GENE, SEME, MEME: VECTORS OF ARATIONALITY, RATIONALITY AND IRRATIONALITY

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Abstract

In a continuous dynamically enhancing global context in terms of complexity, there is a stringent need for a better understanding of economic and human cognitive and behavioural mechanisms and the amount of rationality, irrationality and arationality which is substantiating people decisions.

There is an imperative need for a profound analysis and revision of the concepts of gene, seme and meme from epistemological, logical and praxeological perspectives and their correlations with people cognitive and behavioural decisional mechanisms and how rational, arational, irrational, conscious, aconscious and unconscious states are interfering and forming cognitive and behavioural artefacts.

The argument of the paper is to approach the concepts of genes, semes and memes into a comprehensively theory to explain human cognitive and behavioural decisional mechanisms for a better understanding of how humans are functioning and what are the causes of cultural genesis, transferring, transforming and extinction.

Key words: *gene, seme, meme, rationality, irrationality, arationality, conscious, aconscious*

1. INTRODUCTION

1.1 About Gene

The term *gene* has its etymology in the Greek term *genea*, meaning *generation* or *race*. The term has been coined by Wilhelm Ludvig Johannsen in 1905 under the German version *gen*. The origin of the gene concept is related with the research of Gregor Mendel who, between 1857 and 1864, has made research on the transmission of inherence characteristics between intergenerational cultures of pea plants[1]. Even if the term gene has not been mentioned in Gregor Mendel research but inherit characteristics, the term was later adopted with the development of genetics. Charles Darwin used the term *gemmule*[2] which later has become *chromosome* to describe a microscopic unit of inherence. In 1909, Wilhelm Johannsen, coined the term *gene* as the fundamental physical and functional unit of heredity[3]. Nowadays, genetics has evolved to molecular genetics which is experimenting processes of altering the genetic code, gene extraction, implantation, amplification or reduction.

The concept of gene is closely related with the evolutionary theory, developed in its brute form by Charles Darwin with the publication of his book *On the origin of species,* published in 1859 which suggests that species and organisms, including humans, arise and develop through random variations and natural selection of characteristics that enhance individuals` ability to compete and reproduce. The theory suggests a prevalence of genes ensuring their perpetuation among the descendants of an individual which are considered only vehicles of the genes, their main role being of carrying the genetic material and preserving for replication.

Gene can be technical defined as a distinct sequence of nucleotides forming part of a chromosome[4], which determines the order of monomers in a polypeptide or nucleic acid molecule which a cell (or virus) may synthesize, basically meaning a unit of heredity which is transferred from a parent to offspring and is held to determine some characteristic of the offspring.

1.2 About Meme

Etymologically speaking, the term meme has its roots in ancient Greek term *mimētḗs*, meaning *imitator or predator.* A similar term called *mneme* was used by Richard Semon, in 1904.[5]

The concept of *meme,* as currently known, is also correlated with the theory of biological evolution, in which is stipulated that all the species arises through the process of natural selection of those variations with the ability to better survive towards competitors and environment.

The term *meme* was originated by the evolutionary biologist Richard Dawkins, who, in the book *The selfish gene, published in 1976,* is making a correlation between *gene* and *meme,* which is described as *an idea, behaviour or style that spreads from person to person within a culture*[6]. Dawkins is seeing the cultural existence as a perpetual replication process of memes, in which units of culture are transferred through memes from one subject to another.

Memetics is the field preoccupied with the study of memes in the direction of analysing the success of meme replication but not imperative the truth of cultural units. The discipline of memetics have a recent history, with little consolidation of the concepts.

An important contribution is brought by Daniel Dennett, with the publication of the book *Consciousness explained,* which integrates the concept of meme in a philosophical context, in a theory of the mind. Dennett suggests that during human evolution, the interests of the genes was constrained by the interests of ideas and cultural propagation. [7]

Modern memetics is influenced by several authors outside the academic cultural evolutionary environment. One of the authors is ex-Microsoft employee Richard Brodie, the creator of Microsoft Word, who in 1991 published the book *Virus of the Mind: The New Science of the Meme* which tries to bring together fields such as psychology, biology, anthropology, and cognitive science in a unified theory of the mind. The author sees some crucial similarities between genetic viruses which are making alteration to the genetic material of the infected organisms and memes or *viruses of the mind*[8] and how those are affecting institutions, governments, groups and people by replicating ideas and cultural units in a context of globalization and high speed information access. Another contributor to the memetics, outside academic environment, is Aaron Lynch, who in his book *Thought Contagion: How Belief Spread Through Society,* published in 1998, is trying to systemize the information in the field of memetics and provide his own thoughts on the implication of the memes to past and current issues of humanity[9], from a complementary perspective to his predecessors.

There are several definitions regarding memes, each of them depending on the background of the author and their own perspective:

- Richard Dawkins: *The meme is the basic unit of cultural transmission, or imitation. A meme is a unit of information in a mind whose existence influences events such that more copies of itself get created in other minds.*[10]
- Henry Plotkin: *A meme is the unit of cultural heredity analogous to the gene. It is the internal representation of knowledge*.[11]
- Daniel Dennett: *A meme is an idea, the kind of complex idea that forms itself into a distinct memorable unit. It is spread by vehicles that are physical manifestations of the meme*.[12]
- Susan Blackmore: *Meme is whatever is copied from one person to another person, whether habits, skills, songs, stories, or any other kind of information*.[13]
- Robert Aunger: *A neurometne is a configuration in one node of a neuronal network that is able to induce the replication of its state in other nodes.*[14]

There are researchers who criticize memetics and its components and concepts. Mary Midgley suggests that culture cannot be better understood by analysing its smaller components and that the ontological status of the memes could be questioned[15]. In the same directions, Luis Benitez-Bribiesca, emphasize the lack of *the code script* of memes in comparison with the DNA of the genes and the fact that the so-called evolutionary process of the memes can be only chaotic and unpredictable.[16]

In present days, there are several researches who are contributing with their efforts to the development of memetics but their number is not high. The approaches are various, including memetic algorithms,

neuroscience or evolutionary psychology. Memetics is used in the fields of viral marketing, public relations, cultural evolution, social analytics, sustainable development, etc.

1.3 About Seme

The term seme has it etymology in the Greek term *sema*, meaning *sign* or *mark*. The term seme is mentioned in the field of semiotics with the meaning of being *the smallest unit of meaning*[17] which is transmitted. Semiotics as a discipline of study is the philosophical theory of signs and symbols, studying, including but not limited to meaning processes, indication, designation, signification, communication, semantics, syntactic and pragmatics.

Human preoccupation for the relation between signs and signification was recognized during history of philosophy and even psychology, thinkers such as Aristotle, Plato, Augustine, Umberto Eco and Charles Sanders Pierce brought their contribution to the substantiation of semiotics and its sub-disciplines. Among the first mention of the term was done by John Locke in his book *An Essay concerning Human Understanding*, published in 1690, dividing the human understanding into three directions: first, the nature of things; second, the rational voluntary actions that human ought to take in order to achieve an end and the third is about the knowledge of ways and means is attained and communicated, naming the last category *the doctrine of signs* or semiotics.[18]

In XIX century, Charles Sanders Peirce defined semiotics as *the quasi-necessary, or formal doctrine of signs*[19] and while the semiotics defined by Ferdinand de Saussure is seen as dyadic emphasizing the relation between sign/syntax and signal/semantics, semantics defined by Peirce is seen as triadic, introducing a part from sign and object, the third element: interpretant, which, in his acceptance, *needs not to be mental.*

An interesting approach is cognitive semiotics, developed in recent years and which studies the meaning, integrating methods and instruments from cognitive and social theories such as psychology, cognitive science, computational modelling, anthropology and philosophy.

The concept of seme is very little developed in the field of semantics, being defined as the singular characteristic of the smallest atomic or indivisible unit of meaning or called *sememe*[20] correlative to a *morpheme*, defined as the smallest meaningful unit in a language. A *sememe* can be defined as the meaning expressed by a *morpheme*.

The critics of semiotics suggests that the discipline is *imperialistic* as its implications is concerning the whole culture, *overfilling our lives with meanings* [21] and in the same time, semiotics results are considered to be perceived as subjective interpretations, rather than objective scientific approach.

2. DESCRIPTION OF THE PROBLEM

2.1 Gene Theory Deficiencies

There is a lack of a comprehensive theory that could explain human behaviour in a holistic approach. For instance, Evolutionary Theory could not explain sterilisation, self-destruction acts such as substance-abuse, suicide and procrastination nor altruistic behaviours such as charity, sacrifice acts, volunteering or unconditional helping. The Evolutionary Theory is not able to plausibly demonstrate why human individuals are willing to deliberately suppress their capacity of reproduction by intentional sterilisation or suicide. While there are some explanation for altruistic behaviours such as kin selection, inclusive fitness or inner-group altruism which could explain how an organism could favour the reproduction of its relatives, even with the costs of its own survival or reproduction (sterile worker ants caring for the offspring of their queen[22], alarm calls of birds which expose themselves by informing the group about a potential predator etc.), this could not explain how people choose to sacrifice their life for individuals with less chances to survival or reproduction, for causes out of their inner-group or for causes unrelated with individual or human species perpetuation.

The Evolutionary Theory is focusing mainly on physically and biological aspects of organism evolution with little or no consideration to cultural and social evolution. The complexity of human

society and the dynamics of cultural development has increase the prevalence of semes and memes over the genes so Evolutionary Theory, as is currently known (and genes alone) could no longer be a satisfying and complete explanation for existence and perpetuation, at least in the case of human subjects.

2.2 Meme Theory Deficiencies

Memetics lacks on having a solid theoretic ground and systematized empirical facts to consolidate its concepts and paradigms. Richard Dawkins himself, the pioneer of memetics, in the book *Selfish Gene* where the term meme was coined, is dedicate only one chapter to the concept of meme while the rest of the book is treating the subject of genetics and updated evolutionary Darwinian Theory. The author intention was not to provide a meme theory but, as he specify, was to coin the term meme in a speculative approach.

Other researchers post-Dawkins, such as Douglas Hofstadter, Daniel Dennett, Richard Brodie or Aaron Lynch are making efforts in creating the basis of memetics but while the approaches varies there are few aspects unanimously agreed. In the same time, there are few scientific methods used in memetics, this discipline would be considered, more hermeneutic than scientific.

In the same direction, not only that memetics has at this point a theoretic background which, because of its vagueness, is not allowing to be factual falsifiable[23] but also, the discipline lacks on scientific methodology to provide comprehensive an relevant results.

There is a need of creating a solid framework that allows researchers to build the theoretical and empirical substance of memetics, in order to explain how cultural fund is acquired, how ideas are spreading, how behaviours are replicated, what are the mechanisms of social contagion, why some beliefs and ideas are wider spread than others, what are the components of a meme, how are memes classified, what are the characteristics of a successful meme, what is the process of meme genesis, replication and transmission and how we can use memetics to anticipate behaviours and cultural alterations.

2.3 Seme Theory Deficiencies

The concept of seme is yet insufficient developed, being limited to expressing a singular characteristic of a sememe - smallest atomic or indivisible unit of meaning in the field of semiotics. The area of semiotics is capable to explain some of the dynamics of cultural development but the available instruments are lacking on objectivity and measurable results so the concept of seme needs to be directed to a cognitive theory for defining the meaning in the sense of informational units from the cognitive mechanisms.

3. MSG (MEME, SEME, GENE) THEORY - *AUTHOR DEVELOPMENT*

3.1 Theory terms definition

Below are defined the terms used in this theoretical proposal:

Rationality = logical bivalent property of cultural subjects of consciously and consistently transcending the objective reality with the purpose on normatively representation in the cognitive system. Rationality is a filter at the level of cognitive mechanisms referring to the evolutionary property of human subjects to oppose instinctual and automatized arational mechanisms. Rationality is having the purpose of opposite to the course of action established by the arational level so we can speak about a *free won`t*[24] instead about *free will*. In the same direction, a decision generated by a model of rationality is out of the area of *free-will*.[25]

Irrationality = is the inconsistency of subjects to normatively represent the objective reality in the cognitive system due to the uniqueness of the cognitive systems of each individual which cannot integrate a course of action of another subject with its own rational cognitive models. Irrationality is just a species of rationality which doesn`t fit the rational models of the majority but is validated by at least one subject.

Arationality = primordially propriety of subjects to function through a set of automatized, instinctual and non-conscious mechanisms dictated by the pure natural objectivity of genetic material at the bio-molecular level and by the correlativity between the informational units at the cognitive level, independently of rational models or opposition from subject consciousness or rational filter. Arationality is having the purpose of subject and species survival and increasing the level of complexity and independence of the subject and cannot be integrated with a subjective rational model.

Consciousness = the state of awareness of the capacity of opposite to the decisions already taken at the arational level through a rational filter.

Aconsciousness = the state of unawareness of the capacity of opposite of decisions taken at the arational level.

From my personal perspective, a comprehensive theory that could explain the cultural dynamics of humans is a unified theory based on the triad Meme, Seme and Gene.

Hypotheses

H1: Human physical, cognitive and behavioural mechanisms are caused by the correlativity between memes, semes and genes.

H2: Memes, semes and genes are the vectors of irrationality, arationality and rationality.

3.2 Gene Definition and Structure

Gene is the molecular unit of heredity referring to segments of deoxyribonucleic acids (DNA) and ribonucleic acids (RNA) which holds the information to build proteins by assembling amino-acids into a specific order.

DNA represents a chain made out of four types of nucleotide, each composed of a phosphate group, a five-carbon sugar and one of the four bases phosphate group adenine, cytosine, guanine and thymine. Usually, in a cell, the DNA is represented in a double helix structure of two twisted DNA strands which are bounded by hydrogen bonds between bases phosphate as follows: guanine pairs with cytosine forming three hydrogen bonds and vice versa while adenine pairs with thymine forming two hydrogen bonds and vice versa.

Genes are sets of information that transmit particular characteristics and traits from an organism to offspring, drive proteins to be built into a certain mode and give instruction on how the organism`s cells needs to be assembled and maintained. A Gene is *a locatable region of genomic sequence, corresponding to a unit of inheritance, which is associated with regulatory regions, transcribed regions, and/or other functional sequence regions*.[26] The common usage of genes such as *good genes, bad genes* or *eyes colour genes*[27] is inaccurate and is actually referring to an allele, as while a gene is the basic instruction - a sequence of nucleic acids, an allele is one variation of that gene. In the majority of the cases, individuals would have a gene for a specific characteristic, although certain people will have a specific allele of that gene, which results in the trait variant. Furthermore, genes offers the codification for forming proteins, which might result in identifiable traits, but it is the gene (genotype), not the trait (phenotype), which is inherited.

Genome represents the total complement of genes in an organism or cell, which may be stored on one or more chromosomes (for example human genotype is stored in 23 pairs of chromosomes). The region of the chromosome at which a specific gene is located is called locus. A chromosome is usually visible under microscope in the stage of cell division (mitosis or meiosis) being a complex structure of DNA, structural proteins (histones), transcription factors and several macromolecules.

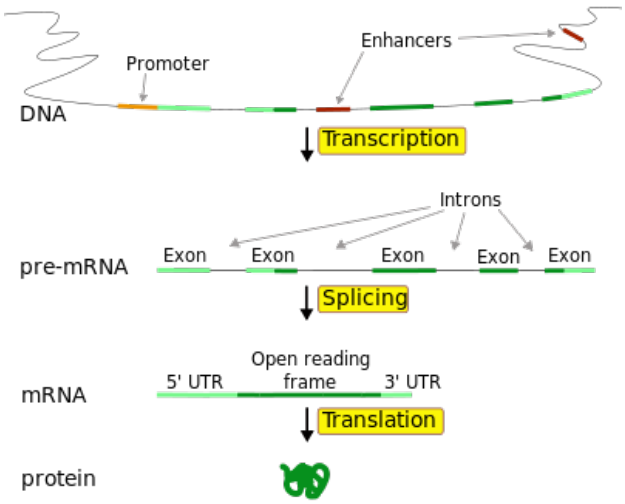


Fig 1 – Protein Coding Gene Structure Example [28]

Protein-coding genes represent the majority of existing genes and are expressed in two stages: transcription and translation. The limits of a protein-encoding gene are defined as the points at which transcription starts and ends.

A protein-coding gene is defined by the extent of the primary transcript. The promoter and any other regulatory elements are outside the gene. The gene itself is divided into three types of sequence. The coding region (light blue) is the information used to define the sequence of amino acids in the protein. The untranslated regions (dark blue) are found in the mRNA but are not used to define the protein sequence; they are often regulatory in nature. Finally introns (white) are found in primary transcript but spliced out of the mRNA. They may interrupt the coding and untranslated regions. Human genes are divided into exons and introns. Exons are part of DNA which are converted into the mature transcript mRNA while introns are part of the gene which do not directly code for proteins

The core of the gene is the coding region, which contains the nucleotide sequence that is translated into the sequence of amino acids in the protein. The coding region begins with the initiation codon, which is usually ATG. It ends with one of three termination codons: TAA, TAG or TGA. On either side of the coding region are DNA sequences that are transcribed but are not translated.

The smallest protein-coding gene in the human genome is only 500 nucleotides long and has no introns. It encodes a histone protein while the largest human gene encodes the protein dystrophin, which is missing or non-functional in the disease muscular dystrophy. This gene is 2.5 million nucleotides in length and it takes over 16 hours to produce a single transcript. [29]

Genes and the entire bio-molecular and genetic level of the subjects is characterized by arationality and aconsciousness as this level is automatic, independent of rational filter of the subject who is not aware about the nano-processes which is ensuring his/her survival as individual and as species.

3.3 Seme Definition and Structure

In my personal view, the predicates of sufficiency for seme definition are the following:

1. **Cognitive Vectors:** Semes are the basic information units of the cognitive mechanism being the cognitive internal representation of reality and interconnected units of information as the cognitive result of neuronal network processes.
2. **Internal Ontological Representation:** Semes are primordially generated in the mind of the subject by the process of seme genesis (semes emerge as a cognitive representation of the genetic material in the form of the primary semes which are continuously altered with new information from semetic internal system or memetic external system)

3. **Internal Correlativity:** Semes are interconnected forming a semetic network of informational units which continuously are altering each other based on the changing information in the system, due to meme replication outside the system.
4. **Prevalence on behaviour:** Semes are capable of reducing gene capacity of perpetuation by altering human behaviour antagonistic to gene propensity towards survival.
5. **Teleological Resonance:** Semes are successfully replicated in the receiver-subjects consciously or unconsciously sharing similar teleological frequencies with the sender-subjects.
6. **Arational Aconscious – Rational Conscious Mixture:** Semes are a mixture of automatic arational and aconscious mechanisms and filters of rationality and consciousness, creating the illusion of free will as the subject is not able to rational and conscious initiate a decision but to oppose to a decision taken at arational and aconscious level due to genetic programming and cognitive information aggregation.

To summarise, a seme is the basic informational unit of the cognitive mechanism, emerging as the cognitive internal representation of reality, continuously altered with new information from semetic internal system or memetic external system, being replicated externally through the semes` expression or manifestation – memes, based on teleological resonance, having a prevalence on subject behaviours through the capability of reducing gene capacity of perpetuation and being a mixture of arationality and rationality.

Being the primary informational units of cognitive mechanism, ensuring main functions and processes, semes should be defined in a holistic context, taking in consideration semes structure, interactions between them and created synergies, cognitive processes and decisional mechanisms.

From my perspective, the cognitive mechanism is a network of interconnected semes (informational units), an active flow of semetic signals, transferred through the network which continuously alters the semes due to information exchange inside the network and the communication with external memetic networks. This cognitive circuit is behind people thought representations, decision and behaviour expressions, motivations, emotions, rationality and irrationality, consciousness and unconsciousness.

From my personal perspective, below is a proposed structure of semes:

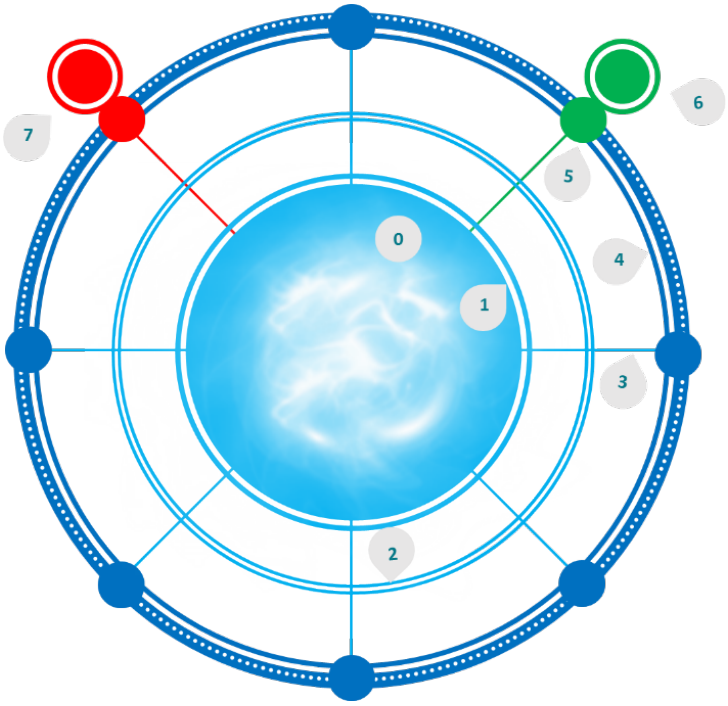


Fig 2 – Seme Structure (author development)

0. **Semetic Arational Core:** The kernel of a seme is represented by an independent unconscious arational amalgam of pure information which is continuously reorganizing based on the internal and external interconnectivity with other semes cores. The role of the seme core is to generate and adopt semetic signals (seme representations)

1. **Semetic Encoder-Decoder Membrane:** The arational seme core is surrounded by a cognitive osmotic membrane which encode the signal generated by own semetic core and decode the signal received from other internal or external semetic cores. The role of encoder-decoder membrane is to ensure a common code between compatible semetic signals and reject incongruous semetic signals.

2. **Semetic Signal:** Semetic Arational Core is generating semetic signals (seme representations) which are transmitted through the internal structure of the seme up to Semetic Signal Sender at the peripheral edge of the seme. Basically, the semetic signal is a representation of the core information into compressed transferable information.

3. **Semetic Connectors:** Semetic Arational Core, through Semetic Encoder-Decoder Membrane, is branched with semetic connectors having the role of conducting the semetic signal between internal components.

4. **Free Won`t Rational Conscious Filter:** The semetic signal received from Semetic Arational Unconscious Core is filtered by a rational component which is creating the sensation of consciousness of the Semetic signal. The rational conscious filter is having also the role to filter external semetic signals and create awareness and to justify or opposite to the already taken decisions at the levels of the arational core.

5. **Semetic Signal Sending-Receiving Terminal:** At the very peripheral edge of the seme, there are semetic signal sending and receiving terminals having the role of continuously transmitting and receiving semetic signals from other semes. Once a semetic signal is received by Semetic Signal Sending-Receiving Terminal, there will be created a sensation of consciousness by the rational filter which will analyse the signal to allow or reject the signal to advance further. If the signal is accepted, this will be fully decoded by the Encoder-Decoder Membrane and will be received into the Semetic Arational Core where will be adopted and mixed with the existent core of the seme, conducting to the alteration (evolution or involution) of the seme.

6. **Transmitted Semetic Signal:** The signal is transmitted internal among the semetic cognitive system and external through the seme vehicles-memes.

7. **Received Semetic Signal:** Semetic signals are transmitted from one seme to another, updating the information from the arational core with each new interaction.

3.4 Meme Definition and Structure

Memes are units of cultural heritage which are vehicles for seme transfer between the cognitive systems of the cultural subjects, being activated only once a seme is released to be copied from a cultural subject to another.

In my personal view, the predicates of sufficiency for meme definition should be the following:

1. **Seme Vectors:** Memes are the basic units of the cultural heritage being the vehicles for semes transmission outside the cognitive system and replication from one cultural subject to another.

2. **Temporary Ontological Expression:** Memes are activated only during seme transmission and replication from one subject to another, being expressions of semes in order to facilitate semes replication among the subjects of a community.

3. **Natural Selection:** Memes are having similar functionality as genes, semes choosing as vehicles only memes which are ensuring successful replication of the semes from one subject to another, this process being evolutive. The information on the most successful memes is updated in semes arational kernel for future use, once the copying process is complete and confirmed.

4. **Cultural replicator:** Meme are the links between people cognitive systems facilitating the exchange and copying of ideas, behaviours, styles etc.

From my personal perspective, below is a proposed structure of memes:

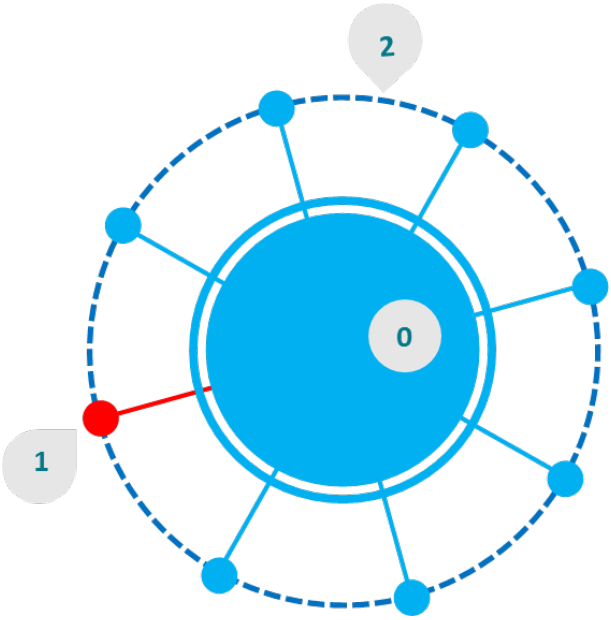


Fig 3 – Meme Structure (author development)

0. **Semetic Signal:** contains the compressed information of the seme belonging to one cultural subject which is releasing the seme to be replicated to the cognitive systems of other cultural subjects.
1. **Trigger:** Memes are having different access points so they could trigger reaction in other subjects with the scope of successfully replication.
2. **Meme Metamorphosis:** The semetic signal is expressed out of the cognitive system in a variety of forms depending on the common codes of communication and interaction inside a cultural system. If the semetic signal is decrypted by the receiver then the seme has been replicated in the mind of the receiver and the meme is temporary deactivated as vehicle of transmission until next action or reaction from the cultural subjects.

Memes are only vehicle of transmission of the semes among cultural subjects and are temporarily activated only when and if a seme is successfully replicated from one mind to another.

3.5 Meme, Seme, Gene Correlation

Genes are responsible for genetic characteristic transmission among successive generations, being an intergenerational replicator.

Genes are the builders of biological processes and characteristics ensuring the survival of the organism and species perpetuation.

Semes are responsible for cognitive transmission among generations, being a transgenerational replicator, having the capacity of information spreading among subjects without the restriction of successive generations.

Semes are the informational units of the cognitive system ensuring internal correlation and external updating of the cognitive system with the scope of increasing the independency degree of the subject compared with other subjects or the environment.

Memes are responsible for cultural transmission among a generation being an intragenerational replicator, having the role of the vehicles for semes from one subject to another and cultural perpetuation.

Memes are the expression of semes as temporary vectors for semes transmission from one mind to another with the role of cultural perpetuation and maintenance.

If genes are the architects of physiologically processes, semes are the components of cognitive processes and memes are the vectors for seme transmission. Genes are vectors of arationality, while semes are vectors for both arationality and rationality and memes are vectors of irrationality:

1. Arationality is represented at the level of genes as the sum of automatic processes, mechanisms orientated towards individual and species survival while at the level of semes, arationality is represented through the aggregated information at the level of cognitive units, non-conscious processes orientated towards raising the complexity and the independence of the subject.
2. Rationality is represented at the level of semes as a free won`t filter as an opposition to the decisions already taken at the arational level. Rationality-Conscious filter is having a role of justification for the already taken decisions or for opposition to those decision.
3. Irrationality is a species of rationality which doesn`t fit the rational models of the majority of the subjects and cannot be integrated as normative. Irrationality is present at the level of memes as unsuccessful seme replication, memes which are not capable of trigger positive reaction for seme replication are becoming temporary carriers of irrational - models of rationality which are not replicating nor resonating among subjects.

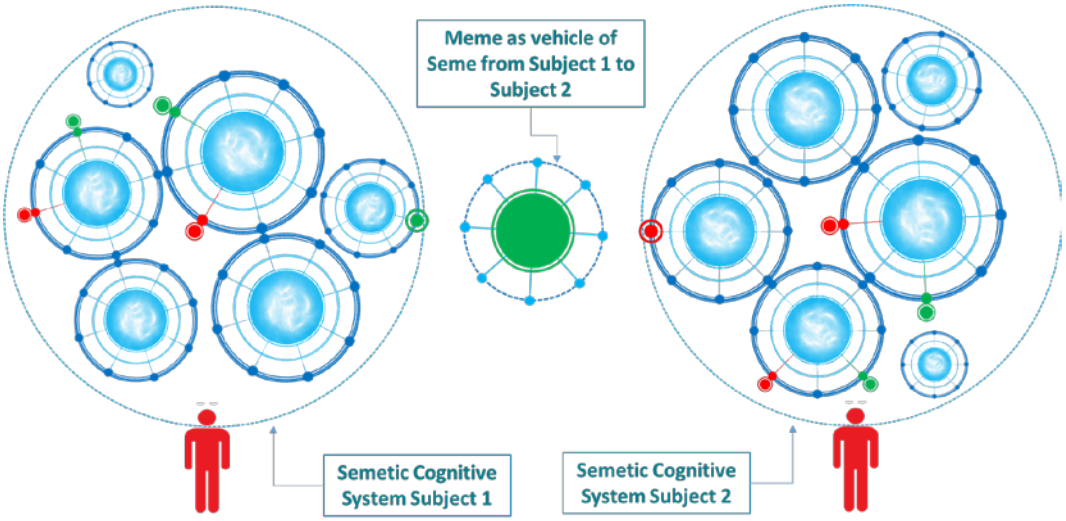


Fig 4 – Seme replication process among cultural subjects (author development)

4. CONCLUSIONS

Human physical, cognitive and behavioural mechanisms are caused by the correlativity between memes, semes and genes, the complexity of biological processes, cognitive processes and cultural heritage is caused by those three agents of replication: gene for genetic characteristic transmission among successive generations, being an intergenerational replicator, seme for cognitive transmission among generations without restrictions of a successive chain, being a transgenerational replicator and meme for cultural transmission among a specific generation being an intragenerational replicator.

Genes are sets of information that transmit particular characteristics and traits from an organism to offspring, drive proteins to be built into a certain mode and give instruction on how the organism`s cells needs to be assembled and maintained.

Seme is the basic informational unit of the cognitive mechanism, emerging as the cognitive internal representation of reality, continuously altered with new information from semetic internal system or memetic external system, being replicated externally through the semes` expression or manifestation –

memes, based on teleological resonance, having a prevalence on subject behaviours through the capability of reducing gene capacity of perpetuation.

Memes are units of cultural heritage which are vehicles for seme transfer between the cognitive systems of the cultural subjects, being activated only once a seme is released to be copied from a cultural subject to another.

Arationality is the primordially propriety of subjects to function through a set of automatized, instinctual and non-conscious mechanisms dictated by the pure natural objectivity of genetic material at the bio-molecular level and by the correlativity between the informational units at the cognitive level, independently of rational models or opposition from subject consciousness or rational filter.

Rationality is the logical bivalent property of cultural subjects of consciously and consistently transcending the objective reality with the purpose on normatively representation in the cognitive system and a filter at the level of cognitive mechanisms referring with the purpose of opposite to the course of action established by the arational level through *free won`t* instead of *free will.*

Irrationality is the inconsistency of subjects to normatively represent the objective reality in the cognitive system due to the uniqueness of the cognitive systems of each individual which cannot integrate a course of action of another subject with its own rational cognitive models, being just a species of rationality which doesn`t fit the rational models of the majority.

To conclude, genes, semes and memes are carriers of arationality, rationality and irrationality as gene is related with arational automatic biological and molecular processes, seme is a mixture of arational and rational through the correlativity between the information at the level of the informational units but also through the rational filter of decision justification of opposition and memes are vectors of irrationality as per unsuccessful seme replication and failures in models of rationality replication.

5. RESEARCH PERSPECTIVES

There are multiple research perspectives in refining and advancing with the theoretical study of the triad gene-seme-meme which can be completed with empirical studies as well. Some research perspectives could be correlated with cultural genesis, transferring, transforming and extinction from the point of view of gene, seme and meme replications or to objectively study the variations of semes and memes and their aggregated valences and effects. In the same direction, an interdisciplinary approach is welcome in the attempt to better understand human from genetic, cognitive and praxeological points of view.

This paper is supported by the Sectorial Operational Programme Human Resources Development (SOP HRD), financed from the European Social Fund and by the Romanian Government under the contract number SOP HRD/159/1.5/S/136077

REFERENCES

[1] Denis Noble, "Genes and causation", Philosophical Transactions. Series A, Mathematical, Physical, and Engineering Sciences (September 2008): 3001–3015.
[2] Robin Marantz Henig, “The Monk in the Garden: The Lost and Found Genius of Gregor Mendel, the Father of Genetics”, Houghton Mifflin, Boston (2000): 1–9.
[3] http://www.genome.gov/25019879, accessed August 1st 2015
[4] Lane Scheiber, “Changing the global approach to medicine - cellular command and control”, iUniverse (2012): 36
[5] Schachter, D., Eich, J.E., Tulving E., “Richard Semon`s Theory of Memory”, Journal of verbal learning and verbal behaviour, (1978): 721-723
[6] Richard Dawkins, “The selfish gene”, Oxford University Press (1989): 192

[7] Daniel Dennett, "Consciousness Explained", Boston: Little, Brown and Co (1991)
[8] Richard Brodie, "Virus of the Mind: The New Science of the Meme", Seattle, Wash: Integral Press (1996): 251
[9] Aaron Lynch, "Thought contagion: how belief spreads through society", New York: BasicBooks (1996): 208
[10] Richard Dawkins, "The selfish gene"
[11] Henry Plotkin, "The role of behaviour in evolution", Cambridge University Press (1988)
[12] Daniel Dennett, "Consciousness Explained"
[13] Susan Blackmore, „The meme machine", Oxford: Oxford University Press (1999): 288
[14] Robert Aunger, The electric meme: a new theory of how we think, New York, Free Press (2002)
[15] Mari Midgley, "Letter to the Editor", 1994
[16] Luis Benitez Bribiesca, "Memetics: A dangerous idea", Venezuela, Interciencia: Revista de Ciencia y Technologia de América (2001): 26
[17] Eric Buyssens, (1930)
[18] John Locke, "An Essay concerning Human Understanding", 1961
[19] Charles Sanders Pierce, "Logic as semiotic: the theory of signs", 1960
[20] Eric Buyssens, "La communication et l'articulation linguistique", Bruxelles: Presses Universitaires / Paris: Presses Universitaires de France, 1967
[21] John Sturrock "Structuralism", London, Paladin, 1986
[22] http://www.nature.com/news/2010/100825/full/news.2010.427.html, accessed August 1st 2015
[23] Bruce Edmonds, "Three challenges for the survival of memetics", Journal of Memetics - Evolutionary Models of Information Transmission, 2002
[24] Libet, B., Gleason, C., Wright, E., Pearl, D., "Time of Conscious Intention to Act in Relation to Onset of Cerebral Activity (Readiness-Potential) - The Unconscious Initiation of a Freely Voluntary Act", 1983.
[25] Emil Dinga, "Prediction and predictors in economics", Romanian Academy, Institute of Financial and Monetary Research (January 2015)
[26] Helen Pearson, "Genetics: what is a gene?", Nature (May 2006): 398–401
[27] Johnson A, Lewis J, Raff M, Roberts K, Walter P, "Molecular Biology of the Cell", New York: Garland Science (2002).
[28] https://en.wikipedia.org/wiki/User:Forluvoft/sandbox, accessed August 1st 2015
[29] http://genome.wellcome.ac.uk/doc_WTD020755.html, accessed August 1st 2015