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Bio-art — the transaesthetics of bios

Everyone is a part of the Bios.

The article reveals the perspective of transcultural (from Latin *trans* — through, behind) paradigm based on the idea of *meta-culture*, which functions according to complementarity principle rather than mutual exclusion or accumulation, evolution or revolution.

Intuitive presence of transcultural elements can be traced in H. Hesse's *Cas-talia* descriptions, in J.L. Borges's prose as well as in the works of O. Spengler and T. Mann. Transcultural world is located inside all existing cultures; it is an endless continuum connecting cultures and lacunas, i.e. on the upper cognitive level of cultural analysis, joining together acceptable and unacceptable, legitimate and illegitimate knowledge about the individual and his/her place in the world. Potential and unrealized elements of culture are regarded to be as important as actual ones, interacting as mutually complementary elements. However, in contrast to *Cas-talia* Game, which had mainly reproductive character, transcultural phenomena are a creation process related to a genre (part) and to the culture (the whole). According to M. Epstein, "Transculture uses styles and forms which have traditionally served the purpose of preservation and study of the culture, such as storage, archive, museum, garbage, exhibition item, document, report, essay, catalogue, album, comment, etc. The culture being expressed in these means of registration and conservation, they become leading in transculture, but here they become creative, productive elements..."¹ Transcultural space is open, giving meaning to all cultures and their dimensions because it is not dictated by a single closed convention of any of these cultures, but is being created on meta-level.

¹ <http://topos.ru/article/2976>.

Understanding of this is supported by the development of interdisciplinary dialogue in science, expansion of mental map of human consciousness, development of non-linear thinking, technocratization and technologization of society and culture.

Non-linear thinking paradigm (post-non-classical rationalism) is being established and spread among modern scientists as well as sociologists, philosophers and culturologists. It is based on a general tendency of meta-synthesis of methodological efforts according to the vision of the epoch and phenomenon in their continuous changes and interrelations. Scientific world view as a component of human vision of the world also influences important issues of culture, when the latter “is not being made of elements like blocks, but, constantly developing, forms its composition or its elements out of available elements of the environment (all kinds of dissipative structures),”² and is analyzed not only with regard to its openness and multiplicity, but also its limits and potential. Following to semiotic research on the basis of American school (C. Peirce, C. Morris), it can be suggested that the conditions are being prepared for the creation of a single principle for the description of all living beings in physical, chemical, biological, social and cultural aspects, which makes it possible to unite all modern sciences into one integral picture of the world.

The development of psychic experience mechanisms functioning beyond the rationality, described in terms of the subconscious, “super-conscious” (archetypes), “transpersonal” by S. Freud, C.G. Jung and S. Groff, is also very important. Those scientists contributed to the expansion of cognitive map. Compared to earlier forms of art, when, scarcely detached from the ritual itself, it was only concerned with depicting the “objective,” i.e. exterior, visible world, today’s art is being attracted by actual composition of its mind — to interior space (surrealism, conceptual art, abstract expressionism, etc.) The empiricism of mind turned inwards — from mathematics to art — is an individual experience. It is the way the mental phenomena are attempting to express themselves in the art.

At the same time continuous development of technosphere contributes to the creation of new art media and forms. Engineering acts as an intermediate between science and its bilateral linking function have been demonstrated during the past centuries. This means that not only technical innovations give rise to new artistic forms, but also artistic experiments very often lead to new technical ideas and innovations (a so-called aesthetization/stylization of technosphere). It is a mistake to think that the triumph of science and technologies, esp. computer technologies, has depreciated the value of traditional art. From a transcultural perspective, it is not depreciation, but enrichment of artistic vision with new elements, which is taking place. Computer technologies, being widely used in different culture fields,

² Добронравова І.С. Нелінійне мислення // Філософська і соціологічна думка. — К. — 1991. — №6. — С. 47–60.

make it possible to find new aesthetic terms for the conceptualization of both creative and other functional aspects of their usage.

Thus, the transition of biology to the non-classical level of development contributed new material for reflections in culture. The search for alternative techniques and conceptualization of bio-art leads to involvement of biological objects which act not only as means of creative idea implementation, but as its co-authors, too. Difficulties in establishing criteria and limits of artworks expand the issue of the nature of “art object” and its transition from sensorimotor to mental sphere.

Bio-art is positioned here as a heuristic example of the realization of transcultural thinking on the basis of new bio-technologies and aesthetic ideas joined together. The article presents the discourse of visual, auditory and literature bio-art forms within the paradigm of anthropology and semiotics research studies on the issues of human dimension and philosophical sentences in eternal search for the answer to the question “where is the beginning and end of a human being?”

Bio-art is, to a certain extent, a postmodernistic phenomenon which emerged in the man-caused information society, being however a transcultural reflection of it at the same time. We suggest marking their intersection points by using three examples of the visual, auditory and literary forms of bio-art. The technologization of art, dialogue with cultural context, decentralization and freedom of meaning, self-irony and humour are characteristics of postmodernism, which can be referred to in order to describe bio-art as well. At the same time, bio-art manages to escape the postmodern scalpel as it cannot be reduced to the idea of “text” and “intertextuality.” It requires integral way of thinking about creating, offering a challenge to overcome subject-object duality in it. This is the synthesis of new thinking in contrast to syncretism of a primitive man and synesthesia of, e.g. theatre or cinema, mosaic eclecticism and autoreferent nature of a postmodern work — here, the understanding of inter-level and inter-hierarchical unity as a key moment of creative expression in art.

As a rule, the issues of terminology are the most sensitive and problematic ones. To start with, what do we mean by new order, or, being more precise, what is the novelty of bio-art, what is the nature of its novelty? Because the principle of linear development, i.e. the old being replaced by the new, proved to be useless in postmodernistic times, which legitimated “eternal recurrence” of F. Nietzsche and “schizophrenic mind” of J. Lacane. Transcultural complementarity logic positions novelty as uniting the present and the past, their simultaneous existence not in residual empty forms, suitable for further reinterpretations, but in the shape of their “being different for...”, i.e., in their partial nature which is continuously completed on different perception levels.

Then, works of bio-art cannot be described as “text” in intertextual meaning, i.e. as an intermediate system of signs with constant reference to other signs. The problem of lost reference is the key issue for postmodernists which destroys all links with reality, representation, realism. Integral approach claims that all seri-

ous philosophic attempts to resolve the problem of external world will always have partial character, limited knowledge, imperfect logic. From the perspective of domination theories of textuality and textualization discussing the issue of reference means moving backwards and rejecting novelty. But from the integral perspective it is an attempt to complete/unite the existing fragments of knowledge and lacunas between them.

Therefore, our opinion is that artistic objects of bio-art as modern culture phenomena not only distinctly demonstrate their reference but also become possible under the conditions of its “reanimation” on the level of “bios.” That is why works of bio-art do not “kill” their author — their genetic or psycho-somatic relations are symptomatic. Let us consider some examples.

A preliminary study of bio-art should be started from visual works. Bio-artists use various materials, such as living tissues, microorganisms, plants and animals of all taxonomic groups, biological processes and biological phenomena. According to nesting levels — organism-tissue-cell-organelle-molecule — they can be the following: the creation of new biologic forms or modification of the existing ones, histological cut of tissues as well as results of manipulating with them (fixation, colouring, lysing, microscoping and macro-filming); cultures of cells on nutrient media, cell colonies (culture-specific visual effects, effects with the use of biologically active substances); cytological medications of forms of cell organelles on different stages of cell cycle (luminescent microscopy, freezing and chipping methods); biopolymers, DNA molecules, proteins, alcaloides, fixed on the carriers: agarose and polyacrylamide electrophoresis plates, plates of liquid chromatography and immunoblotting, etc. Besides, they can be combined with laboratory equipment or even be made of laboratory equipment only, such as sculptures and compositions made of pipettes, cold sterilization filters or endorphes.

Let us consider *A Genomic Portrait: Sir John Sulston*, the idea suggested by Marc Quinn (2001). The portrait was created with the use of standard methods of DNA cloning. The DNA was extracted from the sample of John Sulston’s sperm and was amplified in the cell culture on agar medium. The final picture (of approximately A4 size) was made of parts of agar gel, where bacteria colonies were located (with the cloned DNA). The gel, along with the colonies, was enclosed into the frame with the air-cooling system, which created the impression of sterile laboratory space.³

This was the way Quinn expressed his irony about genetic reductionism of identifying a person with his/her genetic code. This is a typical example, when the object of art is not a sensorimotor sphere (because without relevant information this abstract image cannot be perceived as a real portrait), but a mental sphere,

³ F. Stracey, *Bio-art: The ethics behind the aesthetics*, “Molecular cell Biology” 10, July 2009, pp. 496–500.

the object of which is the idea, concept or technology. The “portrait” is provided with expert’s consultation because the spectator is unable to recognize the person pictured by conventional means of non-figurative imaging.

Auditory bio-art can be discussed starting from the level of organisms and finishing at bio-music and bio-acoustics (in the same terms as visual bio-art as well). The music being the expression of the consciousness, only acoustics has a place beyond the music consciousness. An acoustic phenomenon becomes a musical one only if musical consciousness is present, the latter providing it with the musical meaning. The necessary condition for musical meaning to arise is to have other musical sounds. In other words, each sound has a musical meaning only to the extent to which it expresses its relation to other sounds of the music system. But F. de Saussure’s linguistic model is not sufficient to explain all immensely wide perspectives of music signs. However, C. Peirce’s semiotics, in attempt to understand *semios* process quite successfully reinterprets it in terms of an initial sign, for which the following sign is the *interpretanta*. This situation is only temporary and certain to change with new perspectives of meaning creation to be open.

A French scholar Roger La Fosse together with Pierre Henry suggested a complicated system of musical performance, known as Corticalart — the art of cerebral cortex. A Ukrainian researcher N. Slobodenyuk describes this interesting artistic activity of technical recognition of different mental states, related to music perception and expression: “In the series of live concerts with electronic accompaniment the spectators could see the picture of Henry in dark glasses with electrodes attached to his head. Formal characteristics of cerebral waves of the performer changed the color according to the defined EEG-schemes visual effects being produced along with the music played ... taking into account the correlation between music and psychic activity, caused by external influence, the paradigm of creating sound environment, dependent of human attention. Change of the individual’s concentration was reflected in the encephalogram, which immediately influenced the way of sound self-order in time with particular specific hierarchical levels.”⁴

The above-mentioned example is an attempt to see the sound and to hear the picture in the immediate psychic experience of a particular person, which is a reference field of *semiosis*. In the postmodernism theory the experience expressed by means of technique is of primary importance and, according to M. McLuhan, acquires the status of a message itself. In the performance described, the function of the technique was transformed to the means of translating “live,” “real” experience, which paradoxically contradicts with J. Baudrillard’s simulacrum logic.

We cannot but mention literary bio-art, especially bio-poetry, which mainly concerns with phenomenological sphere, providing the author with the opportu-

⁴ Слободенюк Н. Мозкові хвилі і музика / Гуркіт, 2007, №1.

nity to use diverse figures, metaphors, allegories and comparisons borrowed from modern sections of biology.

Here is the quote from the one-act play *Apple Relations between Our Juices* by V. Relanium.

*(Abscisia*⁵ *enters, she is beautiful and shy)*

Abscisia: And in the spring leaves and flowers will weave

The air turning into sticky ether

And tiny flowers will injure deer,

Coming to night lakes in the search of water...

*(Maleil*⁶ *enters, Abscisia hides her face into a small Chinese box.*

Maleil finishes eating his apple and puts the apple core near six others, withered and little bit twisted).

Ionic columns are my apple cores invincible...

(Notices Abscisia)

What are you doing here, sweetheart, so alone and pensive?

Abscisia:

It's getting dark...

I'm throwing goodbye shadows on the sun

And objects disappearing in darkness

Make their crook reflections longer

And you are still in the garden and — so young! — touching the strings

Not with your hands or even fiddlestick

Beware! This plastic stops at nothing, you will know the horror when invisible fingers hit

The thunder — fire — smoke the sand is burning and so is nearby station, one of the nine⁷

Maleil:

Give your hand, so hot and live, to the night mitochondria⁸

And the throat, absurd bowtie, appears on your neck

Get rid of the nettle which nestles in your lungs and you'll feel it so strong —

Being only a part of your own small shadow...

When the autumn is gone or maybe a day or two later you'll loose all your blush, Abscisia

Than everyone's eye will open to see the world and close with despair and sorrow

The fruit will be so alike the seven suns

And sun will be unlike the sun for seven times...⁹

Many processes of biochemistry, molecular biology and genetics, which describe the relations between molecules (especially molecular relations in the regulation of gene transcription, transposons, bacteriophages or mobile genetic

⁵ Abscisic acid is a vegetable hormone which inducts dormant period in buds and supports it in seeds. It also participates in geotropism of roots, closing of stomates and many other processes.

⁶ Maleic acid (Latin *malum* — apple) an organic compound that is a dicarboxylic acid, a molecule with two carboxyl groups. It is mainly used for the synthesis of various chemical compounds (e.g. maleic acid).

⁷ Nine stations are nine components of Krebs cycle (tricarboxylic acid cycle), which gradually turn from one into other in the process of biochemical reactions; one of them is malate (maleic acid).

⁸ Mitochondria are cell organella where oxidization and reduction reactions, as well as Krebs cycle takes place.

⁹ The texts have been provided courtesy of the author.

elements), have such unique structures and such potential for creating absorbing narrations that the aesthetic qualities of scientific literature can be no less than those of detective or love stories. Using metaphors of biologic scientific discourse and its anthropologisation often cause the artist/scientist to become so involved in the natural (biological) phenomenon or object that he/she starts to identify him/herself with this phenomenon. The author, using his/her imagination, insight and reincarnation, can create visible shapes of creatures, whose lives he has never lived. For instance, the song *It's too latte to apoptize* (Hum Bio 3A)¹⁰ tells about the despair of a cell which is undergoing irrevocable bimolecular transformations, gradually turning into it a cancer cell. Such empathy can often be felt when life cycles or mechanisms of biological organisms are studied, it can also concern the objects having the conditional status of vitality (such as bacteriophages or mobile genetic elements like transposons). Besides, we can experience the worry for the fate of unintegrated plasmids or feel sympathy for the sequences which transform into silent ones and are no longer to be expressed.

Visibly metaphoric techniques are essential for the description of the real, the imaginary and the predicted not only in visual arts, cinema and fiction literature, but also in scientific theories and hypotheses. “Metaphor in scientific search plays organizing function linking the layers of theory language and fragments of knowledge, differing in their nature and origin.”¹¹ A number of works have been devoted to the role of metaphoric lexis, terms and expressions in science, which consider metaphor as a special informational “essence” and new informative channel for moving from one cognitive model to another.

Thus, we have observed several examples of bio-art as creation process, related to “life,” “living” (Bios). Thus, a key element in determination of this phenomenon (visual, auditory) is the presence of objects of biology as co-authors or subjects of the creation process or the use of biological material or biological context (literature). The artists can use “live” substance and biological techniques, methods and technologies. Transcultural perspective of a bio-art object is proven by the fact that it belongs to various cultural fields, human activities and — what is even more important — goes beyond these activities.

As we can see, aesthetic criteria involved in the explanation/description of natural phenomena and understanding of issues concerned with “life” phenomenon and, vice versa — biological knowledge, materials and technologies used in artistic creation are not accidental. As we discuss life (bios), it is quite reasonable that bioaesthetics be referred to as a paradigm of beauty.

Bioaesthetics is the idea of transcultural character, i.e. it has been created on the level of meta-disciplinary unity of scientific, artistic, political, religious, mor-

¹⁰ <http://www.youtube.com/watch?v=mHOX43-4PvE&feature=related>.

¹¹ Мегафора в языке и тексте. /Отв. ред. В.Н. Телия. — М.: Наука. — 1988. — 176 pp. 119–133.

al, technological and other components, which makes their determinations unlock and the field of cultural creation is expanded into micro- and macroworlds. The processes of integral self-creation of culture take place not within their own fields, but in the neighbouring fields of their interaction, on the edge of cultures, which makes it possible to reveal unrealized meanings and sign lacunas (unaccepted elements between the cultures). Bioaesthetics studies are closely linked with such ideas as beauty, form, style, harmony and even fashion and, at the same time, with synergy and fractality, trans-conscious and man-caused, etc.

Bio-art — the transaesthetics of bios

Summary

Today, the synthesis of scientific and technological progress achievements and aesthetic consciousness make it possible to speak about the bio-art phenomenon. Contemporary artists working in this field use aesthetic categories to explain/describe the nature of life, at the same time applying biological knowledge, materials and high technologies to art making. Since we are speaking about life as the bios, it would be appropriate to discuss bioaesthetics as the paradigm of beauty and discuss its rules, conventions and norms in living nature in the context of understanding a human being as a part of bios.

The development of interdisciplinary scientific dialogue, extension of human mind map, establishment of nonlinear thinking, technology evolution as well as bioethical reflection — all these factors contribute to the transformation from the mosaic of postmodernism to the integral conception of the world.

Having dealt with a vast number of bio-art manifestations, we have developed a convenient classification of bio-art with regard to perception channels and cognitive levels: visual and auditory, through literature and performance on the one hand and sensorimotor, mental and spiritual on the other. Thus, our work lies within the paradigm of anthropological, psychological and semiotic research on the range of problems of human dimension and the philosophical sentences in the eternal search for the answer to the question — “Where is the beginning and the end of humanity?”

Bioart — transestetyka biosu

Streszczenie

Tekst poświęcony jest zjawisku bioartu, umiejscowieniu go w kontekście współczesnej nauki, sztuki oraz w ramach paradygmatu transkulturowego. Źródła pojęcia transkulturowości autorzy odnajdują w prozie Hermana Hessego i Jorgego L. Borgesa, a także w pismach Oswalda Spenglera i Tomasa Manna. Transkulturowość lokuje się „wewnątrz kultur”, łącząc kultury i „lakuny” (łac. *lacuna*: dziura, ubytek), uznaje za równoważące to, co w kulturze akceptowalne i nieakceptowalne, a także potencjalne czy niezrealizowane. Autorzy opisują, za Markiem Epsteinem, pojęcie transkultury jako zachowujące tradycyjne kulturowe formy i style (na przykład muzeum, dokument, album, esej) wykorzystanie ich w sposób twórczy, rozwojowy, produktywny. Transkultura opiera się na znajomości tradycyjnych form, operując nimi w sposób otwierający przestrzeń „wszystkim

kulturom we wszelkich ich wymiarach”. Zarazem jednak cechuje ją perspektywa integralna. Sama kultura rozumiana jest bowiem w sposób nieliniarny — jako ciągle się zmieniająca kompozycja tych elementów, które dostępne są w otaczającym środowisku. W rezultacie właściwe jej analizie są kategorie otwartości i wielości, a także ograniczeń i potencjału. Takie nieliniarne myślenie pozwala też na zintegrowanie obrazów świata, które przedstawiają współczesne nauki.

Na tym tle bioart określony został jako rodzaj artystycznych przedstawień, sytuujących się na pograniczu biotechnologii i estetyki. W artykule wyróżniono trzy typy bioartu: wizualny, słuchowy (*auditory*) i literacki. Ich prezentacja wiąże się z uwzględnieniem antropologicznego i semiologicznego wymiaru kultury, a także z filozoficznym namysłem nad pytaniem: „gdzie rozpoczyna się i gdzie kończy człowiek?”.

Przykładem wizualnego bioartu jest praca *Portret genomiczny: Sir John Sulston*, autorstwa Marka Quinna: klonowane DNA portretowanej osoby, powielone w kulturze komórkowej. Przedstawienie, formatu A4, wykonano z żelu agarowego, w którym wcześniej przechowywano kultury komórkowe. Bioartem słuchowym jest muzyczny *performance*, którego pomysłodawcami są francuski badacz Roger La Fosse i Pierre Henry, muzyk i eksperymentator, pionier muzyki konkretnej. Elementem występów jest to, co autorzy nazwali *Corticalart*, „sztuką kory mózgowej” — seria efektów wizualnych, odpowiadająca falom mózgowym Henry’ego, sczytywanym w czasie rzeczywistym, to jest podczas grania muzyki (efekty te z kolei mają wpływ na grającego). Przykładem zaś literackiego bioartu są: jednoaktowa sztuka *Apple Relations between our Juices* autorstwa V. Relanium, a także tekst piosenki *Za późno na apoptozę*¹², traktujący o rozpaczliwej komórki przechodzącej zmiany biomolekularne i zmieniającej się nieodwracalnie w komórkę rakową.

Specyfika i nowatorskość bioartu wiąże się przede wszystkim z obecnością w artystycznych prezentacjach *bios* — życia, tego, co żywe — bądź też instrumentów służących do badania *bios*. Odwołuje się on raczej do umysłu niż do zmysłów, „obiektem sztuki nie jest sfera sensomotoryczna”. Jest tak, ponieważ bioart skupia się bardziej na ideach, pomysłach i technologiach niż na przedstawieniach. Wykorzystuje technikę do wyrażania ludzkich doświadczeń i przeżyć. Autorzy wskazują też na metaforyczność bioartu, co jest znaczące o tyle, że używanie przenośni podczas opisu zjawisk biologicznych jest istotne nie tylko dla sztuki, ale dla teorii i hipotez naukowych, w których stanowi ona o przyswajalności „esencji” nowych teorii, co z kolei ułatwia zmianę modeli kognitywnych.

Mimo że bioart nawiązuje do postmodernizmu, koncepcji technologizacji sztuki, wolności znaczeń czy humoru i autoironii, zarazem go przekracza, ponieważ daje się sprowadzić do kategorii tekstu czy intertekstualności. Tworzenie „żywej” sztuki, łączącej mikro- i makroświaty, znajdującej się na pograniczu kultur i nauk, umożliwia bioartowi odkrywanie także tego, co niezrealizowane i niedopuszczalne. Bioestetyka, związana z ideami piękna, formy, harmonii czy mody, odwołuje się jednocześnie do synergii i fraktalności, świadomościowego wymiaru czasu i ludzkiej kreatywności.

Tłumaczenie: Krzysztof Solarewicz

¹² Apoptoza to naturalny proces śmierci komórki w organizmie wielokomórkowym, dzięki któremu organizm może usuwać komórki zużyte bądź uszkodzone.