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THE BEGINNINGS OF THE TRANSFORMATION OF THE AESTHETIC EXPERIENCE OF ART AT THE TURN OF THE 20TH AND 21ST CENTURIES

Abstract

What is the experience of the digital revolution? We experience being in an expanded space of contact, AR and VR. The development of genetics, the possibility of interfering with the DNA of the organism has influenced works in the field of bio art. Man has excluded technological creations from the scope of nature, distinguishing part of his specificity as so different that he needs acceptance of his own activity. The experience of art is a certain shared manifestation of being, intersubjective, specific to man. Part of this experience is related to the specific time of creation and reception of a given creation. An attempt to capture the current change in experience, a certain atmosphere shared by the latest changes in art, using pioneering tools of science, is not only a possibility to answer the question about the current identity of the contemporary recipient, participant of the network. It is a search for a common direction of future works of art, technological inventions, imagining and building an environment that responds to the current need of art, to what kind of being we want to design for ourselves.

Keywords:
aesthetic experience, robotic art, biorobotic art, ARTEX

The time of the scientific and technological revolution began in the 1950s, and as a result, digital spaces were created that have their own visual language, symbols, such as a floppy disk, which for the younger generation is a symbol of the "save" command, the older generation remembers its use. When Lev Manovich noticed that the *QuickTimePlayer* program had a designed interface to resemble a video player, it was 20 years ago, the interfaces of modern programs still refer to the image icons created at that time (Manovich, 2001). In this way, technology is adapted to remembered forms of communication. According to what the researcher proposes, culture is interactive software created by us to live. In texts from the 1970s, there is a process of transferring attention to the recipient, which is caused by the intensive development of computer programming languages at that time. Through the use of hypertext, the web user creates their own text, their own multimedia navigation path, their own usage strategy, the programmer is particularly sensitive to creating a software tool that allows free movement, intuitive understanding while learning both the new tool and the created information path.

Electronic space is a composition of certain, specific forms in which art galleries also open up. In the composition of forms, further compositions open up. The entire space of the internet platform becomes a frame for aesthetic experience, a frame in which one can move, approach its boundaries, examining one's own distance, and participation in the process. This is a type of space that has been built and it can be expected that the aesthetic experience associated with it changes its character, its other aspects appear, such as presence at a distance, mediation, submission, the feeling of being absorbed by electronic spaces, which affect the contemporary recipient of art.

The frame is overlapping, is it a computer, Oculus, or is an avatar part of it? Where and when does the electronic performance take place, connecting participants from different time zones? How does the phenomenon of art occur when the author is an algorithm, how then to define the framework of the event? Are the chatbot - ChatGPT and the AI program - Midjourney a framework, co-author, tool, or do they replace the creator?

GABERBOCCHUS COMMON ROOM

One of the places where reflection on the possibilities of AI arose in the 1950s was the Gaberbocchus Common Room, founded in London in 1957 by Stefan and Franciszka Themerson in the basement of the Gaberbocchus Press publishing house (Reinhardt, 2011). In this place, invited artists and scientists held discussions, integrated, and inspired each other. Stefan Themerson did not believe that exact sciences and, on the other hand, art and the humanities were separate cultures that found it difficult to conduct a dialogue, as C. P. Snow

pointed out in his book *Two Cultures and the Scientific Revolution* in 1959. Moreover, C. P. Snow himself soon revised his views, writing four years later about the mediating third culture. In 1958, during one of the Thursday meetings of the Gaberbocchus Common Room, the mathematician Irving John Good considered the possibility of a machine that would not only have a self-modifying program, but would be so complex that it would respond in a way that resembled human thought, so that it would be able to interact with humans as equal conscious beings (Bostrom, 2011; Good, 1965). When such a creation was created, Good concluded that it would be the last invention of humanity. The scientist suspected that such a machine would soon make more extraordinary discoveries than its creator.

THE BEGINNINGS OF ARTISTIC ACTIVITIES IN THE CONTACT SPACE

Tim Bernes-Lee developed the concept of hypertext, it was awarded in 1995 at the Ars Electronica Festival, in the category of Interactive Art (Hirsch, 2019). The principles of the then created award for the World Wide Web, such as the creation of communities, virtual identity, impact on society and artistic quality were some of the many issues discussed at that time. The computer and the network connection were commented on by artists and associated with art even before their creation.

Dougles Davis and Nam June Paik in the 1970s carried out artistic activities connecting via satellite, in 1979 the Interplay project appeared. After Interplay, its authors Bill Bartlett and Robert Adrian X organized and implemented one of the first systems of connecting computers with e-mail for artists at the turn of 1979/1980, the Artist's Electronic Exchange System or ARTEX.

The Canadian-Austrian artist Robert Adrian X became the author of the third project at Ars Electronica 1982 *The World in 24 Hours*, connecting 16 cities on three continents, the ORF Regional Television Studio became the centre of the activities. The artists used a telephone modem, which allowed connections between computers, a fax machine, and connected via telephone lines, via SSTV, which allowed images to be transmitted between them by radio. The event lasted from noon to noon the following day, in Central European Time.

For this activity to take place, the related restrictions had to be respected, using this type of media of contact was expensive and difficult to access. The project included connections from Florence, Amsterdam, Toronto, Tokyo, Hawaii, and Turkey, from which the group of artists Minus Delta T travelled to Bangkok. Heidi Grundmann, director of ORF Kuntradio, anticipated from the beginning a lack of interest from the public. This was due to the fact that the project did not envisage an external display, yet here it was already possible to notice that the authors of the works, the works and their recipients function in

a different way. This caused the action to influence other creators, the nature of interactive multimedia art.

The connection enabled the exchange of thoughts, ideas, communication. The project *The World in 24 Hours* was for Adrian X a communicative sculpture. This happened before the Internet and its specific social media. What Adrian X wanted to enable with ARTEX was a dialogue between artists leading to the search for human meaning in electronic space, this became the motto of one of the centers of transformation of electronic art and the Ars Electronica festival in the Austrian city of Lintz (Hirsch, 2019).

The project initially didn't arouse public interest, which was in line with the predictions of the project founder Heidi Grundmann, long-time director of ORF Kunstradio (Hirsch, 2019). This project required participation, there was no "outside" show, only a process of continuous exchange. It was also a departure from the typical division into the author of the work, the audience and the work. Over time, however, the project turned out to have an influence on future generations of artists, showing the developing direction of activities, including interactive activities and through media

The ARTEX network becomes a tool in the next project *La plissure du text* from 1983, of which Roy Asott becomes the originator and moderator. This time the connection is established in 14 stations, 11 cities in Europe, Australia and North America, 24 hours a day, between December 11 and 23. Each of the centers told a story from the point of view of a specific person at the time corresponding to it. Symbolic figures known from fairy tales and legends, e.g. a magician, a cat, a princess or an old sage, created a narrative that turned out to be as diverse as verbal stories, none of the connection points had a full version of the record, the multiplied stories were different depending on the center (alien.mur.at) (www.medienkuntz.de). Roland Barthes wrote a book *Le plaisir du texte*, here we have *la plissure*, a braid that refers to the pleasure (*le plaisir*) of creating a narrative (lpdt2.blogspot.com). Stories, transmitted information used to be non-linear, non-identical, dependent on the creative will of the storytellers or witnesses of the event. This is also hypertext, the visual form of a dynamic information tool that seems immense and eludes control. The user of the network is a traveler, he can lose his way, but to find it he does not have to know the entire creation he is moving through. Over the course of several decades of its formation, virtual space was created along with reflection on whether it would absorb users, whether it would become more attractive than the rest of the environment, it turned out that not for everyone, attachment to the body, movement, prevails.

But going back to the beginnings, the Adrian X network, what we managed to achieve thanks to the ARTEX network is to show the direction that the entire community will follow, becoming an information society. Currently, activities

that required so much effort are part of everyday life. Did artists using the ARTEX network have the impression that they had in their hands a tool that would change the structure of everyday life, and that people would become data transmitters, fulfilling a strong need to share what surrounds them, even without fully understanding the content being transmitted? I understand the social digital connection here not so much as a transformation, but as the direction in which we were consistently heading.

VIRTUAL WORLDS

Since 2003, the virtual world Second Life has existed, it has undergone many graphic transformations, has its own currency, is a meeting place, games are gaining more popularity than virtual worlds, apparently much more encouraging even a very flexible, but still scheme of action, competition and the lack of the need to look for other people to spend interesting time.

In Second Life, the duo Eva and Franco Mattes created under the name 0100101110101101.ORG.9. As part of the *Reenacments* series of actions (2007-2010), using avatars, they recreated five selected performance actions important in 20th century art. They tried to recreate the basic situation, the original action as faithfully as possible, because the change resulted from the medium itself. The virtual space showed the action in a different context, the performer did not so much lose his corporeality as he gained another immersive form, his corporeality on the other hand, one could say, was in a sense "outside", it is mediated, incomplete, but also expanded. The participants of the show could interact with the performance by having their avatar in Second Life, they could not do it outside of that place, because that was where the show was taking place. The artists were at the show only in the virtual space, there was no live meeting. The events have their own documentation, there is a sound and image recording, also a recording of the chat, which is an integral part of Second Life.

The activities referred to by the duo include: *The Singing Sculpture* (1969) by the pair Gilbert & George, *Imponderabilia* (1977) by artists Marina Abramović and Ulay, or *Seedbed* (1972) by the performer Vito Acconci, *Shoot* (1971) by Chris Burden, and *Tapp und Tastkino* (1968–1971) by Valie Export and Peter Weibel.

Later, virtual worlds such as AltSpaceVR, Spatial, VRChat were created, they have 3D graphics adapted to virtual reality glasses such as Oculus, where there is also a speaker and microphone, which simultaneously read the movement of the upper body, head and hands, which allows for more free interactions, this is equipment not connected to a computer. The latest virtual worlds also allow for a hologram to be displayed in this reality, then the participants are visible in a very realistic way, they are not replaced by an

animated avatar. Perhaps it is only a matter of time before the graphics of these worlds, and the impact on other senses, allow for such a realistic illusion that they will become much more common in use, and more economically available. In May 2021, the first scientific conference in Poland took place, taking place in the immersive space of AltspaceVR, allowing participation in VR glasses – virtual reality. It was called Wirtualium and was organized by Academia Electronica and the Section of Philosophy of Technology of Students of the Philosophy Students' Scientific Club of the Jagiellonian University. During the conference, there was an opening of an exhibition of oil paintings, the space allowed for a virtual walk, you could walk through the paintings, float in the air. In virtual reality glasses, you can experience the works of artists in a different way than before.

In 2022, the Wirtualium 2.0 conference took place in the electronic space Spatial, where screens appeared streaming the image from one filled room to another. The screens also showed the content of the chat to people wearing Oculus, which shows the specific limitations of this reality. Various functions are available depending on the device used, but experienced users can compensate for them, in this way, thanks to others, a person in Oculus can see the chat, even though it is not in the virtual reality glasses, it is available on the computer and on the smartphone.

Augmented reality has emerged, which may have even greater utility potential, because it does not separate virtual space from everyday, unmediated space, and its participation in everyday life is sometimes not even noticeable. This area of reality appears, for example, when reading a barcode in a store, contactless transactions, using pens with a touch panel tip, and gloves with material parts that allow you to navigate your smartphone in them.

Presence takes on a special meaning, more and more often we go or drive somewhere relying on an application, we are a marker on a digital map and only then can we find a new place. Whether we are more of a point on the map or a specific moving body, the body of the digital avatar that we take on on the screen also comes into play, or the body of the avatar that has a very strong impact on us when we put on virtual reality googles. Before such glasses were even used, clothes disappearing due to an error turned out to be extremely embarrassing, and the reaction of identifying with the character on the screen was very strong. Performance actions always particularly touch on identity, when the artist becomes their own prop. In the performance in the virtual world, which is an interpretation of a non-digital prototype, in the shows of Ewa and Franco Mattes, one could observe whether the often very controversial prototype still arouses deep anxiety or embarrassment, whether the recipient remembers that he is sitting on a chair in front of the screen. Selecting and imitating known actions shows that we need a connection, the digital space is not completely different and distinct, and can even allow for precise documentation of what we

cannot forget in art and culture. Therefore, the failure of a social network is currently a fear of losing part of the digitalized "I", which can be increasingly used against a member of society who has become a user of the network-transmitter and it is less and less possible to distinguish what is and is not digital, what are the sources of information that surrounds us and where the image of the world that we build comes from. The aesthetic experience, regardless of the environment, digital or non-digital, is always true, emotions always "touch" and leave a lasting mark.

COMPOSING ALGORITHMS AND DIGITAL FLOWERS

Portrait of Edmond de Belamy (2018) was created by artificial intelligence trained by Obvious, a collective based in Paris. It was sold at auction at Christie's in New York for $432,500. It used a set of GAN (generative adversarial network) algorithms.

The name *Blomenveiling* (2019) means flower market, it is a work by Anna Ridler and David Pfau, an application built on the Ethereum blockchain – DIY Nifty Gateway. The work was put up for sale, the project involved bots that boosted the price during the auction. Virtual flowers were designed to wither a few days after purchase, just like real ones.

It turns out that what is durable is not the most attractive; transience, fleetingness, and delicacy is more valuable, and we prefer to follow someone, and a bot will be just as effective. The goal of the achieved durable graphic has already faded, so the seeker of a work of art is looking for something that is harder to obtain, that escapes the power of possession. Where will following bots lead us, let's hope that they are always in the power of programmers.

The already historic, first algorithm creating compositions is AARON (1972–2016) by Harold Cohen (Kluszczyński, 2016). He has been creating painting compositions since the 1970s, using a generative artificial intelligence program. The black and white works became colorful in the 1980s, and figurative compositions were also created over time. In 1995, the device was presented at an exhibition in Boston. The artist would like his machine, the composing algorithm, to be treated as a co-creator of the works, because the program is responsible for what is created in the final version. Here, the robot is not only a medium of art, as the artist understands it, but is a type of subject, a derivative of the aspect of human creation that, leaving the human, begins to take its own steps. Only to what extent is the creation a work of chance, and to what extent is this construction just a variation of human thinking, from which we would like to take away the power of agency and attribute it to the machine.

COMPOSING ROBOTS

The robot named Paul, a device created by Patrick Tresset is more anthropo-morphic, it was presented in 2011 in London. Tresset created several robots that draw portraits, they have their own style, to some extent imitating Tresset's own drawing style (Kluszczyński, 2016). Robot shows become an interactive performance during which you can be portrayed. The work is generated by a device, the image of the posing person is read by the camera, the algorithm processes this image into a drawing, the drawing mechanism is started which fixes the composition. The final effect of the drawing is not known, you have to wait until the device finishes it, the portraits are not identical, each time they are processed slightly differently, which makes the composition unique. Fréderik Fol Leymarie helped Tresset in determining the sequence of drawing creation. The next machines are Paul IX drawing still lifes and a special robot Peter, who constantly erases, smudges his work, is captured in the constant transformation of the creative process, in what some believe is the essence of creation. Do his works provide him with a kind of immortality, as Tresset would like? draw in a similar way to him? There is not only an artifact here, this artifact composes and will continue to do so after the artist's death, i.e. new, in a sense, works by Patrick Tresset will continue to be created. The process of creation is difficult to define, to capture, just like consciousness itself and the mystery of life that can produce art. Mechanisms such as the robot Paul are not only an attempt to compose artifacts, but a search for individuality, the continuity of a certain unique pattern of creation.

Ai-Da is a humanoid robot, it draws and paints using cameras in its eyes, artificial intelligence algorithms and a robotic arm. She was created in 2019, her compositions were shown at the University of Oxford at the Unsecured Futures exhibition. She had an exhibition at the Design Museum in 2021, in 2022 at the Venice Biennale. She is shown together with works internationally, encouraging discussion on the status of the artist and creativity from the point of view of posthumanism.

Robotic art is also a desire for a new kind of contact. The very creation of art is the artist's view of the world. It is a kind of contact, a message, a subjective, non-discursive need to share a certain experience, an inner vision with another human being. The robot artist is a dream that an artificial subject will send us a message about a certain emotion, will convey a new kind of experience and aesthetic experience that will go beyond previous definitions. It is an eternal desire for transgression, development and learning something new, and through this also oneself. It is learning about oneself at the moment of transcendence, transformation, choosing one's own direction of development.

BILL VORN'S ROBOTS

Canadian artist Bill Vorn has been creating robots within the field of robotic art since the 1990s. His creations are often aimed primarily at evoking empathy, seeing a creation resembling a suffering, imperfect being that seems to struggle with the hardships of life.

Vorn's breakthrough work was *La Cour des Miracles* from 1997, in colla-boration with Demeres (Vorn 2009). At that time, he began creating robotic constructions, according to several patterns, or one could say species, each of them having its own, different ability to interact, react to the environment and recipients. They were to reflect the "misery of machines", as the author calls it, their confrontation with the fact of life, and the inconveniences resulting from it, inspired by Victor Hugo's *Les Misérables*, which described the slum district of medieval Paris. *The Crawling Machine* tried to escape from the observers by crawling clumsily and with difficulty on the floor. There was also a machine that reacted in the opposite way, the *Harrasing Machine*, which had tentacles moved by spun air, trying to touch the person nearby. The *Convulsive Machine* suffered from irregular convulsions, which increased as the viewers came closer. The most dynamic was the *Heretic Machine*, which had to be locked in a cage, whenever the viewers approached it grabbed the metal bars and shook the cage, as if trying to escape. *Stéla 01* is a work consisting of 128 rotating mirrors, above which a robot, resembling a human in shape, is placed (billvorn.concordia.ca, 2002). Vorn drew inspiration from the tombstones of the Pere Lachaise Cemetery in Paris, wanting to show the indecision between reality and virtuality, life and death, movement and inertia, humans and machines. A humanoid robot statue stood on an aluminum and Plexiglas stele, covering its face with its hands. Video images of a human death were projected onto the surface of the stele, which was actually a mosaic of smaller rotating plates, acting sometimes as screens, sometimes as mirrors. As viewers approached through the stele, the robot statue removed its hands from its face, spread its arms, and transformed into a machine. The video screen began to move, and the images were deconstructed and transformed, as if artificial life were taking over an impossible life. The DSM-VI installation comes from 2012, inspired by the fourth volume of the DSM, the Diagnostic and Classification Manual of Mental Disorders of the American Psychiatric Association, and the fifth volume was published in 2013. The volume analyzes disorders such as neurosis, psychosis, personality disorders, paranoia, schizophrenia, depression, delirium, and other types of behavioral and mental dysfunctions (Vorn, 2018). Vorn tried to create robots in such a way that it would be possible to notice the aforementioned dysfunctions in their behavior, again the behavior is key here, more than the

appearance of the machine. They were immobilized, attached to the floor, sometimes giving the impression that they wanted to dodge, free themselves, unfortunately, to no avail. The central group consists of eight standing or lying psychotic machines, with two aluminum legs controlled pneumatically, loudspeakers, lights, sensors, and rotating reflectors. There were three *Autistic Machines* placed separately around, giving the impression of being detached from reality. These machines have a loudspeaker and two rotating cameras that somewhat resemble a human face and software that recognizes the faces of viewers. These robots tried to avoid other people, and also noticed faces where there were none, reacting by staring at a stationary point.

The robot is not a tool here that can replace a human, it deals with death, with the limitations of the body, with illness, it is imperfect and weak, can we accept such a robot better, does it seem less alien, even though its suffering is not real. It is also a way of drawing attention to how strongly someone's difficulties or disabilities are integrated, where the recipient may notice something that reminds them of themselves. A doll, a robot, another subject, is something that man has been trying to build since the beginning of civilization, recalling historical golems, feeling the incredible loneliness of a species, having noticed the gap between the world of humans and animals. Perhaps less cruelty to animals, searching for a being who genuinely feels will reduce the loneliness mentioned above, perhaps it is a kind of unconscious "pain" of an insensitive conscience.

Through art created by the algorithm, we try to notice the difference in feeling, to notice the specificity of the artificial creator, we wait for the moment when we will be able to talk about its unique distinctiveness, which will announce that there is a robotic artist, and therefore a creation acting in a uniquely human way. From there, it is only a step to another level of communication.

In art, we perceive more than we can articulate discursively, trying to make the mechanism work in this field of communication is an attempt to better understand unconscious processes, to gain more complete knowledge about man, by trying to recreate such a communication process by a designed creative subject. This is a search for a new point of reference in the field in which we move, but it is difficult for us to define it precisely. Through art, we can express the desire for knowledge. In the experience and aesthetic experience, a scientific experience, a cognitive process, can appear.

With technology, the area of art is enriched with what is new, and perhaps, contrary to appearances, even more human. It is a need for contact that exceeds the conditions of the body, an attempt to build an aesthetic experience on a global scale, the possibility of building a creator in such a way as to fully know, master the aspects of creation, know the essence.

BIOART

A pioneer in this type of activity is Eduardo Kac, who in his initiatives on the border of art and science interferes with living organisms. His flagship work in the field of bio-art is his living, fluorescent rabbit, which glows in the dark due to having jellyfish genes. Another work is the biobot from the Eighth Day project; it is a robot in which there is a colony of *amoebdyctiostelium discodeum*, its activity is monitored and processed into the biobot's movements. Kac tries to show in this way the neural processes inside the brain.

The biobot, moving around the closed exhibition space, has an audiovisual system that responds to the commands of Internet users. Gallery guests could observe the biobot directly, and virtual guests could generate interactions with the robot system. This work once again breaks the pattern of distanced science and engaging art, which we can call the third culture, a term coined by Charles Percy Snow, defining the dialogue between the exact sciences and the humanities.

To work in the area of biological medium, a laboratory is needed, it requires very restrictive conditions ensuring the viability of tissues. One of the places where such activities are performed is the SymbioticA laboratory in Australia (Kluszczyński, 2015).

GUY BEN-ARY IN THE BIOLOGICAL MEDIUM

Guy Ben-Ary has been using neuroengineering knowledge in his artistic works for about 20 years. His works belong to the field of bio-art and robotic art. The artist grows neural networks, using them as an important element that reacts interactively to other components of the composition.

The work *In-potentia*, created in collaboration with Kirsten Hudson, Mark Lawson and Dr. Stuart Hodgett, is a type of sculpture, the component of which is a grown brain (Ben-Ary, 2013). It can be called a borderline, semi-living existence, it uses iPSC technology (induced pluripotent stem cell technology), which allows for the reprogramming of stem cells. This technology allowed for the reprogramming of tissue cells into embryonic cells, which could then be transformed into neurons, thus creating an efficient neural network of the brain. It was placed in a type of incubator, which allows for the proper functioning of the neural network and allows for the recording of neuronal activity, which is translated into sound. The container was displayed in semi-darkness, somewhat reminiscent of a reliquary, or an 18th-century invention, but there is a living organ inside, the sound gives the impression of buzzing, scratching, an active network of neurons. This is a reflection on the status of life, the heart was considered the most important organ supporting life. In ancient Egypt and

Greece, as Martyna Michalska writes, among the Hebrews and Christians, breathing, divine breath, was very important, today the brain has become the key organ, but should we look for the source of existence in it? The mere presence of the brain means the presence of something living, but it seems insufficient, we can confront this issue by looking at the work *In-potentia* from the perspective of art and science, in search of an answer. Silent Barrage is a work created by Guy Ben-Ary together with Phil Gamblen from the SymbiotcA laboratory and a team led by Dr. Steve Potter from the Neural Engineering Laboratory at the Georgia Institute of Technology in Atlanta (Ben-Ary, 2009). It was decided to create an installation investigating the mechanisms that govern thought processes and decision-making, work began in 2006. Using the in vitro method, ten thousand neurons were grown on the surfaces of 1 millimeter Petri dishes, which were connected to robotic arms, thanks to sixty electrodes. Individual dishes became the equivalent of brains receiving and sending stimuli. The installation posts had an outer paper layer on which you could see the recording of neuronal activity, the amount of stimuli sent to the neurons depended on the presence of participants watching the installation, they were tracked by a system of cameras and mapping technology. One could find oneself in an environment giving the impression of a certain organism, Silent Barrage has the charac-teristics of a living organism, sensitive to bio-technological feedback. participants could enter into contact with a neural network, which responded through the activity of the robotic part of the installation. This work was the result of seven years of research, able to observe the processes of memory, learning, which occur thanks to the neural network. In 2012, Guy Ben-Ary decided to create a kind of his external brain grown from a culture of skin fibroblasts reprogrammed into stem cells, which were finally transformed into neurons (Ben-Ary, 2016). The work of cellF becomes a kind of musician that cooperates with humans. Amplifiers were connected to Petri dishes with a growing neural network on them, on which there are multi-electrode arrays, which received electrical signals generated by neurons, while transmitting them external stimuli. Signals from the neurons were transferred to amplifiers and directed to an interface, an analog sound synthesizer, in this way

CellF is heard, able to play music along with other musicians. The work combines a set of analog synthesizers and a bilo laboratory containing an incubator with tissue cultures where neuronal cells are located and a laminar chamber ensuring sterility of the cells. CellF, which creates music in real time, plays different music every time.

Bio Kino – Living Screen is a living screen grown from skin cells, or other types of tissues about half a centimeter in size, on which projections are displayed to be viewed through a microscope (Ben-Ary, 2014).

Within the area of robotic art and art combining living tissue cells with mechanism, experience and aesthetic experience gain a special form. These are

works combining scientific research and artistic creation, where the search for a means of expression becomes a research tool.

MEART

The desire to create a creative subject in art, a robot artist, is the desire to create or discover a being that will be able to communicate, to transmit the process of experiencing the world, from a perspective other than human. This is where the difficulty arises, intuitively we expect a creature that will react, behave similarly to a human, will have emotions, will experience; or a mechanism that will bring danger because it does not have the ability to empathize, and something completely different can happen.

The combination of mechanism and biological tissue is the work MEART – The Semi Living Artist (Ben-Ary, 2015). The first stage of MEART development was the installation Fish & Chips (2001). The name was changed when neurons grown on silicon integrated circuits (Chips) taken from the brain of a goldfish (Fish) were replaced with neurons taken from the gray matter of the brain of rat embryos, grown in a Petri dish using a set of microelectrodes (MEA). I would like to know how this idea affected the fish and the rat, what happened to these animals. MEART is an acronym for Multi-Electrode Array Art. An important element of this work is the culture of cells connected to the environment by an electronic circuit, which is a kind of brain of the resulting construction, treated as an artist and an art artifact at the same time. MEART was shown in 2002 at the Biennial of Electronic Art in Perth. It is one of the first biocybernetic, neurorobotic works.

It has three main elements:

1) wetware – neurons and glial cells taken from the rat brain and cultured on MEA; (cultured on a Petri dish using a set of microelectrodes)
2) hardware – robotic drawing arms;
3) software – an interface enabling communication between wetware and hardware (Kluszczyński, 2014, p. 358).

MEART has software, equipment that processes information, and hardware (robot arms) and wetware – a biological element that are connected to the Internet. The first two elements were geographically separated, wetware was in Potter's laboratory in Atlanta, hardware in an art gallery in Perth. The Internet was used for communication.

The gallery contained robot arms, a computer system and a camera that recorded the faces of individual people and the drawings that MEART produced. The human face was recorded and processed into a 64-pixel image, because that

was how many electrodes connected to wetware, they monitored 60 channels of activity of cultured neurons, constituting the MEART brain. The signal reached wetware as an electrical stimulus, triggering processes that were recorded and sent back to the robot's hardware, in the form of transformed impulses so that they showed the activity of neurons and triggered corresponding movements of the drawing arms. The processed image of the drawing is returned to the MEART brain. The creative system here is a cybernetic system that generates and receives impulses.

MEART records the image with a camera, replacing the eyes, processes what it sees using neurons, which perform the work of the brain. It takes action using mechanical arms, which constitute its body. The Internet here resembles a nervous system that allows for expansion.

The work is an experiment in which nerve cells are an element cooperating with an electronic device. MEART is bio-electronic. From the scientific side, the device uses adaptive and network mechanisms, and you can observe their course, from the artistic side, it is an attempt to create a creative object that has a certain autonomy in producing artifacts treated as the artist's works. Meart can be treated as a work of art, an object producing works of art, and a creation analyzing the environment, you can follow its perception of the environment and its processing, just like in the artist's observation.

Kluszczyński calls the MEART elements collectively "artware", which consist of software, hardware and wetware. A form is created that its authors defined as semi-living, because it is capable of learning, self-transformation. MEART supposedly goes beyond the previous definitions of a living organism. We observe perception, stimulation and action, as a result, a drawing can be a form of expression of a unique entity, a new aesthetic quality can be read in its products, but also information about a different type of perception. MEART drawings are called meta-artware (Kluszczyński). The prefix meta means that we are dealing with a work of art producing a work of art, or depending on the definition of a work of art, an artifact producing an artifact. It is also an object producing a situation of a work of art that forces us to revise the definition of art and its components, the artist, the artifact, the aesthetic situation, aesthetic concepts. One can reflect on the evolution of technology, its better connection with biology and the direction of contemporary transformations, their possible results. Thanks to MEART we learn about new branches of creativity, biocybernetic, biorobotic and cyborg art, which were created thanks to the transformations of the concept of art developed by conceptual, generative (i.e. performed by a program) and performative (performance) art.

In this way, the concept of art combined with science is realized. The concept of creativity, artist, work of art, their status and rank can gain new definitions. A creative artifact can be both an experiment and a tool of science. Fulfilling the need for aesthetic and scientific experience in accordance with the

existence of a third culture combining these activities, instead of separating them from each other, can in this way search for new shapes at the intersection of the field of art and science, which has always generated valuable emergences.

In my opinion, we are not yet dealing with a postbiological world, but with an environment where new forms of biology cooperating with technology and technology better shaped to cooperate with the biological component are developing. Technology has always existed in conjunction with biology, as a creation that is a tool of man, a biological being. It seems that biotechnology is the result of a process that began to take shape at the very beginning of the emergence of technological devices. Does the position of the artist, the definition of creativity, change in the presence of new biotechnological creations, synthetic biology?

Issues of aesthetics, ontology, ethics, exact sciences, knowledge of technology, engineering, are elements needed to analyze objects such as MEART.

If the human DNA code is subject to modifications, we may face a change in the perception, thinking of the human being much more different than ever before. Currently, aesthetic experience is a reflection of art that not only crosses borders, but is the result of the digital revolution, globalization. The recipient of art aesthetically experiences their existence in a space increasingly changed by technology. Due to the presence on the web, where the user is interactive, more works of art are created that are focused on interaction, the experience of art is not only immersive but is an observation of the attempt by artists and scientists to combine biology and technology, an attempt to bridge the gap between the world of digital media and living tissue, which is also a medium of art. Will this boundary not become so sharp over time, or will human actions take a direction that we are currently unable to predict?

Art as a dialogue between people, a social agreement on what aspect of creativity we want to engage with, is a mirror of the current level of the actually functioning hierarchy of ethical values, a form that is not indifferent to them. The language of art allows for the transmission of anxieties and hopes in a language richer than spoken language, conducting communication that goes beyond conscious reception is an existence that man cannot lose. Art may cease to be called art, but this way of communication will continue, under a different name.

I also think that the anxiety associated with losing the development of a series of understandings under the name of art is not so important. It seems more important to preserve what has been said thanks to art. To remember the way of more subtle perception of reality, to reap the benefits of participating in building worlds of culture, stories that every civilization creates even involuntarily. Art can be understood as a certain way of human existence, and therefore as something that manifests itself in the specificity of his existence, regardless of what he calls it, regardless of the level of his consciousness.

What transformation of experience has taken place? We try to share our experience, currently sharing materials, also digitized works of artists is almost equivalent to the existence of the recipient, who becomes a digital creator, recorder and sender of content, which can often shallow, disrupt the reception. Exploring different worlds, the user tries to search for a sense of being in a community, which paradoxically begins to slip away. On the other hand, more subtle types of contact are created, based on an understanding of the mind, a direction that is particularly important. With conceptual art, not the physical form of the artifact became essential, but what is created during the interpretation of the work, its message, where the physical form is secondary, the depth of meaning becomes all the more important, because it can replace the difficulties with location – where we are, or where our field of influence is.

We live inside an enlarged space, in which we search for specificity, which Manovich calls poetics. Perhaps this is a space that does not lead to getting lost, but rather to connecting the mind that precedes the body, would like to be a generator of common spaces of contact and starts to succeed, which will not mean safe spaces either. As one can refer to McLuchan, where each medium becomes an extension of certain human abilities, we are still building a tool to help realize human potential, this time it is the potential of community, which is one of the most important experiences, which is why it is still explored by art (Zawojski, 2000; McLuchan, 2004).

The robot creates creations, compositions that are increasingly diverse, it is a constant pursuit of understanding the essence of creation, and therefore a being that has mastered the art of creation, it is also an attempt to unravel unfathomable biological mechanisms. This direction is also taken up only in a different way by bioart, which, through the manipulation of the DNA code, the implementation of biorobotic creations, tries to fully understand the essence of the tool of technology and strengthen and adjust the technological prosthesis, improve the delicate and requiring constant nourishment and care biological body. The greatest transformation is existence in the digital community, the global image of the world that we carry and which resonates in the context of works that explore the curiosity of the scientist, which in the field of art will be an experience of the need to transform the world that will never leave man. Will the tool-ness of the robot cease to worry over time, it is as if it was possible to combat the alienation from technology despite the fact that it is a human creation, as if man stopped fearing his own element of aggression. And interference in DNA can become much more dangerous, it is the kind of tool that can most transform the fundamental interface of art, the human mind. Art alerts and taming by art, shows in the field of experience the possible consequences of the latest phenomena and shapes sensitivity so that man does not get lost at the interface of created worlds, but finds himself as a kind of constantly transforming hybrid. This is not one direction, this experience certainly exceeds

the field of art and becomes a reflection of art commenting on times of breakthroughs, it is also not a type of question to which an answer can be given, then the path of our development would be very unambiguous.

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POCZĄTKI PRZEMIAN DOŚWIADCZENIA ESTETYCZNEGO SZTUKI NA PRZEŁOMIE XX I XXI WIEKU

Streszczenie

Jakie jest doświadczenie rewolucji cyfrowej? Doświadczamy bycia w rozszerzonej przestrzeni kontaktu, AR i VR. W przestrzeni sztuki każde nowe narzędzie, aspekt nowego, rozszerzonego sposobu funkcjonowania, staje się medium sztuki, środkiem wyrazu. Rozwój genetyki, możliwości ingerencji w DNA organizmu wpłynął na prace z dziedziny bio art. Człowiek wyłączył twory technologii poza obręb natury, wyodrębnia część swojej specyfiki jako tak inną, że potrzebuje sam akceptacji swojej działalności. Czy sztukę może wytwarzać narzędzie pozbawione świadomości, czy też jego twórca staje się współautorem, tak jak w pracach *AARON* Arnolda Cohena, czy *Paul the robot* Patricka Tresseta? Doświadczenie sztuki jest pewnym współdzielonym przejawem bycia, intersubiektywnym, specyficznym dla człowieka. Część tego doświadczenia jest związana ze specyficznym czasem powstania i odbioru danego tworu. Czy ulega ono całkowitej transformacji, czy też pewien trzon specyfiki tego sposobu kontaktu pozostaje niezmienny? Próba uchwycenia obecnej zmiany w doświadczeniu, pewnej atmosfery, którą współdzielą najnowsze przemiany w sztuce, używającej prekursorskich narzędzi nauki, jest nie tylko możliwością odpowiedzi na pytanie o obecną tożsamość współczesnego odbiorcy, uczestnika sieci. Jest to poszukiwanie wspólnego kierunku przyszłych dzieł sztuki, wynalazków technologicznych, wyobrażenia sobie i zbudowania otoczenia, które odpowiada na aktualną potrzebę sztuki, na to jaki sposób bycia chcemy sobie zaprojektować.

Słowa kluczowe:
doświadczenie estetyczne, sztuka robotyczna, sztuka biorobotyczna, ARTEX