirmation can be constituted by denial that through denial or a negative act the effect of an initial negativity is destroyed. It can be said that the source of change of dialectical direction is the sense in the process of double negation lived on the image plane before the grammatical formalism is encoded. The poet places words above thought, which at the mystical and theological Christian level correspondsthe theory that Being, Person or Soul are above energies. Being as person is the unit itself and the causal model for the living unit at any level of existence. Broken from the connection with the soul the material energies destructure themselves, know the phenomenon of entropy and take death image. As a result of the fall, the material-energetic systems know structuring and destructuring, antagonistic guidelines internal or external. The matrix of structuralist thinking is the antagonistic energy logics, which reflects in itself the very state of falling in a Christian sense. The soul, however, transcends the antagonistic logic, it is also provides the unit beyond oppositions: "*O Thou, Father, old, you hold the world in your hand! / blaze without shade, I only can see Your halo,*

³⁰ "There are no images of matter without the dialectic of invitation and exclusion, dialectical imagination that will translate into countless metaphors, dialectic which sometimes will reverse the action of strange ambivalence, going to define, for example, hypocritical hostility of the softness or the annoying invitation of hardness. But the foundation material imagination lies in primordial images of hardness and softness ". (Gaston Bachelard, *Pământul și reveriile voinței*. Traducere de Irina Mavrodin, București, Editura Univers, p. 20

³¹ "There are actually two religious attitudes, one of which is the elevation, other to deepen, but both including a different person of us and to whom religious values adheres to such deep solidarity links, that every man can find only one God". (Tudor Vianu, *Opere*, vol. VIII, Studii de filozofie a culturii. Ediție îngrijită de George Gană, (București: Editura Minerva, 1979,) 118.

³² Dumitru Stăniloae, *Ascetica și mistica Bisericii Ortodoxe*, București, Editura I.B. M. B.O. R., 2002.

³³ Gilbert Durand, *Structurile antropologice ale imaginarului.. Introducere în arhetipologia generală*, Traducere de Marcel Aderca. Postfață de Cornel Mihai Ionescu, (București: Editura Universul Enciclopedic, 2000), 28.

/ guess as in a mirror! **Face of dazzling confusion!**" (Kontakion I)³⁴, "**Under Thy Holy light my heavy clay burnt**" (Canticle I)³⁵, You, our holy country, we speak with the new voice / like hungry for godliness, from temporality we sew/ **in the trappings of light and shade**, your thought." (Kontakion II)³⁶, "And in the third night, when from the heavenly hive / **the gold bees, swarming stars / black night flower**, was buried / your body of a hermit without coffin" (Canticle III)³⁷, "**white nun**". Therefore, the expression of the soul, the word, manifests the relationship between image and full units, between faces that communicate with each other. In the hymn-akathist, the words cease to be part of a system of antagonistic opposition. The poetic identity is grounded at a prereflexiv, preanalytical level, the sheer act of being self utterance: "*Glory to You, Trinity, Non-understood understanding / Glory to you, forever pure virgin bride, / Glory to you, Archangels, Heavenly armies, / Glory to you, O Most-holy, chosen, sealed spiritually / Glory to you, Dimitrie the New Basarabov, / to whom I sang this akathist by this Ceaslov Verse, / Increase a keep-forever through which the world, / Enlarge him forever in ages, Glory! Glory! Amen!*" (Kontakion XIII)³⁸. Hence the Sandu Tudor's need to recover the Auroral condition of poetic utterance that points to the first condition of the being in the theological sense. We note that the uncreated all bathing light experience which he lives is an experience of the transfiguration of all things and especially those earthly realities that seemed to have no spiritual status before being seen by the Spirit: "*So many awaken nights in you the stars devise / and the sun took your dreams, / so you could see the ones alive, / passing under your eye/ merciful, the crown, rings sanctified / good to be praised by the fallen heaven.*"³⁹ Apofatism is essential to define a coordinated knowledge of God in Orthodoxy. "Ignorance" actually means, silence, the inability to express in words the mystery of the Incarnation of the Son of God, "The birth of Virginité of without seed"⁴⁰. Apophatic sense of revelation is clearly of Christ in conversation with the Samaritan woman. This, seeking worship in Spirit and in Truth (Ioan 4, 24), finally finds the living water, that spring most perfect knowledge: "*From veil-high, far into the heavens overthrow / bell endless prayer, to fill all flesh. / Without words, only in thought, in silence I wear, / as an easy myrrh bud, our thought spotless.*"⁴¹

The Akathist, the norm-text that meets own aesthetic and visionary specific, foretastes of same mystical experience of overcoming the inertia of the world, with air filling, the filling with the Spirit's presence.

POETIC ASIDE: About the Messianic FUNCTION OF THE Hymn-AKATHIST

In *The Great Code - The Bible and Literature*⁴², Northrop Frye argues that Holy Scripture had a fruitful and continuing influence on Western literature, establishing an imaginative framework and a mythological universe as it evolved until the eighteenth century

³⁴ Sandu Tudor, *Acatistul preacuviosului părintelui nostru Sf. Dimitrie cel Nou boarul din Basarabov*. În Ieroschimonahul Daniil de la Rarău (Sandu Tudor), *Acatiste*. Prima ediție integral, îngrijită de Alexandru Dimcea, Gabriel Moldoveanu, Editura Christiana, București, p.16.

³⁵ Tudor, *Acatistul preacuviosului părintelui nostru...*, 18.

³⁶ Tudor, *Acatistul preacuviosului părintelui nostru...*, 20.

³⁷ Tudor, *Acatistul preacuviosului părintelui nostru...*, 27.

³⁸ Tudor, *Acatistul preacuviosului părintelui nostru...*, 67.

³⁹ Tudor, *Acatistul preacuviosului părintelui nostru...*, 22.

⁴⁰ Canonul cel Mare al Sfântului Andrei Criteanul.

⁴¹ Sandu Tudor, *Acatistul preacuviosului părintelui nostru Sf. Dimitrie cel Nou boarul din Basarabov*, în Ieroschimonahul Daniil de la Rarău (Sandu Tudor), *Acatiste*. Prima ediție integrală, îngrijită de Alexandru Dimcea, Gabriel Moldoveanu, (București: Editura Christiana), 63.

⁴² Northrop Frye, *Marele Cod - Biblia și literatura*, Traducere de Al. Sasu și I. Stanciu, (București: Editura Du Style, 1999), 214.

and, somehow, is still evolving. The return of the myth over the time is because Jesus Christ is the apparition of a superior nature, a transfigured nature above human life.

Since the concept of death and rebirth of Jesus is a religious concept, being the "result of an experience, not of a theoretical speculation – it is a mystery conception"⁴³ - a reading of these hymns-akathist in the key concept of deification is entirely legitimate and at least two other reading variants could be admitted here: one from the perspective of intertextuality, another of the archetypal criticism. This phrase - *life in Christ* – of Paul's, the Church Fathers called it deification. Thus, according to patristic teaching, the path of deification is **the union with Christ**, precisely because the union of the Archetype is the one that leads the man to his completion. To get here however, the human beings must gain some inner skills, must have overcome the evil within, and have learned with good thoughts. However, this way is just **the imitation of Christ**, the One who, in Himself, has overcome the powers of evil, defeating them by Resurrection.

Far from being an esoteric issue, a "*mythological fantasy*" or metaphysical speculation, **deification of Man** remains an inexhaustible theological and literary theme that deeply marks modern utopias and anxieties, representing a constant of human condition and history as a whole. If for some poets, Religious themes are ludicrous pretense for spelling the inner impulses of being –Lucian Blaga⁴⁴; or subservient ideology of ethnicity – Nichifor Crainic⁴⁵; projecting out into the immediate reality of the sacred – Tudor Arghezi⁴⁶; sacralization / churching nature - Ion Pillat⁴⁷ and V. Voiculescu⁴⁸, the mystic poet Sandu Tudor are pathways to Christ model. Formulas representation of a gender specific structures are dramatic interrogation, tragic dialogue, parable, the parable of exposure in the mirror: lyrical ego v God, and the prevalent images are the image that symbolizes the sofiatic flight, the image convention that turns into messianic image the nationalist poems explicit content⁴⁹.

Picture Convention represents a response, imagination, energy: "*images comme réponse. Images comme énergie*"⁵⁰. Link to the archetype is conserved because of this pulse image to which speaks Jean Burgos, which becomes not so dynamic single through both through plasticity. In *The Akatist of Our Allpious Father St. Demetrius The New, Keeper of oxen in Basarabov* convention image that appears is announced from the title which implies, on another scale, reporting to Christ. St. Demetrius' perfect simplicity of life inspired the young poet Sandu Tudor and he represents an ascetic ideal who, throughout his life, is committed explicitly in the process of updating the Archetype, sinking into oblivion and seeking of God. Demetrius was a very simple man, oxen keeper in Basarabi village, on the banks of the stream Lom, where, finally, stepped back out of sight of the crowd, becoming a hermit. Henceforth his life fulfilled in prayers remained almost unknown, even his grave

⁴³ Mircea Eliade, *Morfologia religiilor. Prolegomene*, (București: Editura Jurnalul literar, 1993), 83

⁴⁴ Vezi Dumitru Stăniloae, *Poziția domnului Lucian Blaga față de creștinism și ortodoxie*, București, Editura Paideia, Colecția de studii și eseuri, 1997; Constantin Noica, *Viziunea metafizică a lui Lucian Blaga și veacul al XX-lea, în volumul Lucian Blaga – cunoaștere și creație* (culegere de studii), coordonat de Dumitru Ghișe, Angela Botez și Victor Botez, (București: Editura Cartea Românească, 1987).

⁴⁵ Nichifor Crainic, *Spiritualitatea poeziei românești*. Cuvânt înainte și ediție îngrijită de Alexandru Condeescu, (București: Editura Muzeul Literaturii Române, 1998).

⁴⁶ Tudor Arghezi, *Scrieri 6, Poeme, Ce-ai cu mine, vântule? Printre psalmi*, (București: Editura pentru literatură, 1964).

⁴⁷ Ion Pillat, *Opere. Poezii. Volumul II (1917-1927)*. Studiu introductiv de Adrian Angheliescu. Ediție îngrijită, notă asupra ediției, bibliografie, note, referințe critice, indice de nume și postfață de Cornelia Pillat, (București: Editura Du Style, 2001).

⁴⁸ Vasile Voiculescu, *Călătorie spre locul inimii. Poeme religioase*. Ediție îngrijită și notă asupra ediției de Radu Voiculescu, (București: Editura Fundației Culturale Române, 1994).

⁴⁹ Jean Borella, *Criza simbolismului religios*. Traducere de Diana Morărașu, (Iași: Institutul European, 1995).

⁵⁰ Henri Michaux, *Emergences-Résurgences*, (Genève: Skira, 1987), 84.

being covered by flood waters and after a storm, and hid under gravel river bottom. More than a century and a half has elapsed over the hermit's relics until one night when he showed himself to a girl from his native village with terrible experiences of illness, and this girl was healed. Following the girl's indications regarding the location of his remains as it was shown in a dream, the villagers proceeded to dig in river and they found, indeed, the bones which they unearthed and placed them in a coffin to which then people nearby and around the world have come to pray for help. And miracles of healing did not slow to appear. Thus began his new and true life, given by the grace of God. In Dumitru Stăniloae's point of view, Jesus opens to the world not only the possibility to invoke a possible therapeutic world, but also transcending truth "through death to resurrection" death being defined by him as a needed and universal time which places the meaning of life in transcendent. As the sanctity of the oxen keeper hermit Demetrius was proven, the Patriarchy moved the remains in the patriarchal church, passing it among the Romanian saints, named Saint Dimitrie the New Basarabov. In this context, St. Demetrius is a "dynamic image" of Archetype which finds its meaning precisely in this way of deepening without ceasing into existence, which is a way of deifying communion: "*Stellar sign in your head inserted, / Pious, you stood over death that had hidden you, / (...) / and by you, thought climbs like a vine in heaven / and with thin hands touching Christ's garment, / so our spirits cure of flaming disease*" (Kontakion VII) ⁵¹. Communion with Christ renews the human being. If here on earth man is imperfect and unfulfilled, the need of deification becomes imperative in Sandu Tudor's view: "*You, with my unseen hand shadows, / to endure the heat of temptation, / to give me without delay! / love buds with abundance of facts, / do not ever try slave rebellion, / to break to the day, through devilish night / revived in the Lord, crystal awe, / kidnapping of stairs to tell the glory*" (Canticle IX) ⁵². Human nature, but simply could not complete its aspiration to perfection; she had to make union with Archetype: "*Holy Light that guides, / under humiliation prayers, do you feel and how, / through love your waking life in me increase / with soaring wings, eagle toward heaven*" (Icos IX) ⁵³.

Christ opened the way for achieving of this goal. God redeemed the man from the servitude of sin, the devil and death, but did the thing which Adam had not done; gave real existence through Christ, raising him to the rank of new creation. Therefore, Christ is the salvation of man, not only in a negative way, delivering him from the consequences of his forefathers' sin, but also positively, completing the iconic existence before the Fall. Human relationship with Jesus is not only a healing one; Human salvation is something much more than redemption, it coincides with the deification: "*Lord Jesus Christ, I am looking at the icon / which in a canon paints on wood, holy, the Crucifixion, / the ninth hour, when, Life Giver, / through the agony pain you redeemed your creation*" (Kontakion X) ⁵⁴.

Therefore, Sandu Tudor's norm-text *The Akatist of Our Allpious Father St. Demetrius The New, Keeper of oxen in Basarabov* develops an authentic anthropology because, as is stressed by Nikolai Berdyaev, it can be based only on Christic revelation: "*The universal fact of Christ appearance is the foundation of anthropology. Only in Christ and through Christ the universal act of human divine awareness becomes possible*" ⁵⁵. Thus, the Tudorian dogmatic Akathist, extensive poetical utterance, is built on Christian anthropological

⁵¹ Sandu Tudor, *Acatistul preacuviosului părintelui nostru Sf. Dimitrie cel Nou boarul din Basarabov*. În Ieroschimonahul Daniil de la Rarău (Sandu Tudor), *Acatiste*. Prima ediție integral, îngrijită de Alexandru Dimcea, Gabriel Moldoveanu, (București: Editura Christiana), 42

⁵² Tudor, *Acatistul preacuviosului părintelui nostru...*, 52.

⁵³ Tudor, *Acatistul preacuviosului părintelui nostru...*, 52

⁵⁴ Tudor, *Acatistul preacuviosului părintelui nostru...*, 52.

⁵⁵ Nikolai Berdiaev, *Sensul creației*, (București: Editura Humanitas, 1992), 85-86.

architecture, which posits human deification, defined as the interplay of human nature and the divine. The poetic discourse is held constant in the expression of humility emotion and faith. The man is pressed by the need of own progress as a human need, and that deification supposed by mystical involvement presupposes inhumanning of the man; it is an act of overcoming human objectivity by tracing its spiritual basis⁵⁶. Deification, the ascetic ideal of shimitics, does not refer to what is commonly called knowledge, but a reconstruction of the human in the perspective of what it should be; it is the result of "to be" instead of "to know": "*Putting away the sadness of the world, free from all blame, / in Christ clothed, kissing your holy bone / day of cross carriers to keep after your holy example, / unbridled Church*" (Kontakion XI)⁵⁷.

CONCLUSIONS

It seems clear that any effort of probing depths of the Tudorian imaginary in the Tradition of the Church and the Christian vision, in addition to identifying any veins or even suspicion of hidden links is forced to confront and explain the own developments, the way which is what we might call the original iconography of Sandu Tudor's imaginary. In this sense, from the trial and assumptions stage, analysis is urged to get and install in that area of approved prospections and safe design.

Aside from its Christian hymn or poem, The Akatist of Our Allpious Father St. Demetrius The New, Keeper of oxen in Basarabov is undoubtedly a profound expression of authentic theology, whose given doctrine is revealed clearly revealed in the context of a genuine lyricism, a work plan articulating aesthetic value. Hymn Akathist is actually a prayer. And not just any, but one for ontological transformation, because it springs from the heart chamber (Matei 6, 6), in the hidden recesses of the soul of an ascetic who put in the service of the creative act, Also Emperor Prophet, all the resources of his being lyric⁵⁸.

The contemporaneity of following Christ is explained by the feeling of unfulfillment that threatens at every step the circumstantial balance of human existence. However *The Akatist of Our Allpious Father St. Demetrius The New, Keeper of oxen in Basarabov* denotes the power exercised by the Archetype of the literature, the impact of Christianity on creative imagination. Therefore reading this akathist-hymn brings the mystical feeling in our hearts to reveal it to us, contributing to the activation of transfigure dynamics of faith.

The Akathist Hymn is primarily for every Christian, a state of prayer, which are not discussed, but are living; does not comment, but it feels. So as theological approach, analyzes and would assign, it would express little of the height at which amounted Hieroschemamonk Daniil and who calls us to live up to our turn, experts prayer in our own being.

The relocation of the kingdom of the Son of His love did good Lord with all those who have given their hearts fully Christian life building under the Mother of God in times of great need.

⁵⁶Sandu Frunză, *O antropologie mistică-introducere în gândirea Părintelui Dumitru Stăniloae*, Editura Omniscope, Craiova, 1996, p. 71. [*A Mystical Anthropology-Introduction in Father Dumitru Stăniloae's Thinking*, Omniscope, (Craiova: Publishing House, 1996), 71

⁵⁷Sandu Tudor, *Acatistul preacuviosului părintelui nostru Sf. Dimitrie cel Nou boarul din Basarabov*, în *Ieroschimonahul Daniil de la Rarău* (Sandu Tudor), *Acatiste*. Prima ediție integrală, îngrijită de Alexandru Dimcea, Gabriel Moldoveanu, (București: Editura Christiana), 59

⁵⁸ Vezi Sandu Daniil Tudor, *Taina Rugului Aprins, Scrieri și documente inedite*. Cu trei cuvinte mărturisitoare de Alexandru Mironescu, ÎPS Bartolomeu Anania, Arhim. Sofian Boghiu, (București: Editura Anastasia, 1999).

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GOLDEN ROOT GEOMETRY STRUCTURING THE POLYHEDRA AND OTHER FORMS VIA PLATO'S TRIANGLES

Quadrature of Circle

Panagiotis Chr. STEFANIDES¹

ABSTRACT:

UNDER GOLDEN ROOT GEOMETRY STRUCTURING THE POLYHEDRA AND OTHER FORMS VIA PLATO'S TRIANGLES, WE REFER TO THE BASIC GEOMETRIC CONFIGURATIONS WHICH, AS THIS THEORY CONTEMPLATES, ARE NECESSARY FOR THE PROGRESSIVE MODE OF FORMATION OF THE FIVE POLYHEDRAL AND THE GEOMETRIES INVOLVED IN THEIR SECTIONS AND RELATED CIRCLES AND FURTHER TO LOGARITHMS, VIA LINES, AREAS AND VOLUMES. BASIS OF ALL THESE STRUCTURES IS A VERY SPECIAL SCALENE ORTHOGONAL TRIANGLE "PLATO'S MOST BEAUTIFUL" [F25], TOGETHER WITH HIS ORTHOGONAL ISOSCELES ONE. STRUCTURAL FORMS ARE IDENTIFIED BEARING IN COMMON THESE TRIANGULAR IDENTITIES. THE PARTICULAR ANGLE OF THE SCALENE ORTHOGONAL IS THAT WHOSE $\text{ARCTAN}[\Theta]=T$ AND $T = \text{SQR}((\text{SQR}(5) + 1)/2)$

KEYWORDS: THE MOST BEAUTIFUL TRIANGLE, ORTHOGONAL SCALENE TRIANGLE, ORTHOGONAL ISOSCELES TRIANGLE, SOMATOIDES TETRAHEDRAL STRUCTURE, GREAT PYRAMID MODEL, POLYHEDRA, CIRCLES QUADRATURE, SPIRALS, SPRIALOGARITHM.

INTRODUCTION

By "Golden Root Geometry" we refer to two configurations of triangles. A Special one, the Quadrature Scalene Orthogonal Triangle [Author's interpretation of the Timaeic "Most Beautiful Triangle"] with sides $[T^3]$, $[T^2]$ and $[T^1]$ in geometric ratio T , which is the square root of the golden ratio $[\Phi]$, and the Isosceles Orthogonal Triangle, with its equal sides $[T]$. The surface areas of these triangles are taken perpendicular to each other and in such, naturally, defining an X, Y, and Z system of coordinate axes. In so, the coordinates of the first are $[0,0,0]$, $[0,0,T^2]$, $[T,0,0]$ in the X-Z plane, and those of the second are $[0,0,0]$, $[T,0,0]$, $[0,T,0]$ in the X-Y plane. A line from $[0,T,0]$ to $[0,0,T^2]$, creates the same Scalene Triangle in the Y, Z plane. $\text{ArcTan}[T]$ is the Scalene angle $[\Theta]$ of the Special Triangle with

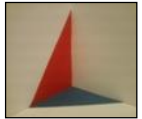
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the property that the product of its small side by its hypotenuse is equal to the square of its bigger side: $[T^1] \cdot [T^3] = [T^2]^2$ [Quadrature].

Using a pair of the Special Scalene Triangle, and a pair of a Similar Kind of Triangle [Constituent of the Special] with sides 1, T and T^2 [Kepler/(Magirus) Triangle with sides 1, $\sqrt{\Phi}$, and Φ] a Tetrahedron [dicta Form 1- F4, Somatoides] is



F1 [Lines]



F2 [Areas- Triangles]



F3 [Volume-3D Space]



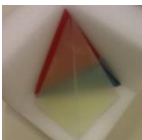
F4 [Form 1- red]



F5 [Form 2 - blue]



F6 [Form 3 - yellow]



F7 [F4+F5+F6]



F8



F9



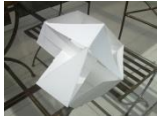
F10 [Back of F10]



F11 [Back of F9]



F12 [Icosahedron]



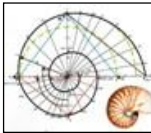
F13 [Dodecahedron]



F14 [Polyhedra]



F15 [Water Section]



F16 [Nautilus]



F17 [Spiralarithms]



F18 [Volume 3D Space]



F19

obtained, by appropriately joining the edges of the four triangles [F4], with coordinates: $[0,0,0]$, $[0,0,T^2]$, $[T,0,0]$ and $[0, 1/T, 1/T^2]$

By joining, a line, from point $[0,T,0]$ to point $[T,0,0]$, a Second Tetrahedron [dicta Form 2 – F5] is obtained [as a natural extension of Form 1], with co-ordinates: $[0,0,0]$, $[T,0,0]$, $[0,T,0]$ and $[0,1/T, 1/T^2]$, having as base, on the X-Y plane, the Isosceles Orthogonal Triangle mentioned above, with coordinates $[0,0,0]$, $[T,0,0]$ and $[0,T,0]$.

Doubling this triangle, in the X-Y plane, a square is obtained of side $[T]$, with coordinates $[T,T,0]$, $[T,0,0]$, $[0,0,0]$, and $[0,T,0]$.

By connecting a line from point $[T,T,0]$ to point $[0,0,T^2]$ a third Tetrahedron [dicta Form 3 – F6] is obtained with coordinates: $[T,T,0]$, $[T,0,0]$, $[0,T,0]$ and $[0,0,T^2]$,

having also as base, the Isosceles Orthogonal Triangle with same dimensions [mirror image] as that of [Form 2 – F5]. The three Forms are wedged firmly together, leaving no empty space between them. Their volume ratios Form 3: Form 1: Form 2 equal to $[1/6]*[T*T*T^2]$: $[1/6]*[1*T*T]$: $[1/6]*[T*T*(1/T^2)]$ is the golden ratio $[T^2]$, and the sum of volumes of Form 1 and Form 2 equals to $[1/6]*[1*T*T] + [1/6]*[T*T*(1/T^2)]$ equals to $[1/6]*[T^2+1]$ equal $[1/6]*T^4$ [SINCE $T^4-T^2-1=0$], the volume of Form 3. The volumes of the three Forms sum up to $[(2/6)T^4$ equal to $(1/3)T^4$].

Two of the four bases of Form 3, are symmetrical orthogonal triangles, with coordinates $[T,0,0]$, $[T,T,0]$, $[0,0,T^2]$ and $[T,T,0]$, $[0,T,0]$, $[0,0,T^2]$, each of which has an angle $[\varphi]$, equal to $\arctan[T^2]$.

Two such triangles joined in a coplanar manner, and symmetrically along their bigger vertical sides, create one of the four triangular faces of a great pyramid model with coordinates $[T, T, 0]$, $[0, 0, T^2]$ and $[T, (-T), 0]$.

The Structure of the Three Forms bound together [dicta Form 4 –F7] with Volume $[1/3]*T^4$ is one quarter of the volume of a great pyramid model [F8], which has a square base of side $2T$, height T^2 and Volume $[4/3]*T^4$.

Splitting one of this model's triangular face into two orthogonal coplanar triangles to form a parallelogramme [with sides T^1 and T^3], we have constructed the basic skeleton of the Icosahedron [F12], since three such parallelogrammes, orthogonal to each other, determine its twenty equilateral triangle bases, by joining adjacent corners in groups of three, by lines.

Similarly, we proceed to the construction of the dodecahedron, the tetrahedron, the octahedron and the cube, together with their related forms such as squares, circles, triangles, circumscribed circles to the parallelogrammes of the polyhedra skeletons, circumscribed spheres and logarithmic spirals [F14], [F15].[F16],[F17], [F20].

Reversing the whole process, the volumes decompose to the areas of the triangle surfaces structuring them which, in turn, resolve to four line traces harmonically codified in space [F19].

II. PLATONIC TIMAEUS TRIANGLES

The work as described above follows, according to my interpretation of Plato's Timaeus description of "The Most Beautiful Triangle" and further, basing on this, the structure of his "world" of his Polyhedra. Lines of triangles represent elements [combinations of the 4 philosophical ones: Fire, Air, Earth and Water]. Solids created bear the same names, but include a further solid the "Fifth Consistency" according to Plato's word, for the Dodecahedron [Aether].

IIA. Sections 53-54 of Timaeus

According to Plato's Timaeus,The conditions prevailed before the world was created, while all elements [FIRE, AIR, EARTH and WATER] were "WITHOUT PROPORTION" [alogos] and "WITHOUT MEASURE" [ametros], and only "TRACES" of them existed, as all things, naturally exist in God's absence. God, under these conditions, transformed them via "IDEAS" and "NUMBERS", for them to become "MOST BEAUTIFUL" and "BEST" as possible, contrary to their previous state.

.... Πρώτον μεν δη πυρ και γη και ύδωρ και αήρ, ότι σώματά εστί..... τρίγωνα πάντα εκ δυοίν άρχεται τριγώνοιν.... προαιρετέον ούν άύ των απείρων το ΚΑΛΛΙΣΤΟΝ..... ΤΡΙΠΛΗΝ ΚΑΤΑ ΔΥΝΑΜΙΝ ΕΧΟΝ ΤΗΣ ΕΛΑΤΤΟΝΟΣ ΤΗΝ ΜΕΙΖΩ ΠΛΕΥΡΑΝ ΑΕΙ"

In sections 53-54, of Plato's "Timaeus", Plato speaks about the triangular shapes of the Four Elements [traces existed in disorder –matter- before their harmonization by God], of their kinds and their combinations:

These Bodies are the Fire (Tetrahedron) the Earth (Cube), the Water (Icosahedron), and the Air (Octahedron). These are bodies and have depth. The depth necessarily, contains the flat surface and the perpendicular to this surface is a side of a triangle and all the triangles are generated by two kinds of orthogonal triangles: the "Isosceles" Orthogonal and the "Scalene" Orthogonal. From the two kinds of triangles the "Isosceles" Orthogonal has one nature. (i.e. one rectangular angle and two acute angles of 45 degrees), whereas the "scalene" has infinite (i.e. it has one rectangular angle and two acute angles of variable values having, these two

acute angles, the sum of 90 degrees). From these infinite natures we choose one triangle "The Most Beautiful". Thus, from the many triangles, we accept that there is one of them "The Most Beautiful". Let us choose then, two triangles, which are the basis of constructing the Fire and the other Bodies : "Το μεν ισοσκελές, το δε τριπλήν κατά δύναμιν έχον της ελάττονος την μείζω πλευράν αεί."

IIB. Proposed New Interpretation:

One of these two is the "Isosceles" Orthogonal Triangle, the other is the "Scalene" Orthogonal Triangle, its hypotenuse having a value equal to the "Cube" of the value of its horizontal smaller side and having its vertical bigger side the value of the "Square" of its smaller horizontal side. The value of the smaller horizontal side is equal to the square root of the Golden Number, the ratio of the sides is equal, again, to the Square Root of the Golden Number (geometrical ratio) and the Tangent of the angle between the hypotenuse and the smaller horizontal side is also equal to the Square Root of the Golden Number ($\Theta = 51.49-38-15-9-17-19-54-37-26-24-0$ degrees). The product of the smaller horizontal side and that of the hypotenuse is equal to the "SQUARE" of the bigger vertical side, and the following equation holds: $T^4 - T^2 - 1 = 0$, $T = \text{SQRT}[(\text{SQRT}(5) + 1)/2]$. The Kepler [Magirus] Triangle is a similar one but not the same. By "THE MOST BEAUTIFUL TRIANGLE", Plato correlates the four elements (UNIFIED THEORY) through the General Analogies of their sides (Fire, Air, Earth and Water), i.e. Fire/Air is equal to Air/Water is equal to Water/Earth, to T, where T is equal to the SQUARE ROOT of the GOLDEN NUMBER: $T = \text{SQR}((\text{SQR}(5) + 1)/2)$ (ό τι περ πύρ προς αέρα, τούτο αέρα προς ύδωρ, και ό τι αήρ προς ύδωρ, ύδωρ προς γήν, ξυνέδησε.....ουρανόν, Plato's Timaeus section 32).

IIC. Section 37 - 39 of Timaeus

According to Plato [Timaeus 37 -39]: ...He planned to make a movable image of Eternity, He made an eternal image, moving according to number, even that which we have named Time.... He contrived the production of days and nights and months and years ...And these are all portions of Time; as "Was" and "Shall be" are generated forms of Time...Time, then, came into existence along with Heaven, to the end that having been generated together they might also be dissolved together...this reasoning and design...with a view to the generation of Time, the sun and moon....and the other stars,...."planets", came into existence for the determining and preserving of the numbers of Time..... [Loeb].

Trying to understand the way possible for elements [according to Plato: traces - i.e. matter] to be joined together so that they compose matter, according to the geometry presented in this paper, we come to the following, possible, scenario:

In a static, but vibrating, field [Aether- Plato's reference to a Fifth Consistency, which God used up entirely to "colourfully paint" everything i.e. means by which matter is illuminated reflecting light from source (Fire) - electromagnetic medium], conductive [massive - "traces" of] elemental lines with alternating bipolar charges moving in it by the action of the field, should result into alternating currents running within them.

Two such lines could be contacted electrically at the ends of each line, via their + and - charges, and similarly three lines [in the harmonically correct lengths] could form triangles [orthogonal according to my theory], and in such forming a surface. Similarly by joining two pairs of such triangular forms [electromagnetically attracted by the currents running within them] could create materialistic volumes [tetrahedra]. Continuing, by these similar actions of electromagnetic forces, the joining of these materialistic volumes [tetrahedra] could result into further building blocks of matter.

According to my geometric theory [pure classical geometry, based on the Square Root of the Golden Section] such materialistic volumes [tetrahedra] build a Great Pyramid Model via which the structure of the world of the 5 Platonic [or Euclidean] solids.

We note that Plato states that everything that is born, it is born by necessity due to a cause, because it is impossible for it to be born without a cause.

With respect to world's creation, Plato states that, according to his thinking after having performed some assumptions, that three things exist before Heaven's coming into creation: Being, Place and Becoming.

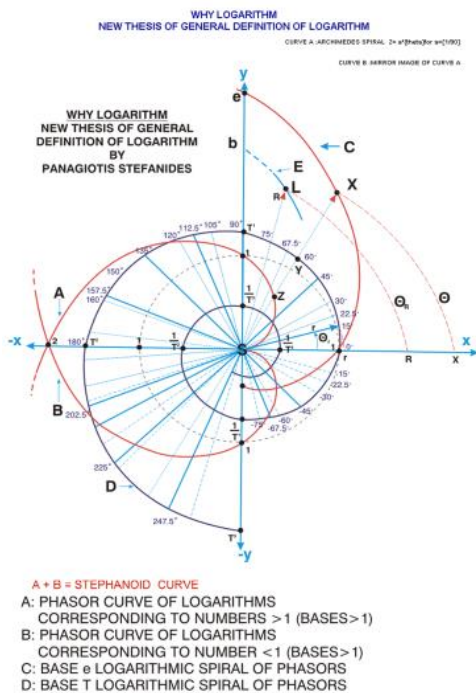
III. Circle's Quadrature [F19, F20, F21]

Structures built upon the form of the two Orthogonal Triangles, as described in this paper, have common relationships i.e. triangles, parallelograms, spirals, logarithms, squares, circles.

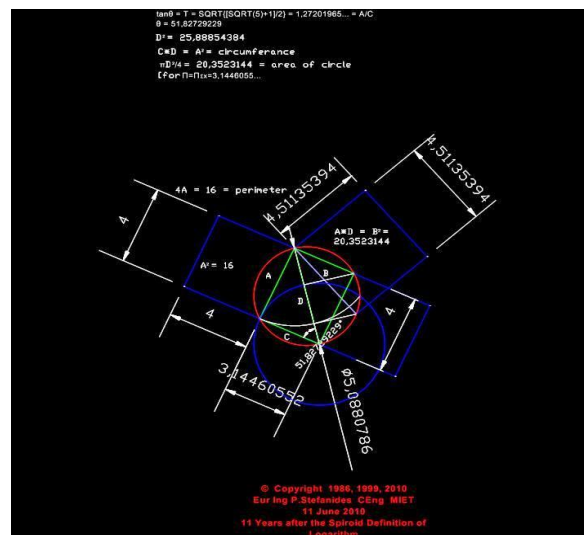
The main classical problem concerning circle relationships with the other geometric figures was that of its quadrature [conditions finding for its area to be equal to that of a square and its circumference equal to the perimeter of another square].

Plato's Scalene Orthogonal Triangle after lengthy elaboration, worked catalytically for forming a novel concept, for achieving the challenge of solving the "insoluble" problem of "quadrature of circle" [F21, F22, F23,], proving that the value of Pi should be quantized : $\pi = 4/[\text{SQRT}(\Phi)]$, i.e. Pi equals 4 divided by the Square Root of the Golden Section [= 3.14460551.....].

Further a [PCST] Point on the Circle, the Square ,the Triangle - Maximum Symmetry Point [F24], was conceived for demonstration that the value of Pi should be quantized to the value of : $4/[\text{SQRT}(\Phi)]$, as achieved ,also, by ruler and compass [F21, F22]. This serves as a gauge for estimating errors [shifts from PCST] of Pi values, used diachronically. { [F26] is the ruler and compass construction of angle Θ , via ϕ and Φ }.

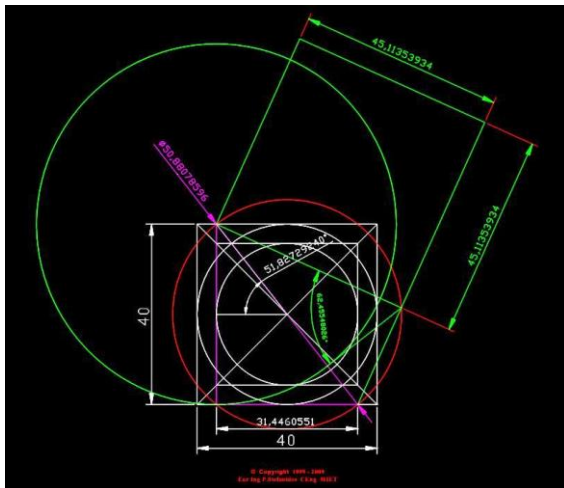


F20

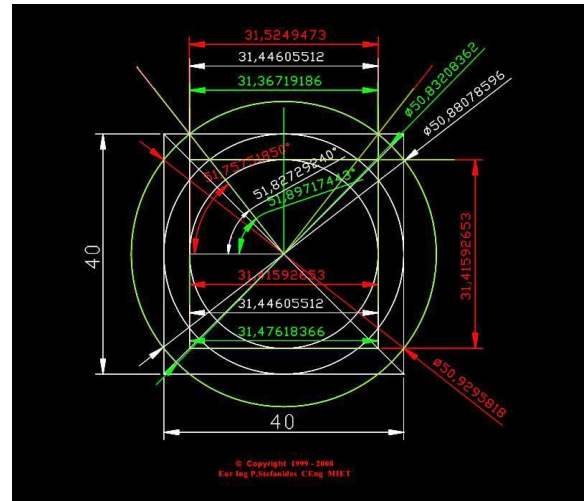


F21

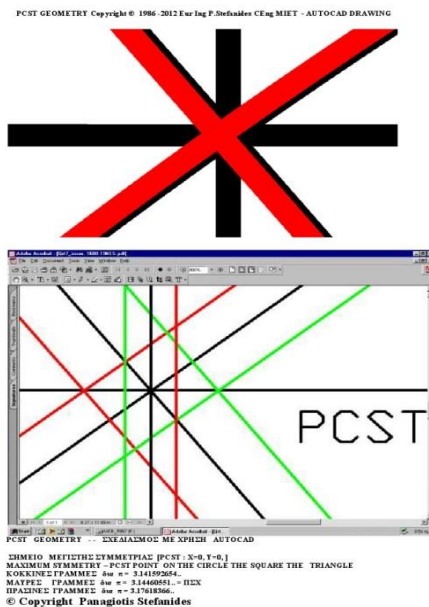
[F21, F22, F23, F24] AutoCAD Drawings
 Vector Definition and Geometry Design by Panagiotis Stefanides, Computerized AutoCAD
 by Dr. John Candyas



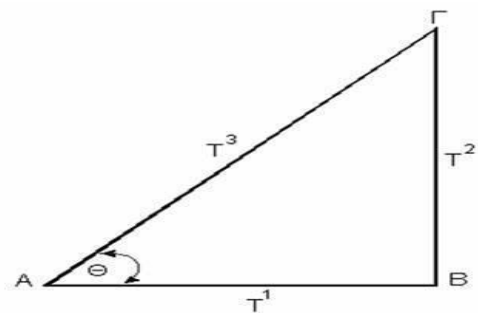
F22



F23



F24



$$T^4 - T^2 - 1 = 0$$

$$T^6 - T^4 - T^2 = 0$$

$$T^6 = T^4 + T^2$$

$$(T^3)^2 = (T^2)^2 + (T^1)^2$$

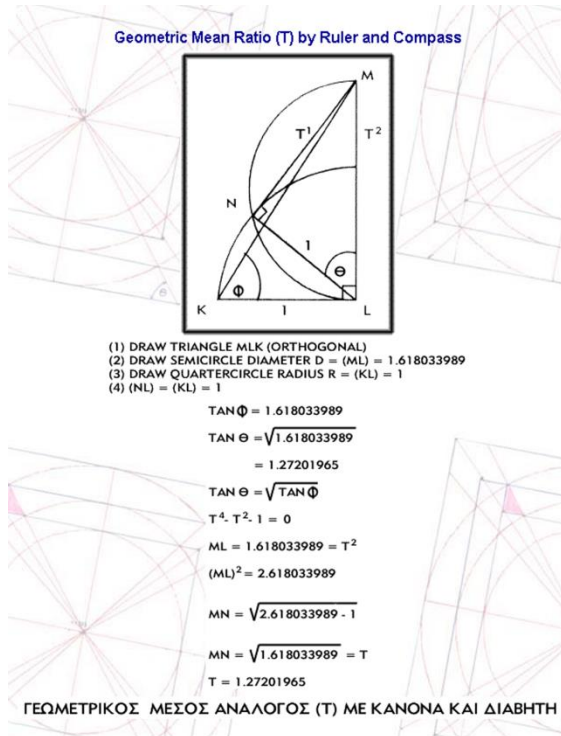
$$(A\Gamma)(AB) = (\Gamma B)^2$$

$$\text{TAN } \Theta = \frac{T^2}{T^1} = T$$

$$\Theta = \text{TAN}^{-1}(T)$$

$$\frac{A\Gamma}{\Gamma B} = \frac{\Gamma B}{BA} = T$$

F25



F26

III. CONCLUSIONS

Via the Golden Root Geometry we get relationships of Geometric structures, Logarithms and Spirals. It is concluded that by "THE MOST BEAUTIFUL TRIANGLE", Plato correlates the elements (Unified Theory) through the general analogies of their sides i.e. Fire/Air is equal to Air/Water is equal to Water/Earth, is equal to T the Golden Root. Finally, we realize Plato's statement that all triangles derive from two Orthogonal Triangles the Isosceles and the Scalene - "The Most Beautiful".

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ADDENDUM

Relationship of the Geometric Theory of the Proposed Plato’s “Most Beautiful Triangle” with the Specially Derived Spiral Logarithmic Curve Form the “Spiralalgorithm”.

Logarithm Spiroid Definition

A model, Logarithmic Spiral, Prototype Definition Of Logarithms

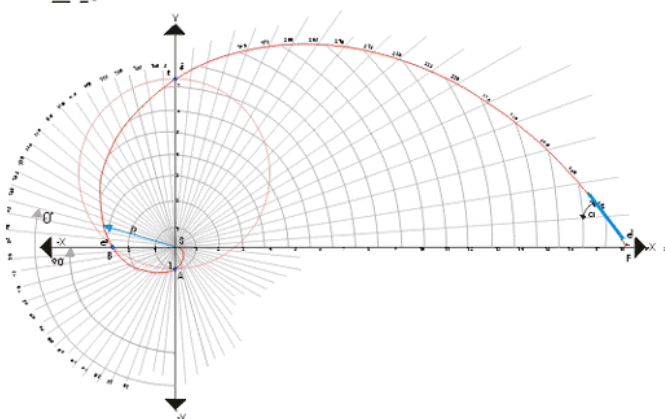
By definition $\text{Log}_e(R) = 2 \left[\frac{1}{2} \left(\frac{R}{R+1} \right)^2 + \frac{1}{2} \left(\frac{R}{R+1} \right)^4 + \frac{1}{2} \left(\frac{R}{R+1} \right)^6 + \dots \right]$

By this model theory: $\text{Log}_e(R) = \left(\frac{R}{R+1} \right) = \left(\frac{R}{1+\text{TAN}a} \right) = \left(\frac{R}{1+\text{TAN}a} \right) R$

And $R = e^{\left(\frac{R}{R+1} \right)}$

$$\left(\frac{R}{R+1} \right) = \left(\frac{R}{1+\text{TAN}a} \right)$$

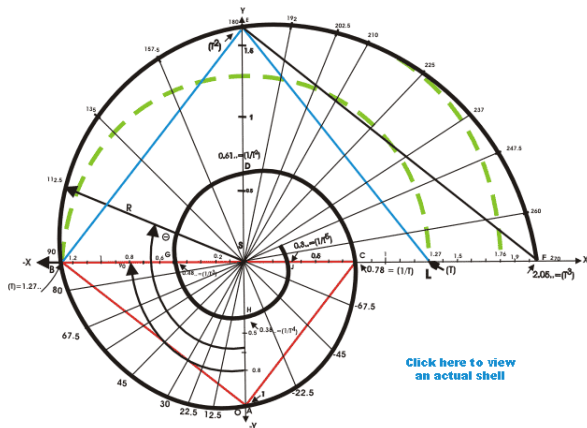
$$\text{TAN}a = \frac{R}{R+1}$$



APPLICATION EXAMPLES: MODEL FIXING VALUES:

- 1) To Find Log of a number
move a long circular arc,
locate angle Θ and divide by 90.
 $\left| \frac{SA}{SB} \right|$ Necessary pair, phased 90°
other points $SE=e^2$ and $SF=e^3$
(e =Base of natural Logarithms
It may be replaced for bases 10,2, etc.)
- 2) To find nth/root/power
divide/multiply Θ
by N and measure
vector (R) along
X-axis.
- 3) Multiplications / divisions
by additions/subtractions.

NAUTILUS LOG [T] BASE SHELL CURVE



NAUTILUS LOG BASE $\sqrt{10}$ SHELL CURVE
COPYRIGHT PANAGIOTIS STEFANIDES SEPT 2001
 $T = \sqrt{10} = 3.1622776601683793319988935444327185$

SET OF X - Y AXES
CURVE CROSSES AXES AT:
A = $T \angle 0$ deg
B = $T \angle 90$ deg
E = $T \angle 180$ deg
F = $T \angle 270$ deg

$$\text{Log}(R) = \frac{\Theta}{90} = \frac{\Theta \text{ rad}}{(\frac{\pi}{2}) \text{ rad}} = \frac{(\frac{\Theta}{180})}{(\frac{\pi}{2})}$$

VECTOR SB = BASE (T)
AT 90 DEG
CLOCKWISE,
FROM:
VECTOR SA = $T \angle 0$
R, ANY VECTOR WITH
ANGLE Θ ,
CLOCKWISE FROM SA
POSITIVE, AND
ANTICLOCKWISE
NEGATIVE.

1. CURVE, APPROXIMATES, VERY CLOSELY,
TO A NAUTILUS SHELL, FROM
SYROS ISLAND (HERMOUPLIS),2001.
2. NAUTILUS SHELL, FITS APPROX. WITHIN
C D G H J, WITH DIMENSIONS (FACTOR 10):
GC = 12.8 CM (THEORETICAL 12.7201965...)
HD = 10.3 CM (THEORETICAL 10 CM)
3. THEORY FOLLOWS:
LOGARITHM SPIROID DEFINITION
<http://www.dotcreative.com/stefanides/logarithm.htm>
<http://www.stefanides.gr>
panamars@otenet.gr
4. BASE(T), LOG EXAMPLE = $\frac{210}{90} = 2.333...$ (THEOR: 2.34...)
(R = 1.76): $\text{LOG}(1.76) = \frac{210}{90} = 2.333...$ (THEOR: 2.34...)
5. TRIANGLE ABC HAS SIDES : T^1, T^2, T^3 , (PLATOS MOST
BEAUTIFUL TRIANGLE, PROPOSED IN CONFERENCES BY
P. STEFANIDES)
TAN [(BCA), ANGLE J] = T (THEORETICAL)
(BCA) ANGLE = 51 DEG, 49 FIRST, 38 SECOND.....
(MODEL, GREAT PYRAMID (BEL) SECTION SLOPE)
[Http://www.dotcreative.com/stefanides/piatostriangle.htm](http://www.dotcreative.com/stefanides/piatostriangle.htm)
<http://www.dotcreative.com/stefanides/piato.htm>

<http://www.stefanides.gr/Html/logarithm.htm>
<http://www.stefanides.gr/Html/Nautilus.htm>

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CONSCIOUSNESS, FREE WILL, AND TRANSFORMATION*Science and Ancient Samkhya***Gramann PRATIBHA¹****ABSTRACT:**

THE EXISTENCE OF FREE WILL HAS BEEN DISCOVERED BY NEUROLOGICAL STUDIES. HOWEVER THERE IS A LACK OF RESEARCH IN WHAT INITIATES THE FIRING OF FREE WILL WITHIN THE NERVE ENDINGS. THIS PAPER ADDRESSES THAT ISSUE USING ANCIENT KNOWLEDGE ABOUT CONSCIOUSNESS, THREE ENERGIES OR GUNAS THAT CHARACTERIZE MATERIALITY, PRANA, AND TRANSFORMATION. THE PREMISE IS MADE THAT REGULAR PRANAYAM BREATH PRACTICES ARE KEY METHODS TO INITIATE THE FIRING OF NERVE SYNAPSE IN THE BRAIN TO DEVELOP FREE WILL AND TRANSFORMATION.

KEYWORDS: CONSCIOUSNESS; MATTER; SAMKHYA; FREE WILL; ENERGETICS; TRANSFORMATION.

INTRODUCTION

Some people claim that there is no free will in life. For those persons, there probably is no free will, choice, opportunity, or transformation. It can be a depressing situation. Samkhya philosophy offers a new opportunity of investigation for the modern mind. Samkhya was written by Kapila more than 2500 hundred years ago, prior to the era of Buddha. It is atheistic and dualistic. It gives a complete explanation of creation, the life principle, the principle of matter composed of three energies, the makeup and functioning of the mind, the factors that lead to a person's transformation away from mental suffering and painfulness, and the concept of liberation².

Samkhya consists of two independent, eternal, co-existent principles and is therefore dualistic. Non-duality occurs rarely in the human person. Even in meditation when the thoughts are stilled, there is a dualism between self and observation of the stillness. As long as there is a sense of self and objects or other, there is duality³.

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² Chakravarti, Pulinbihari, Origin and Development of the Samkhya System of Thought. (2nd ed.) (New Delhi: Munishiram Manoharlal, 1975).

³ Aranya, Hariharananda Sw., Samkhya-yogacharya., Yoga Philosophy of Patanjali. (4th ed.) (New York: State University of New York, 1983).

DEBATE: SCIENCE AND CONSCIOUSNESS

Science has yet to solve the mystery of consciousness. By that is meant: Is consciousness a separate principle or an integrated component of matter or nature. Neuroscience seems to be closing in on discovering the type of relationship that links consciousness and matter. Studies that track the brain's neural activity and the synaptic jump between nerve endings suggest clues. Studies about the brain conducted by Peter Tse at Dartmouth opens up the question about the root of the firing of neurons. What is the process that initiates the firing, or synaptic jump between nerve endings? Professor Tse argues that free will can be pinpointed by the microscopic workings, the firings found within the nerves. He finds philosophical roots to affirm the human free will in psychologist William James and in Charles Darwin⁴.

If free will exists, what is the root of the free will that is observed in the brain? What enlivens the firing of the nerve endings?

Free will in the context of this exploration means one-pointedness, clarity, ability to direct attention, and choose responses, including more creativity. It means control over the mind's ordinary pattern to have reactionary responses, and to jump from one thought to another without connectivity.

CONSCIOUSNESS, MATTER, AND BREATH

Two separate, eternal principles characterize Samkhya. These are consciousness *purush* and matter *prakriti* often referred to as nature. The two principles are described as ever existing in proximity of each other, though they do not interact. Each is eternal and separate, and they have a relationship. Matter works because it is in the proximity of consciousness. Consciousness enlivens the otherwise inert matter. Consciousness is like an inspiration that ignites matter to express its potential⁵. Relative to the premise of this paper, nerve endings are enlivened by the consciousness within prana and pranayam breath practices.

Consciousness is transported within human form and all organisms by way of prana. Breath plus consciousness equals prana. Breath is related to air and wind, and these carry what is in their vicinity⁶.

This is the path by which consciousness pervades the body and the mind. It is carried to every corner and space from large to small, including minute tissues and unseen nerve endings where synapse occurs.

The relationship between consciousness and matter is the same as the relationship between a living and dead body. At the time of death, the breath and consciousness leave the body.

Consciousness: The characteristic of consciousness is to pervade, and it is the principle of illumination, unseen. Perhaps it is like the unseen principle of electricity that is behind light. Consciousness remains an undivided principle of oneness, no matter how many forms it enters. Consciousness within is no different than the consciousness of the macrocosm. Consciousness within is like a magnet around which matter accumulates⁷.

Internally, consciousness brings awareness to the mind, to the intellect, thought, feeling, and sense of self. It acts like a mirror, reflecting what is presented to it. The mirror

⁴ Tse, Peter, *The Neural Basis of Free Will: Criterial Causation*. (Cambridge: MIT Press, 2013).

⁵ Virupakshananda, Swami, *Samkhya Karika of Isvara Krsna*. (Madras: Sri Ramakrishna Math, 2006).

⁶ Larson, G. James and Bhattacharya, Ram Shankar, *Encyclopedia of Indian Philosophies*, vol.4, *Samkhya A Dualist Tradition in Indian Philosophy*. (Delhi: Motilal Banarsidass, 1987).

⁷ Rao, K. Ramakrishna, *Consciousness Studies: Cross Cultural Perspectives*. (North Carolina: McFarland, 2002)

never changes, though one might experience a change as a result of observing one's reflection. Reflections bring an increase in awareness.

The sun could be compared to consciousness because its light brings objects into awareness. However the sun has form, and consciousness has no form. Rather, consciousness is the illumination that enlivens the sun's characteristic of light.

A further description of consciousness could include investigation of the phenomenon of air. It pervades everything. Air is knowable because it has discernible qualities. Amount of dampness or cleanliness can be cognized, even measured. Imagine each molecule of air having a small mirror (consciousness) inherent in its structure. This tiny spot of consciousness belongs to the expansion of consciousness that exists everywhere. Differences exist between air and consciousness because air is discernible. There is no materiality to discern in consciousness. It is the inherent principle of illumination⁸.

The power of illumination can only be inferred. Because we can feel the moisture in the air, kindness, friendliness, warm-heartedness, the presence of a free will, a freedom, and the understanding that synapse occurs in the brain—awareness of these phenomena is due to consciousness. The ears hear and the eyes see because there is a spot of consciousness within their tiny tissues, making them enlivened, giving life to their physical form.

Materiality, Tangible and Subtle: The principle of matter *prakriti* is the opposite of consciousness. It is composed of innumerable configurations of three energies *gunas*: light *sattwa*, motion *rajas*, and dullness *tamas*. In Samkhya, these three energies perform the activity in everything, even in the unseen such as thought⁹.

Working consciously with these energies, a person can bring about change and free will. Breath belongs to the domain of matter. In pranayam, consciousness and breath are attached. Breath carries consciousness throughout the body and mind. Every tissue, space and subtle nerve ending is enlivened.

Light and knowledge in combination contain the largest amount of consciousness. It is the energy of light combined with intelligence that inspires the will to desire change. The thoughts of having more choices and freedom from mental pain become the desire for free will. The question then becomes how to develop free will.

TWO ETERNAL PRINCIPLES AND THREE MUTABLE ENERGIES

The following outline summarizes the characteristics of the co-existent, separate, eternal principles: consciousness *purush* and matter *prakriti*.

Consciousness

- Immutable and Formless. Known by inferring that something exists beyond the physical and mental.
- Pervading Illumination that Enlivens Matter
- Instrumental to Creation, But Not a Cause.
- Eternal, Supreme Spirit

Materiality / Nature

- Mutable Cause of All Manifested Phenomena
- Eternal, Supreme Matter-When the Energies are in Equilibrium
- Consists of 3 Energies:
 - Sentience, Light, Purity *Sattva*

⁸ Ramakrishna, Consciousness Studies...

⁹ Ramakrishna, Consciousness Studies...

- Action and Activity, Intelligence *Rajas*
- Inertia and Dullness *Tamas*

When creation begins, the three mutable energies of matter begin to operate. It is the action energetic that falls first out of equilibrium. It is the only energy that has motion, and it initiates all change. The three energies continually work together, and their combinations are innumerable. One of the energies predominates in every configuration, except in equilibrium¹⁰.

An example: There are three types of sleep, each dominated by one guna. A sound, deep, restful sleep is sattvic. Upon awakening, one feels refreshed and one-pointed. A restless sleep is rajasic. Upon awakening, one does not feel refreshed. A heavy, unrefreshing sleep is tamasic. Upon awakening, one wants more and more sleep. Each type contains all three gunas. The body belongs to the tamasic factor. The mind belongs to the sattvic. Its influence makes the mind peaceful and one-pointed.

UNIVERSAL MIND – DYNAMICS OF CREATION

The first stage of creation is known as *hiranyagarbha* or cosmic egg. Hiranyagarbha contains all of creation's mutable principles as universal mind. The principles evolve, mutations form, and the cycle expands. From a scientific perspective of atoms, molecules, DNA, and minute unseen nerve endings in the brain, could these arise from a universal pool that is the same pool as universal mind described in Samkhya?

Evolution of the principles create first the sky, oceans, plant, and animal life. The same mutable principles created the human form, characterized by the most refined intellect. Each species evolved separately. Humans are the only species capable of evolving their minds. They can take up specific practices, develop awareness, study, make intentions, and go beyond the painful situations and sufferings that occur in life, a transformation¹¹.

The energy of action *rajas* has a full range of activity from soothing to heating. In the first stage of creation, rajas is associated with intellect *buddhi*. Combined with light *sattva*, these two give rise to intelligence. Could rajas as the first energy that fell out of balance, be associated with the Big Bang?

CREATION OF HUMANKIND

The first formation of the universal, cosmic mind is the "I-Sense." This purity of identity evolved into the descended manifestation of "I - Am" which is characterized by attachments. This includes ownership to objects, and to qualities, such as "I am hungry, I am happy, I am intelligent, I am a parent, I am a teacher," and on and on.

The formation of the psychophysiological continued in accordance with the operation of the three gunas. The "I- Am" developed into three types of ego: *Sattva* ego of sentience and light, *Rajas* ego of action and activity, and *Tamas* ego of dullness and inert matter. All of these formations are needed in order to delineate a complete creation for a full life, the ability to involute and experience universal mind, and the ability to attain consciousness and liberation¹².

Sattva-predominate ego manifests into the human mind, the powers of perception, and purified emotions. The fact that we can read, learn, and solve problems is an activity of *sattva* energy. *Sattva* is closest to consciousness as it has the qualities of light and knowledge.

¹⁰ Swami, Samkhya...

¹¹ Shankar, Encyclopedia of Indian Philosophies...

¹² Shankar, Encyclopedia of Indian Philosophies...

Rajas-predominate ego manifests into the powers of action to change and transform, and into the identifying, individual experiencer. Accomplishment in a specific job involves action *rajas*, along with identification with the work and its rewards.

Tamas-predominate ego manifests into the qualities of the senses, attachments, emotional discontent, nerves and tissues associated with moisture, heat, air, the non-physical sensations such as pain and pleasure, and all gross-knowable form. The material body is a phenomenon of *tamas*.

Overeating, oversleeping, obsession with drugs, drinking, sex, or any addiction belongs to the energy of *tamas*. Excesses increase attachment to the object, and this builds more attachment. Excesses trap the psychophysiology and lead to dullness and inertia.

FUNCTIONS OF PRANA

Pranayam is an intervention of breath practices that works with the three *gunas* within. It can change the configuration or code of a particular pattern of behavior, mind-set, or even an addiction. Pranayam increases one-pointedness. When this ability to direct attention is applied to one's work or to relationships, transformations occur. These become a mirror of what is happening within. Examples from my study are given later.

Pranayam works through a system of five *pranas* located in different parts of the mind-body. Their function is to initiate the processes of the psychophysiological. The domain of the *pranas* includes the nervous system, and thus the firing of nerve endings.

One of five breaths is also named *Prana*, the one in the heart, lungs, and frontal lobes of head. *Apana* is located in the navel and lower portions of the body for eliminative. *Samana* or the digestive and nutrient breath, resides between the navel and the heart. *Udana*, the breath of intelligible sounds for communication, is located in the throat, nose, and brain. *Vyana*, or diffused breath maintains general circulation, and the physical and emotional balance. It is located in the extremities¹³.

Pranayam breath practices make use of all three *gunas*. The nostrils belong to materiality *tamas*. The moving breath belongs to action *rajas*, and the breath united with the unseen nerve endings increases *sattva*, that has an affinity with the totality of consciousness.

NEUROSCIENCE AND THE GUNAS

Tse refers to pre-synaptic action as the causation factor that triggers neuronal circuitry. Could the causation factors that trigger neuronal activity be the operation of the three *gunas*?

Samkhya philosophy is based on cause and effect. If causation factors in neuronal circuitry are characterized by the *gunas*, these could be the pre-determined cause that act like an automated code, giving rise to a specific type of neuronal firing.

The cause determines the response. In the example of a father who immediately expresses anger when approached by his son, there is a code set up in the father's mind that kicks in at the sight of his son, or even at the thought of his son. This response is due to a pre-set inner code, pre-determined by rajasic and tamasic energies. If the father was operating from the standpoint of free will, the father would respond according to the present moment. He would not automatically react due to a pre-determined code of anger.

If a person wants to kick the habit of oversleeping, a *tamas* dominate activity, a pre-synaptic setup can change the person's behavior when it is time to get up. More *rajas* and *sattva* predominance would help to counteract. This author suggests that pranayam can change the characteristic of the firing. Tse would use methods that are scientifically

¹³ Shankar, Encyclopedia of Indian Philosophies...

measurable. Still, the scientific methods that change the circuitry are characterized by a predominant guna.

The gunas are not ethereal energies of illusion. Rather, Samkhya philosophy holds that the gunas are the substratum of all creation, every phenomenon. If so, they would have to evolve into every atom, particle, the chemistry of thought, tiny nerve endings, and synapse. It may be a leap in thinking to consider everything as phenomena caused by light, action, and inertia, yet worthwhile consideration.

BRAIN, ENERGETICS, AND PRANAYAMA

Science is confirming a location of free will in the brain. The firing of neurons in synapse demonstrates this process¹⁴. Could the actions of light, motion, and dullness be responsible for the firing? Can the movement of prana influence the movement in the brain of these energies?

Ancient breath practices *pranayam* are a key method to activate the flow of prana. Pranayam knits the breath with the nerves. In turn the processes of the body and mind are initiated. This includes activation of brain cells. It is entirely possible that pranayam helps the nervous system and brain to develop qualities. Will power is a quality associated with one-pointedness and firmness. If free will develops, choice, and opportunities are natural outcomes.

Pranayam is a two-part word. In Sanskrit, prana means life, and yama means death. Together pranayam means giving life to protect from death. This includes prevention of decay of the physical and mental. At different stages of life, there is a gradual change that lessens the mind's concentration power¹⁵. Regular pranayam can keep this force intact. It also reduces the need for physical exercise.

A STUDY: EFFECTS OF REGULAR PRANAYAM

This author carried out a study to investigate the effects of pranayam on long time regular practitioners of pranayam.

The mixed-methods study examined the perspectives and experiences of long time practitioners regarding their daily pranayam breath practice. The aim was to explore the influence of pranayam on focus and attention, and its collateral effects on everyday life, especially work and relationships¹⁶.

Nine subjects working in different professions were interviewed. Then they responded to twelve statements using Likert Scales. The interview data was analyzed for themes, while the mean, median, and mode was calculated for the Likert Scale data. The qualitative and quantitative data were then compared to each other.

The analysis of the interview transcripts revealed 7 themes: pranayam procedures, focus and concentration, influence on work performance, influence on relationships, health and diet, spiritual views, and the single most salient influence of pranayam on everyday life. The analysis of the Likert Scale showed high levels of agreement with the interview data in the areas of focus and attention span; clarity; ability to overcome feelings of suffering and grief; physical and mental stamina; ability to experience kindness and compassion; discipline or self-regulation; quality of relationships; preparation for deeper levels of meditation; enhanced performance for the rest of the day; ability to experience deeper insights; ability to

¹⁴ Tse, Peter, The Neural Basis...

¹⁵ Ramakrishna, Consciousness Studies...

¹⁶ P. Gramann. (2012). "An exploration of the effects of pranayam breath procedures on work, relationships, health, and spiritualit," Saybrook University, [dissertation] <http://gradworks.umi.com/35/63/3563528.html>.

make changes; and agreement that sitting in quiet meditation after pranayam increased its influence.

Likert Scale: Graph of Mean, Median, Mode

| | | | Q | U | E | S | T | I | O | N | | |
|--------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Resp A | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 5 |
| Resp B | 5 | 4 | 4 | 4 | 3 | 4 | 3 | 5 | 4 | 4 | 4 | 4 |
| Resp C | 4 | 4 | 3 | 4 | 3 | 4 | 4 | 5 | 3 | 4 | 3 | 4 |
| Resp D | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 3 | 4 |
| Resp E | 5 | 5 | 5 | 3 | 4 | 3 | 4 | 5 | 4 | 3 | 4 | 5 |
| Resp F | 5 | 5 | 5 | 5 | 5 | 4 | 5 | 4 | 5 | 5 | 5 | 5 |
| Resp G | 5 | 5 | 5 | 5 | 4 | 5 | 5 | 5 | 4 | 4 | 4 | 5 |
| Resp H | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Resp I | 5 | 4 | 5 | 5 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4 |
| MEAN | 4.78 | 4.56 | 4.56 | 4.44 | 4.11 | 4.22 | 4.44 | 4.78 | 4.22 | 4.22 | 4.00 | 4.56 |
| MEDIAN | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 5 |
| MODE | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 5 |

QUANTITATIVE FINDINGS OF THE LIKERT SCALE

Below is a description of the essential themes that were assessed in the 12-statement Likert Scale, Table 1. Nearly all the responses were in the range of Strongly Agree or Agree at the top of the five-point scale. There were a few responses of Neither Agree or Disagree. There were no responses at all in the lowest two categories of Disagree or Strongly Disagree. A description of the 12 themes on which the participants marked their degree of agreement or disagreement follows:

- 1) *increase of attention and concentration*
- 2) *increase of clarity*
- 3) *helps to overcome feelings of suffering and sorrow*
- 4) *stamina to work longer without tiring*
- 5) *enables increased ability for kindness and compassion*
- 6) *helps increased discipline or self-regulation*
- 7) *improves quality of relationships*
- 8) *prepares one for deeper levels of meditation*
- 9) *influences performance for the rest of the day*
- 10) *leads to deeper insights about life*
- 11) *helpful to make a change in one's life*
- 12) *silent sitting meditation enhances the influence of breath practices.*

The Likert Scale in Table 1 is read from a vertical position starting with the statements at the top. The value assigned to each response is: Strongly agree, 5; Agree, 4; Neither agree nor disagree, 3; Disagree, 2; Strongly disagree, 1.

The statistical result of each statement's mean, median, and mode fell in the range between 5 and 4.

MEAN = Arithmetic average of set.

MEDIAN = Middle number in set arranged from lowest value to highest.

MODE = Number that occurs most frequently in a set.

Results of 5 and 4 indicate a high correspondence of agreement that a regular pranayam breath practice influences the participant's mental, psychological, and other aspects of daily life.

The main implication of this mixed-methods study is that a regular practice of pranayam breath procedures can be beneficial. The most provocative result was the influence of pranayam on the ability to direct attention. Examples included enhancement of focus on a work task, improved interactions, holding a conversation without interruption of extraneous thoughts, a good sense of self, less reactive irritable responses, mindfulness and increased awareness, the state of presence, and peacefulness in everyday life¹⁷.

CRITERIAL CAUSALITY AND GUNAS

Tse writes about criterial causality as a way of developing a strong will. This consists of setting up physically realized criteria in advance for behaving in a certain way given certain types of future input. Tse explains that the nervous system can change the physical ground for which a future choice is made. Criterial decoders are setup by changing weights on synapse by either using a rapid or a slow long-term potentiation¹⁸.

A synapse would be rajas dominate due to its movement. It will either change the sattva constituent toward tamas, or change the tamas constituent toward sattva. The gunas have a continual interplay. Something has to monitor and regulate the interplay in order for it to remain stable in a specific combination. This would be the mind affected by neuronal activity, pranayam, and other factors, all having a base of light, action, and dullness or inertia.

Tse refers to making arbitrary linkages of neurons that connect input and output of behavior that makes the human mind both abstract and flexible. It allows neurons to alter realization of future physical events in a way that escapes the problem of self-caused mental reactions. This is done by pre-setting the code of a neuronal firing and changing the weights on a synapse¹⁹.

PARTICIPANTS REPORT BEHAVIORAL CHANGES

If neurons are changed and strengthened in pranayam practice, it is a way to set or reset the code of the mind for future behavior, self-determination, and free will. Could pre-setting a code arbitrarily with weights on a synapse give the same results as regular pranayam? Both affect the neurons and the synapse.

Findings from my study of subjects who do regular pranayam revealed that behavioral changes occurred for them. Examples follow.

The attorney participant joined his wife who regularly complained about his late arrival to the breakfast table. Instead of his ordinary defensive, reactionary response, he found that pranayam gave him an option. He listened calmly and felt no need to argue. This improved the relationship. He felt that improvement in relations was a collateral benefit of pranayam practice, and this was due to increased ability to direct attention at will.

The business owner had a son as an employee. It was a particularly difficult relationship characterized by angry outbursts. After doing regular pranayam meditation, he

¹⁷ Gramann. (2012).

¹⁸ Peter, The Neural Basis...

¹⁹ Peter, The Neural Basis...

found that he approached situations differently. He was a better listener and had patience. He began to model to his son the process that needed to be learned. This style of relating improved his relationship with his son.

The filmmaker reported an increase in stamina. After morning pranayam practice, he was able to hold the camera for long periods without tiring. He was able to interact with many crew- members without losing his attention on the work.

The dietitian reported improved interactions with clients. She was able to interview and counsel without arguments. General increase in good feelings about herself was reported.

The engineering manager reported an increased ability to handle arguments in meetings. The pranayam increased for him a clarity and creativity for facilitating decision-making among team members.

Both methods, presetting a code and pranayam practice, provide options for transformation, for behavior change, new choices of relating, one-pointedness, and free will. Each person is unique and has different interests about methodologies. Some will have an effective response by using the pre-setting of code. Others will prefer the self-determination gained from pranayam, and the benefits of regular meditation practice.

FREE WILL AND CONSCIOUSNES

Free will is a developed mental ability that operates in the psycho-physiological. Consider the mind as an operation of the senses, the intellect, and the ego²⁰. This is a general view of the mind both in western psychology and in ancient Samkhya. Free will is available to everyone, but may not seem possible, especially if the mind is rooted in rumination of thought, and there are behavioral attachments that are obsessive.

Imagine what is taking place in the mental structure of persons with addictions and also post trauma stress disorders.

The senses become overworked, the mind is fighting the senses. The ego is busy fighting the intellect. The senses collect data from the environment and from memory. This data travels to the intellect where it is identified and analyzed. The ego performs the role of acceptance or rejection, and it forms a relationship toward the object of addiction. If the mind feels that it has no choice or options, it submits to the object of addiction. In turn, grasping desires overtake the psycho-physiological.

What is carrying the data, the analysis, and the emotional grasping? It is the breath that carries everything within the psycho-physiological²¹. If the breath is not under ones' control, then it is difficult to have options. One feels more like a victim.

On the other hand, if the prana is directed to unite with the nervous system, an inner strength develops that stabilizes the nerves and the emotions. Grasping falls away. Free will increases, and choice and options become forefront. The mind becomes *sattvic*, more focused, intelligent, attentive, self-regulated and interested in a lifestyle that leads to wholesome feelings about self and life, a transformation.

Increasingly, science and society recognize awareness as an aspect of mind. This is a jump from the mindset of the Cartesian Legacy that consciousness and mind is identical. Psychological discussions now include a presumed distinction between mind and consciousness. The dictionary of the American Psychological Association defines free will as the power or the capacity of a human being for self-direction. It states that inclinations,

²⁰ Samkhya-yogacharya., Yoga Philosophy of Patanjali...

²¹ Ram Shankar, Encyclopedia of Indian...

dispositions, thoughts, and actions are not determined entirely by forces over which people have no independent directing influence²².

Rao states that so far free will has not been proven to be a manifestation of brain processes. Alternative models are warranted. When attention reaches the domain of consciousness, the mind regains its natural spontaneity. The mind is no longer controlled by the bombarding senses and stimuli. The mind begins to exercise free will over cortical processes and the influences from the world of objects. The mind's wanderings come under volitional control²³.

Neuroscience is basically concerned with understanding cortical processes in relationship to mental functions. When behavior change becomes the aim as in Professor Tse's studies, it opens the opportunity to explore in a new way the relationship between the mind, consciousness, and free will. It also offers a new way to study the Samkhya relationship between the materiality of light, action, dullness, and consciousness.

The Samkhya viewpoint affirms that everything is contained in the cosmic egg in subtle form. When objects become apparent to the psychophysiological, they are seen in dense form. This suggests that all materiality including thoughts, dreams, imaginations, and objects become known or manifest to the brain and the body by way of a network of fine nerves. These nerves connect the mind, subtle senses, intellect, and ego. It is the network of nerves that carries the guna configurations. It is through prana that light, action, and dullness or inertia enter the psychological²⁴.

In the Indian Encyclopedia on Samkhya, it states that reflective discerning and rational objectivity is operative equally in will as in cognition. In willing, it is the objective awareness of *what I ought to do*. In cognition, reflective discerning is *what ought to be*²⁵.

Powers or capabilities form a kind of willing, and rational objectivity is the awareness of attaining the maximum. Meritorious behavior, knowledge, nonattachment, and power are composed of sattva constituents. Demeritorious behavior, ignorance, attachment, and impotence are composed of tamas constituents. Rajas, or action is required in order to facilitate change, awareness, and transformation. Pranayam is a type of action²⁶.

PRANA AND PRANAYAM

Pranayam is control of the breath and the movement of prana in the mind-body. It is not simply inhalation and exhalation. There is awareness of each inhalation and exhalation, which means breath and mind are working together. Otherwise, exercising or taking a hike each day would bring the benefits of pranayam. The purpose of pranayam is to make the breath smooth and deep, with no pressure or feeling of tightness. Then the mind becomes still.

Pranayam is effective when it is done regularly. Even twenty minutes a day can make a difference. The aim is to stop unnecessary thoughts and increase ability to direct attention. When the nervous system is affected with pranayam, there is an increase in ability to concentrate. Will power too helps to control thought. When pranayam and will power work together, it is a best combination. Fighting with unwanted thoughts makes them become stronger.

²² VandenBos, G. R. (Ed.). (2009). APA college dictionary of psychology. Washington, DC: American Psychological Association

²³ Ramakrishna, Consciousness Studies...

²⁴ Ramakrishna, Consciousness Studies...

²⁵ Shankar, Encyclopedia of Indian Philosophies...

²⁶ Shankar, Encyclopedia of Indian Philosophies...

If pranayam is done irregularly, the systems of the body have to keep adjusting. It can be upsetting to the nervous and digestive systems. It is best to study pranayam from a knowledgeable teacher. There are basic, simple methods, advanced methods, processes that need guidance, and there are contraindications.

With the development of stillness, thoughts become more manageable. Rumination, or the mind jumping from one thing to another, no longer occupies the mind. Awareness, clarity, freedom to choose, and free will naturally occur. The process is a freeing experience.

Prana in the macrocosm or universe has an effect according to several factors including time of day. At sunrise and sunset there is a surge of prana (air + consciousness) that circulates. It may be that heat from the rising sun increases the circulation of prana. It is a common observation that many things move at sunrise. Flowers open, and species stir. Yoga and natural lifestyles recommend arising early to receive this valuable energy²⁷.

SUMMARY AND FUTURE EXPLORATION

Conclusions: It is a novel result to come up with parallel findings between science and ancient knowledge. If both come up with the same or similar findings, this is a breakthrough for knowledge. It is entirely plausible that regular pranayam breath practice affects the nervous system. In turn, this influences the firing of neurons, resetting-code, and giving rise to increased consciousness, free will, and transformation.

Future Work: In future studies, it would be interesting to investigate whether the character of the firing neurons differ in a mind characterized by free will and in mind states of addiction. Other studies could investigate the three-fold operation of light, motion, and dullness in relationship to neuronal circuitry and synapse firing.

AUTHOR'S BIO:

Dr. Pratibha Gramann received her doctorate in psychology, consciousness and spirituality from Saybrook University, a transpersonal psychology graduate school in San Francisco. Dr. Gramann is a Consultant, and a Life and Spiritual Coach. She gives trainings in pranayam breath practices, beginning and advanced meditation, and lifestyle. Dr. Gramann is a lecturer in psychology, Samkhya philosophy, and Ayurveda medicine.

²⁷ P. Gramann. (2012).

TEMPORAL LOBE EPILEPSY (TLE), “DÉJÀ VU” PHENOMENON AND RELIGIOUS EXPERIENCES

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ABSTRACT:

A LOT OF CONTROVERSIES APPEAR REGARDING TEMPORAL LOBE EPILEPSY TO BRIDGE THE GAP BETWEEN RELIGION AND NEUROSCIENCE. TLE WAS DESCRIBED IN LITERATURE IN 1869 BY RUSSIAN WRITER DOSTOEVSKY (WHO SUFFERED FROM EPILEPSY), IN HIS WORK “THE IDIOT”, WHEN THE HERO PRINCE MYSHKIN DESCRIBED HIS EPILEPTIC FEELINGS OF SUBLIME SACREDNESS OF THE INNER LIGHT. NEUROTHEOLOGY IS THE SCIENCE TRYING TO UNDERSTAND THE BRAIN ACTIVITIES AND TO FIND AN INTEGRATION IN RELIGION CONCEPTS. TLE AURA OR PSYCHIC CRISIS IS DEFINED BY SIMPLE OR COMPLEX HALLUCINATIONS, MYSTIC DIVINE EXPERIENCE, AND UNPLEASANT EXPERIENCE OF FEAR AND DÉJÀ VU PHENOMENON. NEPPE AND FUNKHOUSER (2006) DESCRIBED THE NOTION AS ALREADY SEEN, BUT IT MEANS ALSO ALREADY HEARD, MET OR VISITED. THE “DÉJÀ VU” PHENOMENON IS ALWAYS A SUBJECTIVE EXPERIENCE WHICH CAN APPEAR IN NORMAL SUBJECTS OR IN PATHOLOGIC STATES LIKE TLE, SCHIZOPHRENIA OR OTHER TYPES OF PSYCHOSIS. IT CAN ALSO BE A SUBJECTIVE PARANORMAL EXPERIENCE. NEPPE’S DEFINITION IS NOW UNIVERSALLY USED, DEFINED AS “ANY SUBJECTIVELY INAPPROPRIATE IMPRESSION OF FAMILIARITY OF THE PRESENT EXPERIENCE WITH AN UNDEFINED PAST” (NEPPE, 1983). DÉJÀ VU HAS AN IMPACT ON NEUROSCIENCE AND DESCRIPTIONS FROM HISTORY AND LITERATURE AND THE MULTITUDE OF DESCRIPTIONS FROM EXPERIENCES DEMAND VARIOUS SCIENTIFIC EXPLANATIONS.

KEY WORDS: TEMPORAL LOBE EPILEPSY; DÉJÀ VU; THE SELF; CONSCIOUSNESS; MEMORY; THE HUMAN BRAIN.

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BACKGROUND

Manipulation of the limbic system has caused subjects to report feelings of ‘forced motion’, physical distortion and hyper emotionality⁵. Stimulation direct to the temporal lobe can cause a sense of spiritual well-being experience, paranormal experience and feelings of hyper-religiosity. The majority of the patients (80%) claimed to have experienced a feeling of ‘not being alone’ and sensed a ‘spiritual presence’ when their temporal lobe was stimulated.⁶

Déjà vu phenomenon can be classified in four modern concepts, which are etiologically distinct: psychotic déjà vu (in schizophrenia), temporal lobe epileptic déjà vu or TLE déjà vu (specifically in temporal lobe aura or seizures) , subjective paranormal experience déjà vu (in subjective paranormal experiences), and associative déjà vu (in ostensible ‘normal’ patients). This subtypes are nosologically distinct and appear in different subpopulations, which means that they can be explained by different causes.⁷

The French term ‘déjà vu’ is used as a generic term referring to all types of déjà vu experiences, although it literally means ‘already seen’. From the 36 types of described déjà vu experiences, none of them is exclusively related to one of the above nominated four nosological entities. However some of them are more likely to occur in certain circumstances, for example the feeling of ‘déjà visite’, which is more common in normal individuals.⁸

Vernon Neppe, one of most important researchers in the field of déjà vu, wrote his first book on this subject in 1983 “The Psychology of Déjà Vu” describing 10 new types of déjà vu. In the pre-modern era, before 1979, there were already 11 terms regarding déjà vu experiences described in literature. By the year 2006 he revised his research “Déjà Vu Revisited” and added 9 more terms describing déjà vu experiences : “déjà paradoxe”, “déjà après”, “déjà ésotérique”, “déjà retrosenti”, “déjà hallucine” etc. These new terms which he discovered in 2006 make reference to the clinical subtypes of déjà vu experiences, for example “déjà ésotérique” and “deja hallucine” are related to psychotic déjà vu, while “déjà après” is often found in TLE patients describing the post ictal period as a déjà vu experience.⁹

The most important aspect of defining an experience as déjà vu is for it to fit the definition given by prof. Neppe, therefore the primary criteria for it to be a déjà vu experience is to be a subjective experience of an undefined past. The experience cannot be proven by anyone else except the person experiencing it, so the “déjà vu exists only in the percipients inner reality”¹⁰.

THE SELF AND ‘DÉJÀ’ EXPERIENCE IN TLE PATIENTS

The concept of the self is a modern point of view from philosophy, sociology and biology, but there are many contradictions regarding this subject. René Descartes was the first philosopher who treated this subject in a new manner, his concept of “I think therefore I am” became very popular among scientists. He privileged thinking above being, a concept that defined thinking as a superior activity of the brain which now longer needed the presence

⁵ Ford C, ”Neurotheology: Which Came First, God or the Brain?”, 2002 <http://www.serendip.brynmawr.edu/biology/bio3/web3/ford.html>.

⁶ Persinger. M. A (1997) cited in Ford. C, “Neurotheology: Which Came First, God or the brain?”, 2002. <http://www.serendip.brynmawr.edu/biology/bio3/web3/ford.html>.

⁷ Neppe V. M. & Funkhouser A. T. S. (Eds.) “ Déjà Vu: A Second Look”, Seattle, WA, USA, Brainvoyage.com (Brainquest Press), 2006.

⁸ Neppe V. M. ”Déjà Vu: Origins and Phenomenology: Implications of the four subtypes for future research” ;The Journal of Parapsychology ,2010, vol. 74, no.1, 61-97.

⁹ Neppe V. M., Bradu, D., ”Déjà vu subtypes: four challenges for researchers”.,(Eds.) ”Déjà Vu: A Second Look”. Seattle, WA,USA,Brainvoyage.com, 2006.

¹⁰ Funkhouser 2006.

of a god as its reality. In his work he stated that the mind or self was separated from the body, as distinct and superior and the body was considered inferior and impure¹¹.

Thinkers like Hegel¹² and Freud in his famous work “The Ego and Id” have stipulated theories regarding the concept of the “self”, placing the self as a product of external and internal stimuli which are converted to different sensations which lead to building images and feelings stored in the memory of the unconscious self. The unconscious self cannot therefore determine if the experienced sensations are from outside or from the inside. This lack of discrimination creates a process of optical projection of images separate from the unconscious self. This is the known process of building up an ego.

Persinger states that overstimulation and unsyncopated reaction in one area of the temporal cortex can cause misinterpretation of “the self”. A neuronal imbalance in the left hemisphere of the temporal lobe makes the brain perceive the right hemisphere as a personified “other entity” or God¹³. This physical reaction in the temporal cortex causes a chain reaction in the limbic system, which hyper stimulates the amygdala (seat of higher emotion) and hippocampus (seat of stored memory/experience). This can induce hallucinogenic visions and arousal feelings. Hyperstimulation induces feelings of euphoria and rapture which are associated with high concentrations of opiate receptors in the amygdala and the release of enkephalins in large quantities¹⁴.

The famous “God machine” was invented by Persinger in his attempts to study what happens with the brain, and especially the temporal lobe during seizures. This machine is actually a helmet designed to replicate the effect of epileptic seizures, concentrating electric influxes in the temporal lobe generating a “magnetic field pattern”. In order to imitate the state of epilepsy, the experiment implies restrictions from external influences, by means of blocking audio-visual information and sensory deprivation, just like it happens during seizures.¹⁵

As the temporal lobe is stimulated by electric impulses, the majority of subjects reported having paranormal experiences and states of hyperreligiosity.¹⁶

Newberg’s term “hyperquiescence” describes a state of intense relaxation of the mind, which can be achieved during meditation¹⁷. The mind can block external influences and thoughts by entering a state of total tranquility. Eastern religions like Hinduism and Taoism are known for their practicing rituals and meditation techniques. They have developed certain meditation exercises, which can increase the activity of the so called “Third Eye”. The “Third Eye” is another term for the pineal gland located in the center of the brain between the left and the right hemisphere. It is considered to be the seat of higher vision and as a possible perception organ to see beyond space-time. A study conducted by Leadbeater generated the idea of microscopic and telescopic vision by extending an “etheric tube” on the “third eye”.¹⁸

¹¹ Descartes R, “Discourse on the Method” ,1644.

¹² Hegel G.W.F., *Phenomenology of Spirit*, translated by A.V. Miller with analysis of the text and foreword by J. N. Findlay (Oxford: Clarendon Press, 1977); Paragraph 179, Pg. 111.

¹³ Ford C, ”Neurotheology...

¹⁴ Joseph R . cited in Bradley. F, “On Neurological Origin of Mystical Experience, the Limbic System et al”,1997.

¹⁵ [9] Martin M., “Spirituality and the Brain: Does Research Show New Evidence for Faith, or a Challenge to Religion?”,2002 http://www.abcnews.go.com/sections/scitech/nightline/neuro020114_spirit_feature.html

¹⁶ Ford C, *Neurotheology...*

¹⁷ Newberg A., D’Aquili E., Rause V., “*Brain Science and the Biology of Belief: Why God Won’t Go Away*”, Ballantine Books, New York, 2001.

¹⁸ Leadbeater. C.W. , “*The Chakras* “ Wheaton, Illinois, USA:1927 Theosophical Publishing House , 79.

Microscopic vision would imply the possibility of seeing a whole new universe, quantum particles like quarks.¹⁹

There is a whole new spectrum in science today regarding quantum mechanics, general relativity and the theory of consciousness. We haven't yet fully discovered how the universe works, because there still is no clear link between quantum physics and Einstein's general relativity theory. The human mind is as a small universe as well, waiting to be discovered. For that matter several studies are being conducted in order to understand how consciousness is produced by the human brain. Sir Roger Penrose's, an eminent mathematical physicist, studies focused on the theory of consciousness, also known as "orchestrated objective reduction" or Orch OR. His theory of consciousness has been recently reviewed by Stuart Hameroff, a prominent anesthesiologist and Roger Penrose himself, due to recent discoveries of quantum coherence found in plant photosynthesis, bird brain navigation, our sense of smell and brain microtubules vibrations. The microtubules are important components of the cell's skeleton and their vibrations in the neuron seem to be the fine-level process that generates consciousness. Studies in anesthesia have also postulated the idea of the vibrating microtubules in the neurons for sustaining non-conscious brain activities and blocking consciousness.²⁰

It is not very surprising that different fields of science connect to each other in order to explain how the mind works or how the universe is constructed. Reality is a product of the mind, as subjective as it is it can be related to other things, objects or events. Everything in the universe is related to each other; even space is defined by the objects containing it. The universe and the human brain are defined by processes relating to each other, creating space and time. Perhaps in the near future mankind will be able to reproduce an artificial intelligence based upon quantum processes in the human brain.

By trying to define what consciousness is and how it is created in the human brain, scientists want to solve the question above all questions that is consuming our minds: "Is there a God? Are there other superior supernatural beings?" The answers come one at a time and apparently are not linked together, but the research in the field of temporal lobe epilepsy may offer some promising explanations regarding this matter.

Temporal Lobe Epilepsy is a nosological entity in Neurology, defined in 1985 by the *International League against Epilepsy* (ILAE) as a condition characterized by "recurrent, unprovoked seizures originating from the medial or lateral temporal lobe." TLE seizures consist of simple partial seizures without loss of awareness and complex partial seizures associated with loss of awareness. The main pathologic substrate for this condition, found in approximately two thirds of patients with temporal lobe epilepsy who were treated surgically was hippocampal sclerosis. EEG studies showed that the majority of patients (90%) who had epileptiform abnormalities in the temporal region also had a history of seizures. The temporal lobe is known to be the most epileptogenic region of the brain.²¹

Hippocampal sclerosis is observed through neuroimaging techniques such as magnetic resonance imaging (MRI) as a high-signal intensity on T2-weighted or fluid-attenuated inversion recovery (FLAIR) sequence MRIs and/or atrophy of the hippocampus.

¹⁹ Phillips S., "Extrasensory Perception of Quarks" Wheaton, Illinois, USA 1980 Theosophical Publishing House ISBN 978-0-8356-0227-3

²⁰ "Discovery of quantum vibrations in microtubules inside brain neurons corroborates controversial 20-year-old theory of consciousness", January 16, 2014 <http://www.kurzweilai.net/discovery-of-quantum-vibrations-in-microtubules-inside-brain-neurons-corroborates-controversial-20-year-old-theory-of-consciousness>.

²¹ David Y. K. "Temporal Lobe Epilepsy" <http://emedicine.medscape.com/article/1184509-overview#aw2aab6b2b2aa>.

The term describing hippocampal sclerosis in neuroimaging is called mesio-temporal lobe sclerosis.

Other diagnostic modalities include computer tomography (CT) with poorer resolution on soft tissues of the brain; positron emission tomography (PET-CT) useful for surgery in detecting interictal seizures and localizing them; single-photon emission CT (SPECT) also used for surgical purpose ; magnetic resonance spectroscopy; electroencephalography (EEG) indicated in all patients with suspected temporal lobe epilepsy; magnetoencephalography (MEG) mainly used for co registration with MRI to give magnetic source imaging in 3-dimensional space.

The various etiologies of temporal lobe epilepsy include cryptogenic, idiopathic (very rare), neuroinfections, posttraumatic contusion or hemorrhage, malignancies such as meningiomas, gliomas, gangliomas, vascular malformations. Berkovic also described a familial form of TLE²².

Statistics show that approximately 50% of patients with epilepsy have partial epilepsy, which often originates from the temporal lobe. Since most cases of TLE are not confirmed by video-electroencephalography and the majority is classified by clinical history and EEG recordings alone, the true prevalence of temporal lobe epilepsy remains hidden.²³

The sex ratio is equal for both sexes; however there is an increase of seizures for female patients during the menstrual period, also known as catamenial epilepsy. All age groups are affected; even the elderly are subjected to this condition who can develop new-onset seizures at an advanced age.

Temporal lobe epilepsy is clinically defined by symptoms such as aura (a type of warning for the subject, it lets him know the seizure is about to occur) and cognitive impairment. There are three major types of aura: somatosensory and special sensory aura (olfactory, gustatory, and visual illusions and hallucinations; vertigo); autonomic aura (changes in heart rate, piloerection, and sweating) and psychic aura with elements of déjà vu or jamais vu; depersonalization or derealization; fear or anxiety; dissociation.

TLE complex partial seizure consists of a type of aura, dilated pupils with a motionless stare, behavioral arrest, and the occurrence of automatisms such as oral alimentary, manual or unilateral dystonic limb postures. The evolution of the seizure can lead to secondarily generalized tonic-clonic seizure. Confusion, aphasia and amnesia are common features of the postictal period.

There are questions regarding a predisposition for some temporal lobe epilepsy patients for paranormal and religious experiences. Some patients claim of having intense hallucinations and physical reactions regarding Christian practices or figures from the Bible during their seizures. On recovery from seizure they experienced euphoria and intense spiritual enlightenment. Patients with strong beliefs in the esoteric and agnostic can have experiences of alien encounter, abduction and near death experiences during their seizures. From the vast amount of experience descriptions from TLE sufferers it is possible to consider that their experiences are based upon their beliefs. Christians with strong beliefs are more likely to encounter God or other biblical figures during their seizures, while on the other hand agnostic patients are more likely to have paranormal experiences related to their esoteric beliefs.

²² Berkovic S.F, McIntosh A, Howell R.A. , Mitchell A, Sheffield L.J., Hopper J.L., “Familial temporal lobe epilepsy: a common disorder identified in twins”. *Ann Neurol.*, 1996,vol.40,no.2, 227-35.

²³ David Y. K. Temporal...

It is known today that repeated epileptic seizures have a cumulative effect and that they produce cerebral damage. Intractable epilepsy may be associated with widespread structural cerebral damage. The brain structures affected mostly are the hippocampus, cerebellum, and neocortex. These structural damages occur only after a few years of epilepsy history, however there have been detected some subtle changes after a 3.5-year period which were not related to a history of overt seizures.

A study performed in 2010 in County Hospital of Arad analyzed structural changes as a result from recurrent seizures in 43 subjects with the mean age of 20.6 years. The brain lesions were studied by serial magnetic resonance imaging (MRI) with morphologic analysis of the temporal lobes and volumetric analysis of the amygdala and hippocampus. The study group included 8 patients with cryptogenic TLE, 14 with symptomatic partial temporal epilepsy, 21 with generalized epilepsy (5 idiopathic, 13 cryptogenic, and 13 symptomatic). Patients with temporal lobe epilepsy (TLE) were significantly more likely to have recurrent seizures than were those with extra temporal or generalized epilepsy. One patient had preexisting hippocampal sclerosis. The frequency of bilateral hippocampal or amygdala atrophy ($p < 0.06$) and combined hippocampal-amygdala atrophy ($p < 0.03$) was higher in patients with temporal lobe developmental malformations. The presence of „d  ja vu” was found only in two TLE patients and was persistent with a correct treatment.

Structural abnormality can be best revealed with three-dimensional analysis of volumetric MRI, these abnormalities include bilateral amygdala or amygdala-hippocampal atrophy which are associated with a higher risk of seizure recurrence. Patients with temporal lobe developmental malformations are frequently associated with hippocampal atrophy. Regarding cerebral damage as a result of epilepsy we can conclude that it may occur before the onset of seizures or develop insidiously over a more prolonged period, except preexisting cerebral lesions or alcohol abuse.

The relationship between the human brain and spiritual experience was studied by Newberg and D'aquili in 2001, when they analyzed Tibetan monks and Franciscan nuns during deep meditation and prayer. In order to map the brain regions implicated in meditation they injected a radioactive tracer to the subjects and the tracer detected brain areas where there was an increased neuronal activity and blood concentration. The imagistic studies were taken with SPECT (Single Photon Emission Computerised Tomograph) and the most active area of the brain was the prefrontal cortex with a dramatically increased neuronal activity, an area associated with attention and concentration. In contrast to that, areas of the brain associated with space orientation and time perception which are located in the parietal lobe showed very low activity. This is very important because it topographically explains why the brain can't distinguish the limit between the self and the external world during trance and meditation. It also explains why those involved in deep meditation experience a feeling of "unity" with the universe, overcoming time boundaries and connecting with God.²⁴

A famous psychologist Bentall found a scientific explanation behind the reason why some temporal lobe epileptics claim of hearing voices during their seizures, especially the „voice of God”. His explanation suggests an important implication of the motor language area or Broca's area during seizures, but also in states of deep meditation. These two conditions are altering the contact with the external world by not receiving any external stimuli. The Broca's area is then misled, confusing the internal voice or ego as an external entity, perceiving it as God, or other biblical figures and for agnostic patients with alien or spiritual beings.²⁵

²⁴ Newberg A. et al "The measurement of regional cerebral blood flow during the complex cognitive task of meditation: a preliminary SPECT study", *Psychiatry Research: Neuroimaging Section* 106, 2001, pg. 113-122.

²⁵ Bentall R. cited in Powell V. "Neurotheology – With God in Mind",

It can now be explained via neuroscience and brain mapping what regions in the brain are involved in paranormal experiences and déjà vu phenomenon. With the prefrontal cortex activated and low activity in the parietal lobe, the brain enters a state of trance where it cannot distinguish time and space boundaries. Massive neuronal discharges during epileptic seizures in the left temporal lobe cause the brain to interpret the other cerebral hemisphere as another entity, depending on its spiritual and cultural beliefs.

Funkhouser notes the importance of the level of consciousness involved in a déjà vu episode, many of those episodes being similar regarding this matter. The feeling they leave of us right in the moment of occurrence is that we are totally aware of everything that is happening and that it conforms with our 'memory' of it. This means that the entire brain capacity is not required to produce a déjà vu experience, only a small portion of the conscious self and the I-function being needed to resemble the experience.²⁶

Although one person can sometimes effortlessly recall in detail a déjà vu experience, that experience is nowhere to be found in the memory of that person. So the events "remembered" are not a product of memory of specific events that happened in the past. This matter has been explained by Janet P. in 1942 as an "overlap" between short and long-term memory, resulting in perceiving recent events as events more distant in time. The theory that explains this process of overlapping memories is that the storing of those events happens before the conscious part of the brain even receives the information and processes it.²⁷

There are controversies regarding this theory, especially for it does not explain how the brain stores these memories without a sensory input first. The storing of sensory input could be explained as a process of "memory-in-progress", the reason why during the event itself we believe it to be past memory. The déjà vu experience is a very common phenomenon and in a survey by Brown approximately two-thirds of the population have had déjà vu experiences²⁸. There are also studies that confirm that déjà vu is a common experience in healthy individuals, with a range of 31% to 96% of persons describing it. Wild E. considers unusually prolonged or frequent déjà vu experiences, or associated with other symptoms such as hallucinations could be an indicator of neurological or psychiatric illness²⁹. Results from studies certify that déjà vu experiences can be caused by the consume of certain drugs and by some pharmaceutical drug associations³⁰.

The use of certain hallucinogenic drugs can cause limbic hypersensitivity and induce the effect of paranormal experiences and déjà vu phenomenon. The drug action is connected to the neurotransmitter levels, which are altered during this process. Feelings of euphoria are due to the increased levels of dopamine and the high serotonin levels in the amygdala.³¹ High levels of dopamine are known to be involved in the pathogenesis of psychosis and schizophrenia.³² Other drugs such as cocaine, amphetamines and methamphetamines can cause a temporal state of psychosis by increasing dopamine levels 10 times higher. Antipsychotic medications inhibit dopamine levels at receptor levels, acting as dopaminergic

<http://www.clinicallypsyched.com/neurotheologywithgodinmind.htm>.

²⁶ Funkhouser, A. T. "Deja experience research." <http://www.deja-experience-research.org> , 2006

And: Funkhouser, A. T. "Explanations for déjà experiences." <http://www.deja-experience-research.org>, 2006

²⁷ Janet P. "Les Dissolutions de la Mémoire". Disorders of Memory, 1969, p.152.

²⁸ Brown, A. S. "The déjà vu illusion." Current Directions in Psychological Science, 2004 , vol.13, 256-259

²⁹ Wild, E. "Deja vu in neurology." Journal of neurology, 2005, vol.252 , no.1, 1-7.

³⁰ Taiminen T., Jääskeläinen S. , "Intense and recurrent déjà vu experiences related to amantadine and phenylpropanolamine in a healthy male". Journal of Clinical Neuroscience, 2001,vol. 8, no 5, 460-462

³¹ Chapman. D, "Brain Mechanisms and Anomalous Experience"

http://home.comcast.net/~dchapman2146/pf_v3n3/NeuroWeird.htm

³² "[Disruption of gene interaction linked to schizophrenia](#)". St. Jude Children's Research Hospital. Retrieved 6 July 2006.

antagonists.³³ Also religious practices such as Amerindian rituals performed by shamans are known to make use of hallucinogens such as mescaline, peyote and psilocybin. These drugs are used for the purpose of increasing the neuronal activity in the limbic system and induce a feelings of high spiritual enlightenment.³⁴ In 1972 Lilly studied the effect of LSD, another hallucinogenic drug, combining it to social and sensory deprivation and experienced the presence of „spiritual, god-like beings”.³⁵ The effect is called psychedelic and it is due to the agonist effect of those drugs on the 5HT receptors of serotonin. Serotonin is known as the neurotransmitter involved in the states of happiness, well-being and euphoria. But not only drugs are used in order to achieve such superior mental states, dancing and chanting in a particular way are contributing to help create a barrier to the outside world and to reject external output of the senses.³⁶

Even practice like yoga can have a powerful effect on neurotransmitter activity, by increasing the level of self-awareness and blocking outside signals and information. Yoga is known to have the same effect on the brain activity as drugs do and can become addictive and dangerous, because the mind becomes relaxed and open to suggestions.

THE BIBLE AND DÉJÀ VU

Runehov questions the problems regarding explaining religious experiences by contemporary scientists and she analyses the research performed on religious experiences by canadian neuropsychologist Persinger and the works of Newberg and d'Aquili. She questions whether religious experiences are a product of the human brain or experiences of some type of “ultimate reality”. The question raised is if these religious experiences are sacred in the spiritual sense or just a result of neuronal processes. From a neuroscientific point of view these experiences are consequences of a damaged, malfunctioning or mentally deranged brain or they are part of some sort of existential crises. Some neuroscientists explain religious experiences are part of the human brain as all human experiences are. The conclusion of Runehov's research calls for interdisciplinarity, for neuroscience only can explain religious experiences in a methodologically restricted way. Philosophy and theology are also limited by their methods to explain religious experiences. These experiences are not sacred or neural, but sacred and neural and must be studied properly from different point of views.³⁷

Historical and biblical figures seem to have suffered from neurological disorders that went undiagnosed or misdiagnosed because by that time they weren't understood and named. Researchers speculated that St.Paul of Christianity may have suffered from temporal lobe epilepsy. St.Paul's conversion is described separately in the book of the Acts in the bible, one is a third person narrative and one is a speech he gave when he was arrested in Jerusalem (Acts of the Apostles 22:6-21). They both contain elements to support a TLE interpretation, describing how he fell to the ground, seeing a blinding light and hearing a voice claiming to be "Jesus of Nazareth". After this episode which is very suggestive for a TLE aura, he could not see and he did not eat or drink for three days on his way to Damascus.

³³ Lieberman J.A., Kane J.M., Alvir J., "Provocative tests with psychostimulant drugs in schizophrenia". *Psychopharmacology*, 1937, vol.91, no.4, 415-33

³⁴ Powell V. "Neurotheology – With God in Mind",

<http://www.clinicallypsyched.com/neurotheologywithgodinmind.htm>

Schultes. R. E, Hofmann. A, Ratsch. C, "Plants of the Gods: Their Sacred, Healing and Hallucinogenic Powers", Healing Arts Press, Vermont, 2002

³⁵ Lilly. J. C (1972) cited in Chapman. D, "Brain Mechanisms and Anomalous Experience"

³⁶ Powell V. "Neurotheology – With God in Mind",

<http://www.clinicallypsyched.com/neurotheologywithgodinmind.htm>

³⁷ Runehov A, "Sacred or Neural? The Potential of Neuroscience to Explain Religious Experience" ,*European Journal of Science and Theology*, 2007, Vol.3, No.2, 71-74

This experience made St. Paul a devout follower and missionary of Christianity³⁸. Auditory hallucinations of divine voices, visions of divine figures, and physical collapse are all common elements of TLE, and they are especially common in documented cases of sudden religious conversion in people with temporal lobe epilepsy.

Another text from the Bible sums up the beliefs about déjà vu and the history of mankind repeating itself. “What has been is what will be, and what has been done is what will be done, and there is nothing new under the sun. Is there a thing of which it is said, “See, this is new”? It has been already in the ages before us. There is no remembrance of former things, nor there any remembrance of later things yet to be among those who come after.” (Ecclesiastes 1:9-11). Déjà vu can be considered from this point of view, a process of “remembering” an ancient history of mankind trapped in our DNA. The fact that “there is nothing new under the sun” is just a way of recovering memories from our unconscious collective self. The fact that “there is nothing new under the sun” is just a way of recovering memories from our unconscious collective self. The text found in Ecclesiastes 3:11 “He has made everything beautiful in its time. Also, he has put eternity into man's heart, yet so that he cannot find out what God has done from the beginning to the end.” Reminds us of how little of the entire brain capacity we are using. We are unable to access our entire memory and brain activity, because of our unconscious self.

In conclusion, TLE is a pathology related to déjà vu phenomenon, but it cannot explain entirely the processes which lead to it to those without epilepsy. Certain areas in the brain are activated during seizures and cause the brain to enter a state of trance, experiencing hallucinations and visions mostly of them according to the individual's beliefs. Concepts like the self, consciousness, memory storing, distinguishing time and space, between what is real and what is not are still under investigation by scientists and philosophers. The human brain is a complex micro cosmos ready to be discovered step by step by mankind. No one can foresee what will be in the future, but if it develops exponentially, maybe in the far future we will be able to discover more of that cosmos. As Charles Dickens wrote in *David Copperfield* in 1850 “We have all some experience of a feeling that comes over us occasionally of what we are saying and doing having been said and done before, in a remote time—of our having been surrounded, dim ages ago, by the same faces, objects, and circumstances—of our knowing perfectly what will be said next, as if we suddenly remembered it.”.

³⁸ Marissa Leow, James Noble, Carl Harris, Rachel Diamond, Maya Weisinger
<http://www.macalester.edu/academics/psychology/whathap/ubnrp/tle09/Religiosity.html>.

THE UNCREATED ENERGIES – THE SPIRITUAL FOUNDATION OF KNOWLEDGE

Florin SPANACHE¹

ABSTRACT:

BY THE ORTHODOX TEACHING'S POINT OF VIEW ON THE UNCREATED ENERGIES, THE SCIENCE HAS THE POSSIBILITY TO BE SPIRITUALLY SUBSTANTIATED. AS FAR BACK AS THE PATRISTIC EPOCH, THE THEOLOGY SPEAKS OF THE INWARD RATIONALITY OF CREATION BACKED UP BY THE UNCREATED ENERGIES, BY WHICH THE WORLD CAN BE GATHERED IN MAN AND LIFTED TO THE HIGHEST LEVEL OF ITS EXISTENCE, TO ITS BEING TRANSFIGURED INTO A NEW HEAVEN AND A NEW EARTH. THE MICROSCOPIC WORLD IS FOUND AT THE BASIS OF THE VISIBLE MATERIAL WORLD, BUT BY KNOWING IT, THE SCIENCE HAS EXACTLY DISCOVERED THIS RATIONALITY. IN ACCORDANCE WITH EINSTEIN DISCOVERY CONCERNING THE HIERARCHY OF THE PHYSICS LAWS, THE UNIVERSE'S RATIONALITY GOES BEYOND ITS MANIFESTATION DESCRIBED WITH THE HELP OF THE LAWS OF SYMMETRY, OF FINALITY, OF CAUSE AND EFFECT, ALL OF WHICH ARE CONSPICUOUS AT THE MACROSCOPIC LEVEL; IT WAS THIS REALITY WHICH HAS INDUCED THE MEN OF SCIENCE TO ASSERT THAT THIS IS THE WORK OF GOD'S MIND.

KEYWORDS: THE UNCREATED ENERGIES, RATIONALITY, THE QUANTUM PHYSICS, THE THEORY OF RELATIVITY, MACROSCOPIC SCALE, MICROSCOPIC LEVEL, THE UNCERTAINTY PRINCIPLE, FULFILLMENTS, EPECTHESIS.

THE ROLE OF CHRISTENDOM IN THE DEVELOPMENT OF SCIENCE²

The eastern Christianity has always led the humanity to her liberation from the determinism of natural and cosmic laws which stand at the basis of the myth of eternal return from the pantheistic and dualistic religions of antiquity, thus allowing the appearance of the vast scientific and technical progress of today's humanity. By preaching the teaching on the spiritually pure, eternal and transcendental Being of God, the Christianity has led human reason to the partial desacralization of nature, to the abolition of idolatry which was advocated by the entire ancient world and generalized by the heathen religions, and has permitted the knowledge, the utilization and the preservation of creation which has been made to be bestowed to the man, who had the destiny to spiritualize and humanize it after Christ's model Who has transfigured in Himself the man and the cosmos.³ The Christianity

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² See, also, my study *Energiile necreate – fundamentul spiritual al cunoașterii*, „Revista de Teologie Sfântul Apostol Andrei”, anul XI (2007), Nr. 1.

³ Pr. Prof. Dr. Dumitru Popescu, *Ortodoxie și contemporaneitate*, „Editura Diogene,” București, 1996, p. 158-159.

offers us the possibility to assimilate the universe in our being by God's presence and His work in the creation by the agency of the uncreated divine energies.

But today, as much as in the ancient world, God's existence and the soul's immortality are a priori posited and they must be placed at the basis of the scientific researches. It is asserted that the rational arguments cannot awaken the faith into an atheist; yet they may strengthen and justify it for the faithful. The reason's limits are shown especially in front of miracles and prophesy which cannot be explained by anything but by faith. However, sometimes neither even the miracles are able to make an atheist to believe; but if he manifests a sincere openness as compared to the truth and desires to uncover it, then the miracles are the best means to awakening the faith and uncovering the truth. There is no shame for an intellectual or for a serious scholar to find out that his theses are erroneous; for such an individual, it would be a reason for joy to find out about other theories, closer to the truth, which shall help him to elucidate the mysteries which are worrying him. "Karl Popper has claimed that a true scholar must always attempt at refuting his own hypothesis."⁴ This must be the ultimate norm of the deontology of researchers and scholars. "Nothing honor a scholar more than calling a spade a spade, that is, as he is being led by the sense of his intellectual researches."⁵

Due to our discursive, limited thinking, only the dialectical search allows us to evolve on a scientific plan. Wherefore, "the disputes are always constructive. One may deceive oneself; another one may correct him/her. No hypothesis may be prohibited, and no hypothesis is useless. All of them are offered to the research and the researcher stops at the one which seems to him/her to be true, or, anyhow, plausible. No one must be condemned for his personal options, when they are sincere and honestly sought for. But, one must not lose sight of the fact that his options are personal, since there is no general option. St. Paul the Apostle exhorted: „Receive one who is weak in the faith, but not to disputes over doubtful things” (Romans 14, 1).⁶

B. THE NECESSITY OF SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT OF THE HUMANITY FOR HER MATERIAL AND SPIRITUAL LIFE.

In analyzing various scientific discoveries which, on one hand, present the complexity of the world created by God, and, on the other hand, may offer solutions to the various requirements and necessities of the contemporary and forthcoming human society, such as, the energetic crisis, the genetic diseases, we have to conclude that the scientific and technological development is necessary for the welfare of humanity. The quantum physics and the theory of relativity have decisively contributed to the development of technique to its present-day forms.

But the first important steps taken by the science in order for the man to be able to begin his work of liberating from the chains of relativity have not been taken when Einstein has defined his theory; they have been taken when Galileo Galilei has invented the telescope and showed its first application in the year 1609⁷, and Giambattista Odierna has invented the microscope in the year 1644⁸, with the help of which, Marcelo Malpighi, in the year 1660, has discovered the microscopic structure of the lungs, by demonstrating the value of the new

⁴ ***, *O constatare senzațională, dar controversată, care ar putea produce o adevărată „schimbare de civilizație”*. *Apa are propria ei memorie*, „Magazin Nord-Est,” year I (15-21 june, 1995), nr. 15, 13.

⁵ Mgr. Gheorghe Drăgulin, *Ortodoxia în teologia contemporană*, „Ortodoxia,” anul XI (1959), nr. 1, 148.

⁶ Antonie Plămădeală, *Tâlcuri noi la texte vechi*, „Tiparul Tipografiei Eparhiale Sibiu,” Sibiu, 1989, 269.

⁷ Alexander Hellemans, Bryan Bunch, *Istoria descoperirilor științifice*, „Editurile Orizonturi și Lider”, București, 1988, 120; vezi și <http://ro.wikipedia.org/wiki/Telescop>.

⁸ <http://en.wikipedia.org/wiki/Microscope>.

working instrument in biology and chemistry⁹. With the help of these redoubtable instruments, scholars have succeeded to partially know *the things in themselves*¹⁰ (*das ding an sich*), their microscopic physical side, and have opened the doors for the perspectives of the quantum physics which have been accomplished in the twentieth century.

The great theories of the present-day physics have an important role both in the conserving of the world's existence and of man's, and in its being led to new stages of development. Thus, Albert Einstein has discovered the *theory of relativity* and has very much contributed to the discovery of the *quantum mechanics*,¹¹ but these things have not satisfied him due exactly to the revelation of the caducity of the material world. Any material creature is made up of atoms found in a permanent moving state which takes place in huge void spaces as compared to the atoms dimensions. This means that the creatures, for their greatest part, consist of void spaces. The microscopic particles give cohesion to the things only due to their unceasing dynamism around the nucleus which exerts an attracting force. The matter, under all its forms of aggregation, is made up of energetic particles, which are into a continuous movement in a void space.

These particles have short life duration, disappearing in the nothingness of which they have come out, but not before some others have come out in an equally magic way to the way by which the previous ones have disappeared. We cannot stay impassible in front of such a discovery which reconfirms the intuition of genius of the Holy Fathers. This time we are reminded of St. Justin who, while speaking of the world's cause and its created character, says that the world is such a solid, resistant, and dense body, and it changes itself by disappearing and being born each and every day, nevertheless.¹² In order for them to explain this phenomenon, the men of science, who have in view to preserve the autonomy of creation in comparison with God, have emitted the hypothesis of anti-particles' existence as the source for the particles' appearance. The last innovation of the autonomous science with respect to the way of appearance of the elementary particles is the assertion that they appear by the agency of the bosons nicknamed "the God particles."

In passing over all these theories, we want to emphasize that the creatures are founded on these particles which have a short existence and which bring the men of science on the horns of a dilemma, since some are prone to call them creatures, also, because the microscopic universe is to them more real than the macroscopic universe.¹³ "In each point of the creation the matter was never anything but a servile slave and dominated everywhere by the sovereignty of the forces that are steering it."¹⁴ The firmness of the rock is based not on a dense composition of stable material particles; it is based on dynamic particles which manifest themselves in a void space, and this proves the dynamic character of all creatures, grounded on the energetic structure of the matter, on the presence of some forces which come from a continuous source of existence and movement.

Einstein has understood why the man cannot easily dominate the matter, namely because, although he possesses a complexity which is hard to describe, it does not have

⁹ Alexander Hellemans, Bryan Bunch, *Istoria descoperirilor științifice*, „Editurile Orizonturi și Lider”, București, 1988, p. 145; vezi și <http://en.wikipedia.org/wiki/Microscope>.

¹⁰ Jeanne Hersch, *Mirarea filozofică. Istoria filozofiei europene*, trad. de Drăgan Vasile, (București: „Editura Humanitas”, 1997), 181.

¹¹ Stephen W. Hawking, *Visul lui Einstein și alte eseuri*, (București: „Editura Humanitas”, 1997), 77.

¹² Sf. Justin Martirul și Filosoful, *Dialogul cu iudeul Trifon*, 5, 2, at Pr. Prof. Dr. Ioan G. Coman, *Patrologie, vol. I*, (București: „Editura Institutului Biblic și de Misiune al Bisericii Ortodoxe Române,” 1984), 301.

¹³ Kitty Ferguson, *The fire in the equations: science, religion, and the search for God*, („Templeton Foundation Press,” Philadelphia and London, 2004), 5.

¹⁴ Camille Flammarion, *Dumnezeu în natură*, trad. de Arhiereul Irineu Mihălcescu Târgovișteanu, (București „Editura Aurom”, 1997), 37.

stability, and is not eternal. Even the physical laws must be framed into a hierarchy, since some of them are valid at a certain level, while others start acting at another level, superior to the others. Wherefore, it is said that “Einstein has not proved that ‘Newton has deceived himself:’ he has transcended Newton’s theory, by including it in something deeper and with greater applicability,” and because of this it is deemed that, it would have been better suited for the theory of relativity to be called the theory of invariant.¹⁵ If we go higher on the stages of knowledge, our perspective is more complete, supplying us a better understanding of the things’ interconnection, and amazingly broadening our horizon.¹⁶

This is how one could explain why he lived the second half of his life while looking vainly to realize a unified theory by which this thicket of material particles could be controlled and thus the world to be understood in its totality.¹⁷ This theory could not be ever defined, due to apparent contradiction between the microscopic world, characterized by a fantastic contingency, and the macroscopic one, which evinces an amazing rationality, a fact which made Einstein to assert that the only incomprehensible thing as far as the world is concerned is the fact that it can be comprehended.¹⁸ On the other hand, Einstein has discovered another one, the one of probability, by which he had in view, to some extent, the explanation of the connection between phenomena at the microscopic level, and their supervision. This last theory has laid at the basis of the subsequent development of the data processing science, by which there have been possible the present-day fulfillments of the human civilization, such as the development of the spatial navigation, of the automating, and of robotics.

The Einstein’s step is not novel and it was not forgotten to the present-day; it was taken over by some other restless spirits, eager after the exhaustive knowledge of the seen world, that were ignoring the fact that the infinite God works in the world and offers it infinite potentialities. “Descartes, and the modern science, all at once with him, considers that the interpretation of (reality, our note), may be replaced by the data accumulation (it is a displacement from the *teleological* method to the *eutaxiological* one, a step visible at Hawking, also: “the final goal of science is to give a single theory which describes the entire universe”¹⁹).²⁰

But the man is much more a complex creature than this, and this reality is discovered only by the faith teaching through which the action of the divine grace’s work enters into action, grace which is able to unify all in God. “The contemporary science leads us to the frontiers found between science, faiths and ethics. Some dream about a vast unifying synthesis between the present-day science and the mystical and religious traditions. Yet, instead of succumbing to a concord or a syncretism full of confusion, it is rather necessary to attain to a true dialogue between the great cultural traditions: science, religion, etc... The

¹⁵ Martin Res, *Doar șase numere. Forțele fundamentale care modelează universul*, (București: “Editura Humanitas,” 2000), 48.

¹⁶ Julian Barbour, *The End of Time*, „Weidenfeld & Nicolson,” 1999, after Martin Rees, *Doar șase numere*, 49.

¹⁷ Stephen W. Hawking, *Visul lui Einstein și alte eseuri*, 77-78.

¹⁸ Ian C. Barbour, *Când știința întâlnește religia. Adversare, străine, sau partenere?*, (București: „Editura Curtea Veche”, 2006), 89.

¹⁹ See Stephen W. Hawking, *Scurtă istorie a timpului. De la Big Bang la găurile negre*, „Editura Humanitas”, București, 1995, pp. 24-28, at Doru Costache, *Istoria recentă, actualitatea și perspectivele raporturilor între teologie și reprezentarea științifică a lumii*, in Pr. Prof. Dr. Dumitru Popescu, *Știință & Teologie. Preliminarii pentru dialog*, (București: „Editura XXI: Eonul dogmatic”, 2001), 39.

²⁰ Doru Costache, *Istoria recentă, actualitatea și perspectivele raporturilor între teologie și reprezentarea științifică a lumii*, in Pr. Prof. Dr. Dumitru Popescu, *Știință & Teologie. Preliminarii pentru dialog*, (București: „Editura XXI: Eonul dogmatic”, 2001), 39.

contemporary epistemology has quite clearly shown that the very science involves the faith dimension.”²¹

The science gives oneself airs. Our attainments bestow on us pride, gravity, and we have the tendency to rely only on ourselves, without any more appealing to God. The more we identify quicker our knowledge's errors, the more we are closer to the truth. The faith teaching does not signify anything to those who consider themselves wise in accordance with the wisdom of this world, while to those who are pure in their heart the whole work of God in the creation is discovered until, united to Him in the life hereafter, they attain to knowing Him into an ascending form, into a perpetual epecthesis.

The dynamics of indetermination and of cosmos' order,²² which fascinates the modern science, was anticipated by the Holy Fathers, who have spoken about the rationality of creation, of whom we are reminded, particularly, of St. Maximos the Confessor, who asserts: “Who is the one who knows the reasons of things as they are and how they are differentiated and have an unmoved stability by nature, and an unchanging movement between them, having the stability on the move and the move on the stability, which is such an astounding thing? Who knows which one is the relation between them of the contrary things toward the making up of a single world, and which one is the kind of the move and of the well ordered and unmixed steering?”²³

It ensues from all of these researches that there exist three categories of laws. The theory of relativity is applied on a macroscopic scale, in connection with the space and the time, thus revealing to the man not only the universe's relativity, but the present-day life of man, which is directly dependent on the forces and moves of the heavenly bodies with slower or faster speeds.²⁴ In contrast with this, the Newton's physics is applied to the terrestrial plan – the one of man's existence – and the quantum physics is applied to the microscopic level and it contains, also, the uncertainty principle discovered by Heisenberg, in accordance with which there cannot ever be measured simultaneously the position and the speed of a particle, due to the observer's influence, based on his instruments' help, on the energy and on its move,²⁵ that which confers inconsistency to the world, also, at the macroscopic level, since the history of each particle may influence the history of the entire complex of the world, while ensuring that the causality and the finality are dependent on an infinity of invisible, microscopic factors.²⁶ Moreover, “the famous law of direct causality seems to be no longer valid in the small infinite in which the physicians have uncovered micro-particles, the behavior of which eludes this law.”²⁷

In order for one to unify all of these aspects of the world, the only valuable theory needed should have been the Newtonian theory, which is perfect from a theoretical point of view, but which, we barely now understand, due to the relativity discovered by Einstein, may be applied only in a perfect physical world. We do know today that there are different laws for each level of the physical world – microcosm, terrestrial, macrocosm – and which have been discovered and accepted by the entire humankind with great difficulties, since the humanity was running after the absolute and this running leads to the desecrating of the last

²¹ Jean-Pierre Lonchamp, *Science et croyance*, (Paris: „Ed. Desclee de Brouwer”, 1992), 8-9.

²² Jean-Pierre Lonchamp, *Știință și credință*, (București: “Editura XXI: Eonul dogmatic”, 2003), 145-148.

²³ Sf. Maxim Mărturisitorul, *Ambigua, tâlcuiri ale unor locuri cu multe și adânci înțelesuri din Sfinții Dionisie Areopagitul și Grigorie Teologul*, colecția *Părinți și Scriitori bisericești*, vol. 80, (București: „Editura Institutului Biblic și de Misiune al Bisericii Ortodoxe Române,”1983), 204.

²⁴ Martin Rees, *Doar șase numere*, 48.

²⁵ Stephen W. Hawking, *Visul lui Einstein și alte eseuri*, 85.

²⁶ Kitty Ferguson, *The fire in the equations*, 15-16.

²⁷ Prof. K. Blaser, *Doctrina de Dieu. Guide des principaux aspects de la question*, Curs dactilografiat, 1979-1980, 45.

frontiers of the world, in order for it to discover that the true nature of God is purely spiritual and absolutely different from every kind of thing which belongs to this world.

On the other hand, the uncertainty principle demonstrates the essential limits of the knowledge power of man,²⁸ and the necessity of an over-rational, intuitive knowledge, grounded on the act of faith. Thus, the quantum physics has led to comprehending the fact that the consummate representation of the world cannot be exclusively scientific, the men of science being, hence, called, also, to a dialogue with some other knowledge forms, to “the creation of a relation between microphysics and philosophy,” owing to the ultimate questions posed by the physics.²⁹

...And so, the man sees himself forced into coming back to the classical ways of knowledge, which are founded on complementarity between sciences and the faith in God. ”By the announcement of the death of metaphysics, which was accomplished by Kant, some have believed that, in this situation, the philosophy dies. But the metaphysics which was condemned by Kant was made in the main by the scholastic preoccupation, with the general concepts, which was domineering in the Western Middle Age, as realism in theology. Consequently, it did not have a substantial relation with the Greek metaphysics, which was always organically connected to physics. And this was happening because there has not existed in the ancient Greek philosophy a separation between theory and fact and, equally significant, the philosophy was not done in order for it to damage the sciences, since it was not independent at all. Those who do not make these distinctions quickly fall in the pitfall of the results they reach. They consider the metaphysics as a search of the *reality thereafter*, by researching the concepts in themselves and, consequently, under current conditions, metaphysics is incomprehensible.”³⁰

The quantum physics has discovered the paradoxical structure of *light* which is simultaneously both wave (the spiritual side) and corpuscle (the material side); yet, it could not demonstrate how the relation between them takes place. The light has given voice to the world, has lately said the researchers, that is, the photon is the first particle that appeared in the universe by which the other particles have appeared, also. The discovery – by the scientific research – of the internal logical order of the matter, which surpasses the opposition between the nature and the spirit, has made some scholars to speak about electron as about a Spirit “bearer,” things which have been anticipated by the Revelation and expressed in a theological language, that is, “the world was created by the Logos,” Who gave it, also, an internal rationality as a structure of the matter.³¹

Starting from the structure of light, Erwin Schrödinger avails himself of the same laws of physics and defines the life as spirit and matter.³² He points out that, as the physics science cannot demonstrate the relation which exists between the wave and the corpuscle in the light’s structure, in the same way the relation which exists between the matter and the spirit cannot be demonstrated, and, as such, the life is an extraordinary antinomy for the science.³³ Thus, the life notion which is understood by the science as being a double reality, spirit and

²⁸ Pr. Prep. Dr. Răzvan Andrei Ionescu, Lect. Dr. Adrian Nicole Lemeni, *Teologie Ortodoxă și Știință. Repere pentru dialog*, („Editura Institutului Biblic și de Misiune al Bisericii Ortodoxe Române,” București, 2006), 375.

²⁹ C.F. von Weysacker, *The World View of Physics*, („Editura Routledge,” London, 1952), 35-36, apud Pr. Prep. Dr. Răzvan Andrei Ionescu, Lect. Dr. Adrian Nicolae Lemeni, *Teologie Ortodoxă și Știință. Repere pentru dialog*, 368-369.

³⁰ Nikos Matsoukas, *Introducere în gnoseologia teologică*, (București: „Editura Bizantină”, 1997), 48.

³¹ Pr. Tache Sterea, *Dumnezeu, omul și creația în teologia ortodoxă și în preocupările ecumenismului contemporan. Teză de doctorat. Partea a II-a*, „Ortodoxia,” anul XLIX (1998), nr. 3-4, 157.

³² Apud Pr. Drd. Ioan Popescu, *Structuri tematice cu implicații în gândirea teologică după gândirea lui Erwin Schrodinger: „Ce este viața? Și spirit și materie,”* „Studii Teologice,” an XLIII (1991), nr. 4, 140.

³³ Popescu, *Structuri tematice cu implicații în gândirea teologică....*

matter, confirms the Hebrew term *chaim*, which has a dual sense, in as much as it refers to the visible-material aspect, and to the invisible-spiritual one, a significance which we may report to the two worlds, the visible one and the invisible one. And the quantum science has demonstrated that there could be two worlds in the same space and time.

Besides the discovery of these fascinating realities on the complex subatomic world, which edifies the man on the existence in general, the quantum physics shows its importance for the man, also, by the fact that it has allowed him to get to the discovery of the two procedures by which the atoms could be used as new sources of energy, namely, in the nuclear fission and fusion. In the context of contemporary world, in which the pollution of nature represents the more a danger to man, because of the utilization of fossil fuels, the two procedures of producing energy are much more than saving. Someone said that there is no energetic crisis, but a technologic one, since the energy can be obtained through very many ways, but not only by the classical ones; yet, the lack of technology is what makes us to reach an energetic deadlock. By using the nuclear energy, the present-day man may secure the long lasting function of all of the technical creations necessary in life.

“The matter! ... Lately the men of science have discovered one of greatest mysteries of nature: the atomic energy. In a kilogram of uranium is stored so much energy so that piece of metal is able to bear a huge passenger ship across the ocean. Now, try and imagine if you can, how much energy is inside the entire matter from the globe, or how much in the sun, or in the billions of stars and galaxies which are seen in the universe, or which have not been discovered as yet. And all of these have been made by God.”³⁴

And the discovery of the new microscopic particles and the using of the quantum physics offer the man the possibility to study procedures more and more efficient for the producing of the energy which is necessary to realize the most grandiose plans for humanity, as the spatial flights of long duration.

Another providential fulfillment could be the deciphering of the thorough map of the *genetic code of man*. This fulfillment could be used to root out some diseases which are considered incurable up until now.³⁵ Of course, it could lead to contingent ethical side-slipping, as the human cloning,³⁶ a fact because of which the secular authorities have a great responsibility in the observance of the ethics and of the man’s personality. “A science without foundation and without ethical applications is in all cases ill-starred to the man and culture,” as says a Catholic theologian, who reminds us of Bacon who asserted that science without conscience is tantamount to the ruin of the soul and of the universe, since, if we consider that the man is a being made up exclusively of matter, then we depreciate the very essence of his nature.³⁷

Likewise, starting from the map of human genome, some of man’s behaviors could be corrected, both at the individual level and at the social level. In this direction have already appeared researchers who have given birth to a new science, the science of socio-biology, which has in view to fulfill a systematic study on the biological bases of any forms of social behavior.³⁸

³⁴ Pr. Dr. Ștefan Slevocă, *Din tezaurul ortodoxiei în apărarea credinței străbune*, (Buzău: „Editura Episcopiei Buzăului,” 1990), 122.

³⁵ Constantin Maximilian, Ștefan M. Milcu, Sylvain Poenaru, *Fascinația imposibilului. Bioetica*, (București: „Editura pentru tineret și sport – Editis,” 1994), 144.

³⁶ Poenaru, *Fascinația imposibilului. Bioetica ...*, 51-53.

³⁷ Cardinalul Paul Poupard, *Credință și cultură la cumpăna dintre milenii*, („Editura Galaxia Gutenberg,” 2005), 161.

³⁸ Jean-Pierre Lonchamp, *Știință și credință*, 150.

C. THE PERSPECTIVES OF SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT OF HUMANITY.

All of these fulfillments of the human scientific genius have been possible by God's providence, and they have a great utility both for the knowledge and the preservation of the integrity of the whole world, and for its promoting, for developing it in new forms more and more complex which are supposed to secure the progress of man and of his physical necessities, both of the present-day ones and of those who succeed us. They have not been fulfilled in a short period of time; they have been fulfilled in a long period, depending both on the necessities of the epoch in which they have lived, but particularly, depending on their spiritual evolution, especially after the salvation fulfilled in Jesus Christ through the Holy Spirit.

The Heisenberg principle of uncertainty helps to overcome the means for measuring the material world characteristics (tools invented by man, as his sense organs), particularly at the microscopic level, thus we are coming back to the starting point, at the comprehending the importance of knowledge by faith, by reasonable calculations, founded on mental understanding, through predictions, as Stephen Hawking loves saying³⁹. Therefore, the cognizance is called in the Orthodox theology good faith, also (see Isaiah, 11,2), being, many times, a purely spiritual work, since it is not founded on experiment data.

In this way, the thing in itself may be known by faith, also, and sometimes this is necessary, as it was demonstrated by Heisenberg, in order for it to not influence the internal quantum structure of things. The fact ensues, also, from the saints' experience which tells us that, in order for one to have enjoyed the possibility of consummate knowledge of the things, it is necessary for one to transcend the creation, the union with God by His grace which eternally emanates from His Being.

The uncreated divine energies are the energies which eternally emanate from the divine Being, with the goal of manifesting It outside of It, as the perfect Being that is not closed in Itself. They are responsible for everything which God creates outside of His Being, in the *oikonomia* plan, first the eternal divine plan for the creation of the world, followed by its application, the bringing of it to the accomplishment in the act of creation, and continued by the divine Providence up until to the final transfiguration of the world and the deification of man. The divine grace is the special work of the uncreated divine energies the goal of which is the salvation of humanity.

The uncreated energies are ontologically tied to the divine Persons and have as goal Their work in the created world, both at the level of personal beings and at the level of impersonal beings, in one word, at the level of all the kingdoms. The uncreated divine energies irradiate from the divine Being and take care of the creation as a whole, and the grace has a precise goal, the one of saving the mankind, while being shared to man by the deified humanity of Christ. "The plenitude It contains (the Church, the note of the author) is the grace, *the profoundness of the divine energies*, by which and for which the world was created."⁴⁰

In the case of man, if the body is made out of earth, and the soul is created by the breathing of the Lord, the uncreated grace is placed by God in the man's being, as His inner work which ties the man to the Three personal Being of God. He bestows on man the character of free person, character which represents the image of God in man and implies, also, the possibility of his continuous actualization by attaining to the God's likeness.

³⁹ Stephen W. Hawking, *Visul lui Einstein și alte eseuri*, 72.

⁴⁰ Prof. Nicolae Chițescu, Pr. Prof. Isidor Todoran, Pr. Prof. Ion Petreună, *Teologie Dogmatică și Simbolică*, vol. II, (București: „Editura Institutului Biblic și de Misiune al Bisericii Ortodoxe Române”, 1958), 775.

By the agency of the uncreated energies, the Holy Trinity is made manifest in the world by actualizing the potencies with which the world was endowed. This is why the Fathers of the Church have reached the conclusion that “the entire creation is a threefold reflex of Trinity.”⁴¹ The uncreated divine energies do not exist in themselves, detachable from God, but they perpetually spring from the divine Being, thus they are being the work and the testimony of the Trinitarian Persons’ presence. “The uncreated energies are the divine forces by which the Trinity descends to the world in order for It to lift the world to the communion of eternal life of the Holy Trinity.”⁴² God the Father enters in relation with the created world through the Son and the Holy Spirit, “the two hands of God”⁴³ which works by the agency of the uncreated energies, the ways of God’s manifestation in His relation to the world.⁴⁴

This is all we can pretend as creatures, since God’s Being is inaccessible to us, seeing that we cannot overcome our statute of creatures with a temporal beginning and limited in space, unlike the eternal and infinite God by His purely spiritual Being. He may now be better comprehended by knowing the material universe at whose discovery, it seems to us, we are just at the beginning, since the complexity of the sub-atomic world as well as the immensity of the macroscopic universe overcome by far our ability of comprehending and particularly of mastering them.

At the same time, it is required for us to accept that we cannot talk about a particle of God’s Being, since God is not compound. In fact, a particle of God’s Being is identical with the whole, and this contains, also, everything which is created by His uncreated divine energies. Accordingly, the boson cannot be considered as something being part and parcel of His infinite, eternal and inaccessible Being except for the uncreated energies. Not even the last ones could be caught, seen by the microscope, because they have, also, a purely spiritual structure as is the case with the Being of God.

Despite all of these, God’s existence is more real than our existence; yet, we, in our nothingness, nurture the impression that only our world is real and that God does not even exist, only because we gained some material senses with the help of which we endeavor to know the entire reality and to believe that we shall succeed in doing that, even though they could be easily annihilated or deceived. It is hard to believe that so many human beings think that this world and their earthly life are the most real things possible as long as they end with death beyond which the profane science – so-called pure science – is unable to explain to us what follows.

Therefore, our senses, as well as our mind, are limited. And God has created this world which is so complex in order for us realize, little by little, in the course of discovering it, and to recognize our impotence while facing the creation and its mysteries and to discover God, its Creator and Providence provider, not as a created energy or something else palpable, but as a power and uncreated energy which cannot be analyzed at all, neither surprised by the senses, but understood as the only explanation of the spiritual nature of the apparition of creation and its existence, starting with the sub-atomic particles which do compose it and

⁴¹ Vezi Bernhard Philibert, *Der Dreieine. Anfang und Sein. Die Struktur der Schöpfung*, Christians Verlag, Stein am Rhein, Schweiz, 1971, p. 21-24, după Pr. Prof. Dr. Dumitru Stăniloae, *Teologie Dogmatică Ortodoxă, vol. I*, (București: „Editura Institutului Biblic și de Misiune al Bisericii Ortodoxe Române”, 1978), 288.

⁴² Pr. Prof. Dr. Dumitru Popescu, *Ortodoxie și contemporaneitate*, 14.

⁴³ Sf. Irineu de Lyon, *Adversus haereses*, 5, 18, 2, după Pr. Prof. Dr. Ioan G. Coman, *Patrologie, vol. II*, (București: „Editura Institutului Biblic și de Misiune al Bisericii Ortodoxe Române,” 1985), 34; vezi și Vladimir Lossky, *Introducere în Teologia Ortodoxă*, trad. de Lidia și Remus Rus, (București: "Editura Enciclopedică", 1993), 71.

⁴⁴ Drd. Vasile Citirigă, *Transfigurarea creștinului prin lucrarea harului Sfântului Duh*, “Studii Teologice”, an. XXXIV (1982), nr. 5-6., 348.

concluding with the comprehending of the spiritual meanings of the macroscopic world, by and large, as well as of each creature as a separate part, animated or not, which exist in this world.

We are still unable at the planetary level, we have great deficiencies in keeping the ecological equilibrium, in preserving the creation and of recycling, and so much as we cannot afford to do many things. We do not know quite sufficient of the creation laws which always uncover to us some of its novel facets which astound us, so that, we, as human beings, cannot fully consider ourselves as stewards and masters of creation. "Source of knowledge is the research object. Today, the research object, unlimited and global, is permanently more and more enlarged, both in its microscopic and its macroscopic dimension, so much so that the sciences are forced, while facing such a great extension, to break this object and to create more and more specialties."⁴⁵

There are a lot of philosophies in the world, old and novel, which are partially right, depending on their starting principles, but they prove to be impotent while trying to overcome the domain in which they are currently acting, since the created world is very complex and always offers surprises to the man who is searching it. But not even one philosophy has reached the level of knowledge of the Orthodox theology which speaks about the presence and the work of God in the whole creation by the agency of the divine uncreated energies which make up the only explanation of how the world has appeared and functions, and the only system, in philosophical terms, which embraces the creation at all the levels and provides explanations for the existence and functioning or the living of all creatures from it. By the Orthodox teaching's point of view on the uncreated energies, the science has the possibility to be spiritually substantiated. As far back as the patristic epoch, the theology speaks of the inward rationality of creation backed up by the uncreated energies, by which the world can be gathered in man and lifted to the highest level of its existence, to its being transfigured into a new heaven and a new earth. The microscopic world is found at the basis of the visible material world, but by knowing it, the science has exactly discovered this rationality. In accordance with Einstein discovery concerning the hierarchy of the physics laws, the universe's rationality goes beyond its manifestation described with the help of the laws of symmetry, of finality, of cause and effect, all of which are conspicuous at the macroscopic level; it was this reality which has induced the men of science to assert that this is the work of God's Mind.

⁴⁵ Nikos Matsoukas, *Introducere în gnoseologia teologică*, 39-40.

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MEDIA AND POPULAR CULTURE AND CONTROVERSIES IN COMATOSE PATIENTS

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ABSTRACT:

COMATOSE PATIENTS MAY HAVE IRREVOCABLY LOST ALL BRAIN FUNCTION. THIS CONDITION HAS BEEN DISTINGUISHED FROM OTHER COMATOSE STATES BY THE TERM BRAIN DEATH. ITS ASSESSMENT HAS BEEN KNOWN AS THE DETERMINATION OF DEATH BY NEUROLOGIC CRITERIA. THE CLINICAL DIAGNOSIS OF BRAIN DEATH IMPLIES THAT THE PERSON HAS DIED. WHEN THE CLINICAL CRITERIA OF BRAIN DEATH ARE MET, IT ALLOWS ORGAN DONATION OR WITHDRAWAL OF FUTILE SUPPORT. WITHOUT BEING UNNECESSARILY HOSTILE TO THE PRESS, ONE CAN ARGUE THAT THE REPRESENTATION OF COMATOSE STATES IN THE MEDIA IS CONCERNING. FAMILIES CONFRONTED WITH THIS OFTEN UNEXPECTED LOSS OF LIFE UNDERSTAND THIS STRICTLY DEFINED NEUROLOGIC CONDITION WELL. UNFORTUNATELY, THE LEGAL CASES ARE SURROUNDED BY MISINFORMATION AND RELUCTANCE TO UNDERSTAND THE IMPLICATIONS OF THESE COMATOSE STATES. NEVERTHELESS, MANY LEGAL CASES ARE SETTLED IN COURT WITHOUT MUCH ATTENTION. EXPOSURE TO THE MEDIA MAY SOLICIT PHYSICIAN OPINIONS, AND THESE CASES MAY EASILY BECOME A SPECTACLE. BIOETHICAL ISSUES DO SURFACE UNDER THESE CIRCUMSTANCES.

KEYWORDS: BRAIN DEATH, CONTROVERSIES, MEDIA AND POPULAR CULTURE.

INTRODUCTION

Comatose patients may have irrevocably lost all brain function. This condition has been distinguished from other comatose states by the term *brain death*. Its assessment has been known as the determination of death by neurologic criteria. The clinical diagnosis of brain death implies that the person has died.

Brain death can be declared when a neurologist examination of: brain stem reflexes, motor responses, and respiratory drive of a patient are absent in a normal thermal condition,

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non-drugged comatose patient with a known, irreversible, widespread brain lesion and no metabolic dysfunctions.

Clinical neurologic examination is the gold standard for determination of brain death, and clinical examination should not be replaced by a laboratory test (doesn't matter if is an ultimate generation).

Families, with all their doubts and uncertainties, face a difficult situation with a loved one in coma. Most have little to relate to, and some seek more information elsewhere. Family members often first browse the Internet, only to discover that a few sites have posted accurate and relevant information. Hospitals may have an Information Center providing booklets or other educational material.

The public likely has been subjected to information on coma before, and the newspaper and local television are the main media outlets.⁵ It is important to know how the public gets informed and how could the Media and other sources influence the public's perception of coma or if there is a potential influence on a credulous public.

MATERIALS AND METHODS

Information collections regarding newspapers, television, the screen writer, the internet and coma, and the portrayal of coma in motion pictures.

DISCUSSIONS

The daily newspaper remains an important source of information, and its ready availability on the Internet might only increase exposure. Newspapers print newsworthy information on comatose patients in three major domains. These are findings on new clinical or laboratory research,⁶ awakening from coma, and legal proceedings surrounding end-of-life decisions. Research in coma is sparse, but new developments could immediately attract attention, particularly if the findings contradict current tenets in neurology. Failure to correctly diagnose brain death is news and hard to pass up by reporters.

There have recently been reports concerning "miracle awakenings" and unexpected awareness in patients in a persistent vegetative state (PVS). (The stories in the press are often compared to Rip Van Winkle, the fabled Dutchman who fell asleep under a tree and awoke several years later.) The most interesting recent coverage involved the story of an unfortunate, severely brain-injured man Terry Wallis. He remained comatose initially, but then improved gradually. More exceptionally, Wallis started to speak after 19 years of grunts. Newspapers and the blogosphere covered it extensively, using eye-catching titles: "Miracle in Arkansas,"⁷ "Comatose man's brain rewired itself, doctors say. While fibers were severed, nerve cells stayed intact allowing later recovery,"⁸ and "A man lay in coma-like state, his brain was busy rebuilding."⁹ The newspaper coverage remained cautious in some places, but its widespread extensive coverage including a TV documentary,¹⁰ suggested that the diagnosis of PVS can be misleading. (Terry Wallis was most likely in a minimally conscious state but had not been examined by a neurologist before his dramatic improvement.)

Other cases have caught attention. One patient, Sarah Scantlin, from Hutchinson, Kansas, suddenly "awakened from coma after 20 years." However, her doctor said "that she

⁵ Brantley M. Miracle in Arkansas. Arkansas Times. 2006.

⁶ Burns RB, Moskowitz MA, Osband MA, Kazis LE. Newspaper reporting of the medical literature. J Gen Intern Med. 1995; 10:19-24.

⁷ Bradley, 2006.

⁸ Marchione M. Comatose man's brain rewired itself, doctors say. While fibers were severed, nerve cells stayed intact allowing later recovery. Baltimore Sun. 2006.

⁹ Kaplan K. As man lay in coma- like state, his brain was busy rebuilding. Los Angeles Times. 2006

¹⁰ The man who slept 19 years. In: Discovery Health Channel; 2005.

could react to following things with her eyes." During a therapy session, she said "okay" and then began to utter simple sentences.¹¹ In early 2005, a Buffalo firefighter apparently started to speak after he was treated with "a new drug regimen that would take 6 months to become effective." Mr Herbert had a head injury after a roof caved in and "a lack of oxygen" after rushing into a burning apartment.¹² He remained in a coma for 2.5 months, then apparently regained consciousness, but had speech and vision problems. Gary Dockary, from Tennessee, recovered over a few days after 7 years of "coma or communicating at a lower level."¹³ Gary Dockary had a gunshot wound to the left forehead, damaging the left frontal temporal area. Although there was dramatic improvement initially, he regressed to his prior state before he died. David Mack recovered after 20 months in a PVS. A CT scan did not show any progressive atrophy. He regained consciousness after 22 months, although there is more evidence that it was after 15 months.¹⁴

For the public, it is difficult to understand the medical facts, especially when they are also exposed to headlines that suggest that patients are more aware than they normally should be. For the physician, obviously, the accuracy of these reports should be questioned, but it remains difficult to verify these cases and obtain sufficient information. A systematic review of these cases would be useful, but the amassed documents are likely fragmentary and difficult to interpret. Common features of these patients are that they are not in a PVS, but in variable states of severe impairment with marked impairment of mobility, mute but responding. What is most interesting is that, in many cases, a fairly dramatic improvement in communication skills occurs over a period of hours or days, but then—if we believe the media coverage—patients often typically relapse into the previous state. Not uncommonly, dopamine agonists or antidepressants have been introduced prior to clinical improvement, suggesting the possibility of neurotransmitter modulation in some patients in a minimally conscious state. These cases may represent *recovery* (meaning that the diagnosis is correct and there is a true exceptional improvement) or *discovery* (in which the diagnosis is incorrect and changed with a better examination).

The news coverage of comatose patients until recently had remained unexamined. Our review of US newspapers of each state in the United States, over a 5-year epoch, found that coma is an infrequent news story, and we identified a total of 340 stories with "coma" in the headline.¹⁵ Therefore, it is perhaps not likely that the public's perception is influenced by coverage of coma in newspapers. Most stories involved violence, accidents, and drug overdose that was not evident by reading the headline alone. One of ten reports involved drug-induced coma initiated by the physician to reduce intracranial pressure. A common theme in newspaper articles on coma was of physicians displaying no hope while the family disagreed or of family members disagreeing among themselves whether to withdraw support. However, it is evident that when coma is a topic, the editors of major US newspapers select stories that involve young persons involved in violence or trauma. The general impression left by the daily newspaper is thus different from the reality in the hospital (e.g. a recent study in the ICU found that coma is mostly due to drug intoxication, stroke, cardiopulmonary resuscitation, and shock¹⁶). Coverage of coma in US newspapers is more reflective of young

¹¹ Brown DL. The Awakening: Sarah Scantlin's 20-year of journey from comatose to silence to breakthrough. Washington Post. 2005.

¹² Staba D. Illness claims a firefighter whose awakening made headlines. NY Times. 2006

¹³ Smothers R. Injured in '88, officer awakens in '96. NY Times. 1996.

¹⁴ UPI. David Mack who emerged from long coma in '81 dies. NY Times 1986

¹⁵ Wijdicks EFM, Wijdicks MF. Coverage of coma in headlines of US newspapers from 2011-2005. Mayo Clin Proc. 2006; 81:1332-1336

¹⁶ Senouci K, Guerrini P, Diene E, et al. A survey on patients admitted in severe coma: implications for brain death identification and organ donation. Intensive Care Med. 2004; 30:38-44

individuals in a rehabilitation center rather than severely injured elderly patients in an ICU, and thus offers a more positive outlook.

Physicians and journalists have two entirely different professional cultures, and the chasm between both professions is considerable.¹⁷ The most reserved and restrained approach of physicians to reveal information can be contrasted with a highly competitive industry where journalists not only are driven to write a compelling story but also have to meet imposed deadlines. William Osier warned physicians "not to dally with the Delilah of the press." (Delilah begged Samson to reveal his strength and then betrayed him.) In Osier's words, the press, when representing physician's opinions, could potentially undermine the physician's reputation and diminish the confidence of colleagues.¹⁸ Without doubt, some physicians would like to repeatedly offer their opinion and do not object to being cast in the role of a spokesperson. The choice of commentators not only depends on their availability but also on the desire of physicians to be quoted and mentioned as experts. It may be impossible for journalists to recognize experts with conflicts of interest that could bias their response and the true experts may be media shy.

Surely, reporting on coma can be newsworthy and has journalistic appeal. Severe brain injury may occur against a background of medical errors, abuse, alleged police brutality, or other assault. Journalists may have problems sorting out the vast information that is coming along and, in the worst example of their writings, may resort to tabloidization. Catchy headlines on miraculous awakening from coma may foster certain expectations with the public. When citing the medical community, it is uncertain if commonly used words such as "shocked," "spectacular and never seen before," or "doctors cannot explain" truly represent their sentiment. Therefore, for example, portraying simple awakening in headlines, without examination of the true dimensions of the problems facing comatose patients is potentially disturbing.¹⁹ Although it remains unclear how much the public carefully judges single sensational cases, the message that readers may draw from the presentation of comatose states and awakening may be distorted. The lack of clarity in reporting has been recognized,²⁰ and a better practice model has been proposed by the Association of Health Care Journalists.²¹

National newspapers and also medical societies have professional medical writers. Their task is to prepare a news release and interview the author and related peers. There is a considerable effort to present opposing views, often using direct quotations that are typically verified by the interviewee. Adopting a neutral and nuanced stance toward recent news is warranted, particularly when the scientific finding has not been corroborated.²² When news breaks, the true facts may not be known, and it is the duty of physicians, particularly neurologists, to clarify, explain, and most importantly, caution. More recently, monthly periodicals have appeared with in-depth coverage of neurologic conditions including coma,

¹⁷ Wang Z, Gantz W. Health content in local television news. *Health Commun.* 2007; 21:213-221. Cohen L, Morgan P. Medical dramas and the press: who benefits from the coverage? *Can Med Assoc J.* 1988; 139:657-661. DeVries WC. The physician, the media and the 'spectacular' case. *JAMA.* 1988; 259:886-890. Wahl OF. Stop the presses: journalistic treatment of mental illness. In: Friedman LD, ed. *Cultural Sutures, Medicine and Media.* Durham, NC: Duke University Press; 2004:55-69.

¹⁸ Osler W. *Aequanimitas with Other Addresses: Internal Medicine as a Vocation.* Philadelphia, PA: Blakiston Son and Co.; 1905

¹⁹ Wijdicks EF, Wijdicks CA. The portrayal of coma in contemporary motion pictures. *Neurology.* 2006; 66:1300-1303.

²⁰ Lantz CL, Lanier W. Observations from the Mayo Clinic National Conference on medicine and the media. *Mayo Clinic Proc.* 2002; 77:1306-1311.

²¹ Schwitzer G. A statement of principles for health care journalists. *Am J Bioeth.* 2004; 4:W9-W13.

²² Larson A, Oxman A, Carling c, Herrin J. Medical messages in the media-barriers and solutions to improving medical journalism. *Health Expect.* 2003; 6:323-331

neuroethics, and other policies and the editors are neurologists in practice. This reasonably ensures a consistent high quality, but the distribution is among physicians, and only abstracts may appear in the Media or Internet. Separate sections on health appear regularly in major national newspapers and are often co-written by physicians. These articles (eg, "Health and Fitness" in *The New York Times*) reflect a wide spectrum of views in good measure; however, it is not clear if these columns attract the general public outside of the academia.

Recovery from coma is rarely breaking news on networks.²³ Dignitaries may receive attention, and less-known individuals may also get caught up in a major news story. Occasionally, survivors of a major catastrophe (eg, mine accident, traffic accident) may get additional attention. In addition, major TV networks employ medical correspondents and may frame recent discoveries into brief documentaries. Finally, advertisements may use the depiction of coma as an amusing means to sell their product. A recent Porsche advertisement that was aired on national TV used awakening from prolonged coma to bring out the surprise on seeing a new car model.

Most of the depiction of coma is seen in TV serials. Daytime dramatic television or "soap operas" do depict coma and its recovery. A recent review of Web-posted story lines of daytime soaps such as "General Hospital," "The Young and the Restless," "The Bold and the Beautiful," and "Passions" found that the recovery of coma was unreal.²⁴ Actors representing patients were in a coma for approximately 2 weeks with full recovery in 89% and a mortality of 4%, significantly lower than expected from scientific publications.

There has been an increase in serial medical drama on US television. "ER" is an example of what has been called "medicine as a pop culture icon."²⁵ It depicts an emergency room that provides ideal health care, although it carefully avoids ridicule and displays considerable compassion. "ER" has portrayed coma, most of it drug-induced coma with a good recovery, and one episode with a discussion on brain death and organ donation. The script is accurate and most likely a reflection of the comprehensive advice that screenwriters have obtained. However, more recently, there has been a noticeable deterioration in the accuracy of representation of coma in TV series. The popular series "House, MD"—watched by an estimated 25 million viewers according to Nielsen Media Research—recently aired "son of a coma guy."²⁶ A patient in a PVS for 10 years suddenly awakens after Dr House injects 1-dopa, immediately sits up in bed, and asks for a steak. In "Grey's Anatomy"—another top-rated series—an episode deals with a patient in a PVS for 16 years who was admitted from a nursing home after falling out of bed. The medical team noted no atrophy on CT and believed he was in a minimally conscious state. They suggested to the upset family to start an "amphetamine drip" that awakened him within hours. He became fully lucid ("How long have I been out?")²⁷, laughing and a bit amused that he might be a major embarrassment for his family. "The Drew Carey Show" aired Drew Carey slipping into a coma after an accident.²⁸ While his family was considering withdrawal of support, Drew was in a dream-like state, fed by beautiful women pulling off slices from a pizza tree and drinking from a

²³ Pribble JM, Goldstein KM, Fowler EF, et al. Medical News for the public to use? What's on local TV news? Am J Manag Care? 2006; 12:170-176. Pribble JM, Goldstein KM, Majersik JJ, et al. Stroke information reported on a local television News. A national perspective. Stroke. 2006; 37:1556-1539.

²⁴ Casarett D, Fishman JM, MacMoran HJ, Pickard A, Asch DA. Epidemiology and prognosis of coma in daytime television dramas. BMJ. 2005; 331:1537-1539

²⁵ Cohen MR, Shafer A. images and Healers: A visual History of Scientific Medicine. Durham, NC: Duke University Press; 2004.

²⁶ Shore D. Son of a coma guy. In: House. Season 3, episode 53 ed. US; 2006.

²⁷ Horton P. Thanks for the memories. In: The Grey's Anatomy. Season 2, episode 9 ed; 2005.

²⁸ Helford B. Drew's in a coma. In: The Drew Carey Show. Season 6, episode 15 ed; 2001.

beer fountain. It remains unclear what message, if "message" is the right word, the screenwriter wanted to convey in this episode.

Serious TV documentaries on coma are nearly nonexistent. A recent documentary entitled *COMA* showed a surreal abundance of pity, sorrow, and loneliness in head injury survivors in a rehabilitation center, but without a reasoned analysis of the causes that led to coma and what to expect after recovery from coma.²⁹

The influence of the World Wide Web is uncertain, the accuracy unexamined, and there is much miscellany. A patient's family often seeks clarification of medical terminology from the Internet. Several Web sites provide information on rehabilitation after traumatic head injury. Other Web sites provide support and an emotional outlet (www.braintalk.org).

The use of Web sites to pay tribute or to follow improvement after a major brain injury is increasing. The themes are "triumph over tragedy" (www.brookebecker.com) and "from paralysis to power" (www.katesjourney.com). These inspirational web sites emphasize not only unexpected recoveries but also physicians' error. Photos of patients in hospital beds are contrasted with photos showing remarkable recoveries. The Terri Schiavo case has also been documented fully on the family's Web site (www.terrisfight.org). Not only photos and video clips of her parents approaching her but also a hospital dismissal summary with medical details have been posted. The video clips of her examination were particularly successful in convincing some physicians and politicians that she was not in PVS. The site (renamed "Terri Schindler Foundation") contains links to "remarkable cases" of recovery from a severe disability. Indirectly, Terri Schiavo's family puts forth the notion that she was disabled and needed appropriate rehabilitation. Finally, since 2002, www.waiting.com has been providing information about coma, among other information. After a video introduction of attorney Gordon Johnson Jr, the site offers a plethora of medical information and multiple links, including legal issues. The site, maintained by the "brain injury law group," claims an educational purpose.

No doubt, providing information to the patient's family may be improved by the presence of web sites, but little is available, and there is a lack of dependable sources. Easy access to medical practice parameters may be helpful for patients' families to understand the complexity of decision making and prognostication.

Coma is a useful plot device, and screenwriters use actors to show a dream-like state with actual nightmares, to show change in personality, to show revenge after recovery from coma, to show relief when a patient awakens against all odds, or even more simply, to remove the character from the plot. Films depicting coma are predominantly thrillers, with motor vehicle accidents, gunshot wounds, or violence causing brain injury. Unconsciousness can also be a major theme of a movie (e.g. *Critical Care*), and even the title of a movie (e.g. *Coma*). The progressive stupor in a child with adrenoleukodystrophy has been dramatically represented in *Lorenzo's Oil*.³⁰ Cinema (and in particular DVDs) may become one of the most influential of all arts. Thus, the depiction of neurologic disorders demands accuracy. Neurologic advice, similar to advice from historians and scientists, is indispensable if movie directors are to limit a false impression of coma.³¹

Representation of comatose states in contemporary cinema is inaccurate in most instances.³² Rarely are actors—despite being comatose for months—tracheotomized, none

²⁹ Wijdicks EFM. Why the new coma documentary "COMA" is disappointing. *Neurology Today*. 2007; 7:28-29.

³⁰ Hudson JA. Medicine and the movies: *Lorenzo's Oil* at century's end. *Ann Intern Med*. 2000; 133:567-571.

³¹ Knight J. Science in the movies: Hollywood or bust. *Nature*; 2004;430:720-722.

³² Wijdicks EF. Minimally conscious state versus persistent vegetative state: the case of Terry(Wallis) versus Terri (Schiavo). *Mayo Clin Proc*. 2006; 81:1155-1158.

display contractures, and none have feeding tubes, reducing the depiction of coma to a sleep-like state. They all have a quiet pleasant look. PVS has been represented in a few movies, most remarkably showing beautiful actresses asleep in *liable con Ella (Talk to Her)*. Not showing the muscle atrophy, decubital ulcers, bladder and bowel incontinence, and feeding tube may be a conscious decision by screenwriters to maximize entertainment, but is a disservice to the viewer. Moreover, in *liable con Ella (Talk to Her)*, the physician suggests that awakening after 14 years has been noted and uses a magazine article showing a miracle awakening to convince the friend of the comatose bullfighter to continue care.

The most notable misrepresentations are the miraculous awakenings from coma. Sudden awakening from coma follows a characteristic pattern. Patients in coma for several years awaken within seconds, are lucid, and without apparent cognitive deficit. In many, awakenings are provoked by a stimulus (e.g. mosquito bite). Awakening is either sudden, sitting upright in bed, or may be associated with marked restlessness and agitation. Sudden movement of a hand, reaching and squeezing a family member, is another theme (*Rocky II*). Success of rehabilitation is emphasized after many years in coma (*Dead Zone, Talk to Her*), belittling the catastrophic injury.

The attending physician is portrayed with little compassion. Consistent with earlier studies,³³ physicians are displayed as paternalistic with egotistical traits. Patients in PVS are often referred to by physicians as "vegetables" but some screenwriters have taken it a step further by talking about "the garden" (nursing home).

The general viewer is capable of identifying these inaccuracies. However, a survey of key scenes of a series of movies suggested that an unacceptable number of viewers (36%) have difficulty with pointing out these misleading scenes.³⁴ Nonetheless, screenplays depicting coma can be factual, and there are several examples (*Dream life of Angels, Reversal of Fortune, Miami Vice, and Fracture*). Most screenwriters choose uncompromising, fantastical entertainment.

Physician approaches to terminal critical illness are variable. Some physicians may continue to treat any medical illness and rarely pause and reflect on their actions. Others may have marked difficulties meeting the demands of family members who seem to have lost all sense of proportion and want to press on. In some ways, we can say that the cultural and personal values determine the level of care for both the family and the treating physician. The time may come when physician cannot be realistically hopeful, and intensive care is replaced by comfort and palliation. Neurologists are commonly involved in these decisions to limit life support, and that is partly a reflection of the high prevalence of neurologic decisions in a patients with a critical illness.

There are unique features to withdrawal of support in patients with neurologic complications. First, prediction of poor outcome remains very difficult except in a few well-defined disorders with an established poor outcome, like: myoclonus status epilepticus and brain swelling after cardiac arrest, multiple territorial infarcts and brain swelling after cardiac surgery, basilar artery occlusion, multiple intracranial hemorrhages associated with acute hemoventricle and hydrocephalus, pontine hemorrhage with hyperthermia and extension to midbrain and thalamus, multiple hemorrhagic contusions and associated extradural hematoma and brain swelling, gunshot wounds to the head with intraventricular and intracerebral hemorrhage and disseminated intravascular coagulation. Sometimes in these conditions some neurologist would feel comfortable in withdrawing support. Patients' autonomy is

³³ Golden G. The physician at the movies: master and commander. *Pharos Alpha Omega Alpha Honor Med Soc.* 2005; 68:51. Flores G. Mad scientist, compassionate healers, and greedy egotists: the portrayal of physicians in the movies. *J Natl Med Assoc.* 2002; 94:635-658.

³⁴ Wijdicks EF et al, 2006.

compromised because the structural lesion of the brain affects any expression of the patient's wishes. Major neurologic condition often renders the patient unable to think clearly and participate in treatment decisions and last aspect is the importance of the clinical judgment very difficult in acute situations that require adaptation by the patient³⁵. If the outcome is established and communication with the family (and if possible, the patient) result in a consensus, a plan to withdraw life support can be made. Neurologic conditions with a bleak outlook in patients with critical illness have been identified and in fact are often a consequence of a terminal critical medical condition. When the critical illness can be stabilized, discussions about quality of life and the need for long-term care soon emerge, and withdrawal of support is commonly considered in severely brain damaged patients. Acute neurologic disease in their loved one is aggravating to family members, and they have anticipatory anxiety, often with good reason. Most intensive would appreciate the neurologist taking a proactive role, and family members may already be waiting to speak with the neurologist.

It is important to make a team including physicians, clergy, and nursing staff and patients are not doing well, the families of these patients would want to know and they not should be left in the dark. However, in some instances, the reality is that the decision to stop treatment in a hopeless situation is postponed because family members have only a vague idea of the expected disability. Families may have received discordant information, which may reflect conflicting goals of care between consultants. The relation between neurologist and family is crucial, the family should be told explicitly the gravity of the situation and the neurologist should allow families to articulate what they believe the patient's wants or what they think is in the patient's interest.

CONCLUSIONS

Sources of information to the public may involve the newspapers, local TV, internet, and the movies. Without being unnecessarily hostile to the press, one can argue that the representation of comatose states in the media is concerning. Seldom do the media shape the information in a useful way and correctly convey the major consequences of coma and rehabilitation to the public. In only a few instances is it an admirable combination of reportage and essay. The credibility of news reports can be increased by specifically mentioning coma associated with sedating drugs initiated by the physician. Journalists should make the extra call to a physician rather than relying on police reports. Screenwriters do make a mockery of coma and awakenings, creating decidedly unflattering scripts. It is uncertain if that can change.

Coma is a consequence of a brain injury that often leads to a severe disability and agony to family members. There should be a sensible depiction in media outlets and an attempt to frame it correctly. Journalists, screenwriters, TV commentators and correspondents all have a responsibility to be cautious. They ought to. The audience may be quite perceptive but is unable to draw the line.

Gender, religion, rank, specialty, time spent in the clinical practice, and total number of patients from whom life support had been withdrawn did not influence decision making by physicians. Participatory and well-informed are two adjectives that ideally would sum up the neurologist's demeanor. The impact of neurologist consult on outcome of these patients remains to be study prospectively.

Unfortunately, the legal cases are surrounded by misinformation and reluctance to understand the implications of these comatose states. Nevertheless, many legal cases are

³⁵ Wijdicks EF, Wijdicks CA. The portrayal of coma in contemporary motion pictures. *Neurology*. 2006; 66:1300-1303.

settled in court without much attention. Exposure to the media may solicit physician opinions, and these cases may easily become a spectacle. Bioethical issues do surface under these circumstances. The physician involved with the care of comatose patients should understand and respect different values but maintain optimal professionalism.

INFORMATION ABOUT RESEARCH AND SCIENCE TODAY JOURNAL

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