

**Luigi Russo (ed.)**

**Evolutions of Form**

Logos Verlag Berlin



Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://dnb.d-nb.de> .

© Copyright Logos Verlag Berlin GmbH 2011

All rights reserved.

ISBN 978-3-8325-3384-7

Logos Verlag Berlin GmbH  
Comeniushof, Gubener Str. 47,  
D-10243 Berlin  
Germany

Tel.: +49 (0)30 / 42 85 10 90

Fax: +49 (0)30 / 42 85 10 92

<http://www.logos-verlag.com>

## Contents

<b>Introduction</b> LUIGI RUSSO	1
<b>The Classification of Monsters. Isidore Geoffroy Saint-Hilaire and His Teratological Taxonomy</b> MADDALENA MAZZOCUT-MIS	3
<b><i>Him, the Monster? The Ego deformation in Rameau's Nephew</i></b> CLAUDIO ROZZONI	25
<b>Monsters and Social Deformations in Balzacs Work: <i>Sarrasine's</i> Case Study</b> MICHELE BERTOLINI	41
<b>Skin-deep. Wax Moulages between Science and Aesthetics</b> PIETRO CONTE	59
<b>Evolutionary Monsters: Regression and Hybridisation between Science and Imagination</b> ELENA CANADELLI	69
<b>Between Uexküll and Weizsäcker: the Criticism of Functionalism and the Configuration of the Biological Act</b> SALVATORE TEDESCO - VALERIA COSTANZA D'AGATA	83
<b>The Pontifical Gaze. Morphology and the History of the Images</b> ANDREA PINOTTI	95
<b>Fredrik Adama van Scheltema and the West between Systole and Diastole</b> LUCA VARGIU	113
<b>The Form of the "Denkraum": Technique and Representation in the Kreuzlingen Lecture</b> CLIO NICASTRO	133
<b>Man and Technique: Photography as the Art of Modernity in Franz Roh and László Moholy-Nagy's Thought</b> EMANUELE CRESCIMANNO	139
<b>Form, Gestalt and 'Dominion': Echoes from the George-Kreis. Friedrich Wolters' Case. (Herrschaft und Dienst, Richtlinien, Gestalt)</b> DAVIDE DI MAIO	149
<b>Constraints, Boundaries, Responsibility: some Remarks on Contemporary Morphological Lexicon, between Aesthetics and Theoretical Biology</b> SALVATORE TEDESCO	169

<b>Ethics of the Formlessness: Imagination, Sublime and Morality in Kantian Aesthetics</b>	<b>179</b>
SERENA FELOJ	
<b>Form and Fragment: the Unfeasibility of Sense in T. W. Adorno</b>	<b>193</b>
MARIA LUISA BONOMETTI	
<b>Deductive Reasoning and Totalitarianism: Hannah Arendt's Provocation of Logic</b>	<b>209</b>
MIRIAM FRANCHELLA	
<b>Living Formis (of Art), Edoardo Kac's Transgenic Art between Ethics and Aesthetics</b>	<b>223</b>
ELISABETTA DI STEFANO	
<b>Shared Responsibility: Author and Public in JR's Experience</b>	<b>233</b>
EMANUELE CRESCIMANNO	

## Living Forms (of Art). Edoardo Kac's Transgenic Art between Ethics and Aesthetics

ELISABETTA DI STEFANO

**Abstract:** The Twentieth Century produced a remarkable progress in physics and biology, thanks to the support of new technical instruments, generally enlarging the horizon of scientific research. The genetic alterations are tolerated in those fields, such as medicine, where they are beneficial to man, whereas they provoke perplexity and anxiety in the artistic field, where the intervention on living forms, since it is not justified by a principle of utility, seems to fall into futile hedonism. After a brief review of the main theories on the relationship between ethics and biotechnologies, started in the 70s, we will analyse some transgenic works by the Brazilian artist Edoardo Kac, in order to, on the one hand, emphasize the ethical, philosophical and social value of these living forms of art, and on the other, clarify how the arrival of new technologies has influenced the transformation of traditional aesthetic categories.

The Twentieth Century produced a remarkable progress in physics and biology, thanks to the support of new technical instruments, generally enlarging the horizon of scientific research. Charles Darwin's theory on natural selection and Gregor Mendel's theory on the inheritance of certain traits have found today new consensus and wide acknowledgement also in the general public. The experiments on genetically modified organisms enhance hope for their benefits. For instance, the Golden rice, a variety of rice that can accumulate provitamin A, has been very beneficial in South-East Asia, where many people suffer from sight impairment due to vitamin A deficiencies. The S. Marzano GM tomato, to quote another example, was made resistant to a virosis that was endangering the whole production. However, besides some immediate advantages, there are also concerns about possible negative consequences in the future. In the *communis opinio* a great deal of perplexity, in relation to technologies operating on living forms, prevails and it is due to a static understanding of the biological world, rather oriented towards an harmonic balance and the preservation of the *status quo*. On the base of such an Edenic vision of nature, inherited by classical and humanistic culture, any human intervention replacing the creating divinity is condemned as an act of arrogance (*hybris*). There are also some myths, as for instance Frankenstein's, that feed the common imagination with prejudices, according to which the biologist who manipulates the laws of nature is often compared to Faust, who makes a deal with the devil. The main issue concerns the criterion of what is just, that means whether it is possible to take the operations on living organisms, that man can today accomplish thanks to technological development, as ethically correct. The genetic alterations are tolerated in those fields, such as medicine, where they are beneficial to man, whereas they provoke perplexity and anxiety in the artistic field, where the intervention on living forms, since it is not justified by a principle of utility, seems to fall into futile hedonism. After a brief review of the main theories on the relationship between ethics and biotechnologies, started in the 70s, we will analyse some transgenic works by the Brazilian artist Edoardo Kac, in order to, on the one hand, emphasize the ethical, philosophical and

social value of these living forms of art, and on the other, clarify how the arrival of new technologies has influenced the transformation of traditional aesthetic categories.

### 1. Ethics and biotechnology: the issue of what is just.

The debate starting in the 70s and developed in the field of bioethics has tried to provide an answer to a fundamental question: whether or not everything that is operatively possible is also ethically justifiable. The principle of responsibility<sup>1</sup>, revisited by the German philosopher Hans Jonas, is finally very relevant. Jonas believes that the augmented operative potential of man forces him/her to ethical actions that are compatible with the permanency of life on earth<sup>2</sup>, thus limiting his/her freedom of action. Opposite to Jonas' "precautionary" responsibility, we find Tristram Engelhardt's concept of "emancipating" responsibility<sup>3</sup>, supporting the legitimacy of ethical pluralism and establishing the principle of the agent autonomy, that is the compulsory acknowledgement of each individual's right to decide about his/her own good. Actually, according to Roberto Marchesini, both Jonas' position and Engelhardt's derive from a misunderstanding of man's position in relation to culture, technoscientific activities and nature itself. Jonas' analysis expresses indeed a conservative hardening and employs old concepts, such as *hybris*, to prevent any intervention in relation to the intangible alterity; Engelhardt's theory instead supports human prerogatives and rights, leaving nature out of consideration, according to a self-referential and anthropocentred scheme. Therefore, according to the Italian scholar, both the supporters of precautionary responsibility and the supporters of emancipating responsibility adopt the same presupposition adopted by the theorists of incompleteness, according to which, from Herder to Gehlen<sup>4</sup>, man is biologically deficient and only thanks to culture it is possible to compensate his/her deficiencies and adapt to the environment. To the contrary, Marchesini claims that cultural conquests shift continuously the threshold that supports the hybridisation processes between *bios* and *techne*<sup>5</sup>, thus producing previously unexpected needs. Accordingly, he then presents a theory in bioethics that recognizes alterity and etero-reference as essential moments of technological activities. Marchesini's remarks on the concepts of threshold and chimera can guide us to a better understanding of the biotechnological arts, and of the reason why, whenever they overcome the boundaries of experts' culture, they provoke controversies in the media as well as people's indignation, and they are condemned as mere spectacularity.

<sup>1</sup> See L. Battaglia, *Dimensioni della bioetica*, Genova, Name, 1999.

<sup>2</sup> H. Jonas, *Das Prinzip Verantwortung*, Frankfurt am Main, Insel Verlag, 1979.

<sup>3</sup> H.T. Engelhardt, *The Foundations of Bioethics*, Oxford, Oxford University Press, 1986. See R. Marchesini, *Bioetica e biotecnologie. Questioni morali nell'era biotech*, Bologna, Apèiron, 2002, p. 110.

<sup>4</sup> A. Gehlen, *Der Mensch. Seine Natur und seine Stellung in der Welt*, Berlin, Junker und Dünhaupt, 1940 and *Die Seele im technischen Zeitalter. Sozialpsychologische Probleme in den industriellen Gesellschaft*, Reinbek, Rowohlt, 1957. On the concept of "deficient being" see M.T. Pansera, *L'uomo progetto della natura. L'antropologia fisiologica di Arnold Gehlen*, Roma, Studium, 1990, p. 76 ff.

<sup>5</sup> R. Marchesini, *Il concetto di soglia*, Roma-Napoli, Theoria, 1997<sup>2</sup>.

## 2. Art and biotechnologies: the issue of what is useful.

Since ancient times the binomial art-life refers to the theory of art revolving around the principle of imitation of nature. Classical and humanistic sources, from Pliny (*Naturalis historia*, XXXV, 65-66) to Vasari (*Le Vite de' più eccellenti architetti, pittori, et scultori italiani*, Florence, 1550, 1568), are full of anecdotes referring to paintings that are so realistic to seem true, or to sculptures that seem to breathe<sup>6</sup>, however the enlargement of the artistic horizon in the second half of the Twentieth Century, while replacing pictorial and sculptural representation with real exhibition of human and animal (living) bodies, has given a proper content to what was before just a metaphor. Nevertheless, whereas classic aesthetics (Horace, Vitruvius<sup>7</sup>) strictly respected the laws of nature and condemned chimeras as unlikely monsters, today the topic of hybrid has a revived actuality, thanks to those technologies allowing disturbing grafts among different species<sup>8</sup>. If it is true, as Marchesini claims<sup>9</sup>, that the relationship between biological world and technological production can be traced back to the time when, through agriculture and animal breeding, man has deeply modified the ecosystems' conformation, we shall remark that today biotechnological interventions on vegetable and animal organisms should not be placed on the *monstrum* axis, i.e. the line of violation of nature, but simply on the axis of the development and refinement of procedures applied since forever. Consequently, the employment of biotechnologies by artists should not provoke great sensation, since the aim of art has always been an early grasp of cultural transformations and their – also provocative – popularization.

In the 70s genetics appeared as a discipline for experts with scanty consequences on daily life. The hermeneutic tools in the hands of the non-expert public, in order to understand what was happening, were totally inadequate to grasp the importance of the ongoing biotechnological revolution. Common imagination was yet shaped by myths and metaphors (Frankenstein) branding the manipulations on living forms as a transgression of ethical and religious laws, by which man was attempting to replace God<sup>10</sup>. In such a context, the works of several artists, particularly sensitive to the ongoing cultural transformations, made use of biotechnologies in their artistic productions, in order to orientate the debate on some of the most important questions of our time. Among them, Edoardo Kac<sup>11</sup> has gained international

<sup>6</sup> Reference to *spirantia signa* can be found in Virgil and Statius, but also in Petrarca and Poliziano. See E. Di Stefano, *Dal Medioevo al Seicento*, in L. Russo (ed.), *Estetica della scultura*, Palermo, Acsthetica, 2003, p. 50-51.

<sup>7</sup> Horace (*Ars poetica*, vv. 9-10), although he was giving to poets and painters equal power to attempt anything, exhorted them to avoid the *adynaton*, the creation of centaurs, syrens or other ridiculous monsters. Similarly Vitruvius (*De architectura* VII, 5, 3) protests against the proliferation of that kind of wall painting that was mixing realistic and fantastic element, thus creating unlikely figures half man half animal.

<sup>8</sup> E. Fiorani, J. Ceresoli, *Ibridazioni. Nuovi territori della scienza e della tecnica, dell'arte e della mente*, Bologna, Apèiron, 2000.

<sup>9</sup> R. Marchesini, *Bioetica e biotecnologie* cit., p. 5-6.

<sup>10</sup> *Ibid.*, p. 105.

<sup>11</sup> Edoardo Kac (Rio de Janeiro, 1962) lives in Chicago where he works as professor of Art and Technology at the School Art Institute of Chicago. He is also a member of the staff of the prestigious review *Leonardo* published by the Massachusetts Institute of Technology. His interests focus on dialogical exchanges and communication among different forms of life. His artistic path, aiming to analyse social transformations caused

renown to the general public as well through the mass media. The Brazilian artist has troubled the souls with his creation of fluorescent animals, very often taken as the exhibition of a mere spectacularity, that is, a useless inflicted suffering in order to emulate, not only on a metaphorical level any more, the creative power of God.

The analogy between the artist and God has given substance to the Renaissance's aesthetics, as to emphasize the creativity of the work of art and the intellectual value of its author. However, when we shift from simple representation to proper generation of manipulated living organisms, the metaphor acquires a troubling concreteness. As a matter of fact, although the reference to divine creation appears in more than one of Kac's works, as in *Genesis* (Ars Electronica, Linz, 1999) and *The Eighth Day* (2001), the primary focus of his research does not revolve neither around this aesthetic category, nor around the new possibilities opened up by technology. His works focus on other questions, as for instance the dialogical relationship between artist, artwork and public. In his productions, as in most of biotechnological art, the artist is not a god generating vegetable beings and nonexistent animals, but rather the person who starts a project that is able to establish relationships. The work is in fact accomplished thanks to the public who decides unpredictably its evolution. We can then apply to his productions the categories of "collective" author and "plural" artist<sup>12</sup>, that in the relational art<sup>13</sup> as in the interactive art (employing digital technologies) defines the figure who is able to creatively relate with the public as well as with a team of collaborators (IT technicians, experts from several disciplines). In Kac's transgenic art the element of dialogical relationship acquires further ethical, social and emotional connotations, since it concerns the relationship between author, public and living forms of art. Consequently, the concept of responsibility of each member of the public in relation to the organisms becomes very important whenever one decide to participate in the work. Moreover, responsibility etymologically means "the ability to give a response". Thus the concept can properly enter the aesthetics of dialogue<sup>14</sup> promoted by Kac in all his artistic projects.

*Genesis* by Eduardo Kac is a polemic artwork on the human dominion, decided by God, on the other living forms (*Genesis* 1, 26: "Let man have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moves upon the earth"). The biblical verse is translated in Morse code; this latter is then converted in couplets of DNA nucleotide bases. An artificial gene is thus created, the "artist gene", then grafted into (non pathogenic) bacteria of *Escherichia Coli*. Afterwards they are exhibited in an art gallery. The public, through their presence or from whatever part of the world, through the Web, can switch on a

---

by technological development, focuses in the 80s on Telecommunications Art, a series of works employing telecommunication media in order to let displaced users interact. In the 90s with the Telepresence Art, he promotes distance interaction combining telecommunication with robotics and internet. At the end of the 90s he gets to the Biotelematic Art, where he connects living species (human, animal, vegetable) to telecommunication and robotics. See <http://www.ckac.org>.

<sup>12</sup> Plural artist is the definition of Paolo Rosa and Andrea Balzola (*L'arte fuori di sé*, Milano, Feltrinelli, 2011, p. 153).

<sup>13</sup> On the relational art developed in the middle of the 90s circa see N. Bourriaud, *L'esthétique relationnelle*, Dijon, Les presses du réel, 1998.

<sup>14</sup> E. Kac, *The Aesthetics of Dialogue*, interview realized by S. Osthoff, "Revista do Mestrado de Arte e Tecnologia da Imagem" 0, (1994) (<http://www.unb.br/vis/revista/k.htm>).



UV wave lamp provoking alterations in the DNA of the bacteria. Accordingly, the word of God, genetically incorporated in the bacteria, is modified, thus questioning the divine command and human supremacy on the other species. The polemic and symbolic intent is made clear when, afterwards, through the opposite process, the artist gene is translated back into Morse code and then in English, producing new meanings<sup>15</sup>.

*Genesis* has further symbolic value, since it emphasizes the responsibility of the common man as well in the biotechnological era. *To click or not to click* becomes then an ethical dilemma between the acceptance of the *status quo* and the risk of unpredictable changes. Not clicking, the public accepts the divine law, clicking, instead, he/she cannot anticipate the new generated meanings. With *Genesis* Kac denounces the confidence of genetic engineering that in due time will be able to permeate daily life. A simple click, a familiar gesture already, can have unaccountable consequences, according to what Kac has defined as the "paradoxical condition of the non-expert in the biotechnological era"<sup>16</sup>. The use of new technologies is indeed today increasingly easier, thanks to straightforward interfaces: it suffices to digit on a keyboard or to touch an icon. The person who does these gestures however is not always perfectly aware of the applied algorithms, the activated processes, and their more or less big consequences: for instance, in Kac's work, a genetic mutation. Therefore the aim of Kac's project is precisely to revive the topic of the responsibility of the subject and a new ethical protocol in art. Only endorsing an ethical responsibility and an educational role, the artist who employs new biotechnological media can give full sense to his/her artistic operations. In a period of wide-spread aestheticism, where everything is played on the level of image (of objects, people, life-styles), art can still be the vehicle of a new "ethics of form"<sup>17</sup>, however it must orientate technology so that its use is not empty, self-referential, or destructive.

*The Eighth Day* as well provides new hard content to ancient aesthetic categories. Now art not only completes the work of nature, as a classic *topos* suggests, but also generates unnatural hybrids. Thanks to technology man is able to continue the work of God in the "eight day" when transgenic organisms and bio-mechanical hybrids are created. For the first time, in this work several fluorescent creature (plants, amoebas, fish, mice) are independently developed in several laboratories and are then gathered together in a biological robot<sup>18</sup>

<sup>15</sup> Id., *L'arte transgenica: geni sintetici, transgenici e biobots*, in F. Fischnaller (ed.), *E-art. Arte, società e democrazia nell'era della rete*, Roma, Editori Riuniti, 2006, p. 109-112.

<sup>16</sup> Id., *Bioestetica, arte transgenica e il coniglio verde*, interview realized by M. Bolognini, in S. Lux, *Arte ipercontemporanea un certo loro sguardo...ulteriori protocolli dell'arte contemporanea*, Roma, Gangemi, 2006, p. 433-439, in particular p. 434. See also E. Kac, *Bioestetica e arte transgenica*, in M. Bolognini (ed.), *Postdigitale. Conversazione sull'arte e le nuove tecnologie*, Roma, Carocci, 2008, p. 75-80.

<sup>17</sup> The appeal to an ethics of form in relation to the new technologies is brought forward both on the side of aesthetics (P. Montani, *Bioestetica. Senso comune, tecnica e arte nell'età della globalizzazione*, Roma, Carocci, 2007, p. 109-112) and on the side of art criticism (A. Balzola, *Principi etici nelle arti multimediali*, in A. Balzola-A. M. Monteverdi, *Le arti multimediali digitali*, Milano, Garzanti, 2004, p. 424-47), however with no reference to biotechnological arts. On the relationship between ethics and bioart see J. Zylinska, *Bioethics in the Age of New Media*, Massachusetts Institute of Technology, 2009.

<sup>18</sup> By biobot Kac means a robot with an active biological element commanding some aspects of its behaviour. In *The Eighth Day* the biobot has a colony of amoebas GFP working as brains cells: since they form a network inside the bioreactor that is the brain structure of the biobot. When the amoebas divide, the biobot slowly moves forward and backwards in its environment. The biobot also works as an avatar for the public, who can control the

(biobot), in order to shape a new artificial and bioluminescent ecosystem, enclosed in a transparent perspex dome (a sphere of one metre and twenty centimetres in diameter with an internal clear blue light) evoking the image of the earth seen from out of space<sup>19</sup>. The work represents the expansion of biodiversity beyond natural forms of life. It is clear that genetic engineering will have increasingly deeper repercussions on the social, medical, political and financial sphere and by consequence art cannot be indifferent to these topics. The ethical engagement is very clear in Edoardo Kac's own words, who in several interviews declares to be interested in analysing the several social implications of genetics. According to him the task of art is to make the implicit meanings of the biotechnological revolution explicit, and to contribute to the shaping of alternative points of view, making the language of genetics more accessible<sup>20</sup>.

From these remarks it becomes clear that the production of chimeric animals in Kac's artistic projects is very far from the hedonistic and decorative purpose of other transgenic forms, such as the GloFish<sup>21</sup>, GM fluorescent fish on sale to decorate your fish tank. The Brazilian artist's goal is to open the dialogue among artists, scientists, and philosophers, as to awaken public opinion on important issues in relation to genetics: for instance, the relation between genes and environment, the identity of living beings as not only genetic organisms, the sense of equality and alterity among living beings, the communication among different species. He is then trying to reformulate the role of the artist as an individual, who is able to stimulate thinking, not only on abstract aesthetic categories, but also on urgent, actual problems, highly relevant in our political and social context.

Aware that new technologies always push further the threshold between *bios* and *techne*, and that today society is now oriented towards post-humanism, where biotechnological hybrids will co-exist, Edoardo Kac wants to awaken through his projects the awareness and the sense of responsibility of individuals in relation to genetically modified organisms. Such is the meaning of his Transgenic Art:

There is no transgenic art without a firm commitment to and responsibility for the new life form thus created. Ethical concerns are paramount in any artwork, and they become more crucial than ever in the context of bio art. From the perspective of interspecies communication, transgenic art calls for a dialogical relationship between artist, creature/artwork, and those who come in contact with it.<sup>22</sup>

---

audiovisual system of the biobot, through a specific device connected to the web. The biobot's movements allow the public to have a changing perspective on the environment. The visitors of the gallery can see the terrarium with the transgenic creatures both from outside the dome and from inside, thanks to a computer that provide the public with the same experience of the people in internet. Since it provides the possibility to live the environment inside the dome from the point of view of the biobot, the work allow a first person thinking of the meaning of transgenic ecology. E. Kac, *L'arte transgenica: geni sintetici, transgenici e biobots* cit., p. 112.

<sup>19</sup> J. Hauser (ed.), *Art Biotech*, it. ed. by P.L. Capucci, F. Torriani, Bologna, Clueb, 2007, p. 58-59.

<sup>20</sup> E. Kac, *L'arte transgenica: geni sintetici, transgenici e biobots* cit., p. 112.

<sup>21</sup> See the official website <http://www.glofish.com>.

<sup>22</sup> In 1998 Kac invents the expression "transgenic art" in a written text that is also its manifest: E. Kac, *Transgenic Art*, "Leonardo Electronic Almanac" 6/11 (1998) (now available here <http://www.ekac.org/transgenic.html>): "Transgenic art, I propose, is a new art form based on the use of genetic

It is not by chance that Kac's transgenic projects have often taken into account "pet" animals, with whom man has always established an inter-relation, such as the dog (*GFP K-9*) and the rabbit (*GFP Bunny*). GFP is the acronym of Green Fluorescent Protein, a protein extracted from the jellyfish *Aequorea Victoria* (a species of the North-West Pacific Ocean), that becomes fluorescent when exposed to UV light. The implantation of a gene carrying this protein in the DNA of the mammal embryo leads to the birth of organisms fluorescent under specific light conditions. As Kac has emphasized several times, the GFP has long been used as marker in the laboratories of molecular biology and it is inoffensive for the animal health, not altering its vital functions<sup>23</sup>.

At the end of the 90s the artist tried to implant the protein in the DNA of a dog. The dog is the pet animal par excellence and its temperament predisposes it to social interaction. According to Kac "the dog is a quintessentially dialogical animal"<sup>24</sup>. But the project *GFP K-9* was left to an early stage because of several difficulties, among which the lack of a complete mapping of the dog genome, without which the project could not be carried on safely for the health of the animal. In 2000 the artist attempted the experiment again with a rabbit<sup>25</sup>, a species that man has long been using for hybridisation and selective breeding. *GFP Bunny* was thus born, the green rabbit, tenderly called Alba. Both projects envisaged three phases equally important for the success of the artwork: the first one, properly creative, is the genetic manipulation in laboratory with the help of scientists and it is concluded by the birth of the transgenic organism<sup>26</sup>; the second one (that we could call communicative or expository) is the museum exhibition and media communication of the transgenic animal, in order to solicit public debate and shake common people consciousness; the third one, that we could call dialogical or relational, is the integration of the transgenic animal in a domestic environment<sup>27</sup>. Therefore also in *GFP Bunny* the concept of responsibility of the public is present, as care of the other living being perceived as different. The hybrid, in fact, is not the monster generating fear (hence the choice of animals such as the dog or the rabbit), but rather biodiversity with which we should learn how to co-exist:

---

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".

<sup>23</sup> Id., *Bioestetica, arte transgenica e il coniglio verde* cit., p. 435.

<sup>24</sup> Id., *Transgenic Art* cit.

<sup>25</sup> The transgenic rabbit is made in Jouy-en-Josas (France) in collaboration with the Institute National de la Recherche Agronomique (INRA) that since 1995 was using the GFP in experiments on embryos of frogs and cats. Since 1998 it was working on the injection in whitish rabbits' ovaries of the fluorescent green protein, following a safe procedure, finalized to the chemical tracing of some events in the body of the rabbit, as the growth of tumours or the development of genetic illnesses. F. Fischmaller, *E-art. Arte, società e democrazia nell'era della rete*, Roma, Editori Riuniti, 2006, p. 51-52.

<sup>26</sup> Alba was born in 2000 from the collaboration of the Brazilian artist, the zoosystemist Louis Bec and the scientists Louis-Marie Houdebine and Patrick Prunnet. See E. Kac, *GFP Bunny*, in P.T. Dobriša, A. Kostic (eds.), *Edoardo Kac: Telepresence, Biotelematics, Transgenic Art*, Maribor (Slovenia), Kibla, 2000.

<sup>27</sup> Kac's artistic project envisaged to live with the rabbit in a room especially arranged for the exhibition and to bring it afterwards to Chicago in order to insert it in the domestic life of his family, as to develop the analysis on the insertion of the different in the social and family context. S. Lux, *Arte ipercontemporanea un certo loro sguardo* cit., p. 425.

Molecular genetics allows the artist to engineer the plant and animal genome and create new life forms. The nature of this new art is defined not only by the birth and growth of a new plant or animal but above all by the nature of the relationship between artist, public, and transgenic organism. Organisms created in the context of transgenic art can be taken home by the public to be grown in the backyard or raised as human companions.<sup>28</sup>

The aesthetic tension of the work, as the artist remarks, comes from the conflict between the familiar bunny and the hypothetical monstrosity of the transgenic being. According to Kac it is important that society learns how to accept and welcome clones and chimeras. He is not interested in emotional and spectacular aesthetics, but rather in the involvement of another subject<sup>29</sup>. Also this project is therefore included in the dialogical aesthetics characterizing all his artistic productions: "GFP Bunny gives continuation to my focus on the creation, in art, of what Martin Buber called dialogical relationship, what Mikhail Bakhtin called dialogic sphere of existence, what Emile Benveniste called intersubjectivity and what Humberto Maturana calls consensual domains: shared spheres of perception, cognition and agency in which two or more sentient beings (human or otherwise) can negotiate their experience dialogically"<sup>30</sup>.

The artist however could not accomplish the project that was blocked by censorship at the first stage. He tried anyway to get to the second phase through a massive media communication that made the image of the green rabbit known all around the world. The reasons behind the censorship, marking the boundaries between scientific research and artistic project, are nevertheless very interesting. Kac's transgenic art proceeds indeed parallel to scientific research (in the use of laboratories and instruments, in the collaboration with technicians, biologists, geneticists, in the common sharing of some goals), but it diverges from it in the analysis of the results: for the field of research the transgenic rabbit is the vehicle of an ongoing scientific study and it must therefore be kept in the laboratory, for the field of art, instead, it is full of expository and aesthetic values. Although thanks to Kac for the first time an operation of genetic engineering is associated with the supposed uselessness of art<sup>31</sup>, as a matter of fact, artists, as scientists, have as their own purpose to contribute to knowledge. However, differently from the scientists, often working in the secrecy of their laboratories, the artists aim to shake people's sleepy consciousness and animate a debate, in which ethics and aesthetics can collaborate to inform the general public on the ongoing cultural transformations.

[Translated by Tessa Marzotto]

---

<sup>28</sup> E. Kac, *Transgenic Art* cit.

<sup>29</sup> Id., *Bioestetica, arte transgenica e il coniglio verde* cit., p. 436.

<sup>30</sup> Interview conducted online, with questions posted to the Genolog website, July-September 2000 (<http://genolog.com/slash>). Cfr. <http://www.ekac.org/genointer.html>.

<sup>31</sup> E. Kac, *Bioestetica, arte transgenica e il coniglio verde* cit., p. 435.

## References

- BATTAGLIA, Luisella, *Dimensioni della bioetica*, Genova, Name, 1999.
- BALZOLA, Andrea, *Principi etici nelle arti multimediali*, in BALZOLA, Andrea, MONTEVERDI, Anna Maria, *Le arti multimediali digitali*, Milano, Garzanti, 2004, p. 424-47.
- BOURRIAUD, Nicolas, *L'esthétique relationnelle*, Dijon, Les presses du réel, 1998.
- DI STEFANO, Elisabetta, *Dal Medioevo al Seicento*, in *Estetica della scultura*, RUSSO, Luigi (ed.), Palermo, Aesthetica, 2003, p. 47-89.
- ENGELHARDT, Hugo Tristram, *The Foundations of Bioethics*, Oxford, Oxford University Press, 1986.
- FIORANI, Eleonora, CERESOLI, Jacqueline, *Ibridazioni. Nuovi territori della scienza e della tecnica, dell'arte e della mente*, Bologna, Apèiron, 2000.
- FISCHINALLER, Franz, *E-art. Arte, società e democrazia nell'era della rete*, Roma, Editori Riuniti, 2006, p. 51-52.
- GEHLEN, Arnold, *Der Mensch. Seine Natur und seine Stellung in der Welt*, Berlin, Junker und Dünhaupt, 1940.
- GEHLEN, Arnold, *Die Seele im technischen Zeitalter. Sozialpsychologische Probleme in den industriellen Gesellschaft*, Reinbek, Rowohlt, 1957.
- HAUSER, Jens (ed.), *Art Biotech*, It. ed. by CAPUCCI, Pier Luigi, TORRIANI Franco (eds.), Bologna, Clueb, 2007.
- JONAS, Hans, *Das Prinzip Verantwortung*, Frankfurt am Main, Insel Verlag, 1979.
- KAC, Edoardo, *Bioestetica e arte transgenica*, in BOLOGNINI, Maurizio (ed.), *Postdigitale. Conversazione sull'arte e le nuove tecnologie*, Roma, Carocci, 2008, p. 75-80.
- KAC, Edoardo, *Bioestetica, arte transgenica e il coniglio verde* (intervista di M. Bolognini) in LUX, Simonetta, *Arte ipercontemporanea un certo loro sguardo...ulteriori protocolli dell'arte contemporanea*, Roma, Gangemi, 2006, p. 433-439.
- KAC, Edoardo, *GFP Bunny*, in DOBRILA, Peter Tomaz, KOSTIC, Aleksandra (eds.), *Edoardo Kac: Telepresence, Biotelematics, Transgenic Art*, Maribor, Kibla, 2000.

KAC, Edoardo, *L'arte transgenica: geni sintetici, transgenici e biobots*, in FISCHNALLER, Franz (ed.), *E-art. Arte, società e democrazia nell'era della rete*, Roma, Editori Riuniti, 2006, p. 109-112.

KAC, Edoardo, *The Aesthetics of Dialogue* (interview by S. Osthoff), "Revista do Mestrado de Arte e Tecnologia da Imagem", 0 (1994) (<http://www.unb.br/vis/revista/k.htm>).

KAC, Edoardo, *Transgenic Art*, "Leonardo Electronic Almanac", 6/11 (1998) (<http://www.ckac.org/transgenic.html>).

MARCHESINI, Roberto, *Bioetica e biotecnologie. Questioni morali nell'era biotech*, Bologna, Apèiron, 2002.

MARCHESINI, Roberto, *Il concetto di soglia*, Roma-Napoli, Theoria, 1997<sup>2</sup>.

MONTANI, Pietro, *Bioestetica. Senso comune, tecnica e arte nell'età della globalizzazione*, Roma, Carocci, 2007.

PANSERA, Maria Teresa, *L'uomo progetto della natura. L'antropologia fisiologica di Arnold Gehlen*, Roma, Studium, 1990.

ROSA, Paolo, BALZOLA, Andrea, *L'arte fuori di sé*, Milano, Feltrinelli, 2011.

ZYLINSKA, Joanna, *Bioethics in the Age of New Media*, Cambridge MA, Massachusetts Institute of Technology, 2009.