George Gessert. *Green Light: Toward an Art of Evolution*. Cambridge, MA, and London: MIT Press, 2010, 234 pp. ISBN 978-0-262-01414-4

George Gessert is a well-known artist and theorist of bio art. A burgeoning field, bio art is a relatively tangled cluster of contemporary art movements that use live organisms or parts of them to make works that are situated on the boundary between conceptual art, installations, and multimedia art, and sometimes also land art, body art, and photography. According to Pier Luigi Capucci,[1] whose hierarchization of this semantic field Gessert has adopted, the term bio art is a collective appellation for works of art that include the complete or partial use of living organisms (with the exception of people), or works made in collaboration with these organisms. A subset of this kind of art is biotech art, which influences the living parts by means of technology, for example, cloning, genetic engineering, and the use of tissue culture, or, even more strictly defined, transgenic art, which has to do with the modification of living organisms by means of genetic engineering.

The book under review, Gessert's *Green Light: Toward an Art of Evolution*, serves well as an introduction to the whole field of bio art. It comprises almost two dozen articles, almost all of which are revised lectures or articles, which reflect the author's thirty years of experience in the fields of art, plant breeding, and theory. The essays combine various topics from the fields of art theory and breeding. The individual chapters oscillate between different genres. In his essays, Gessert employs the approaches of the historian, the classic essayist, the art theorist, and sometimes the plant breeder. He himself describes his book as a 'collection of notes' (p. xxi).

I. AESTHETICS, ART THEORY, AND LIVE PLANTS

Gessert sees questions of aesthetics in connection with bio art and human interventions in evolution (such as hybridization and genetic modifications) as being the most important topic of his book. He himself, however, does not start from any particular school of aesthetics; indeed, he does not even approach his topics with the erudition of a university-trained aesthetician. Among his chief interests, however, are the aesthetic attitude towards artefacts, and aesthetic evaluation of them. This is unusual; bio artists usually come out of conceptual art and expressly ignore the qualities of the sensually perceivable elements of art, accenting ethical or natural-science aspects instead. Gessert, too, pays great attention to biological aspects, while ethical aspects are considerably in

[1] Pier Luigi Capucci, 'A Diagram', in *Art Biotech*, ed. Jens Hauser, Pier Luigi Capucci, and Franco Torriani (Bologna: Clueb, 2007), 11.

the background. This approach is made possible by his interest in plants, which is far less controversial than various manipulations with animals.

As part of his interest in aesthetics, he tries to base himself at least peripherally on 'academic' aesthetics. The aesthetic experience is for Gessert, following the literary scholar Hans Ulrich Gumbrecht,[2] mainly the oscillation between presence and meaning (pp. xx, 178), the process of mediation between the sensuous experience of our bodies in the present and the meaning produced by our minds. In *Green Light*, however, we find other references both to philosophical aesthetics (Burke and Kant) and to biologists' theories that are oriented to the aesthetic preferences of organisms and landscapes, for example, Edward O. Wilson's 'biophilia hypothesis' or Gordon H. Orians's 'savanna hypothesis'.

Probably the part of this volume that most relates to aesthetics is the article 'Darwin's Sublime' (pp. 41–45), in which Gessert presents the relatively bold hypothesis that the formulation of the theory of natural selection, Darwin's conception of nature, was motivated by aesthetics. He endeavours to demonstrate that Darwin's inspiration was mainly a conception of the sublime in the Burkean and Kantian traditions. According to Gessert, the cruelty of nature, no longer graspable or comprehensible in the traditional theological sense, is for Darwin somehow 'redeemed' by the sense of the sublime as a special aesthetic pleasure.

The truly aesthetic dimension of natural phenomena did indeed play an important role for Darwin. In some respects he was inspired by traditional aesthetic views, both those of eighteenth-century British aesthetics and those of Romanticism, but he mainly started from contemporary physiological aesthetics and the evolutionary approach of Herbert Spencer. Indeed, one must recall that Darwin was concerned with aesthetic questions not as part of the theory of natural selection, but as part of the theory of sexual selection (and therefore of the work *The Descent of Man*, 1871), and probably came out of the traditional conception of beauty. The term 'the sublime' does not appear in Darwin's writings on natural history and this reviewer would argue that it was not even Darwin's concern, though in his youth Darwin had read not only Edmund Burke, but also, for example, Archibald Alison's reflections on the sublime.[3] The chapter

[2] Hans Ulrich Gumbrecht, *Production of Presence: What Meaning Cannot Convey* (Stanford, CA: Stanford University Press, 2004).

[3] Darwin read Burke's *Philosophical Inquiry into Our Ideas of the Sublime and Beautiful* and Alison's own excerpt of his *Essays on the Nature and Principles of Taste* published in *Edinburgh Review* in 1811. See Paul H. Barret, Peter J. Gautrey, Sandra Herbert, David Kohn, and Sydney Smith, eds., *Charles Darwin's Notebooks, 1836–1844* (London: British Museum; Cambridge: Cambridge University Press, 1987), 531, 540, 546, 566, 578, 603.

'Darwin's Sublime' is, however, a sketch rather than an analysis and it is hard to argue with views that are presented only in outline.

In the conclusion of this essay, Gessert discusses a topic that he then returns to many times – namely, the aesthetic dimension of the processes of domestication. In many places (for example, 'Aesthetic Effects of Domestication') he demonstrates that domestication (artificial selection) has been strongly influenced by aesthetic criteria, particularly in the last five centuries, when new plants or animals have only rarely been domesticated for economic reasons. He also demonstrates that whereas both functions previously overlapped, today the gap is growing between organisms cultivated or bred purely for use and those cultivated or bred purely for beauty.

Gessert's views of contemporary breeding practices, which he considers as an experienced breeder and also from an aesthetic or artistic point of view, tend to be more interesting than these historical excursions and observations on Darwin's thinking. He acquaints us, for example, with the contemporary approach to judging the 'beauty' of plants at exhibitions according to quantifying points of view (in the chapter 'Standards of Excellence'). He is highly critical of this approach, which is largely based on George Glenny's normative aesthetics of the 1830s. A landscape designer and horticultural writer, Glenny endeavoured to offer a precisely definable standard and ideal, to be used by judges when considering specific plants. His guidelines were based, however, on formal patterning and geometric precision, in particular circular silhouettes and flowers shaped like spheres or portions of spheres. Gessert's chief objection is that these theories are based on ignoring the 'naturalness' of plants in the sense of their original growth tendencies and structures. Though plants by themselves have a tendency to certain symmetry and proportion, breeding norms 'force' them into other proportional relations or even the shapes of Euclidean geometry, which are alien to them.

The aesthetician will also certainly find interesting Gessert's reflections on the phenomenon of kitsch in hybridization. In the chapter 'Kitsch Plants', he explains kitsch as the quality of a work, which desires to impress and to please the largest possible number of people, but offers no surprises. He associates kitsch mainly with consumer culture and Nazi and Communist propaganda, but he also carefully analyzes various kitsch hybrids, whose history goes back to the nineteenth century. Gessert considers kitschy, for example, artificially bred ruffled flowers and cheaply striking white-green variegated leaves, which have a dramatically contrasting coloured structure that is usually absent in nature. (We may compare it to the colourfully spotted breeds of dog that derive from the wolf, which has camouflage colours.)

But plant breeding, for Gessert, is not merely an interesting area in which to observe changing aesthetic preferences. It is mainly an area that he himself promotes as a distinctive kind of art, not only at the theoretical level but also, indeed mainly, as a practising artist. Originally a painter, Gessert has been devoting himself to plant breeding since the 1980s, and exhibits his hybrids as works of art. Although he discusses this topic again in several of the essays, it is regrettable that he did not include 'Why I Breed Plants'[4] in *Green Light*, since in that essay he considers the topic from the point of view of his own artistic development, and makes a number of propositions related to breeding as a branch of bio art or of art in general. For Gessert himself, hybridization was an extension of painting and also a bridge between the art of the Far East (with which he became acquainted practically before Western art), and modern nonrepresentational art.[5] As a painter, Gessert had thus tried to free flowers from their traditional symbolic function, because, according to him, even domesticated flowers 'ultimately represent nothing except themselves'. Even in his breeding experiments he has refused to assign any meaning to the hybrids he creates. Plant breeding is, according to him, an 'art that lends itself to celebration of pure materials'.[6]

In some of the essays in *Green Light* (for example, 'Divine Plants and Magical Animals'), Gessert discusses and presents the history of bio art. The use of organisms in the making of works of art began, according to him, with the different experiments of the Avant-garde. His first example is the ironic experiments to get an animal to paint a picture (Roland Dorgelès's donkey) or to include a plant as a living ready-made in an installation (Salvador Dalí's *The Rainy Taxi*, 1938). He also considers contemporary experiments that use sophisticated biotechnology in art projects, particularly to change the genome ('Recent Art Involving DNA'). Perhaps most of all, however, Gessert assesses the experiment of Edward Steichen, a photographer and curator of the Museum of Modern Art, New York, where in 1936 he exhibited about 1,500 cut delphiniums, regularly replacing the wilted with fresh ones. Although the exhibition was to some degree positively received, it was soon forgotten either because it was too revolutionary or because war was approaching, and it has only been recalled in recent decades.[7] Steichen, an enthusiastic breeder of this

4 George Gessert, 'Why I Breed Plants', in *Signs of Life: Bio Art and Beyond*, ed. Eduardo Kac (Cambridge, MA: MIT Press, 2007), 185–97.

5 Ibid., 185–88.

6 Ibid., 189.

7 For more on this, see Ronald J. Gedrim, 'Edward Steichen's 1936 Exhibition of Delphinium Blooms: An Art of Flower Breeding', in *Signs of Life: Bio Art and Beyond*, ed. Eduardo Kac (Cambridge, MA: MIT Press, 2007), 347–62.

robust flowering plant, also presented plant breeding as art. Gessert considers him the most important forerunner of bio art, and even pays homage to him with one of his own most frequently reproduced works, the hybrid *Streptocarpus* 'Edward Steichen'.

II. ARTIFICIAL SELECTION AND NATURAL SELECTION

In theory and in the practice of art, Gessert is fascinated by evolution. An emphasis on the continuity of evolutionary processes is typical of his approach. He sees no fundamental difference or break between natural and artificial selection; nor does he see a difference or break between the use of advanced biotechnologies and traditional breeding methods.[8] Similarly, he sees no fundamental difference amongst organisms – or at least plants – in a state altered by man or in a natural state: 'The continuum from wild to domesticated is genetic and aesthetic' ('Breeding for Wildness', p. 180). Man is essentially an instrument of the evolutionary forces of nature. Gessert therefore considers contemporary efforts by artists, and more generally, by breeders, to be a counterpart to trends threatening the natural environment (in the chapter 'The Angel of Extinction').

Gessert refers to the Prague-born Brazilian philosopher Vilém Flusser, who in 1988 presented his vision of the birth of imaginary, aesthetically motivated landscaping that will one day change the colours of plants in the landscape for artistic reasons, as well as the creation of imaginary creatures, for example, photosynthesizing horses.[9] Even for Flusser, it will actually be only a matter of developing hitherto infrequent experiments in domestication into a new Creation, but with the accent on the entirely decorative function of the new organisms and their larger units. These topics are of course relevant also to other bio artists, who use modern biotechnologies to make 'new' organisms. The foremost among them is direct interventions in DNA, often with luminescent effects (for example, Jun Takita's luminescent moss and Eduardo Kac's green fluorescent rabbit), or the oddest combination of various organisms (for example, Kac's implanting DNA from human blood into a petunia).[10] Kac,

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8 In the light of bio art, many existing domesticates may, according to Gessert, be perceived as a kind of bio folk art (p. xx).

9 Vilém Flusser, 'Curie's Children: Vilém Flusser on Science', *Artforum*, October 1988, 9; see also Vilém Flusser, 'On Science', in *Signs of Life: Bio Art and Beyond*, ed. Eduardo Kac (Cambridge, MA: MIT Press, 2007), 371–72.

10 In *Green Light*, Gessert is relatively optimistic, even though he does not go so far in his visions of a 'new world' as he does in 'Why I Breed Plants', where he even states 'plant breeding could create a world far wilder and freer than our own'. George Gessert, 'Why I Breed Plants', in *Signs of Life: Bio Art and Beyond*, ed. Eduardo Kac (Cambridge, MA: MIT Press, 2007), 196.

the icon of contemporary transgenic art, has even proposed that the current decline in biodiversity can be reversed by the creation of new 'artificial' organisms.[11] Gessert does not go so far.

What is considerably problematic, however, is that Gessert, as well as a number of bio artists and theorists of this genre, have not really considered the meaning of the word 'evolution' and how it works.[12] They simply accept the idea that this entails 'some kind' of transformation of genes and organisms by external environmental pressure.[13] This transformation is, according to them, something that can be simulated by artificial 'human selection', sometimes in a bizarrely impersonal form by simply emailing the requested DNA sequence to a specialized company, which then has FedEx deliver the requested package to the artist's studio. It is as if the idea of artificial selection, which would be a continuation of natural selection, somehow covered various hypotheses about how actually to imagine this evolution. But artificial selection, even though Darwin used it as a prototype for natural and sexual selection, is a mere analogy of the process that takes place in nature, yet is itself not that process. Not even the many-headed fruit-fly monsters and the most fantastical plant hybrids made in laboratories are the creation of new species. No matter how much artists and theorists of biotech art, genetic art, and so forth proclaim the revolutionary nature of their creations as part of art and part of the conception of evolution, and no matter how much they truly offer a great variety of alternatives to various technological, ethical, and artistic approaches, their biological approach remains essentially limited.

One should also note that Gessert and many other artists consciously turn only to 'official' (Neo-) Darwinist ideas of evolution, yet their experiments tend to testify to much more alternative paradigms. Lamarckism is not mentioned often, though some artists' experiments and projects perhaps actually even tacitly assume its operation (for example, from the perspective of 'Darwinist' evolution, Andrea Zittel's absurd efforts to force hens to fly[14]). Gessert, too, for

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11 Eduardo Kac, 'Transgenic Art', in *Telepresence & Bio Art: Networking Humans, Rabbits & Robots* (Ann Arbor: University of Michigan Press, 2005), 237.

12 In similar theoretical writing the term 'nature' is accepted with even less reflection.

13 It should be noted, for example, that Kac to a certain degree casts doubt on the simple idea of DNA as the 'master molecule' and points out that there is also a context in which the idea can become meaningful – namely, the body. And even the body is comprehensible only in a context – namely, an environment. Eduardo Kac, 'Genesis', in *Telepresence & Bio Art: Networking Humans, Rabbits & Robots* (Ann Arbor: University of Michigan Press, 2005), 251.

14 As part of her ironic installation, Andrea Zittel divided an area into four successive compartments, in each of which she placed a nest for a hen, each nest a bit higher than the previous one (*A-Z Breeding Unit for Reassigning Flight*, 1993).

example, cites the great American plant breeder Luther Burbank (pp. 47, 162),[15] though Burbank, like his Russian counterpart Ivan Michurin, was chiefly a Lamarckian. Nor is the potential of Lynn Margulis's symbiotic theory used; she accentuates cooperative relationships between species rather than the struggle for life. Many bio artists could be said to be taking a Lysenkoist approach, now carried out using modern technologies.[16]

Paradoxically, Gessert, like a number of other bio artists, is not actually concerned with biological theories about the emergence of aesthetic phenomena in nature. No matter how comprehensively he has devoted himself to Darwin, he still writes mostly about the aesthetic views leading to the formulation of the theory of evolution, but not about Darwin's hypotheses on the topic of the emergence of aesthetic phenomena. Yet Darwin in many places states that a number of aesthetic structures among the higher animals are the result of their sense of beauty, which operates as part of sexual selection. Females choose 'more beautiful' males on the basis of taste and they pass on their genes to their offspring. Consequently, either the males change or the whole species changes according to the aesthetic criteria of the females. For Darwin this kind of selection was essentially contrary to natural selection because of the creation of various exaggerated forms or striking colours, which, from the point of view of survival, actually made life more complicated for animals. Darwin's theory of animals' ability to perceive beauty was a thorn in the flesh also for his advocates and followers, who endeavoured to explain these striking structures some other way (for example, as protection or as an expression of male strength), and only in recent decades has the theory become a point of interest again. Similarly, Darwin is largely ignored as a great theorist of the processes of domestication, even though he was the author of one of the first truly scientific books on the topic, *The Variation of Animals and Plants under Domestication* (1868), and it was natural that he noticed various 'aesthetic' domesticated animals.

Similarly, other biologists' theories of the emergence of aesthetic phenomena in nature are also ignored or not taken advantage of, for example *Kunstformen der Natur* (1899–1904) by perhaps the best-known biologist-artist,

[15] Similarly, Kac mentions that Burbank 'invented' many new organisms. Eduardo Kac, 'Transgenic Art', in *Telepresence & Bio Art: Networking Humans, Rabbits & Robots* (Ann Arbor: University of Michigan Press, 2005), 241.

[16] The ideas of the Soviet agronomist Trofim Lysenko were official dogma in the East bloc roughly from the 1930s to the 1960s. A key idea was that acquired characteristics could be inherited. Lysenko went much further than Lamarck; he truly believed species could, under certain external influences, suddenly change into another species.

who devoted himself to the study of the 'aesthetics of organisms', Ernst Haeckel, and the attempt to achieve a systematic aesthetics of nature, by the biologist Karl August Möbius, or later reflections on the tendency of organisms to present themselves (*Selbstdarstellung*) by the Swiss biologist Adolf Portmann.

III. CONCLUSION

Amongst contemporary works concerned with the theory of bio art, *Green Light* holds a unique position. Whereas a number of theorists and artists tend to approach this kind of art from the sphere of new media connected with the intoxicating possibilities of contemporary technologies,[17] what primarily interests Gessert is living organisms. As its title suggests, this book is different from other similar works also because of its express orientation to plants. Furthermore, whereas other theorists and artists (for example, da Costa and Philip)[18] emphasize the ethical and social dimensions of bio art, or discuss questions from the area of technology and the natural sciences (for example, Flusser and Kac), what is important for Gessert is the aesthetic dimension of bio art. Both these characteristics of his approach also stem from the fact that Gessert himself is an artist who is not a proponent of using the latest technology in art. As an artist he is not oriented to genetic manipulation or tissue cultures, but is chiefly a great proponent of plant breeding.

What Gessert and other artists and theorists do have in common is an interest in the problematic nature of the boundaries between the artificial and the natural, between a work of art and a work of nature. They are also somewhat optimistic about the current revolutionary possibilities of influencing not only individual organisms, but also nature as a whole, including the landscape, for aesthetic or artistic reasons. Similarly to other bio artists, Gessert considers the actions of human beings who change the landscape and

[17] See, for example, Ingeborg Reichle, *Art in the Age of Technoscience: Genetic Engineering, Robotics, and Artificial Life in Contemporary Art* (Vienna and New York: Springer, 2009); Eduardo Kac, *Telepresence & Bio Art: Networking Humans, Rabbits & Robots* (Ann Arbor: University of Michigan Press, 2005), and his website, http://www.ekac.org. One of course finds books also accentuating biology, particularly in its 'laboratory' and biotechnological form: Beatriz da Costa and Kavita Philip, eds., *Tactical Biopolitics: Art, Activism, and Technoscience* (Cambridge, MA: MIT Press, 2008), or the exhibition catalogue, Patricia Solini, Jens Hauser, and Vilém Flusser, eds., *L'art biotech*' (Trézélan: Filigranes, 2003).

[18] See Beatriz da Costa and Kavita Philip, eds., *Tactical Biopolitics: Art, Activism, and Technoscience* (Cambridge, MA: MIT Press, 2008). Of the artists who have included living organisms in their own works, one finds a strong social accent, for example, in the works of Joseph Beuys (who did not, however, use the label 'bio art'), for example *Coyote, or I Like America and America Likes Me* (performance, 1974) and *7000 Oaks*, which were planted at Kassel in 1982–87, for *documenta 7* (1982).

individual organisms to be something that is essentially the same force as nature uses. And he understands this human activity as natural and justified. Like other practitioners of bio art, Gessert therefore includes evolution by means of artificial selection in his conception and he presents the influence of human beings as being essentially in harmony with the influences of nature.

Although evolution is becoming a key topic of bio art and is a link between many of the reflections in *Green Light*, Gessert actually never attempts to define this problematic term. A number of his reflections therefore lack the necessary foundations and it is no surprise that he is occasionally carried along by the current of the popular – and to a considerable degree imprecise – version of Neo-Darwinism. A more subtle manoeuvring amongst the different theories of evolution would not only provide us with the desirable theoretical context for bio art, which often makes reference to the natural science, but could also, indeed mainly, be a source of inspiration for bio artists themselves. Despite these critical reservations to some of the theoretical concepts, Gessert's *Green Light* is a highly readable, fascinating introduction to the topic of bio art, and for people interested in the most forward-looking trends in contemporary art it can only be recommended.

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