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Bio Art—Taxonomy of an Etymological Monster

Bio Art isn't just a hybrid; it's also a proliferating mutant term. Biology's ascent to the status of "hottest" physical science has been accompanied by, on the one hand, the inflationary use of biological metaphors in the scholarly disciplines that study culture; on the other, a wide range of biotech procedures are simultaneously providing artists with the themes for their work as well as the expressive media with which to realize them. As this has transpired, the evolution of the term "Bio Art" has somewhat resembled the recent hyperbolic career path of the gene-hype launched by techno-industrial special interest groups in the 1990s that, in the wake of its zenith in conjunction with the media frenzy surrounding the Human Genome Project, has been slowly subsiding in the last few years. BioArt has not unfolded and developed in accordance with prescribed master codes of a determinant post-avant-garde manifesto; instead, it has been subject to a process of social drift and diverse aesthetic influences from its environment. For a long time, the dominant element of BioArt was the Genetic Art that was purportedly synonymous with it; however, with the demystifying abnegation of the primacy of the genetic paradigm as ultimate Jacob's Ladder, artistic protagonists expanded their horizons to take in other fields and methods: cell and tissue cultures, neuro-physiology, bio-robotics and bio-informatics, transgenesis, synthesis of artificially produced DNA sequences, Mendelian cross-breeding of animals and plants, xeno-transplants and homo-grafts, biotechnological and medical self-experimentation, and subverting the visualization technologies of molecular biology in ways not foreseen in the users' manuals.

The typological dilemma is reminiscent of the difficulty of defining media art as an artform. What is it exactly that is essential to and definitive of it: that it produces art with the help of media, or that artists' encounters with certain subjects are thematicizing and changing the way media are being used?[1] In contrast to the technologies deployed in digital media art, bio-technologies as artistic implements have not yet been democratized,[2] even if biotech home studios as new manifestations of pop culture might almost be upon us.[3] In this way, the notion of Bio Art, a concept already pregnant with meaning, is still additionally contaminated by art biotechnology, that regards biotechnology from the safe haven of purportedly critical distance and conceptualizes it purely as another topic. It would be safe to say that nobody today would even think of categorizing Miltos Maneta's conceptual oil paintings depicting joysticks, computer mice and tangled thickets of cables and wires as computer art or media art, but then we are confronted by an absolutely grotesque state of affairs in which the idea goes on about its merry way (even in specialized publications that should know better) that a work can be ascribed to Bio Art based on the content that it represents. Bio-fictional manifestations such as chimera-sculptures, DNA-portraits, chromosome-paintings or mutant-depicting digital photo-tricks are no more examples of Bio Art than Claude Monet's impressionistic paintings could be classified as "Water Lily Art" or "Cathedral Art". These conventional artforms in which exclusively metaphoric and iconographic reference systems are operational serve above all to satisfy the content-demands of traditional art museums in which establishment curators are beset by the pressures exerted by the challenges of biotechnological perspectives: on the one hand, they must take a position on an issue of pressing importance to society; on the other curators—overtaxed by the conceptual demands of the issues, ignorant, intellectually lethargic[4] or made insecure by the fact that such works are hardly *objets d'art* in the conventional sense of the term—avoid

the awkward terrain of formally innovative Bio Art that confronts biotech with paradoxical application in actual practice. Out of the countless exhibitions staged in recent years that have dealt with the subject of biotechnology, those in which biotechnologies have been utilized as a tool can be counted on the fingers of two hands.
Things get even more convoluted in the case of media art installations that are based on so-called genetic algorithms. Are computer simulations of biological processes Bio Art? Hardly! After all, isn't this *a priori* an effort to instrumentalize such programs to purvey aestheticizing, pseudo-scientific, significance-endowing illustrations[5] and, via informatics, to permit the myth of the artwork as living organism to sprout up and blossom again? Despite the ever-growing importance of research in the field of bio-cybernetics and, on the other hand, synthetic biology that seeks to design new functions for living organisms, it remains the case that art whose sphere of operation is the interface of the organic and the mechanical and that reflects the fascination of bio-informatics and bio-computing above all generally remains arrested in a cybernetic ideal.[6] Nowadays, though, this is once again being confronted with concrete, carbon-based material.[7]
To phrase this in the highly fashionable parlance of genetics: these aesthetic hybrids cannot be explicated by means of the visual analogy of the phenotypes of such works, but instead by means of their conceptual genotypes. The "mutation" that Bio Art has been undergoing currently be described by four hypotheses:

1. Bio Art is increasingly re-materializing itself. The former fascination with the "code of life" is receding and making way for a phenomenological confrontation with wetwork.
2. Instead of representational objects, graphic depictions or simulations, transformational processes with performance characteristics are now the center of attention.
3. Bio Art is increasingly attracting the interest of performance artists specializing in Body Art; there exist structural relationships connecting the two fields.
4. As a medium, Bio Art does not permit itself to be nailed down with a hard and fast definition of the procedures or materials that it must employ; the "manipulation of the mechanisms of life" assumes a very wide variety of forms both with respect to discourse and technique.

Photo: Axel Heise

Bioreactor of the Tissue Culture & Art Project

Photo: TC&A

Extra Ear Quarter Scale: Tissue Culture & Art Project / Stelarc

1. When Ars Electronica dedicated the 1993 festival to "Genetic Art – Artificial Life," the first and foremost items on the agenda were "autopoietic systems, virtual creatures, AL software, genetic images, synthetic life, evolution and the ecology of digital organisms, interactive evolution and the algorithmic beauty of nature." After all, as Peter Weibel wrote, "the task of artificially creating life can be approached from two directions: from the hardware and from the software side."[8] Indeed, artificial life ought not to be understood as a simulation but rather as a preliminary stage of hardware visions. Nevertheless, computer culture promoted "the shift of paradigms from defining life as substance, material hardware or mechanisms to conceiving life as code, language, immaterial software, dynamical system." In the wake of the subsequent arrival at the hardware stage and the emergence of the artistic strategies associated with it like "transgenic art,"[9] the term "genetic art," a holdover from software times, has, in light of the clear trend of development in the direction of *wetwork,* become almost totally devoid of meaning. Instead of efforts based upon the suggested programmability of the "mechanisms of life," artists like Kac and Jeremijenko are coming out with works that are investigations of software theses using concrete, organic material and, simultaneously, clear critiques of genetic fetishism.[10]

2. Nevertheless, the upshot of this re-materialization is by no means a process of regression into object-centered art. It mostly has to do with staging transitory transformational processes and is not a matter of end-products of living, terato-generated, animated object-creatures derived from the historical fascination with automatons. And it is by no means coincidental that many of those artists opt for performative forms of presentation that establish purported interrelationships between biotechnologies and their philosophical, political and economic framework conditions. The dialectical relationship between real presence and metaphorical representation is comparable with that of performance art. Whereas the theatrical actor still metaphorically embodies a role, the performance artist brings his own body and his own real biography into play. What this gives rise to for the spectator is a realm of emotional tension and interplay between the two possible modes of perceiving the action. Likewise, the viewer experiencing Bio Art must switch back and forth between the symbolic realm of art and the "real life" of the processes that are being put on display and that is being suggested by organic presence. Inherent in the distinctive, definitive essence of such a perception-situation is a breach that provides an opening for hoax-art that makes a windfall profit from the impossibility of certifying biological processes as genuine. The growing intense interest in authentically "wet" Bio Art gives rise to expectations of the appearance of efforts at subversion and an aesthetic of the simulacrum.

3. Following a period of de-materialization, digital simulation and sensorially expanded immersion in contemporary (media) art, re-materialized Bio Art is helping to bring about a situation in which artists are again increasingly attempting to use their own bodies too as a battlefield for the confrontation with themes and issues that have arisen in connection with the Life Sciences. For example, the artistic duo named *Art Orienté objet* is planning a transfusion of filtered panda blood;[11] Neal White, in his concept of an "invasive aesthetic," makes the substance-absorbing body of the beholder into a site for art; furthermore, Stelarc and Orlan, two of the seasoned pioneers of Body Art, have joined the Tissue Culture & Art Project that is being carried out at the SymbioticA art & science collaborative lab in Perth, in order to utilize tissue cultures to grow an "extra ear" and a patchwork-like mantel made up of hybrid skin cultures of diverse donors representing a variety of different ethnic origins. These works can be meant as "satellite bodies", so to speak,

designed to effectuate the shift of the modifications Orlan performed on the level of virtuality in her *Self-hybridations africaines* into the domain of real, customized physical design.[12] But even the preservation and presentation *a posteriori* of frequently ephemeral projects bring forth aspects that Body Art and Bio Art have in common: they survive either as film, photo or video documents, as traces like posters or flyers, or in the form of material remnants or relics that refer back to the process of the manipulation of and the actual creation of new life itself in the manner of a synecdoche.

4. In an era in which the techno-sciences themselves have become potent producers of aesthetic images, it is clear that the use of biotechnological procedures as a medium of expression may not have primarily only a depictive function, even if such art does occasionally engender icons that make a powerful impact in the public sphere. This is first and foremost an art of transformation *in vivo* that manipulates "biological materials at discrete levels (e.g. individual cells, proteins, genes, nucleotides)"[13] and creates displays which allow audiences to partake of them emotionally and cognitively. Even telecommunications-oriented conceptions of media that correspond to cybernetic ideas do not do justice to the manifold possibilities of utilizing biotechnological procedures in art. Here, technical media definitions that declare bio-informatics and bio-computing as carriers of digital information to be similar systems of data transformation[14] do not bring us closer to a satisfying conclusion. Of course the encoding of visual icons or text fragments into DNA is still relevant for artists like Joe Davis[15] and Eduardo Kac within the genetic paradigm, but when artistic practice moves into the field of *Tissue Culture,* for instance, this calls for a concept of media that is not based on information theory.

Photo: Axel Heise

Disembodied Cuisine (Tissue Culture & Art Project) as part of the *L'Art Biotech'* Exhibition in Nantes

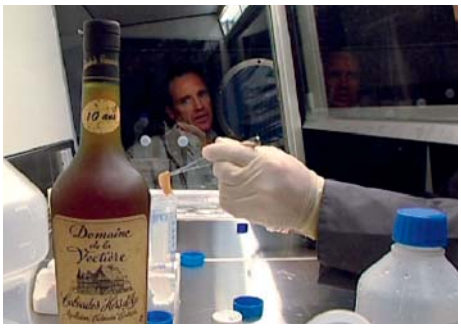

Photo: Gérard Sergent/Jens Hauser

Disembodied Cuisine (Tissue Culture & Art Project): tissue culture frog steaks marinated in Calavados

The following example illustrates the discursive complexity that Bio Art can have: In *Disembodied Cuisine,*[16] a performative installation whose theme was "meat production without victimization", the Australian members of the Tissue Culture & Art Project cultivated tissue to create a pseudo-positivistic junk-food alternative to massive factory farming. Edible, "semi-living sculptures" were cultivated out of isolated muscle cells from frogs on biodegradable polymer scaffolds in bio-reactors. Bio-artists "fed" them daily with a nutrient solution during their cell-cultured lives in a gallery-laboratory featuring a sterile hood and CO_2 incubators. Eight weeks later, at a *nouvelle cuisine* cookout whose invited guests included the happy creatures spared from slaughter as a direct result of the project, they were flambéed in Calvados and devoured. Menu-handbills advertising the barbecue were distributed at the local farmers' market so that the typical contemporary art audience could

be enriched by the presence of butchers interested in the prospect of alternative meat production. The igloo-shaped laboratory facility was hidden under black plastic sheeting, an allusion to the first Tissue Culture Laboratory headed by Alexis Carrel, a Nobel laureate whose career later also included a stint as eugenics theoretician during the time of the Vichy Regime in France. Framed, circular portholes were the only windows that offered a view to the *tableaux vivants* of the lab's operations. A passageway connected the lab with a rectangular room sealed off with transparent plastic: a dining hall full of set tables. Two aquariums were built into the transparent walls; inside, frogs could frolic amongst miniature Venus sculptures and ultimately observe the ceremonial supper before finally being released unharmed in the nearby botanical garden. On the other hand, participation by the diners who volunteer to eat the "victimless steak sculptures" actually was connected with a real, physical risk. The tough tidbits were difficult to cut even with a scalpel and their taste was questionable to say the least; furthermore, one of the guests paid a high price for this dubious pleasure in the form of an allergy suffered for weeks afterwards—ironically, not a reaction to the ersatz meat but rather to its polymer structural skeleton, and thus to the technological avatar that was meant, in this artistic context, as a symbolic means of saving animal life. Following the performance, a video-triptych remains as a documentation of all stages of the project, which, in this elaborate form, would be quite difficult to replicate in other exhibition settings. The video entitled "The Remains of Disembodied Cuisine" is placed opposite the tables set with plates upon which rest the boluses of half-chewed food that dinner guests spat out.

Here, the aesthetic objects can hardly be made out clearly and overlap one another. Tissue culture is deployed in this instance in a non-utilitarian way for the realization of a technological utopia, and simultaneously carried out *ad absurdum* to thereby undermine the conciliatory-compensatory function of techno-ideology. Here, the artists intentionally distance themselves from the phantasm of controllable genetics—the very title "Disembodied Cuisine" evokes the idea of the laboratory as kitchen in which nothing is programmed, recipes are indeed tried out but now and then dishes just happen to come a cropper. To be precise, what are being produced here are sculptures in the form of "steaks", consumable and ephemeral objects and therefore not finalized works of art. Rather, these are components of a performative and narrative process that integrates real protagonists beyond the confines of the museum and realm of the art world, and even demands readiness on the part of participants to engage in self-experimentation with uncertain outcome. Moreover, the project has concrete feedback effects on the scientific context itself. Now that TC&A has brought the concept of tissue-engineered *ersatz* meat into the public domain at this early stage, it may become difficult for commercial firms to make a profit out of "tissue engineered meat" patented at a later date. The artists are thus making a contribution to the open use of the existing knowledge. Substantively speaking, *Disembodied Cuisine* is an incarnation of the speciesism concept of Australian philosopher Peter Singer, who condemns discrimination on the basis of species and thereby calls into question differentiation among species as well as humanism as a philosophical model. This was inspired by the bio-phenomenological practice of the co-culturing of cellular entities in which species boundaries on the molecular biological level play no role. Core concepts of Jacques Derrida's deconstructivist critique of conventional humanism are also reflected here.[17] The Venus figures in the aquarium raise the question of the possibility of non-anthropocentric art, an issue thematicized by many Bio Art projects. The round picture segments of the laboratory's sporadic operations in the igloo mock the framed image as a proxy for representative art that merely thematically depicts biotechnology. In addition, the biotechnological sculptures disappear with the conclusion of the barbecue; what are left over—like in Body Art—are documentary traces (the video) and

material leftovers (the spit-out pieces of "steak"), which now *a posteriori* play out utopian and dystopian potential against one another.

One comes to the realization that a concept of media oriented on technical indices does not capture the essence of what is happening here. Naturally, what is called for here is greater selectivity when it comes to the relationship between the selected methods and the content, whereby not the least important reason for this is that artists who merely thematically appraise biotechnology from a distance often lack technical knowledge and, as a result, may pose less relevant questions. It is not relevant either whether "network art, computer art, video art, pigment art, oil art, painting art or sculpture art is art or not, but rather how the production technologies and the physical-chemical, biotechnological and mediated-procedural modes of conception and execution enable, hinder, modify and characterize those products that, in accordance with a particular society's view of certain methods and objects, are referred to as 'art'. (...) Art in the focal point of mediatization is of interest as a specifically inspired capacity to tie together vision, knowledge and the world of everyday life."[18] One could assume that artists go hawking their wares solely with the argument of their technological advantage. The key question that repeatedly crops up here is whether they must necessarily contribute actively to the process of knowledge production in accordance with a cognitivist approach or whether their role lies in the subversive questioning of emerging concepts and dogmas. At this point, a remark made by pioneering bio-artist Joe Davis comes as a surprise: "Some day, it will no longer be called Bio Art, but rather simply: art."[19] Thus, the leading practitioners of the genre itself would only too gladly dispense with the stigma of a purely technological definition of their hybrid art.

1 Cf. Reck, Hans Ulrich: *Mythos Medien Kunst,* Cologne, 2002
2 Interest in acquiring lab skills to handle real "wet biology" is increasing exponentially-for example, 92 artists from all over the world applied for the 10 openings for participants in the most recent "Art & Biotechnology" workshop organized by SymbioticA and Artscatalyst last March in London.
3 Cf. Thacker, Eugene & Natalie Jeremijenko: *Creative Biotechnology. A User's Manual.* Newcastle, 2005.
4 The case for media art is made in Blais, Joline & Jon Ippolito: "Looking for art in all the wrong places". In: *Takeover. Ars Electronica 2001.* pp. 28 – 33.
5 Cf. Hoppe-Sailer, Richard: "Bioplay. Medien – Simulationen – Natur?" In: Ingensiep, Hans Werner & Anne Eusterschulte (Eds.): *Philosophie der natürlichen Mitwelt.* Würzburg, *2002.* pp. 257 – 272.
6 For an elaboration of the explanatory model of cybernetic worldviews as general paradigm and ersatz for classical humanistic ideals, see Lafontaine, Céline: *L'Empire Cybernétique. Des machines à penser à la pensée machine.* Paris, 2004.
7 The most prominent example of this confrontation of immaterial code and real, trans-genetic bacteria is certainly *Genesis* by Eduardo Kac. See *Life Sciences,* Ars Electronica 1999, pp. 310 – 311.
8 Weibel, Peter: "Life—The unfinished Project". In: *Genetic Art – Artificial Life,* Ars Electronica 1993, pp. 9 – 10.
9 Kac, Eduardo. In: *Leonardo Electronic Almanac, Vol. 6, No. 11,* 1998.
10 Cf. Hauser, Jens: "Gènes, génies, gênes". In: Hauser (Ed.): *L'art biotech'.* Nantes/Trézélan, 2003. pp. 9 – 15. Published in German and English in: *Larger than Life,* EMAF, European Media Art Festival, Osnabrück, 2003. pp. 228 – 241.
11 In *A-positive* (1997), Eduardo Kac had already created a situation in which the human body provides a robot with life-sustaining nutrients by actually donating blood to it; the biobot accepts the human blood and extracts enough oxygen from it to support a small and unstable flame, an archetypal symbol of life. In exchange, the biobot donates dextrose to the human bod, which accepts it intravenously.
12 See Orlan in conversation with Hans Ulrich Obrist, in: *Orlan.* Paris, 2004. pp. 200 – 201.
13 Kac, Eduardo. Introduction to the book *Biotechnology, Art and Culture,* M.I.T. Press (forthcoming in 2006).
14 E.g. Thacker, Eugene: *Biomedia.* Minneapolis, 2004.
15 Cf. Davis, Joe: "Romance, Supercodes and the Milky Way DNA". In: *Next Sex.* Ars Electronica, 2000. pp. 217 – 235.
16 "Disembodied Cuisine" was produced in conjunction with the L'Art Biotech' exhibition in Nantes that presented the work of 11 bio-artists. See Catts, Oron, Ionat Zurr & Guy Ben-Ary: "Que/qui sont les êtres semi-vivants créés par TC&A?" In: Hauser, op.cit., pp. 20 – 32. Published in German and English in: EMAF 2003, op.cit., pp. 242 – 248.
17 Cf. Hauser: "Derrière L'Animal l'Homme? Altérité et parenté dans l'art biotech'". In: Lafargue, Bernard: *Figures de l'Art, No. 8—Animaux d'Artistes.* Pau, 2005. pp. 397 – 428.
18 Reck, op.cit., pp. 20 & 93.
19 "Larger than Life" Conference, Osnabrück, April 25, 2003.