The Living Future: Nonorganic Life
Nanotechnologies and Contemporary Art

Dmitry Bulatov
Senior curator,
National Centre for Contemporary Arts (Kaliningrad branch), Russia
bulatov@ncca.koenig.ru

The contemporary art proceeds from the premise that a new media phenomenon is in principle devised by the artist as an innovation; i.e. it is assumed that resulting from his activity there originates a reality *with a complicated structure of decision space* (antinomies, bonds and relationships). Based on this understanding is it rightful to speak of innovativeness or active development of a new media carrier.

In the territory of contemporary art, the process going "from research to formation" of a new medium is supported by the so-called "coevolution" strategies representing a synthetic form of scientific and artistic creative work that embraces not only interpretation but also constructive activity. To find out where the essence of "coevolutionary" development strategies in the nanotechnology field lies, we shall bring in a notion of *metabola*. By *metabola [Greek* metabole — *change, metamorphosis] we understand an organization type of information physical carrier that mirrors compression of qualitative and quantitative characteristics of a nonorganic structure due to activating, modeling or taking into account metabolic processes' influence.* Thus far, among the examples of such metabolas that incorporate hybrid properties of a silicone world and those of biosystems one can name nanomotors, bacterial engines, quantum biosensors, DNA switches, etc.

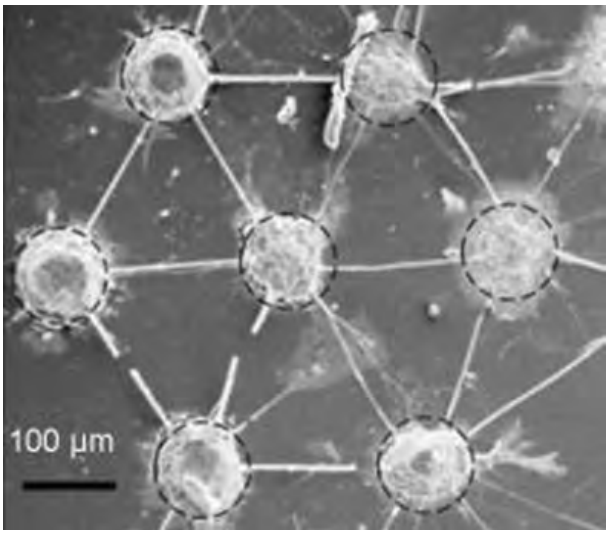

Image 1: Example of metabola (Neural network of living cells, joined together by nanotubes)

It is known that in biology metabolic processes imply interchange of matter, energy and information. When we point out that the main system requirement of nanoart is *structural compression of nonorganic matter*, we imply thereby *a necessity of formation of various forms of the inanimate* at the cost of provision of media carrier with the properties of growth, variability, self-preservation and reproductivity. All those properties of *metabolas* help us to proceed from observation of discrete objects in a discrete area to the description of materialized dynamic systems in the area of relations. In other words, it goes about comprehending the phenomenon of a new media environment existing "on the brink of chaos", duality and hesitation, when bonds and relationships that make up a unity of the inanimate in assembly are created by way of metabolic processes. The main medium analyzed here is the nonorganic life, and the main issue under study — release of the artistic message existence time at the expense of interest to encoding, conversion and changing of this message carrier itself.

It is evident that on the "nano" level we can no longer be sure of the correctness of subdividing processes into natural and artificial ones. In this mode, the organic merges with the nonorganic, and the material with the nonmaterial, revealing in so doing their *technobiological or post-biological* character. Therefore, by introducing the notion of metabola — implying metabolization of the non-living, transformability with preservation of severalty, integration on the basis of differentiation — we deliberately emphasize the existing proportions of ambiguity, thus upbuilding a methodology of artistic investigation in probability terms. This is just the way to enable thematization of a new art medium obtained with the help of advanced technologies that have nothing in common with the processes of life except that those technologies have appeared through the methods that life itself avails of.

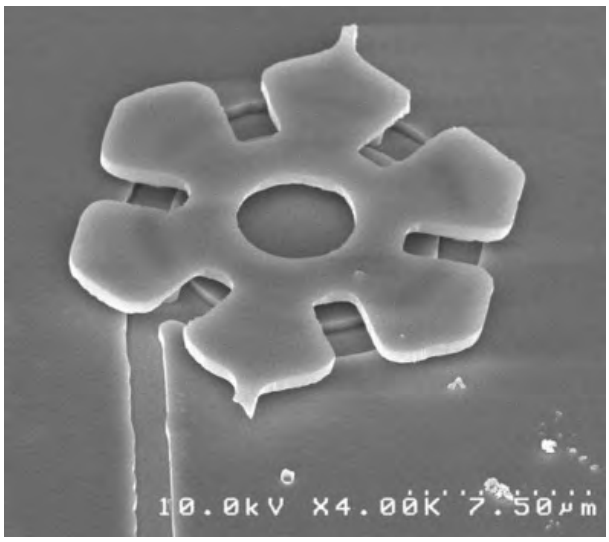

Image 2: Structural compression of non-organic matter: formation of various forms of the inanimate (Bacterial motor).

A probabilistic approach in exploration of the nanoterritories, which are different and at the same time welded together by the nonorganic life problematics, demands for establishing thought processes lying outside of the dichotomy of single/multiple, biologicity/technologicity, etc. In this regard we are yet to learn to perceive a new media carrier of information "in flux". It means that, when viewed through the prism of metabolas, technobiological creations occupying a mid-position in the classification of biological and abiological nature's production, the differences between authenticity and counterfeitness, reality and virtuality will now bear *the character of temporal distributions* and be solely dependent on us.

Such "pulsatile" type of new medium existence implies multidimensionality and interdisciplinarity of artistic approaches to its research that were virtually impossible before, in the context of previous stages of art history. Here are some of these approaches:

Interaction *with the living as with the technical* (variability) allows for a considerable increase in evolutionary speed of metabolas at the expense of informational selection, which prescribes documenting of self-reproduction information with its further conversion into a program. Let us note a special role allocated to analysis of a document as a most important characteristic of metabola technical component. Indeed, it is the document that makes it possible to replicate technobiological creations as species, setting up a link between a singular metabola and technical documentation. "Coevolutionary" effectiveness of this approach is today well-illustrated by scientific research carried out on the basis of organics and synthetics symbiosis. However, against a background of impressive achievements in this field, art has yet to find an answer to the question: "What kind of relations are ruled out, or will be ruled out in the future, given further implementation of this adjacency concept?"

Work *with the technical as with the living* (lifelikeness). Recently, the study of lifelikeness in the field of nanotechnology has been ever more tightly associated with dispersion modeling. In this case the research of new media carrier is transferred from the level of discrete object to the phenomenon of *amorphous but "coordinated" matter*. The nature presents us with samples of such self-organization by the example of the so-called swarming insects or groups of animals (flocks, herds, etc.) possessing the effect of distributed knowledge. And if the main task of science in this instance still lies with the issues of operational coercion when encoding such knowledge, performing distributive control, etc., the art is rather preoccupied with operational paradoxes — haziness of preset encodings, anonymity, and lack of control over the "controlling" authority itself.

Finally, it is the *interpretation work* (involvement), consisting in embedding of technobiological entity into a certain social construction. In essence, science and art are both assigned the task of synchronizing the systems with different timing. The point is that the stage of technobiological creations' socialization can be defined as a degree of innovation emergence within a system (thermodynamical time according to Ilya Prigogine). This kind of time is a synonym of motion, development and appearance of anything new whatsoever. This time inevitably comes into conflict with the physical time. As John A. Wheeler's put it, physics defines time so that motion looks simple. These two times — thermodynamical (innovative) and mechanical (calendarian) — are inequivalent and extremely difficult to synchronize. There is no knowing today as to how exactly the contention between the two will manifest itself; we can feel confident though in saying that, by and large, a unified system will prove troublesome: the times cannot coexist amicably.

The basic law of technology, which has been repeatedly uttered by the philosophy and sociology of the 20th century, says that each new technical advance considered by itself appears to be desirable, while technological process as a whole continually narrows the common sphere of freedom. Thus, representation of the progress as a choice between the old and the new that man makes in consequence of interaction between deed and doubt (which is, in fact, the gist of freedom of development) does not imply that making this step will remain a voluntary act in the future. Therefore, I believe that the main task of the Artist working in the nanotechnology field — in the territory of overwhelming possibilities that the nonorganic life presents us with — is engineering of the living future (i.e. the one investing the man with freedom) as opposed to the lifeless mechanical future, which is built somehow or other without our involvement.