

EDIFICATION OF THE INDIVIDUAL MEDIUM

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Abstract. *In this paper, we try to analyze medium as an ecologic factor with major significance during evolution process. Each individual or species lives into a proper medium from which they using some factors. The proper medium is a creation of each individual and it was been realized through quantitative and qualitative selection of factors needed for adaptation process. Individual medium presents, together with Umwelt and Innenwelt, aspects which define and include it into a larger comprehensive medium. Inside of this medium, each species realize a proper medium, and each individual realize a proper medium inside of a larger medium where they living.*

Keywords: *medium, individual medium, internal medium, Umwelt, Innenwelt.*

Rezumat. Edificarea mediului individual. *În lucrarea de față analizăm mediul ca un factor ecologic, cu semnificație majoră în evoluție. Fiecare individ, asemenea fiecărei specii, trăiește într-un mediu din care folosește anumiți factori, realizându-și un mediu propriu. Mediul propriu este o creație a fiecărui individ și se realizează prin selecția cantitativă și calitativă a factorilor de care are nevoie în asigurarea existenței și în adaptare. Mediul individual prezintă, alături de Umwelt și un Innenwelt, care îl definesc și care se integrează într-un mediu cuprinzător. În unul și același mediu de viață, fiecare specie își realizează un mediu propriu, după cum fiecare individ își realizează mediul propriu în mediul mai larg în care trăiește.*

Cuvinte cheie: *mediu, mediu individual, mediu interior, Umwelt, Innenwelt.*

INTRODUCTION

Ideas concerning both organism-medium unity and organism integration inside of medium represent the real clue of biologic concepts. Medium is something already given, but it depending on which organisms developing their existence based on different evolution strategies.

If medium influencing the existence and organisms evolution, than, how is possible that into any kind of medium (aquatic, for example) living and developing organisms from different groups? Have these species the same needs inside of aquatic medium? Of course, they have not.

Although, they live in the same medium, each species have they own needs which are capitalize in different ways by other species. It means that **Alexandru Dragomir** had right when said: „*Always, medium belongs to someone and it is proper for somebody*” (DRAGOMIR, 2004, p. 66).

This kind of thinking has to be applying to all types of media and organisms, no matter by groups and organisms. Therefore, we have to admit that our medium, for each of us, is situated inside of a larger sphere, a larger medium, from which we choose what we want and what is important for ours interests. This is our proper medium.

If the social medium is so complex, and if inside of it, every human creates a proper medium, than, we have to accept the idea concerning to the complexity of other media. These media offer a larger sphere of possibilities (factors), from which specie chooses what and how it needs. In abyssal medium of an aquatic basin, which is quasiuniform, each species creates its own proper medium, depending on possibilities and especially on its needs for life.

EDIFICATION OF INDIVIDUAL MEDIUM

Further, we refer to the edification of individual medium specific for each human being. For a good explanation of all these essential aspects, we have to talk as “first person (I)”. I live together with my family into a larger social medium. However, I build my own spatial and temporal medium. I build a special life-style, a daily programme, but this is not important. For me, it is very important the working rhythm and intensity of my way of living. It is my life-style and my actions. Even rhythm and profoundness of my thinking belong to me. I could be faster, when it’s necessary, but I have my own walking rhythm. I am integrate into a larger medium, and I respect an institutional program, but in my own way. Even my way to lecture belongs to me.

We have to understand that each person build his proper medium by taking from general medium what they needs and what they could take.

An analysis of the entire medium gives us the possibilities to realize that each factor has opening and closing mechanisms. It doesn’t matter if my existence will be long or short, because I can’t realize unlimited openings in all directions inside of medium. Spatial and temporal medium has not only physical characteristics. As person, I can’t extend my „beating” inside of spatial medium, through a speed record under ten second for hundred meters. I can’t throw down the record for high jump, or to jump over 180 cm. Even, if I can do all these, maybe I have many other limits into other directions.

I build my own spatial medium as a “wind rose” which is more or less extending inside of the given space into many directions.

I living in my world, which I build alone, and my medium and my fingerprints are unique in the entire world.

The building of my proper medium is an evolution strategy. Inside of aquatic world living organisms from almost all species. Adaptations and living needs are different from a group to another. All spaces are occupied based on serious competition. However, the competition is diminished because the living needs are different. Each species create its own medium inside of a larger medium offered by a special aquatic basin. Inside of the environment, each species and each individual, build proper medium for life.

This kind of thinking represents something new, which opening a new way to penetrate the secrets and dimensions of life.

The building of an individual medium is realized through connections between internal and external media. For explanations about some aspects concerning to building of proper medium, biosemiotics offers to us a new perspective. JACOB VON UEXKÜLL (1936) introduced the “Umwelt” concept into biosemiotics domain (through this system, we have to understand the medium built in a selective way, conforming to specific interests and needs of an organism).

Someone still believes that, living inside of this medium, all organisms have similar conditions and they use medium factors in the same way. Although, they live in the same larger medium, individuals from specie realizes, through selection, a proper medium depending on their specific interests, needs and capacities. This medium is named “Umwelt”. In other words, medium represents an entire inside where each individual (or each specie) building its own medium, a proper Umwelt.

More important is the fact that each Umwelt has an Innenwelt. But, what is the Innenwelt? This is an internal medium, realized in a selective way, depending on individual interests and needs. For us, „internal medium” concept is restricted to physical, biochemical and physiological characteristics of humours which circulate inside of organism, or which keep body cells together (blood, interstitial liquid, lymph and some other uncirculant humours). We don't need to make confusions between Innenwelt and internal medium. The Innenwelt includes body physiological compounds and all other accumulations of an individual. This notion is more comprehensive than we think, and this is available both for animals and humans.

Innenwelt allows to individual to find the way inside of medium and to involve in a communication relationship with its neighbours from the same specie or with individuals from another species.

If we refer to human specie, we could use the example of an individual which takes in a selective way some elements from his social medium where he lives. If we talk about cultural and intellectual media, each accumulations of individual depend on his apercpective content. More than that, new accumulations depending on the mode in which information was been structured inside of his own memory and how they are used in connection with the new one. Through the perspective of new accumulations, the Innenwelt obtains new dimensions and is enriched depending on all accumulations based on experience. When we looking to an art object, our affective experiences have high or small amplitude, depending on our culture and accumulations from Innenwelt. We form an internal medium which is different. Our intellectual accumulations are parts of us and our knowledge and them influencing the contact between us and internal medium. Otherwise, in some stages, their Umwelt is realized depending on Innenwelt. Transformation of external medium into an internal medium is a creation of each individual. This truth represents an important concept of modern biology, even it was demonstrated since from XIX century by Herbert Spencer (MUSTAȚĂ GH., MUSTAȚĂ M., 2006).

If we expending „internal medium” concept through adding the accumulated elements which proceed from our experiences, than, we have to consider that there is a particular internal medium where genes live. All body cells have the same genetic information and the same genes. But, cells are very different from a tissue to another. Than, how it's possible that the same genetic information to generate an extreme morpho-functional differentiation of cells? Explanation is clear. Depending on their associations into tissues and position inside of organism, cell differentiation is determined by the fact that no all genes functioning in the same time. Some cells have activated some genes, but other cells have activated other genes. Cell from epithelium have activate some certain genes, but other are inhibited; in muscular cells are activate the others, and so on. Inhibition and activation of genes and cellular differentiation could be determined by: organs where they are, characteristics of tissue medium and their position inside of organism.

If a replicator is correctly adapted to the all media from a niche, than, we could name it well-adapted to this niche. **Deutsch** analyzes only the spatial dimension of a niche. For him, niche is the medium where genes develop its activity. Based on modern concept regarding niche, we have to think that genes create a certain medium where they act. Genes depending on medium where they act, but they contribute essentially to the edification of this medium. A niche has many dimensions. The replicator has to be adapted to all these dimensions. Niche of gene is a part of medium which allow the replication process. For this reason, we can affirm that each gene creates its own niche, and each species creates its own ecological niche during evolution process. Cellular medium has many dimensions. Inside of this medium, each gene builds its own niche. Depending on its relationships with other genes, it obtains expression and penetrance and it becomes dominant or recessive. The gene replication depending on the presence of other genes, but it is influenced by the entire cells autopoetical network.

The organism represents medium which makes copies of genes – the true-replicators.

This concept talks about organism as part of medium where genes exist and act. Genes function inside of a special medium. We talk about somatic ecology, which make possible the existence and functioning of replicators as essential structures of life.

Here, we have to talk about another aspect very interesting for some of us. DAVID DEUTSCH (2006, p. 249) considered that: „*genes including knowledge about their niches*”. Although, all living forms are based on replicators, the life phenomenon is concerning to knowledge. „*Life means a physical incarnation of knowledge. An entity is adapted to its niche, if only it includes knowledge which make niche to be able to keep this knowledge into its own existence*” (DEUTSCH, 2006, p. 251).

Here, we talk about cells with genes which know very well how, where and when to act. Nothing is happening accidentally. **Turing** considers that genes functioning based on a programme, but biological laws are included into genes (into epigenetic and autopoietic network), in the same way as physics laws are included into programmes.

DEUTSCH (2006) said that: „*life is the method used for the implementation of effects generated by Turing principle*” (1950). Turing’s principle postulates the fact that it is possible to build a generator of virtual reality where are included all possible physical media.

Based on Deutsch opinion, people are: „*animals with an ecologic niche which depending on creation and application of knowledge, without significance (in its absolute sense)*” (p. 252). It is considered that for *Homo sapiens* (monkey which manipulates knowledge), knowledge is very important. After that, we have to admit that knowledge are very important not only for *Homo sapiens* or Earth, but for entire Cosmos.

Through the acceptance of this concept, we have to understand that Universe has an intelligent structure and its main characteristic is knowledge.

How have I to understand this kind of knowledge? Is life an incarnation of the physical knowledge? Is it not sensational to consider that Universe is based on knowledge, and, this kind of knowledge has a material support into vital structures?

„*Although, I want to say that all known living forms are based on replicators, but life phenomenon is based to „knowledge*” - said DAVID DEUTSCH (p. 251).

For more details concerning this concept, we could talk about some concrete aspects. Cellular informational structures assure the synthesis process of all proteins and enzymes. A special category of cells, from a specialized organism, receive a command to synthesize a protein (enzyme) which is very important for vital processes. The command is formulated clearly and precisely. There are mentioned information about what kind of protein is necessary and which is the adequate quantity. When command is received, the action starting. First, it is active the structural gene with its genetic information; the second, it is realize a copy of genetic information into a ARN-m; the third, this passing to cytoplasm and here it is associated with ribosomes, and it expose information for reading, but not before its maturation. After that, it is starting the protein synthesis. If we introduce deliberate, a quantity of protein on which cell start to synthesize, it could happened: cell discover the created situation, it „calculating” the quantity which has been introduced and how the new needs of organism is. When the entire quantity was produced, the synthesis is stopped. Therefore, the cell knows all about its interior and it acts depending on knowledge. A synthesis process is started or stopped from time to time, but not accidentally.

An organism invaded by a pathogenic agent knows immediately about the invasion and it get start the measures which are necessary for the agent elimination. The organism recognizes pathogenic agent and mobilize the „active army” which has to synthesize anticorps and cells used for phagocytosis of pathogenic agents cells. If the fight is difficult, there are mobilized the „reserve army”. There are forced to act the macrophageous cells from different tissues. The active operation process of organism continuing until pathogenic agent is eliminated and the immunity state in assured. This entire process is based on knowledge. Organism knows very well about its own situation, and it acts depending on this.

Elements, about we already talk before, try to open for us a way for understanding the concepts of interaction between Innenwelt and Umwelt. In this context, we have to emphasize the fact that Umwelt is realized depending on Innenwelt, and, the conversion of external medium into internal medium is the creation of each individual.

Therefore, what we named „life medium” means interaction, means creation, means history of individual and specie existences.

Ecology principle - all is connected with all - is perfect available here.

George Kampis considered that adaptation means nothing else but medium assimilation. Adaptation contributes to realize the unit between organism and medium. The „unity between organism and medium” concept is not new. If we don’t give a real support for this information, than, it will be considered nothing else but a wooden-language which is specific for evolutionism.

Adaptation contributes to realize the organism-medium unity with a resonance in genealogic tree of living creatures. Using a modern language based on cybernetic principles, we could talk about what **George Kampis** considered as „medium assimilation”, which mean a transformation of external medium into internal medium. This profoundly and subtle observation is not a recent revelation. In one of his notebooks, Mihai Eminescu written: “co-adaptation means transformation of external medium into internal medium”. (MUSTAȚĂ GH., MUSTAȚĂ MARIANA, 2006) **Eminescu** assumes this expression from **Herbert Spencer**’s writings. **Eminescu** assimilated this precious expression of ecologic and philosophical thinking and he included it into his notebooks. **Herbert Spencer**’s thinking passing without recognition of its value by specialists from ecology domain. They considered that this idea was not sustained by physiological and ecologic arguments. It was a genial idea appeared too early for those times. If he followed this way of philosophical and ecologic researches, than, we would be far away from this.

We can't understand the „internal medium” concept only as a physiological characteristic of organism. Today, it talks about an internal medium of organism, population (specie) or biocoenosis levels etc.

External medium seems to have the same structural and functional charges. But, it only seems to be like that. Medium couldn't be considered only as something detached, something from outside, something where “adaptation is a kind of assimilation process of external medium (its interiorize process)”. “**Interiorize process**” could be understood as an assimilation process through learning and this was been demonstrate by few ethologic and ecologic researches.

If we referring to human beings when we talk about the internal medium, it is necessary to understand both body humours (circulating and/or uncirculating) and accumulation from learning domain, which influencing the adequate answer. The learning process from genetic level could means appearance of genetic variations which transmit information about some behaviours (some scheme of learned behaviours), through the way of genealogic tree, up to ethologic level.

Internal and external media have to be understood based on **Jacob von Uexküll**'s concepts (Umwelt and Innenwelt), which that represent a penetration of semiotic universe.

Inside of biosemiotic universe, we have to accept the existence of some codes which functioning as parts of biological structures used for the establishment of few connections between present and future. These types of codes are given by the existence of signals determined by some biologic structures (particular and specific structure of DNA).

Each living creature emits special signals determined by the existence of specialized structures. Signals represent codes which are initiated inside of medium both for decoding by some other creatures and using for establishing special interactions. We have to accept that inside of medium are initiate many signals and functioning endless symbols: “*life is this medium full of symbols which is protected and transmitted further on*” (DEUTSCH D., 2006).

The child tries to know something about objects from his neighbourhood using their signals. He discovers some objects from his proper medium, knowing them and introducing them in his own Umwelt. Therefore, Umwelt appears as a conscience of body.* This is something like an animative universe which functioning all around us, and which could find a translator (the actor of the third role from **Pierce**'s triad: sign-object-translator).

We don't have to make observations only at the human level, but we have to develop our understanding up to the most simple living creatures which representing the origins of „self” and „subject”.

There is a system of signs around us, because of life which generating them through intentions. They are initiated not accidentally or without a certain purpose. We are agree with **Jennings** and **Daniel Dennett** who considered that even unicellular creatures have to be understood as intentional agents. (MUSTAȚĂ & MUSTAȚĂ, 2006)

Intentionality has to be accepted as an adaptation strategy. It could be accepted in that way, only when we consider that other creatures have mental aptitudes. „Intentionality” concept has to be followed in the same time with signs searching which could give special senses, as **George Kampis** said: „*both an intentional system (from naturalist point of view) and something which is considered as a sign by semiotics could be versions of the same problem*”. (HOFFMEYER J., 1996)

Inside of medium are many signs which have senses. If there is so, than which is the value of a sign? Has this sign a kind of intentionality? The warning colour of an animal represents a really signal of an imminent danger? If we are agree with ideas elaborated by **Pierce, Morris, Hoffmeyer, Dennett** and **Bateson**, than “*a sign represents something which replacing something else*”. (DEELY J., 1990) The warning colour is a sign which signalling a danger, which start a negative experience inside of predator mind. The warning colour has the sense of danger only based on an experience of our life. Only one intentional agent could transform any object from neighbourhood into a sign.

Signals represent an information which could has sense only when it generating an action in a special way. The „Phi X-174” virus superposed genes which could determine synthesis of different proteic products. These proteic products are generated by genes depending on received information which they have. What means information? Gene mechanisms used for reading depending on identified signals without help of the genetic code. It is a matter of interactions.

G. Kampis showed that our experience presenting to us a large part of material reality which functioning based on „**features preservation**”. In this context, we follow a certain feature of an object. This could be investigating up to the end of our action. But, „*there is a connection with other part of reality which reflect some other aspects used by common objects to obtain a new unexpected and larger perspective. During their context is changing or establishing, those things could be transformed in something else*” (DEUTSCH D., 2006).

The signals wait for an observatory.

Kampis wants to demonstrate that signs and signals are not a result of the natural selection, and biologic adaptation not depending on natural selection. The analysis and description mode used for an object could not be realized out of thinking, because of the large number of interactions which make this action impossible. Maybe one or just few of them could be relevant as parts of a symbolic relation.

„*The acceptance of an image of symbolic relation as a stenography of many characteristics including the fact that, significance is recognized as a selective result both of the functioning mode or the predominant set of characteristics from a larger sphere of possibilities. This is the main sense of signs selection*” - said **Kampis**.

Kampis presents us a reality, a structured nature based on endless signs and signals. Based on ecologic principle „*everything depends on everything*”, we have to understand that all living creatures sending signs and signals

into medium for all living creatures. In the same time, all living creatures are observers (either they are protozoan or primates). Signs and signals have to be understood. Signs and signals from external medium have to generate resonance in some structures from internal medium. The observer succeeds to realize an Umwelt starting from selection of signs and signals from external medium, on which he could solve. The meaning of endless signs and signals is different from a creature to another, and we could realize a hierarchy of living creatures depending on those complex meanings.

Applying this kind of thinking, even only for human beings, we should understand that each human becomes individuality as a consequence of his capacity to decode one or more signals and to integrate them into his Umwelt. The Umwelt contributes to build the Innenwelt with a special structure used by the feed-back which is necessary for the Umwelt development.

Into nature there is no selector used in signs and signals selection for another creature and which is used for the adaptation process. It is something like each creature becomes its own selector. And, specie, as an entire, needs individuals which could realize many understandings positioned in a higher hierarchy. This could be a mechanism of natural selection which **Kampis** doesn't understand very well.

Universe of signs and signals forming semiosphere; this provides connections between all parts. Each species forms its own semiotic niche which influencing its existence. Specie forming its own semiotic niche, but, in the same time, individuals forming an individual medium. This individual medium is enlightened, from biosemiotic point of view, based on the interrelationships between Umwelt and Innenwelt.

Imanishi Kinji considered that the main characteristic of nature is the autonomy. Each creature acts both on medium and on other creatures, as a subjective entity. The main purpose is to form the society of this specie which could establish interactions with some other specie societies for the development of a new world. This kind of autonomy was named „*Shutaisei*” by **Imanishi**.

The living creatures could be understood only together with their medium which belongs to them, together with they evolve. Therefore, we talk about evolution both for creatures and medium, a kind of co-evolution. These living creatures act inside of medium, animate it and transform it into an extension of itself.

As **Imanishi** affirmed: „*Only a medium which is recognized by a creature could be considered proper for it and their external world. Inside of this world, creature is the master. Therefore, creature has to be watched as the controller and governor both of its own body and the environment*” (DEUTSCH D., 2006).

The organism governs and controls not only his proper body, but the environment. The creature is the master of its own medium. And, more than that, it identifies its own medium with a larger medium. It creates its proper medium where it has to feel well.

When we look around, we are used to focusing on objects and creatures together with their physical characteristics. We look them depending on how much we know about. We don't feel that we living into a world of signs and signals which is very dynamic. But, all is selected using a personal filter.

An experience could be fascinating or frightful, depending on our personal filter, from the perspective which is choose to see the world.

Language, society, education, race, gender, family, or genetic material, faith, our thoughts, habits and commonness, all of them, decide how to understand us, how to experiment ourselves and how to see the world around us. We are catch into our proper life-style and, sometimes, we forget about our filters which colouring our perspective and we continuing to make projections. But, we think that what we see into “exterior” is the absolute and objective reality. Things are more influenced by our personal filter when we talk about social medium. You could ask three persons how were their evening party or the last show which they saw. Certainly, you will receive many different answers.

Maybe they have right, when they said that the way we looking to world is a reflection of our inside. Often, our problems from external world are reflections of unsolved problems which torture our thinking and which influencing our “id”.

“*Integrate nature of all creatures, which mean controlling and governing the environment, representing its own shutaisei*” - said **Imanishi Kingi**.

Edification of the individual medium - its shutaisei - is realized depending on creature characteristics from the beginning of biologic time - subjectivity. Subjectivity is situated at the origin of human mind genesis; this is possible because the „subjectivity is embody” (said **Hoffemeyer**).

Kawade Yoshimiy is very strict concerning the application of this principle. „*If we looking on cells which are considered to have cellular-life and plants which have a plant-life, than it isn't absurd to consider that there is a cell-mind inside of cells or a plant-mind inside of plants. But, we have to make distinction between them. The life of creatures is composed by medium assimilation and world control; finally, that mean inherited shutaisei*”.

“*Creature lives are composed by medium assimilation and world control*”, that is a generic sentence. Life appears into a modified medium which were been transformed in a proper way for life. Life doesn't appear in a strange medium. The first living creatures don't appear until the medium was transformed and controlled. Controlled and assimilated medium representing what **Uexküll** defined as Umwelt.

“*Creatures and medium are not independent entities, but them influencing each other*”.

All living creatures belong to certain specie. Not even a creature can live isolated. Individuals are bounded between them through different kind of connections (following a monophyletic line) and between geographic-territorial

relations inside of the common medium. Individuals from a specie forms communities, even when they seems to be singular or when they share a territory. Individuals forms a society, where they interacting with medium, both of them as subjective entities.

Imanishi named the society of individuals - specie. Society needs a common life-style, and it has to function based on the identity principle; identity of itself and identity of others. Identity is the recognition of own person (individuality). It is forming during ontogenesis and it has phylogenetic dimensions. Identity has a semiotic charge. Here, we talk about the recognition of proper signs and signals initiated inside of medium and their differentiation from others. „Mirror recognition” representing an IQ test passed by just few creatures till now (only chimpanzee and octopus).

Identity principle has to be applying to all living creatures; even this kind of identity perceptions of the other members from society knows a hierarchy phylogenesis. We are agree with **Sibatani** (1983), who consider that „identification” concept is a general biologic principle, a common attribute of all living creatures.

CONCLUSIONS

Into this paper, we tried to present aspects concerning individual medium as an ecologic factor. Medium is an ecologic factor with an important significance used as evolution strategy both for specie and individual.

Individual living inside of spatial and temporal medium. All the time it was considered that the medium belong to one ore more species and it has the same value for all of them. Inside of aquatic basin, all individuals using all factors from quantitative and qualitative perspectives. In the same way, humans who belong to a social medium are need to use cultural and intellectual values of their medium. But, this is a terrible mistake. In the same larger medium, each individual build his own medium depending on his interests, needs and capacities. As ecologic niche representing a creation of that specie during evolution process, in the same way, individual medium is the creation of each individual.

Individual medium is realized based on interaction between external medium and internal medium, or based on intersection between Umwelt and Innenwelt of each individual. That means than it is talk about the transformation external medium into an internal medium, which representing an evolution strategy both for specie and individuals.

“Innenwelt” concept is larger than “internal medium” concept. The last one is reduced to the body humours and their homeostasis. Even genes act inside of ecologic medium. A gene could express its penetration and expressivity depending on its proper medium. In the same time, this medium could be realized depending on relationships between genes, which could be different from an individual to another.

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