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Biotechnological Art Performing with Living Microbiological Cultures

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ABSTRACT. Within the biotech era, art that addresses the issues of life, and aims at showing biological life in the artistic context, cannot avoid using biotechnology as the technology that enables interventions into the living matter. In the 1950s the artistic mode addressing the biotechnological subjects was rather representational, meaning that the artist would not *do* biotechnology, but would rather *depict* the biotechnological subject on the canvas. Later on, art has gone through a *performative turn*. In the article the author claims that because of the imperative of performativity, art addressing biotechnology necessary comprises the presence of living tissues and other living substances in the gallery spaces or spaces meant to show art to public. The galleries have turned from spaces for showing artefacts into spaces of events, performances and workshops. In this context, the idea to grow living entities within art might sound self-evident, yet it actually testifies of a performative turn, a shift from pictorial modes to performative modes of visual art. For biotechnological art the performative imperative leads to a novel idea of performativity, micro-performativity, which means a real-time action of the living bio-engineered tissues within the artistic context and in front of the public.

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1. Introduction

Visual art has very often had interest in indicating life in the dead matter, such as marble or stone. For Michelangelo Buonarroti evoking life meant to establish such statue of Pietà to assure the perception of the presence of Mary with slithering Jesus in her arms. Since 1990s biotechnology has been established as *the* technique of treating biological life. It has become the promising science contributing new chapters on revitalization of organs and therefore to the quality of life and longevity. Considering this framework, in contemporaneity art that has aimed at evoking life in the situations it establishes or at addressing the issues of biological life cannot avoid using biotechnology as the technology that enables real interventions into the living substances. In the 1950s biotechnology was at its beginnings and the artistic mode addressing the biotechnological subject was still rather a pictorial representational, meaning that the artist would not yet use real biotechnology, but would depict the biotechnological subject on the canvas (Salvador Dalí, *Butterfly Landscape, The Great Masturbator in Surrealist Landscape with DNA*, 1957). Chronologically later on, biotechnology has become the actual technology, which is able to manipulate biological life. Technically, the options to grow living entities or cultivate living cells have opened a palette of possibilities for art. Art, on the other hand, has gone through a *performative turn*, which has been well presented by Erika Fischer Lichte (*Ästhetik des Performativen*, 2004). Because of the performative turn

and the imperative of performativity, art addressing biotechnology necessary comprises the presence of living tissues and other living substances in the gallery spaces or spaces meant to show art. The galleries have turned from spaces for showing artefacts into spaces of events, performances and workshops. In this context, the idea to grow living entities within art sounds self-evident, yet it actually testifies of a performative turn, a shift from pictorial modes to performative modes of visual art.

1. “Why Is that Dogs Aren’t yet Blue with Red Spots”

An early stimulation for doing real interventions into the living world has come from a philosopher Vilém Flusser. In the late 1980s he suggested that the artists should actually become biotechnologists: “Why is that dogs aren’t yet blue with red spots, and that horses don’t yet radiate phosphorescent colors over the nocturnal meadows of the land? Why hasn’t the breeding of animals, still principally an economic concern, moved into the field of esthetics?” (Flusser, 1988, p. 9) At the end of the millennium art has begun to actually manipulate biological life as artistic doing. Art has started to use methods that enable manipulation of the living substances. The earliest were the announcements of the transgenic art from the late 1990s. Eduardo Kac has defined it as “a new art form based on the use of genetic engineering techniques to transfer synthetic genes to an organism or to transfer natural genetic material from one species into another, to create unique living

beings.” (Kac, 1999b) Significant for this discussion is the fact that much of the early transgenic art was presenting the seeming artefacts or even pictures of the supposed products that resulted from the prior laboratorial manipulation. For instance, the most known biotechnological work of art, Kac’s Green Fluorescent Protein rabbit Alba, was even never presented to the public as a living animal. This triggered suspicions about its actual existence. Another project by Kac, *The Genesis* (1998/99), was rather different. In it the performative dimension is well counted upon. This is an artistic situation with a real-time manipulation of the living substance. The installation contains a culture of living bacteria with synthesized genes, which multiply. In addition, there is a recurrent loop established in the installation with web participants, who activate UV radiation. The UV light disrupts the DNA sequence in the plasmid and accelerates the mutation rate.

Much of biotechnological art is product-oriented. Many artists tend to deliver real world products with using biotechnological manipulation within art, such as for instance Symbiotica produced stakes, leather or an extra ear for Stelarc; Maja Smrekar produced Maya YogHurt with modifying the genome of yeast in such a manner to add a part of her own DNA to it. In all these cases, the products are the results, while the artists show the living processes in the real time of the art show. The projects are communicated with the public as living cultures or performing biotechnological manipulations of living substances.

2. The Presence of Life

The central question here is tied to the issue of presence, the presence of the living substances, of the living cells, living tissues, and the manipulation of these living substances. The presence and manipulation of the living substances establishes a performative dimension of the biotechnological art. Without these interventions into the living material, any addressing of manipulation of the living substances would render art to pictorial representations. Using substitutions of living substances in the art projects that announce the use of living substances, for instance using inorganic or dead organic substances for showing the supposed cultivation of a “cell culture” in a petri dish installed in an incubator, would be a fake. Addressing biotechnological interventions with openly using nonliving material, such as wax or clay, for representing tissues and living cultures, would bring such doing close to representational theatre. In a representational theatre an actor plays a character and uses color for representing blood. For the performance art it is crucial that the performer is really who she or he represents and that she or he really does what she or he as a performer does – cutting her flesh means real cutting which results in leaking blood, a shot with a gun makes a true hole in the body, Marina Abramović and Ulay actually break up their relationship on the Great Chinese wall etc. For biotechnological art it does not make much sense, if

nothing can be *done* with the materials used in the sense that no life is *performed*. There would be no process, nothing would evolve, if there would be nothing living there. Using any kind of media that would introduce mediality in this communication process would establish only representations and not real life situations. Instead, cells have to actually divide there in the real time and species have to be hybridized for real, with the means of biotechnology. The significance is that with the performative dimension, biotechnological art is not establishing fictional discourse. It aims at surpassing the status of secondary reality, as it had been established with the traditional representational media. It does not re-present reality, which would mean to present again, for the second time. It does not reproduce reality, which would mean to produce it for the second time, but it *produces* it. It *does* it. This is achieved through the performative dimension, but also with the act of intervention, which is not a passive stand of an artists as regards the situation, but an action.

3. Différance and Repetition

Biotechnological art tends to minimize the *différance* between the context of origin and the situation of installation and aims to affect reality with intervening into living substances.

To discuss the issue of presence and *différance*, we need to open the question of *representation*. The presence in the differentiated mark of writing, in the representation, was discussed by Jacques Derrida (1971). Representation here should be considered as inseparable from *communication*. According to Derrida, the issue of communicability (possibilities, conditions and ways of communicating) of marks, the representativity of a medium of writing, cannot be simply understood in a sense of substitution, supplementation of presence² in a sense of continuing, homogeneous modification of the presence in representation or the progressive weakening of the presence, but for the medium of writing the most essential is the break with presence. (Derrida, 1988, p. 6)

The written sign has, according to Jacques Derrida, its specificities. The first is the absence of the addressee, in respect to which we can ask ourselves, “[b]ut is not this absence merely a distant presence, one which is delayed or which, in one form or another is idealized in its representation?” (Ibid., p. 7) It is coming to some distance, divergence, delay, *différance*; however, this can no longer be an ontological modification of presence, but the written communication, “[i]n order /.../ to retain its function as writing, i.e., its readability, it must remain readable despite the absolute disappearance of any receiver, determined in general.” (Ibid.) It has to be repeatable, iterable (*iter* as again). According to Derrida the iterability

² In French, which Derrida uses, the word *le supplément* means substitution, a substitute and replacement, a surrogate.

structures the mark of writing itself. The essential predicates for the minimal definition of writing are, according to Derrida: 1. a written sign is a mark that subsists and gives rise to iteration (this separates written and oral communication); 2. a written sign allows a force that breaks with its context, with the collectivity of presences, which organize the moment of its inscription (the so called “real” context includes the “present” of the inscription, the presence of the writer, the entire environment and above all the intention; the sign possesses the characteristic of being readable even if the moment of its production is irrevocably lost, when we don’t know the author’s intention) – because of iterability we can always detach the written syntagm from the connection in which it is given without causing it to lose the possibility of functioning; 3. this force of rupture is tied to the spacing that constitutes the written sign.

In the processes of embodiment as performed in *The Lips of Thomas* and in other performances, Fischer-Lichte recognizes aesthetic and *delayed* (in the Derridian sense) *reenactments*. According to Fischer-Lichte, performances do stylized repetition of performative acts. Here it is also relevant that John Austin, who actually introduced the notion performative, and likewise Fischer-Lichte recognize “the accomplishment of performative acts as ritualized, public performances.” (Fischer-Lichte, 2008, p. 28) Yet, Fischer-Lichte adds a crucial remark, namely that Abramović’s performative acts of the historical patterns are not reenacted just to repeat them, but to significantly modify them. Analogically, biotechnological

patterns, for instance techniques and methods, as well as the enactments of the historical possibilities, are not established in biotechnological art as just repeated patterns, but they are significantly transformed. Maja Smrekar addresses the historical possibility in the age of Anthropocene, of a global food deficit, and proposes a solvation, i.e. a production of a biotechnological food product, but with a surprising element, an extract from a human blood.

Although the reenacted patterns and historical possibilities are present also in biotechnological performances, it is additionally highly relevant that an aesthetic performance is a unique event and that the level of uniqueness required is much higher than that for a theatrical performance. Chris Burden got himself shot only once, Gina Pane cut her belly once, Abramović and Ulay broke up once. Performance is a unique event. Therefore, the issues of a delay and a break with presence, which are not acceptable for performative biotechnological art, need to be readdressed.

4. Delayed Communication and Performativity as Instant Communication

When John L. Austin introduced the notion performativity back in 1955, his objective was to contribute to the interruption with the tradition of thinking about characteristics of statements as being true or false and called the attention to statements or utterances which “do not ‘describe’ or ‘report’ or

constate anything at all, are not ‘true or false’”, (Austin, 1962, p. 5) therefore they are not constatives. With examples, such as the groom would say during the wedding ceremony: “I do” (namely, take this woman to be my lawful wedded wife), declaration of the competent person: “I name this ship *Queen Elisabeth*”, the record in a will (“I give my watch...”) and uttering a bet (“I bet you it will rain tomorrow”), Austin ascertained that “it seems clear that to utter the sentence (in, of course, the appropriate circumstances) is not to describe my doing of what I should be said in so uttering to be doing or to state that I am doing it: it is to do it.” (Ibid., p. 6) He suggested that we call the utterance of this kind performative. The name originates from the English verb to perform, which is usually connected to work, action and also with act, therefore “it indicates that the issuing of the utterance is the performing of an action”. (Ibid.) The performative does not mean just to say something, it represents “said-done”, respectively it happens when said means to do something or *when we do something in such a way, that we utter it and by uttering it*. The performative is doing something by uttering it.

The performative is essentially realized through communication, in Derrida’s words: “The performative is a ‘communication’ which is not limited strictly to the transference of a semantic content that is already constituted and dominated by an orientation toward truth”. (Derrida, 1988, pp. 13–14) From Derrida’s perspective, Austin’s insisting on perlocution and especially on illocution shows the consideration of the acts of the

discourse only as acts of communication. In that his category of communication is relatively original as his conceptions of illocution and perlocution do not denote the transfer or transition of the content of sense, but they denote the communication of original movement, the procedure and the production of the effect. Communicating, in the case of the performative, in Derrida's terms, means communicating a force through the impetus of a mark. (Ibid., p. 13) As opposed to the constative utterance "the performative does not have its referent /.../ outside of itself or, in any event, before and in front of itself. It does not describe something that exists outside the language and prior to it. It produces or transforms a situation, it effects." (Ibid.) It therefore has an interventional character.

If the performative does not describe and does not report about the outside of the discourse reality, and in such sense cannot be true or false, does it refer to any reality? The performative is not representational but it demands equalization between the utterance and the act, which has the power of liability. According to Émile Benveniste (1966), the performative is self-referring, for it is referring to the reality which is being reestablished. "The signified is identical to the referent." (Benveniste, 1971, p. 236) This is because it is uttered under the conditions which make it an act. "The act is thus identical with the utterance of the act." (Ibid.) The reality to which the performative is referring to is therefore the same reality that the performative is reestablishing itself.

As regards the break with the context of inscription, the collectivity of presences, which organize the moment of inscription, as discussed by Derrida in regard to the medium of writing, one can establish that the discourse of a performance is rather closer to the medium of speech than to the medium of writing. It is happening here and now. The performance is not telecommunication, remote or delayed communication, whereat writing is.

With a notion performative turn, Erika Fischer-Lichte refers to a whole wave that reached different domains of art, for which significant was that the performances have transformed the spectators to the participants of the performance. Performance, as contemplated by Fischer-Lichte holds some features of rituals and spectacles, so that these actions are linked to various cultural fields from the past or from diverse cultural contexts. The new form of action and performance was practiced in the 1960s by the visual artists, such as Joseph Beuys, Wolf Vostell, Fluxus and Viennese actionists. In music, the performative turn took place with events and pieces by John Cage already in the early 1950s. Different actions and noise, mainly produced by the listeners, became sound events, while the musician, for instance the pianist David Tudor in *4'33* (1952), did not produce any sound on the piano. However, Fischer-Lichte recognizes performative character of visual art already in the action painting and body art, as well as in the later light sculptures and video installations. A visit of an exhibition often became participation in a performance. In literature, she recognizes

performative turn in within the genre, for instance in the novel-labyrinth or “interactive” novel. According to Fischer-Lichte, with performance, it has become impossible to distinguish between the artist (the subject) and the work of art (the object). (Fischer-Lichte, 2008, p. 20)

5. Micro-Performativity and Possibilities of Communication Between the Species

Derrida annotated that any differential mark is separated from its origin. In writing, the rupture of the marks with the context of origin is obvious and the reader is shifted to the future, the communication process is delayed, it is not instant here and now. In speech acts differential marks are as well used. These too are, according to Derrida, separated from their origin. Because of differentiation, the differential mark does not assure the experience of pure presence. Derrida even claimed that no one can experience the whole communication with anyone, not even with himself, as he is not possessing the pure, immaculate meaning, intention or experience which would afterwards fall apart, break or blend with cracked medium of a language. I can never have the pure meaning or experience for: “there is no experience consisting of *pure* presence but only of chains of differential marks.” (Derrida, 2008, p. 10) In other words, any communication is differentiated. And every production of marks is already a production of reality.

In the case of biotechnological in vitro installation, the medium is alive. Working with living entities requires to give an assurance of special conditions, such as warmth, humidity, special nutrition, oxygen, etc. which are needed for the preservation of life. The presence of living entities and the establishment of particular conditions construct special environment, to which the living material pours into. There is a break with the context of origin, the cells taken from one's body represent that body and are differentiated from it, yet they are still the biological cells of that body, they have a potential to grow into something more, build tissues, organs, organisms – particularly with the support of biotechnology. So these situations do open new chapters as regards the issues of presence, break with the context of origin and the performing reality.

To speak of performativity in the sense that the micro living beings would do action that would be observable to the human observers, is difficult and rare. The human observer cannot see the cells dividing for the ear cultivated by Symbiotica. In that sense, the observer does not perceive that something is actually going on there, a process of life and some physical action related to it. This is comprehensible only through the fact of the installation of an ear in a liquid colored medium in an incubator and the whole surrounding to this central spot.

There is some action of microorganisms that establish performative situation in the case of *Bacterial Radio*, an installation by Joe Davis (2003). Installed is a microscope, which is connected to a computer that is further

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connected to loudspeakers. A sample of living culture is placed in the microscope, whereat the sample is full of microorganisms found in the muddy waters from the neighborhood, which the observer can notice through the magnification that is projected on the walls of the space. The sound is being produced with the moving of microorganisms, which is translated into sounds. The result is a kind of music that sounds similar to free jazz performance. In this case, the microorganisms are communicating, “over the abyss”, with the human observers, whereat the artist is absent. His role is similar to a composer. Here he just installed the platform and defined the sounds.

Guy Ben-Ary has established a neural synthesizer for the installation *CellF* (2016). “It is an autonomous instrument that is composed of a brain, made of biological neural networks, and a body, made of analogue modular synthesizers that work in synergy.” (Ben-Ary, 2016) The neural networks are bioengineered from the artist’s skin cells, transformed into stem cells, which were finally differentiated into functional neural networks. These were grown over a multi electroded dish to become Ben-Ary’s “external self”, as this is said in the project documentation. The “alter ego” produces a tremendous amount of data as responses to stimuli, as for instance those by a human musician. During the performance communication and responsiveness happens between the human and the nonhuman musician. A result is a sort of posthuman music that is produced by both, the human and the bioengineered musicians. The project acknowledges the dichotomy

between the body and the brain, which could be discussed separately. Yet, with establishing the brain for an installation that is capable of some autonomous action during a performance, the artist challenges the contemporaries with a question about the eventual self of this organism.

6. Conclusion

In the project documentation Guy Ben-Ary is not called an artist, but a project initiator. In this case, the performer is the bio-engineered organism. Art that is speaking about the living processes and manipulation of living entities is necessary performative. However, there are various sorts of performativity involved in these projects. On the one hand, the presence of an artist is ceasing, on the other hand, the presence of the living cell cultures is leading to an ability of autonomous action of the engineered living material or organisms. For biotechnological art the performative imperative leads to a novel idea of performativity, micro-performativity, a real time action of the living bio-engineered tissues within the artistic context and in front of the public.

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