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Exploring Transdisciplinarity in Art and Sciences

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Performative Gesture in the Era of Science Art: *POST OIL UTOPIA* project

by Olga Kisseleva and Alexander Kiryutin

Abstract

The authors are describing their work on the “POST OIL UTOPIA” project devoted to the global oil depletion. Some countries, such as Kuwait which is one of the most striking examples of a mono-economy state, could suffer from this crisis heavily in the future. For their artistic project, the authors teamed up with French scientists who work on the revolutionary replacement of petrol-based products with the more environmentally friendly bioderived products. As a result of collaboration with them as well as with Interactive Performance Laboratory the performance, presented at The Garage Contemporary Art Museum, had been created.

Introduction

Our world faces a huge challenge. The global oil crisis is fast approaching; raw material dwindles. Meanwhile, some oil-based chemicals are even used to produce ordinary everyday items (products made of plastic, synthetic resin, rubber... and even soap!). Our current level of scientific development allows us to penetrate so deep inside the chemical structures, that the moment is fast approaching for the revolutionary replacement of petrol-based products with the more environmentally friendly bioderived products. To achieve this, French chemists in their laboratories study the behavioral structures of such materials at a nanolevel (about 10^{-9} meter) [1].

The experiments that we are interested in essentially involve adding (aggregating) biosurfactant molecules (represented as globules) in aqueous or oil solutions and watching their behavior. Since these structures (micellae) are classified in a certain way depending on the particle movements and on the proportions of participating elements, molecules are divided into hydrophilic (white) and hydrophobic (black) ones. The scientists are particularly interested in an additional aggregation of sugar globules (red), and in the formation of structures with higher level of complexity, which can be seen in Fig. 1.

Purely on a visual level, the images produced by the scientists’ state-of-the-art microscopes present the remarkably vivid analogies of the processes unfolding in contemporary society. These analogies embrace certain universal human questions in the fields of political science, sociology, economics, as well as in philosophy, culture and art.

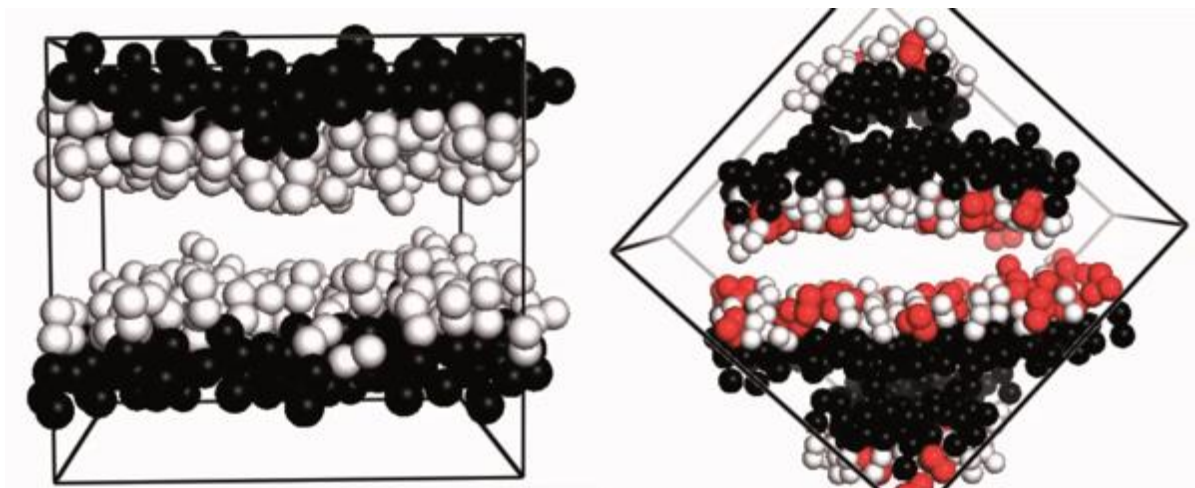


Fig 1. On the left: membrane structure of a bilayered micelle after adding 216 molecules of C12E2 surfactant in aqueous solution. On the right: the same amount of surfactant plus 70 sugar globules form two triangles in water, such that each molecule can move freely around the structure. (© Stephane Abel.)

About the Performance

POST OIL UTOPIA multimedia performance, which formed a part of our project of the same name, was shown at the Garage Museum (Moscow) on December 12, 2015. The performance was created in collaboration with Niki Baccile and Stephane Abel, researches in Nanochemistry Laboratory of College de France, and the Interactive Performance Laboratory of The Polytechnic Museum (Russia), represented by composer Alexey Epishev and choreographer Yulia Chekmas, and headed by the curator Natalia Fuchs. At the core of the performance is the limitless nature of the chemistry's artistic interpretation of a phenomenon. Having reached the level of connections totally inaccessible to a naked eye, we discovered how closely it correlates to the global social processes (structures).

The original concept of *POST OIL UTOPIA* was conceived during Olga Kisseleva's visit in Kuwait in 2014. This Arab country, located in a desert area, is one of the most striking examples of a mono-economy state. Its citizens take pride in their skyscrapers and shopping malls that has "sprouted" out of the sand dunes. But virtually all its riches come from the oil export. The lifestyle of the population is remarkable. Men in snowy-white dishdashas, with the equally white ghutras covering their heads, scurry through the endless passages of shopping malls, searching for the luxury items among Chanel and Armani boutiques. Groups of women, wearing voluminous silky-black wraps (abayas) that leave only their eyes uncovered, hurry to add to their collections of haute couture clothes. From a birds' eye view, these streets seem to overflow with black-and-white crowds. What will happen to Kuwait if, in the near future, humanity ceases to depend so much on the country's main source of income? What will happen to this country---and to others like it---if their traditional black-and-white masses are sprinkled with the "revolutionary" red element, changing the very nature of their existence? To avoid critical situations resulting from the lack of oil, we need to already start thinking about the future.

POST OIL UTOPIA performance is an outright attempt to imagine a model of future society, functioning without the requisite dependence on the single resource. It is a utopian concept of an ideally organized system, with the characteristics generally similar to the ideas

expressed in Thomas More's classical book. Within this system, humanity as a whole labors and acts equally productively to create the highest possible level of comfort. But the XVIth century English philosopher could hardly envisage the level of technological progress our modern civilization would achieve and the ways in which his *Utopia* could be interpreted today. Scientific development led to the emergence of the notion of self-organization in the science of the second half of the XXth century. This term was first used by the English psychologist William Ashby in 1947[2]. Since then, this concept has become quite popular; it is already in use in the complexity physics, as well as in synergetics, chemistry and a number of other disciplines. The meaning of our performance could be best explained using "order out of chaos" definition taken from the works of Ilya Romanovich Prigogine, Belgian physical chemist and Nobel Laureate of Russian origin who had studied characteristics of various self-organizing systems.

The history of early technological art also contains an episode related to this term. During the 1960s, the English cyberneticist, psychologist and artist Gordon Pask had been developing an approach of "modelling cognition as an evolutionary, selforganising process" [3]. He took part in the 1968 London exhibition "Cybernetic Serendipity" (an event well known to media art historians), where he had shown his installation titled *The Colloquy of Mobiles*. Five hanging mobiles that were using sounds and colors to communicate with each other and with the visitors were, essentially, a take on Pask's ideas of *POST OIL UTOPIA*. Moreover, being both a working scientist and a practising artist (the concept of "artist as researcher" is described in detail in the ArtScience manifesto [4], and we wholeheartedly support it), he was concerned with the question of the artistic relevance of such experiments. For this purpose, he specifically introduced the concept of an "aesthetically potent environment", where "the primary role is played by the viewer---the person who perceives something as art and experiences aesthetic pleasure" [5]. Apart from the fact that Pask's works assigned the main roles to autonomous mobiles, *POST OIL UTOPIA* performance, saturated with audio and visual content, definitely has some points in common with the approach of this cyberneticist-cum-artist of the second half of the last century.

A Mode of Self-Expression

The 17-minute act stylistically based on contemporary choreography was performed at the Education Center of the Garage Museum. It is an unusually laid out space: a square hall is divided by four massive columns, also square in shape (Fig. 2). The main action unfolded in the central area among the columns; it was complemented by the full-scale media setting: both the surround sound and the video imagery were designed specifically for this project. The video was transmitted on the four screens installed in pairs on the side walls. Seats were arranged in three zones. Sitting inside the central zone, the viewers faced the performers directly more often and had the best overview of the whole area. Two other groups of seats were located somewhat to the back, behind the columns, facing the visual center of the performance---in such a way that some projections appeared outside of the viewers' direct field of vision. However, since one of the main characteristics of all performative practices is the dialogue they create with the viewer, dance choreography was designed in such a way as to allow performers to periodically address all three groups. Consequently, the "scene" could be schematically imagined as a circle within the square of

the room. This shape was emphasized by centripetal---and sometimes centrifugal---movements of the performers. As a result, an “aesthetically potent” space had emerged, similar to the extraordinary expressive simulations by nanochemists.

And now we need to consider---what is this space, taken symbolically? Initially, all nanolevel processes are represented within the apparently enclosed cubic space. In fact, these borders are artificial. They represent symbolically the size of a fully formed micelle, which equals approximately 10^{-9} meter. This means that 1 liter of water simultaneously holds about 10 million of such micellae. By making simple calculations, we can even realize that 1 barrel of oil holds 1 billion 590 million micellae... This knowledge gives us a completely different understanding of what *POST OIL UTOPIA* is about. We can clearly see that the projections covered walls, which serve as constraints, are actually an illusion. And there is an almost infinite number of imaginary micellae, among which our three molecules are moving in a whimsical dance, searching for intersections...



Fig. 2. Olga Kisseleva *POST OIL UTOPIA*, The Garage Museum of Contemporary Art, Moscow.

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The dance itself was not so much a replication of chemical processes, as their interpretation on a human level. This is proved even by the fact that the real micelle is never formed out of three parts only. It requires dozens or even hundreds of globules (simulations performed by scientists showed this number to be between 20 and 286). The initial preparation stage (recitals took place in August in Moscow) was built around an assumption that the performative act will require about 20 participants chosen among ordinary people, total strangers to each other---not necessarily possessing any choreographic training. Their bodily experience and choreographic vocabulary acquired in the process would have helped them to actualize the concept of the performance using a new language of perception. This would have created a distinctively anarchic base of the performance as an independent practice, described by Roselee Goldberg [6]. Taking on the disparate behavior

of slowly added to the micelle molecules and performing various roles (white, black and red), participants were supposed to pass through all stages of POST OIL UTOPIA process. This task was further complicated---but, at the same time, this ensured the experiment's integrity---by the fact that both at their first meeting and during the recitals participants were prohibited to contact each other. All communication had to happen only through the distinctive language of contemporary dance, unfamiliar to some of the participants.

Later, to increase performance laconism and artistic expressiveness, the decision was made to invite three professional dancers. Their movements throughout the whole act resembled molecular movements as close as possible---but didn't simply copy them. If we witness the scientific simulations in motion, we will see how the particles exist and what relations are eventually formed between them; how the self-organization process happens at the almost mythical to us level. At first, black and white elements are placed in an aqueous medium with set conditions. Muted sound, based mostly on vibrations and coupled with gently swinging rectangular figures projected on screen, create a mysterious impression of being underwater. (The metaphor of "water immersion" is often used in immersive installations.)

The molecules detachedly disperse across the space, making straightforward and simple movements, exploring their novel surroundings. Some time later, they begin to notice each other; the adjustment process ensues. In the end, they intertwine, finding a new form of existence in a highly dynamic dance accompanied by the powerfully vibrating surroundings. At the very moment when both elements has achieved their most comfortable position and a welcome lull has ensued, the third---red one---element enters the scene. Restless music swells; molecules rush around with strange jagged movements, unable to ignore each other's simultaneous existence. The strict linear imagery that heretofore dominated the projection screens, falls apart. Another stage of life has begun.

After this, the same thing happens as before: only it is now intensified in every way. Fast and sharp movements of the performers are complemented by the dramatic music and the lightness of the images. They struggle; they look directly into each other's eyes, as if communicating information about their condition through their crossed hands. At last, we arrive at the final stage. It is an individual dance of three molecules. But the nature of its individuality is in their communion and their deep understanding of each other; in their equal co-existence. The viewers watch how each of the "members" of this nano-society functions now---but in rapport with the others. At the final note of the performance---which symbolizes the ubiquitousness of represented processes---the molecules dissolve into the projection (i.e. in the medium).

Performance theorists---Roselee Goldberg among them---believe that performance serves as an indicator of the artist's sensitivity to the changing world, as well as the most fruitful way for the artist to "reach the viewer" using dramatic and provocative public statements [7]. Often this task is impossible without the artist's personal participation. However, this problem is solved differently in *POST OIL UTOPIA*. What could not be expressed by an artist using his or her tools, was brought to life by the performance team: dancers Natalia Kroshkina, Kristina Ra and Igor Tishkov; choreographer Yulia Chekmas; and composer Alexey Epishev.



Fig. 3. Olga Kisseleva *POST OIL UTOPIA*, The Garage Museum of Contemporary Art, Moscow.

Performance episodes. (© Alexander Kiryutin.)

Conclusion

POST OIL UTOPIA allows us to trace the latest trends in the performance as an artistic genre. First, it is the merging with theater and dance (according to Goldberg [8]). The choreographic quality, as well as the theatrical staging of performance acts, were both the distinctive features of the first experiments by Futurist and Dada artists, when the language of the genre had not yet been developed. Second, it is interdisciplinarity.

It is widely acknowledged that the merging of art and science has opened new perspectives for various ways in which the artworks can be presented. Diverse forms of collaboration between artists and scientists, as well as different types of interaction strategies, led to the emergence of a new language of performance. Our project, created at the intersection between art and science, is located within the field characterized by the gap (“complexity limit”, according to Dmitry Bulatov [9]) between technologically innovative character of the scientific discovery---and its adoption by society. The distinctive space created through the media setting of this performance, and the universalized language achieved in the form of a fantastical dance---as well as, ultimately, an approach to the material chosen by the artist: all of this attests to the performance’s liminality and interdisciplinarity. It also confirms an existence of a particular artistic strategy: when an innovative scientific idea is transposed to the worldview of the artist; then interpreted, under the artist’s guidance, by other professionals of audiovisual expression; and, finally, is brought to life as a media performance.

References and Notes

- [1] This is described in a number of articles published in major scientific journals, which were co-authored, among others, by the chemists with whom we were collaborating. See, for example: A. Sorrenti, O. Illa, R.M. Ortuno, “*Amphiphiles in aqueous solution: well beyond a soap bubble*”, *Chem. Soc. Rev.*, Issue 42 (2013) pp. 8200--8219. Alternatively, in: N. Baccile, J.S. Pedersen, G. Pehau-Arnaudet, I.N.A. Van Bogaert, *Soft Matter*, Issue 9 (2013) pp. 4911--4922.
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- [6] Goldberg R. *Iskusstvo performansy: ot futurizma do nashikh dney (Performance Art: From Futurism to the Present)* (Moscow: Ad Marginem Press, 2014) p. 10.
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- [9] Dmitry Bulatov, “*A Techno-Biological Artwork*”, *Evolution Haute Couture: Art and Science in the Post-Biological Age, Part 1:* (Kaliningrad: BB NCCA, 2009) p. 16.

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