Wet Work:
Artists Appropriating the Tools and Techniques of Science

Clea Badion

> "Life and death appeared to me ideal bounds, which I should first break through, and pour a torrent of light into our dark world."
>
> —Mary Shelley, *Frankenstein*: *The Modern Prometheus*

I am looking at a disembodied human ear, recalling a certain scene from David Lynch's *Blue Velvet*. Gazing online at images of this lonely organ's various stages of life—or "partial life," according to its makers—I'm entranced, unsettled. In one image, a hand holds the ear, which is mottled in shades of pink. The hand is contained in an off-white glove, the generic sort that might be worn by a scientist or serial killer. (This is a place for body parts without evident owners.) In a second photograph, the ear is encased in its own embryonic sac, and in a third it floats, ghost-like. And sickly, too—a monster part Victor Frankenstein might have used.

This creation of non-Darwinian evolution is not the work of a scientist, but rather of a new breed of art maker whose practice takes the form of a human ear, a set of wings for pigs to fly, or a glowing rabbit. The artist collective Tissue, Culture and Art Project (TC&A) created the ear, which grew only to one-quarter its full size.[1] And although there are different labels for this emerging art practice that suggests the

stuff of recent science fiction and news headlines, the term "bio art" is commonly applied to art that literally uses wet or moist media—living materials—as its medium. Bio artists go beyond reacting to experiments in genetic or tissue engineering; they actively deploy the same tools and techniques to create art that is actually alive.

Genetic and tissue engineering, molecular biology, and selective plant and animal breeding, to name just a few, are their sources, and the points of departure. Technology itself is subverted to artistic ends; the scientist's laboratory becomes the artist's studio. Works like *Extra Ear ¼ Scale*, for example, were made at SymbioticA, a research laboratory where artists can engage in wet biology practices in an actual biological science department. Artist Marta de Menezes created live butterflies with wing patterns she designed during a residency in a developmental biology laboratory at the University of Leiden in Holland. Artist Joe Davis is a research affiliate in the Department of Biology at MIT; in *Microvenus*, he embedded his art in a bacterial genome.

The bio artist, in addition to subverting modern biological techniques, engages the related Pandora's Box of questions: Are you for or against cloning? Embryonic stem cell research? Genetically engineered foods? Genetically engineered animals? In *Extra Ear ¼ Scale*, TC&A considers the possibilities and ramifications of tissue engineering by using the same process a scientist would to theoretically grow an ear. Made of human cartilage cells and cultured in a rotating micro-gravity bioreactor, it grows in a three-dimensional structure. Furthermore, the ear is nurtured: It feeds on nutrients every three to four days in a sterile cover. In an article, "The Ethical Claims of Bio Art: Killing the Other or Self-Cannibalism?" members write of the project: "It also concerns broader cultural perceptions of 'life' given our increasing ability to manipulate living systems. TC&A is dealing with ethical and perceptual issues stemming from the realization that living tissue can be sustained, grown, and is able to function outside the body."[2] Indeed, TC&A's projects, which include the cell- and tissue-based creation of wings for pigs, so-called victimless meat patties, and Guatemalan worry dolls, almost always involve keeping their creations alive by maintaining an environment free of fungi and bacteria that would kill them. In caring for these entities—although in some cases viewers have been asked to "kill" them at the end of an exhibition by touching the biosculptures—TC&A presents what they call semi- and partial-living others in a way that highlights the artist's or caretaker's responsibility to

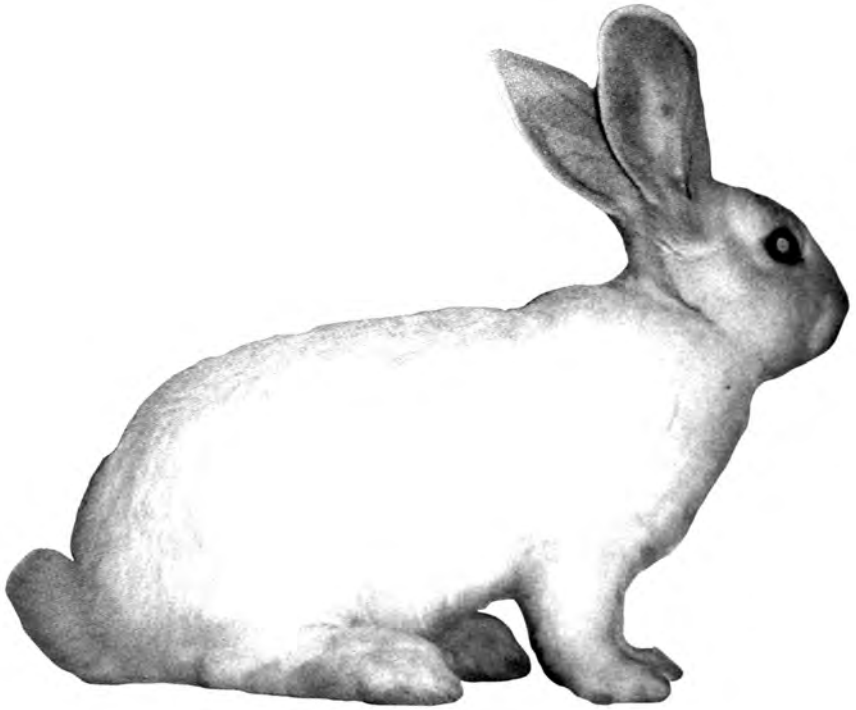
his or her creation. In a *Wired* magazine interview, TC&A cofounder Ionat Zurr states:

> Tissue engineering offers a possibility to change our own design as well as create a new breed of 'things.' Presently, scientists are trying to mimic nature. However, how will we look when we decide to improve nature? Are we going to see fashion-driven neo-organs? Are we going to completely objectify living matter?[3]

These questions are particularly relevant in the context of a recent announcement in *The Lancet* about the first human recipients of laboratory-grown organs—bladders grown from the patients' own cells. The director of the program at Wake Forest University School of Medicine, Dr. Anthony Atala, is already working on growing 20 different tissues and organs, including blood vessels and hearts.

Of course, TC&A and Dr. Atala's differences as artist and physician pose another interesting question: Should artists manipulate what might be considered the materials of life? After all, it is one thing to make a representation of something—a politically charged issue, for example—via collage or clay; it is quite another to make a real object of wet materials, such as cells and tissue, replacing mere representation with the presence of a being or entity that requires care from its creator and literally embodies the issue it was made to engage. Yet if bio artists fail to do this work, who should?

Many of these artists are using wet work, too, as a means of considering the broader cultural, political, and



ontological issues at stake, while keeping ethics in mind. Artist George Gessert wrote in "Notes on the Art of Plant Breeding":

> Do artists cross a line when they breed plants or animals, or use tools of biotechnology? Scientists routinely cross the line. So do farmers, business people, military men and doctors. Only artists and certain religious people hesitate… We will need all the awareness we can muster to engage evolution. To the extent that art favors awareness, the more artists who cross the line the better.[4]

If one subscribes to Gessert's sentiment, and I do within reason, the more relevant question becomes not *should* artists be engaging in bio art, but *how*? Here ethics is at play on an entirely unique level in an artistic practice. This is a particularly salient question in light of artist Eduardo Kac's work. He brings the idea of artistic manipulation of living matter and caring for a genetic creation to a different level

than TC&A. Instead of creating a new breed of so-called thing, he created a new breed of animal.

In the first photograph I see is artist Eduardo Kac's "GFP Bunny" (green fluorescent protein), in which he's cuddling a white bunny in front of a tan-and-black patterned wall. The scene appears as though someone caught Kac at an adults-who-love-fuzzy-rabbits fetish fair. The bunny has seemingly seen better days, as if given the opportunity she'd jump out of this clown-haired man's arms.

The genetically modified rabbit he holds in this photograph is named Alba—the result of the collaboration between artist Kac and scientists in Jouy-en-Josas, France, in 2000. Alba was injected with the green fluorescent protein of a jellyfish at the zygote stage, and when a blue light hits her pigment-free coat, she glows with phosphorescence that exposes her as a transgenic creature. Transgenic technology (Kac termed this "transgenic art") has been used in biotechnology for years to create new life via gene manipulation or the alteration of the genetic makeup of living organisms.[5] It is used most frequently as a sort of biomarker in a small region of an animal's body that enables a scientist to conduct studies of human diseases.

Kac's "GFP Bunny" depicts an animal that doesn't exist in nature—a chimera in the sense of the mythic lion-serpent-goat creature of which Hesiod and Homer wrote. Kac's project is distinct from TC&A's work in that Alba's creation was not his doing; he instead hired a laboratory as the creator. Alba can be seen as the ultimate ready-made object in this sense. In his article, "Gènes, génies, gênes," curator and writer Jens Hauser suggests that Alba is a "(scientific) ready mate" whose social integration is shaped by her creator, Kac.[6] Like TC&A's idea of "fashion-driven neo-organs," you can imagine fashion-driven companion animals: Paris Hilton switched Chihuahuas a few times before finding one small enough to suit her tastes. Kac—who alternately sounds like either a futurist's dream or a nutcase—takes this idea one step further, suggesting in his book of essays, *Telepresence and Bio Art,* that artists might increase biodiversity with the invention of new life forms. He also writes: "Every living organism has genes that can be manipulated, and the recombinant DNA can be passed on to the next generations. The artist literally becomes a genetic programmer who can create life forms by writing or altering a given sequence."[7]

But Kac frequently highlights ethics and responsibility in creating transgenic animals as well. He notes (perhaps in an attempt to avoid the "ready mate" connotation) that he is interested not in the creation of genetic objects but "in the

invention of transgenic social subjects."[8] Indeed, there is a sentimental thread to this project: He talks as much about the process of creating the rabbit as he does about providing a nurturing environment in which she might live. Kac's original plan for this art project included three different phases: first, the birth of Alba in the French laboratory; second, Kac intended to take part in a one-week gallery performance, in which he would live with her; and last, Kac would take the rabbit home to Chicago to live with him and his family. All of these steps were intended to spark an ongoing debate about her existence. On Kac's website (www.ekac.org), people were invited to register their opinions about the project.

As a visual critic, I am drawn to and repelled by Kac and his mutant rabbit artwork. Even the final step—to bring home the bunny—is endearing yet suspicious. The rabbit escapes the laboratory environment, but I question the artist's motives: Does he truly care for Alba as a genetically created animal or as an object of his own (indirect) creation? As it turns out, she never came home with him. The director of the French lab that created Alba—whom I begin to view as a sort of Cruella DeVil character—refused to release her, extending the debate over her existence to include where she should live. Such newspapers as *Le Monde* and the *Boston Globe* featured the story, and Kac spearheaded a "Free Alba" poster campaign. The lab now claims she is dead. In a strange twist, then, she remains a sort of mythic character that, like the ancient chimera, appears in representation only.

While TC&A and Kac have different approaches to their art—one is directly working with wet materials and the other is hiring someone to do so—they are both appropriating scientific techniques and, in the process, provoking us to contemplate the existence of transgenic animals and the use of tissue-engineering technologies. These are messy, sometimes contradictory art projects that address equally messy contradictory questions.

Of course, not all the issues raised in bio art are new: The myth of Pygmalion speaks to the artist bringing a creation to life (and also to the narcissism involved in this process). As to the issue of appropriating the very tools or processes it means to critique, there are other realms of art that can do the same, such as digital art and eco art. How bio art is distinguished is the materials. A visceral quality exists to using DNA or cells to create art. At a basic level, we can immediately relate with wonder or horror or laughter—or all—to an extra ear or a glowing bunny. We can relate to the knowledge of their physicality even when we only see photographs of them (and due to the newness and ephemeral quality of much of this genre of art, that is what most of us see). Similarly, we also may view these artists as technological mediators, domesticating the idea of do-it-yourself entities or animals so that every nonscientist wants to do the same.

Here ethics become central, and in considering TC&A and Kac, the question of how they engage in their respective art practices leads to other questions: Does art have to be ethical? Is it good only if it is ethical? It is likely bio artists would receive even greater attention in using technology in a purely unethical manner? (Some will claim they already have.) What if TC&A began growing human limbs and then attached them to cows? What if Kac asked a lab to create something that was more monster than bunny? Such scenarios would certainly be more disturbing commentaries on the dangers or downfalls of tissue and genetic engineering and they likely would gain more attention. Yet it doesn't mean these artistic experiments should be conducted.

I want to trust the artists who have chosen this genre to do more than "the right thing" (although bio art should not be used as a license to operate amorally); but to provoke better questions of complicated, nuanced issues, such as genetic or tissue engineering. Indeed, I think they should engage these technologies and make mistakes along the way—like not being able to bring the bunny home is part of any art practice. And because Kac was unable to bring Alba home, her plight was more broadly publicized, as was the creation of transgenic creatures for scientific research. Danger also is involved when working with living materials: The artist is not always in control. Joe Davis, who made *Microvenus*, admitted he inadvertently almost created a super-virus, and in a *Scientific American* article said, "I still come up with ideas that are dangerous and don't realize that they are dangerous."[9]

Perhaps Davis was seeking attention with such a provocative statement. Fortunately, like many working with this living media, Davis collaborates with scientists and can benefit from guidance on how to avoid creating the next Avian flu. And is it possible the reverse could be true—that scientists could benefit from some of the questions this art elicits?

I return to TC&A's stunted ear. As it happens, the doctor who taught the collective how to use tissue-engineering technology was also unable to grow a full-size ear. Here is a place wherein the difference between researcher and artist can exist, and it's the difference in how each views the actual process of creation. Zurr and Catts were focused not only on the ear size, but also the process of its development and

what its existence meant. Each views tissue engineering as more than a prescription for new body parts; they both see it as an entirely new ecology in which "partial living entities" exist. Or in the case of Kac where glowing animals exist. The art makes us consider the larger meanings of a world that includes these literal handmade entities and animals. After all, what happens in the process of creation—scientific or artistic—is as important as the end result.

Photos

Page 17 Tissue, Culture & Art Project's *Extra Ear ¼ Scale*

Page 18 Eduardo Kac's *GFP Bunny*

1. Zurr, Ionat and Catts, Oron, *The Ethical Claims of Bio Art: Killing the Other or Self-Cannibalism?* http://www.tca.uwa.edu.au/atGlance/pubMainFrames.html, The Tissue, Culture & Art Project's members Ionat Zurr and Oron Catts refer to their creations as semi-livings and partial life, which are defined as "a new class of objects/beings constructed of living and nonliving materials' cells and/or tissues from a complex organism grown over/into synthetic scaffolds and kept alive with an artificial support." http://www.tca.uwa.edu.au/atGlance/pubMainFrames.html.
2. Zurr, Ionat and Catts, Oron, *The Ethical Claims of Bio Art: Killing the Other or Self-Cannibalism?* http://www.tca.uwa.edu.au/atGlance/pubMainFrames.html
3. Sandhana, Lakshmi, *The Art of Rat-Powered Pigs Wings,* Wired News, (May 6, 2002)
4. Gessert, George, *Notes on the Art of Plant Breeding, L'art Biotech,* (France, Le Lieu Unique, 2003)
5. Kac, Eduardo, *Telepresence & Bio Art,* (Michigan, The University of Michigan Press, 2005) 236.
6. Hauser, Jens, *Gènes, Génies, Gênes,* http://www.idea.ro/revista/index.php?nv=1&go=2&mg=26&ch=37&ar=86, English translation of the article courtesy of the author.
7. Kac, Eduardo, *Telepresence & Bio Art,* (Michigan, The University of Michigan Press, 2005) 242
8. ibid, 271
9. Gibbs, Wayt W., *Art as a Form of Life,* Scientific American, (April 2001)