

ART AT THE END OF THE WORLD: BIOART
AND POSTHUMAN ETHICS IN
THE ANTHROPOCENE

by

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Abstract

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Bioart is a vital contemporary aesthetic movement that involves the use of animate matter (such as animal bodies or DNA) and is generative of productive encounters between theoretical methodologies of posthumanism, new materialism, and continental philosophy. I analyze this fruitful intersection of ideas in the context of the Anthropocene in order to excavate the possibility for a posthuman ethical encounter between the artist, the artwork, and the audience. I examine a wide variety of bioartworks by artists such as Eduardo Kac, Damien Hirst, and BCL; I also provide an in-depth analysis of synthetic biology and its productive potential within the frame of bioart. I ultimately argue that in order to be posthuman, bioart must also be humane, in the sense that in the Anthropocene we must be cognizant of the wide variety of potential material interactions that occur at the site of a bioartistic practice. I also contend that we must reconcile the absolute alterity of the bioartistic material with the need for an ethics that is enfolded and entrenched within the material intra-active becomings of the world.

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Chapter 1

Aesthetics in the Anthropocene

the hedge fund billionaire
the scientists, the artist,
and The Second Coming of the Shark
—Isobel Dixon, "Requiem on 'The Physical Impossibility of Death in the Mind of the Living'"

Advocates of the “material turn” in contemporary critical theory and cultural studies seek to cultivate not a move away from linguistic construction *as such*, but rather a complexification of the situatedness of material agency with/in such construction. While some scholars are understandably wary of such an endeavor¹, it is nevertheless vital that this work be done, especially given the enormous environmental impact humans have had on the planet. As Stacy Alaimo has illustrated, toxins are passing through the environment and the human body at a previously unthinkable scale, affecting conspicuous and surprising results; Alaimo thus proposes that we think of chemical illnesses like Multiple Chemic Sensitivity as “a metonymic slide, a chain of material significations in which ‘*environmental illness*’ extends the body outward as a trans-corporeal space” (*Bodily Natures* 115, emphasis in original). Under such a rubric, in which we must take seriously the agency of the nonhuman, a *material* intervention is

¹ Common criticisms of the material turn tend to revolve around two poles: First, those who argue that such formulations devalue the hard work done by cultural critics and scholars of the past several decades by suggesting that the linguistic turn was useless or unhelpful; and Second, those who argue that the “new materialism” is in fact no different from the “old materialism” practiced by scholars of, for instance, Medieval literature or, perhaps more significantly, theories of the body. In regards to the first, I would offer as rebuttal that there are very few (if any) scholars arguing *against* the power of language (even those working in the field of Object Oriented Ontology, or OOO, would not argue this); rather, these scholars seek to reacquaint contemporary critical theory with the material, which may have been lost in the linguistic shuffle, as it were. In regards to the second, while there is an enormous body of work on the corporeal dimensions of intersectional identity, it would be disingenuous to suggest that the work being done by, for instance, Karen Barad, Donna Haraway, and Stacy Alaimo is reducible to work that has already been done.

necessary to contend with a “nature” that is emphatically *not* a passive subject waiting to be colonized by language, but is instead an agential force that “kicks back” at the human. In addition, as Nicole Shukin forcefully contends, human power over animals’ “right to life and ability to die” (to borrow from Foucault’s definition of biopower) has never been more extensively managed, and indeed underlines contemporary logics of capitalist renderings, as in the relationship between Fordist assembly line production and late 19th Century slaughterhouses, to take one example.² Shukin’s discussion of the massive and often hidden logics of rendering gestures toward the ways in which the human, although deeply enmeshed with its environment, has more than any other actor on the stage the capability to effect change on a planetary scale. A material intervention is needed here, also, in order to comprehend how such change impacts on environmental collapse, species extinction, and notions of human exceptionality.

The tension at the heart of these competing formulations of human relationality to nonhuman animals and inanimate matter is the central subject of this thesis, which aims to explore the ethics of human engagement with living organisms via the growing field of *bioart*, which typically involves the use of organic matter and can include such varied aesthetic “experiments” as rabbits genetically modified to glow green, “semi-living” dolls made of cultured bacteria, and even taxidermied animals. Bioart, as typically understood³, is a diverse field of artistic practices that not only utilizes living organisms as its expressive medium, but also calls attention to this material condition; that is, bioartworks are often *about* the manipulation of living organisms and the implications that

² Shukin discusses this at length in Chapter 2 of *Animal Capital: Rendering Life in Biopolitical Times* (2009).

³ Throughout I will make reference to a number of significant scholars within this field, many of whom are bioartists themselves. Examples of artists who would likely agree with the definition given here include Eduardo Kac, George Gessert, and Oron Catts and Ionat Zurr, among others.

follow. The intersection of life as *expressive medium* and life as *animate matter* at the site of aesthetic practice thus raises crucial questions about the place of both art and the artist in contemporary debates of ecocriticism and speculative design, in that bioartistic practices—whether intentionally or not—often excavate the logics of rendering, biopolitics, and representationalism that operate in our contemporary epoch. In an important sense, then, bioart—in revisualizing and materializing the logics that guide the drawing of boundaries between human and animal, and human and environment—can be and in fact has been cast as fundamentally *posthuman*, scholars of which argue, according to sociologist Richard Twine, that “both ‘human’ and ‘animal’ are terms to deconstruct,” such that there becomes “an open ethos to rethink human-nonhuman relationalities” (29). Despite the positive connotations of a potentially posthuman visuality, it will be my aim here to trouble this claim by bringing bioart in conversation with theories of the Anthropocene.

“The Anthropocene” is a recent formulation that serves as a theoretical geochronological marker for the epoch in which human impact on the environment has reached the level of a geological force.⁴ Although the project of formal recognition by the geological-scientific community at large is not yet completed, theories of the Anthropocene productively speak to the problematic tension between the human as

⁴ There is some debate as to whether geological evidence supports theories of the Anthropocene. However, this debate has little bearing on the Anthropocene’s theoretical and cultural viability; both within the sphere of popular science writing and within contemporary critical theory, the Anthropocene has become a useful tool for assessing the many potential ramifications of human impact on the environment. Interestingly, even among those who find the Anthropocene useful, there is little agreement as to when it began: Zalasiewicz et al discuss several possibilities, including “the Industrial Revolution ... [and] the postwar ‘Great Acceleration’ ... of global environmental change;” I am drawn to the latter simply because the authors follow this up with the sobering fact that “the world’s strata from 1945 on contain tiny but measurable amounts of artificial radionuclides” (2230)

exceptional in its ability to act as a geological force on the planet and the (post)human as *unexceptional* in its place among a nexus of enfleshed species. It is among the central contentions of this thesis that it is precisely this tension between human mastery and human enfleshment that motivates bioartistic practices: in fact, when cultural anthropologist Paul Alberts asks, “how is the assertion of the human species on the planet to be understood against a natural world that does not stand ‘beneath’ the human as the secure stage to its self-defined projects?” (7), he may as well be speaking of bioart. Thus bioart is both *symptomatic* of the material tensions of the Anthropocene, and, perhaps paradoxically, *generative* of these conditions.

To be clear, it is not my aim to posit bioart as the “inciting incident” of the Anthropocene; rather, I aim to show how bioart is an aesthetic *of* the Anthropocene, and that ethically engaging with this kind of aesthetic practice requires a renegotiation of human relation to non-human animals, the environment, and the material world. This thesis is thus an attempt to weave together the various theoretical strands enumerated above—including new materialism, posthumanism, biopolitics, ecocriticism, and theories of the Anthropocene—in order to contend with the alarming complexities attendant the use of animate matter for aesthetic purposes. I hope therefore to raise a number of significant questions: How do we ethically engage with animals and the environment? How do theories of new materialism and posthumanism intersect with or extend these questions? How can bioart help us as scholars to situate animal studies, biopolitics, and posthuman ethics within the Anthropocene? In the wake of theories about the Anthropocene, we must begin the process of renegotiating how we theorize the place of the human within the world; it is my central claim here that bioart, as a (potentially) posthuman aesthetic practice, offers us some ways to do so. The remainder of this introduction will focus *first* on outlining a definition of bioart and its significance as a

contemporary artistic practice; *second* on a defense of ethics as the lens through which to view bioartistic practices; and *third* on a more detailed overview of the structure of this thesis.

Definition and Significance of Bioart

“Bioart” is a sweeping term that encompasses multiple kinds of aesthetic practice and is variously defined by both critics and practitioners. Artist George Gessert provides the most exhaustive definition of both bioart and associated terminology by delineating their relationship in an effectively nuanced Venn Diagram (see Appendix A George Gessert, “Bio Art Terminology”) that draws a distinction between “Bio Art” as an encompassing term and the related fields of “Transgenic Art,” “Biotech Art,” and “Genetic Art.” According to Gessert, Bio Art⁵ comprehends any artistic practice that is “comprised partly or entirely of living, nonhuman⁶ organisms” or that is “created in association with nonhuman organisms” (191), a point he reinforces early in the text when he lists just a few of the many expressive media that bioart may utilize, including:

grasses—wild, domesticated, and genetically engineered—and
numerous species of trees, several kinds of bacteria, various fungi, slime
molds, and aquatic creatures, including fish, frogs, and fluorescing
tadpoles . . . algae, horses, honeybees, pigeons, plant seeds and

⁵ Gessert is one of many artists who refers to this field as “bio art,” with a space between the words. I however prefer the term “bioart,” with no space; the primary motivation behind this preference is that it sufficiently collapses the biological and the artistic. I do not see these terms as mutually exclusive or even necessarily separated from one another, but rather as being situated side by side in a constant co-becoming.

⁶ To be clear, I am not suggesting a radical division between these two terms, and as my examples will show such distinctions are in fact untenable in a posthuman frame (see, for instance, Chapter 3). However, this does provide a useful justification for what is essentially a convenient distinction in this thesis between bioart and performance art, which, although it also uses biological matter, does not operate with the “nonhuman” in quite the same way.

bedding plants, ants, protozoa, spiders, earthworms, maggots, caterpillars and butterflies, vanda orchids, interspecific iris hybrids, elephants, dogs, chickens, silkworms, culinary herbs, turtles, mice, scorpions, and several species of spiders” (2; this is not a mistake—the list is so extensive that it includes spiders twice!).

Given the incredible variety of media and possibility for expression within the field of “art that uses biological materials,” Gessert necessarily sees the need for great specificity when discussing sub-fields of bioart; hence “biotech art is bio art in which the living components have been biotechnologically altered,” “transgenic art is a subset of biotech art in which living components have been genetically engineered” (2), and genetic art is that “in which genetics or manipulation of DNA plays a significant role” (185), which includes also “simulations of genetic processes” (191). Provisionally, then, we would say that bioartist Eduardo Kac’s *GFP Bunny* (a rabbit genetically modified to glow green under certain light) would fall under the rubric of “transgenic art” because it involves the manipulation of genomes, while less obvious examples—such as the taxidermy I discuss at length in Chapter Two—might simply fall under the category of “bio art,” as it incorporates the bodies of formerly living animals. I will return to the classification of taxidermy and plastination as bioart in Chapter Two.

Gessert’s definitions share much in common with other artists and cultural critics whose foci trend primarily towards bioart’s expressive materials. For instance, Kac defines bioart as “a new direction in contemporary art that manipulates the processes of life,” arguing that it typically “employs one or more of the following approaches: (1) the coaching of biomaterials into specific inert shapes or behaviors; (2) the unusual or subversive use of biotech tools and processes; (3) the invention or transformation of living organisms with or without social or environmental integration” (18). Louis van den

Hengel, meanwhile, emphasizes bioart's place amid paradigms of linguistic construction, arguing that it "[takes] life as the subject, rather than the object, of social, discursive, and aesthetic practices," thus generating "assemblages of bodies, technologies, and selves that not only challenge the methodological paradigm of the so-called linguistic turn, but also require a reconsideration of the foundational categories of life and death" (4). Finally, bioartists Oron Catts and Ionat Zurr—founders of the influential Tissue Culture and Art project—take what is perhaps the extreme position when they contend that "life is becoming bio-matter, waiting to be engineered" ("Life as Raw Material" 252), as synthetic biology offers "not merely rebranding of existing forms of manipulation of life," but also "a far-reaching shift in ways life is being perceived and used" (250-251). I will speak more on "bio-matter waiting to be engineered" in Chapter Three.

This last definition also points to some of the limitations of the above, which focus almost exclusively on the radical potential of bioartistic *materials*. A working understanding of bioart must contend, as Robert Mitchell argues, not only with media but with concepts: indeed, "what unifies [bioartworks] . . . is their shared interest in generating 'critical debate' about biotechnology" (23). This claim follows from the work of W.J.T. Mitchell, who contends in *What Do Pictures Want?: The Lives and Loves of Images* that bioart is symptomatic of contemporary "biocybernetic reproducibility," that is, "the combination of computer technology and biological science that makes cloning and genetic engineering possible" (312). Such reproducibility is so pervasive that it "has replaced Walter Benjamin's mechanical reproduction as the fundamental technical determinant of our age" (318), from which it follows that "the 'work' itself is highly ambiguous as to the art object . . . the medium of art, or the very task . . . to which the arts ought to be committed" (318). W.J.T. Mitchell thus contends that bioart's conceptual possibilities alter the way we engage with art while simultaneously changing the

expressive medium by which such concepts must be played out; and while Robert Mitchell does not go quite so far as to say that the medium of bioart is ambiguous or disconnected from the conceptual work it accomplishes, both authors agree that bioart “demands a new mode of aesthetic experience” as it engages with “the problematic of biotechnology” (R. Mitchell 25-26).

Robert Mitchell utilizes the term “problematic” here to indicate that “biotechnologies are situated within a field that is made up of relationships between inorganic matter and living beings, as well as human social institutions and relations” (26); that is, it is not *incidental* that bioart engages with the problematic field of biotechnology—which is problematic precisely because it borders on such varied fields as bioethics, animal studies, rights, and posthumanism—and the “effort to situate themselves within this problematic” is a defining trait of bioart (26). In W.J.T. Mitchell’s view, this problematic is significant precisely because it signals our transition into an epoch “that is best described as a limbo of continually deferred expectations and desires,” in which “everything is about to happen, or perhaps it has already happened without our noticing it” (321-322) due to the overwhelming remoteness of the present *against itself*. That is, W.J.T. Mitchell argues, “the present is, in a very real sense, even more remote from our understanding [than the past],” which entails the need for a “paleontology of the present,’ a rethinking of our condition in the perspective of deep time, in order to produce a synthesis of the arts and sciences adequate to the challenges we face” (324). Such a pronouncement has significant bearing on contemporary theories of the Anthropocene, and indeed paints bioart as *the* necessary artistic practice of our age as it engages with the confused and distant biotechnological present in which we currently live.

Thus far we have seen how contemporary bioartistic practices can be defined according to two interrelated poles: First, bioart tends to involve, on some level, biological materials, and indeed tends to foreground these materials as part of its aesthetic practice; and Second, bioart is generative of new conceptualizations of biocybernetic reproducibility and how we understand our current epoch. What may be missing from these definitions, which foreground *bios* as the problematic term needing to be defined, is a consideration of the aesthetic/artistic quality of the work, this despite the fact that defining such work as art is often the most controversial move in the public sphere.⁷ Defining art is, in general, difficult and quite contentious, as is defining how we interact with aesthetics; as such, and taking into consideration the limitations and focus of the current project, I will not be undertaking here a definition of “aesthetics” or “art,” instead taking it as a founding assumption of my argument that bioart *is* art. In this I am following bioart’s practitioners, whose work I will be analyzing, and who also assume as a foundational condition of their various projects that the work they are undertaking can be defined as “artistic.”

That having been said, that these works are aesthetic is also not *incidental* to my argument. As I will demonstrate in later chapters, the intersection of aesthetics and science is a crucial aspect of both bioart’s power and its potential for harm, as the aestheticization of animal bodies and other animate matter foregrounds the often hidden

⁷ Much popular art criticism takes as its project the denigration of what may appear to be faddish performance artworks that incorporate corporeality via the body of the artist. While it is difficult to say whether such work would constitute bioart *per se*, it is the case that the conversation surrounding these works often centers on whether they are in fact “art,” and if so what they are meant to convey. One recent example is “The PlopEgg Painting Performance # 1 - A Birth Of A Picture” by Swiss artist Milo Moire, in which the artist splattered paint filled eggs onto a canvas out of her vagina. The question that immediately surfaces in response to this work is, “Is it art?” followed by “What does it mean?” I will not offer an analysis of the work here except to say that some bioartwork is no doubt more productive than others.

logics of biological manipulation. That is, as Deborah Dixon contends, “[i]n taking objects out of their usual domains and . . . placing them within new assemblages, art is able to comment upon the distribution of” political and public spaces; thus bioart, “though diffuse in regard to the actual biotechnologies used” (a problem of definition discussed by the critics already enumerated above), “has become an arena within which some of the salient features of a more-than-human world have been placed within publicly accessible domains” (412), such as museums and other kinds of exhibition spaces. In addition, bioart—as a highly *transgressive* art that often plays against traditional modes of artistic representation—poses challenges that invite speculation and ultimately new kinds of (posthuman) “ways of seeing” on the part of the viewer.

I will argue that this is because of the material agency of the artwork itself, which after all is composed of the stuff of life. The transgressive potential of these artworks creates a field in which radical responses to organic matter are possible (meaning that the aesthetic in bioart moves beyond a simple conception of the rational human observer into a new space in which the human may be thrown into question along with the art itself), while the display of this work *as art* offers the possibility for engagement with these issues by diverse audiences. Thus, while the aesthetic is significant in terms of my understanding of the work done by bioart, this is not the space to discuss in any more depth than the above what I mean by “aesthetic.” While I understand that this may be a contested term for some, for my purposes we must simply acknowledge that the artists *themselves* see their work as artistic, and that this thesis takes this as a point of departure for further analysis.

The above is the beginning of a “definition” of bioart. This definition is necessarily expansive, and from it we can see why bioart is a significant movement: as many authors have discussed, it seems to be *the aesthetic* for the Anthropocene, as it operates at

multiple levels of environmental and political concerns. These concerns, however, lead us to one final reason why bioart is an important contemporary practice: the ethical questions it raises. In the following section, I will discuss in some depth what I mean by “ethics” in this thesis, and defend the use of ethics to discuss bioart against critics such as Steve Baker.

In Defense of Ethics

Several contemporary scholars argue for the impracticality of ethics when considering bioartistic practices, including and especially Steve Baker. Baker argues in *Artist/Animal* that we must *trust* artists: his book “presents the case for the importance of trusting artists to operate with integrity in relation to the animals that figure in their work” (3), as art’s power “does not lie in resolving things, settling things, and then putting them comfortably aside” (179), as a moralistic ethics might do (and indeed has done, in the case of the ethics committee, which, according to Nigel Thrift in “Practicing Ethics,” an essay that Baker quotes at length, “in its desperation to avoid mistakes, closes down some of the main means by which we learn about others” (Thrift 108)). In another context—this time, discussing the bioart of taxidermy—Baker goes even further, arguing that “the integrity of the artworks I’m describing is not fashioned out of, and is not best expressed through, the language of morals and ethics” (“Something’s” 8), which would seem to cut off any discussion of how taxidermy—and, by extension, the many other breeds of bioart I will be discussing in this thesis—may reveal ethical insights into how we might engage with the animal other.

I find Baker’s formulation of the relationship between animal art and ethics to be problematic, to say the least, and indeed much of what follows will concern itself with what bioart uncovers for us about ethically engaging with animals and other biological matter in the Anthropocene. To begin with, my understanding of ethics not only offers but

demands a space for thinking through these relationships: I am not using it here to denote a moral paradigm, a checklist of attributes an artistic project “must” have in order to be “ethical.” Nor, however, am I treating it only loosely as “what society deems correct,” a definition few would find particularly controversial. I am thinking ethics instead to be a *signpost for how we might engage with the Other*. Specifically, I follow Penelope Ingram in *The Signifying Body* when she argues that “the representational nature of traditional metaphysics precludes an ethical relationship with the Other” (xxii) as “unrepresentability is the condition of incommensurability” (xxx). Ingram, following Heidegger, Fanon, and Irigaray, proposes that “material signification exists beyond representation, beyond the always already grounding that the material becomes subject to in the act of representation” (xxx), meaning that an ethical encounter with the Other cannot occur as long as that Other is bound into representationalist frames that reduce its incommensurability and materiality to a mere figural shadow. In Chapter Two, I will discuss two examples of animals rendered into such frames, including a plastinated shark posed to seem menacing, which fits into narratives of deadly sharks that date back to *Jaws*. This frame robs the shark of its incommensurability and thus makes an ethical encounter, in Ingram’s frame, difficult to sustain.

I also contend, however, that we must pair this ethics to a critique of other, more hidden, and profoundly *non-representational* frames of violence and control. Specifically, we must also consider the ethics of encounter within a *biopolitical* context, in which larger systems impact on how life and death are managed on simultaneously vast, intimate, and insidious scales. The concept of biopower comes primarily from Michel Foucault, who argues that the state and its apparatuses control “the right to make live and to let die,” in contrast to older models of sovereign power to “take life or let live” (241). Cary Wolfe suggests that biopower and biopolitics are thus concerned with the control of entire

populations: “the exercise of violence on the terrain of biopower is . . . an affair of power over and of life that is *regularized*, routinized, and banalized in the services of strategic, not symbolic, goals” (*Before the Law* 27, emphasis added). The violence of biopolitics comes in part from the flattening, massifying effect of this kind of regularization, which has as its necessary foundation the delineation of human as species. That is, the biopolitical at once *both* frames the human as a species set against “animalistic” others, *and* “masks and makes possible the more fundamental operations of modern politics . . . by means of a machine that depends on . . . the distinction between *bios* (or political ‘forms of life’) and *zoe* (or ‘bare life’),” that is to say, it both depends upon such distinctions and *hides them from view* (24). Significantly, then, the difference between human and animal—a difference of *species*—is the *bedrock* of the *zoe/bios* distinction and the frame of law that enacts violence by determining who possesses “rights,” a political and often violent determination that is often concealed from view.

In the Anthropocene, such logics—which include Nicole Shukin’s concept of rendering—are accepted as part of a project of human exceptionalism, such that *representation itself* is elided: it is not needed to enact violence. The human is inoculated against the nonhuman other through biopolitical processes that reflexively disguise their own operation, such that having an ethical encounter may require significantly more work in order to recover the existence of the Other. Bioart—again, sometimes intentionally, sometimes not—uncovers these operations by putting them on display, opening up a space for an ethics of posthumanism *and* the kind of signifying ethics discussed by Ingram, an intervention that is not only linguistic but *material*. I will in Chapter Two call such a formulation of material ethics “posthuman(e).”

To interrogate the ethical encounter at the heart of bioart is thus *not*, as Baker would have it, simply asking whether the art is moral: rather, it involves an account of

how the work operates within representationalist and biopolitical frames. Of course, significant questions abound: Is it possible to be *humane* in our treatment of animals, while simultaneously refusing to re-submit them to representationalist frames that always already render them through contemporary narrative logics? How can we envision ethics when it extends past the human? Do butterflies and bacteria carry the same ethical weight as rabbits and sharks? I will contend with these issues at length in Chapter Four.

Tied up in this notion of ethics are also, of course, questions of “right” and “wrong,” inasmuch as there must be some rubric by which we understand the degree of harm, control, and power enacted upon subjugated Others; however, I also find much of contemporary animal rights ethics—especially that deriving from Peter Singer (whose utilitarian ethical frame focuses on the ability of the animal to suffer) and Tom Regan (who argues for the inherent value of life and explores the dichotomy between animals as “moral patients” to human “agents”)—to be problematic. For instance, Anthony Julius argues in *Transgressions: The Offenses of Art* that transgressive art—art that breaks taboos—“has contributed to the impoverishing of our moral consciousness by its contempt for pieties” (186) and “has muddled boundaries that need to be protected” in order for us to remain human (188). One of these boundaries: “the most fundamental of hierarchies, which places the human above the merely animal” (143). I find this uncritical assumption—that art which disturbs human-animal hierarchies is inherently unethical—to be incredibly problematic, in that it disallows a posthuman move by bioart. That having been said, Julius’s frame of bioart as “transgression” will prove useful in Chapter Two, and, in providing the ground for Baker’s assertion that “the integrity” of bioart “is not fashioned out of, and is not best expressed through, the language of morals and ethics,” demonstrates that Baker’s own negative reaction to ethics as a mode of critical investigation into bioart is at least troubling, at most irresponsible.

What is needed then is an acknowledgment of the insufficiency of prior ethical frames that does not also entail a move away from ethics as a mode of inquiry for understanding the place of bioart in the Anthropocene. As an example, Cary Wolfe in *Before the Law* argues that as existing ethical frames are insufficient, we need to forge a new and posthuman frame by practicing active responsibility based on *potential* rather than *automatic and schematized* inclusion. That is, Wolfe claims that while we absolutely should “strive for unconditional hospitality and endeavor to be fully responsible” with respect to the animals that receive our care and attention, such a decision cannot be *ethical* unless it is made “selectively and partially, thus conditionally, which in turn calls forth the need to be more fully responsible than we have already been” (86). Wolfe points the way here for how we might discuss bioart and ethics together: by broadening our view of whom it is possible to incorporate into an ethical frame, we open the possibility for engagement beyond violent schemas. This means rethinking not just how “human” and “nonhuman” relate, but troubling the boundedness of these signifiers in and of themselves: how and where we delineate the “human” from the “nonhuman” becomes a problem of ethics, a problem of how we inter-(and intra-)act with the animal other.

All of this is not to say that I find Baker’s position utterly without worth: in fact, I follow Baker in arguing that we should be less concerned with the morality of bioart than with *what bioart has to say* about contemporary human-animal and human-environment relationships. This thesis is thus at least in part an attempt to balance these concerns: to be radically open but ultimately critical of bioart through an application of posthuman ethics to the biotechnological and aesthetic dimensions of one of the most significant artistic movements of our current epoch.

Significance of Project and Outline of Thesis

By bringing theories of the Anthropocene in conversation with the posthuman ethics of bioartistic practices, I hope to raise a number of significant questions: How do we ethically engage with animals and the environment? How do theories of new materialism and posthumanism intersect with or extend these questions? How can bioart help us as scholars to situate animal studies, biopolitics, and posthuman ethics within the Anthropocene? In the wake of theories about the Anthropocene, we must begin the process of renegotiating how we theorize the place of the human within the world; bioart, as a posthuman aesthetic practice, offers us some ways to do so. Moreover, by bringing these fields together, we might ask: Are artists—even in a posthumanist frame—*subverting* or *enforcing* the material-discursive strategies for the inoculation against “natural” subjects that characterizes the Anthropocene? Is there *any* ethical way to foster a posthuman dialogue through bioart? Bioartists and cultural critics have not addressed these dimensions of aesthetic practice, at least not together; therefore, in order to assess the posthuman dimension of bioart, we must put it in conversation with the messy tensions that surround questions of human exceptionalism in the Anthropocene, which makes this project of the utmost importance for contemporary theory. The central problem guiding my research and writing thus concerns how we might develop a posthuman politics and ethics for engaging with the aestheticization and commodification of animate matter in bioartistic practices, given the tensions surrounding questions of human exceptionalism in the Anthropocene. Specifically, I am asking: How can bioart help us to situate animal studies, biopolitics, and posthuman ethics within the Anthropocene? And to what extent can placing the posthuman ethics of bioart in conversation with the tensions surrounding the Anthropocene be generative of new ways of speculating upon an ethics for engagement with animate matter in art?

Before I begin the thesis proper, I would like to offer three caveats. *First:* The subject I am undertaking here is a highly complex one, and while I have attempted to provide a comprehensive study of the various interconnected subjects under consideration, it is nonetheless true that there remains quite a bit of research to be done. And *Second:* What follows builds off of not only contemporary social-cultural theory (including new materialism, Marxism, posthumanism, feminism, etc), but also contemporary biotechnological projects (such as genetic engineering, protocell engineering, and cytogenetics). The former is quite comfortable to me and comprehends the majority of my graduate academic training; the latter is, regrettably, rather foreign to me, and before I began this project what little knowledge I had of these fields was filtered through the fog of High School biology class memories. While I have made every effort to become acquainted with these fields⁸, I have no formal training in them, and as such some of the scientific information here may be incorrect or (and this is, I hope, more likely) simply outdated. All of which is simply to say that while every effort has been made to be both comprehensive and intelligible within the space I have, the theoretical models and material analyses are, as anything in an intra-active frame, always-already contingent, provisional, and subject to revision. With these caveats out of the way, the remainder of this introduction will focus on the organization and structure of the thesis.

Chapter Two is an extended analysis of two kinds of bioartwork, both of which specifically involve animal bodies, in order to tease out the extent to which these

⁸ I am indebted to a few texts here specifically: *Biotechnology*, a textbook by Darbeshwar Roy; *Biotechnology and Genetic Engineering*, an introductory book for laymen such as myself by Lisa Yount; *Animals as Biotechnology: Ethics, Sustainability, and Critical Animal Studies*, a social-cultural analysis of specific biotechnological phenomena by Richard Twine; and *Protocells: Bridging Nonliving and Living Matter*, an edited volume by Rasmussen et al. that covers a number of scientific issues related to the creation of living matter out of nonliving matter.

practices are capable of being *both* posthuman *and* humane, a formulation that I render as “posthuman(e).” In this chapter I am specifically concerned with the place of the animal in the *Body Worlds* exhibition series and the work of Damien Hirst, whose art often incorporates animal bodies. The chapter will begin with a new materialist and Marxist/Foucauldian analysis of plastinated animal corpses, before moving to a posthumanist critique of the works of Hirst. Through the lens of various theories of animal flesh and aestheticization. I will contend through this analysis that art that utilizes animals has the potential to render the animal body into existing systems of capital and biopower while leaving very little space for the animal to “speak back” to the viewing public. That having been said, I will also argue that these animals in their material agency always already exceed the representationalist and biopolitical schemas that we place upon them, and suggest that although they have been interpellated into these schemas, it may yet be possible to uncover an ethical relation with them if we foreground that relation and seek new ways of engaging with the animal body. I will leave the actual formulation of this ethical frame for the final chapter.

In Chapter Three I will explore in some depth the intersection of bioethics and semi-living artwork in the Anthropocene. In this chapter I seek to address the question: At the end of the world as we know it, what good or ill can come from the exceptionalist project to create and aestheticize new kinds of life? I will draw on a number of scientific texts to explicate the realities of protocell creation and to excavate the history of bioethical engagements with this project. I will also analyze in some depth the work of Oron Catts and Ionat Zurr, along with other kinds of synthetic aesthetics. I will also examine the networks and global/local interactions in which and through which such synthetic bioart transits. I will ultimately contend that such work offers a provocative

counterpoint to the idea of “saving nature” by leading to a reconceptualization of both nature itself and the kinds of networks and systems that impact on the tree of life.

In Chapter Four, which is also my conclusion, I will offer a more comprehensive, if still ultimately provisional, formulation of a posthuman(e) ethics that I believe offers a more robust methodology for understanding the place of bioart in the Anthropocene than previous frames. I present this through the lens of three “theses”—statements of ethics and methodologies for understanding the intra-relatedness of the terms discussed in the prior three chapters. Specifically, I will bring together Karen Barad’s theory of agential realism and Penelope Ingram’s emphasis on the importance of difference in order to understand what a posthuman ethics might *look* like, and put these authors in conversation with Stacy Alaimo and Claire Colebrook to demonstrate why such questions are essential in the Anthropocene. Again, my formulation of this ethical frame is provisional, but the hope is that I will have demonstrated by the end that bioart is not only a remarkably complex and productive field of inquiry, but that by attending to varied theoretical strands in our reading of bioart we can excavate the potential for a more posthuman, more humane ethics of encounter with the aestheticized animate other.

Chapter 2

Scientific and Aesthetic Renderings: Can Bioart be Posthuman(e)?

As discussed in Chapter One, the use of animals is one of the primary points of contention among those who argue against the morality of bioart, and is often the focus of ethics committees or news reports that spark the public imagination. In this chapter, I will explore two kinds of bioartistic practice that use animals in order to excavate the intersection of scientific and aesthetic “renderings,” a term I borrow from Nicole Shukin in order to discuss the material practice of objectifying (in a literal sense) animal bodies. The first is *plastination*, a process by which many of the organic elements of a body are replaced by plastics. Ostensibly, such a project aims to preserve specimens more perfectly, as plastinated animals decay slowly; however, since the discovery of the technique, it has enjoyed a popular life in the public sphere within museums and the *Body Worlds* exhibit, which travels across the globe, igniting controversy wherever it goes. Although not initially conceived of as “art,” plastinates take on an aesthetic quality when ported to the museum space, and thus constitute a kind of bioart, one that takes previously organic matter and *renders* it as inorganic. The intersection of the scientific and the aesthetic is one part of the materialist analysis of these artworks that I offer in an attempt to interrogate the ethics of interaction with animal art. The second practice I will be discussing is that of Damien Hirst, an infamous artist whose work often incorporates animals and sells for hundreds of thousands of dollars, making him one of the most profitable artists alive today. The profitability of his work speaks to the power of transgressive art and its potential to engage with the strong emotions of its audience—an engagement that may engender an ethical encounter.

My aim in bringing these two kinds of bioartwork together is itself twofold. First, by doing so I hint at the wide diversity of possibilities in bioart: while plastinates are not

generally considered under the rubric of bioart, it will become clear through my analysis that its incorporation of biological materials is as problematic and productive as that of a more straightforwardly bioartistic product, such as that of Damien Hirst. Second, by bringing these works together, I interrogate the implications of the *use* of animal art in the Anthropocene. Indeed, one of the reasons we have to critically investigate art that uses animals is that in the Anthropocene, when there is already so much environmental devastation, we have to be critical of any practice that might support biopolitical regimes, speciesism, and immunitary logics. That is to say, if we take seriously the notion of human impact on the environment, as well as the responsibility attendant human-caused mass extinctions of animals, we must also take seriously the claims made by animal studies and posthumanist theory, which suggest—even more than theories of the Anthropocene by themselves, which tend to focus on the place of the human within these frames—that we must problematize *any* use of the animal as simply another extension of human exceptionalism. Thus by bringing the Anthropocene to bear on animals in bioart, I am able to examine—even if only provisionally in this chapter—the intersection of posthuman ethics and Anthropocene politics, to ask whether bioart can be both posthuman and *humane* in the context of the Anthropocene; this leads to a neologism, “posthuman(e),” that I discuss in more depth at the end of the chapter.

This chapter thus offers a crucial intervention into contemporary dialogue concerning the use of animals in art. Over the course of the chapter I will challenge both Steve Baker’s and Cary Wolfe’s formulation of posthumanism and significantly problematize the easy demarcation between “art” and “ethics” offered by these scholars, while at the same time recognizing the crucial advances both have made in our understanding of how art operates in the Anthropocene. I begin with a discussion of plastination and the many renderings it undertakes, followed by an in-depth discussion of

the similar forces at work in the art of Damien Hirst. I conclude this chapter with a gesture toward what it might mean for bioart to be humane, posthuman, and productively ethical in the Anthropocene.

Aestheticizing Corpses

The development of plastination techniques in the late 1970s by Gunther von Hagens was initially useful as a method of preserving specimens in the laboratory;⁹ however, by the late 90s von Hagens had adapted the methods for use in public-scientific discourse as part of the now-infamous *Body Worlds* exhibition series, which featured plastinated animals—often human—displayed for perusal by audience members curious to have an intimate encounter with inner anatomy. According to the mission statement of The Institute for Plastination (est. 1993), the procedure has a number of benefits, including “improving overall anatomical instruction,” “improving awareness of medical issues, particularly among the general public,” and (perhaps somewhat self-servingly!), “popularizing and developing plastination techniques.” Plastinated corpses on display thus occupy something of a middle ground between scientific practice and public scientific education, being at once *useful* for scientists studying anatomy, but *displayed* for perusal by museum attendees. This doubled purpose marks the *Body Worlds* exhibition as a clear example of what Bruno Latour would call a “quasi-object.” Latour, in *We Have Never Been Modern*, describes the quasi-object as being simultaneously “much

⁹ Specifically, plastination involves several steps which generate a useful specimen for research and display. First, a suitable corpse is chosen, which should be relatively recently deceased and be “free of any deformity that would affect the morphology of the sections” (Pashei 1076). Next, “corpses are injected with 15-20 liters of Kaiserling-I solution” in order to embalm them, after which they are cleaned and dehydrated “using acetone of a grade between 96 and 100% purity” (ibid). The bodies are then “impregnated” with a variety of resins, after which they are “placed in an oven at 40°C where they remain for 4-5 weeks” (ibid 1077); At this point, all that remains is to remove any anatomically or aesthetically unhelpful body parts, through a process that Pashei helpfully calls “grinding.”

more social, much more fabricated, much more collective than the 'hard' parts of nature” and “much more real, nonhuman and objective than those shapeless screens on which society—for unknown reasons—needed to be 'projected'” (55). For Latour, the quasi-object is the quintessential “modern” construction, being at once necessary for the production of modernist dualistic schemas¹⁰ and indicative of how these schemas fall apart in the wake of, for instance, materialist science studies. As Levi Bryant puts it in his blog *Larval Subjects*, “[q]uasi-objects are objects that are *neither* quite natural *nor* quite social . . . they are operators that draw people together in particular relations as well as drawing people into relations with other nonhuman objects while being irreducible social constructions in the semiotic sense” (Of Quasi Objects). The plastinated corpses on display at *Body Worlds* are thus both material and semiotic, operating simultaneously as irreducible nonhuman other *and* as semiotic representation, drawing the audience in to both fields of relation as they view the bodies on display.

What is interesting about plastinates, however, is that they also resist this construction, as whatever biological materials that remains are quite literally made into plastic; for this reason, some might contest plastinates as examples of bioart at all, asking: What does bioart become without the bio? To begin with, the human in human plastinates is hardly evacuated from the display: indeed, “in plastinates the human . . . lies not in the solid flesh but in the semiotics of representation” (Belling 20), such that even once objectified the originary biological matter “punches back.” In this sense,

¹⁰ According to Latour, the modern (as in modernist) schema operates through two contradictory practices with respect to these dualisms: “translation,” which “creates mixtures between entirely new types of beings, hybrids of nature and culture,” and “purification,” which “creates two entirely distinct ontological zones: that of human beings on the one hand; that of nonhumans on the other” (10-11). For Latour the “first dichotomy” is thus *nonhuman nature|human culture*, which underlies much contemporary scientific discourse.

Belling's statement does not go far enough: it is not only that a "semiotics of representation" enfolds non-biological matter within a biological frame; in addition, and following Stacy Alaimo, the "organic" enacts a metonymic slide in which it continuously ruptures out of the bound and overdetermined plastic flesh of corpses on display. In a moment, I will refer to this rupturing as a *hauntological* moment, in which the "ghost" of the animal remains (albeit only conceptually!) even after it has been rendered into plastic.

In addition, and as in much bioart, the ways in which the biological impinges on the enactment of the artwork is itself part of *why we can call it bioart*: if this were just a plastic display, it would be easy to dismiss it as only educational.¹¹ The rupturing of the biological through a representationalist non-biological frame is part of why "we are not petrified at the sight of them" (Belling 18), despite the fact that these are in fact corpses. To read plastinates as both art *and* science affords us an opportunity to think them as *bodies*, rather than as passive receptacles for our objective scientific gaze. Or, as Belling eloquently puts it, "if we imagine [plastinates] as works of art, we risk acknowledging the pleasure that looking at them makes us feel, and such pleasure might remind us of the horror it has replaced" (17). By acknowledging the place of the biological in plastinates, we acknowledge the aestheticization of bodies on display, we acknowledge, that is, the art of the corpse. Crucially, then, this aesthetic display hails viewers (in an Althusserian sense) to take part in a circulation of multiple discourses that have no clear grounding in either the subjective social or the naturalized and objective natural/scientific¹².

¹¹ This is not to say, of course, that non-biological or scientific displays can't be art. Rather, I am arguing here that it is precisely the rupturing of the biological through the semiotic representationalist frame of the non-biological that governs my assignation of plastination as "bioart," a claim that some might contest given that biological materials are largely absent from the finished product.

¹² Of course, most of these terms should be in scare quotes; I follow many feminist science studies scholars in wanting to trouble the extent to which "objective" scientific "fact" is naturalized in contemporary discourses. See, for instance: Harding, *Whose*

This status as quasi-object is not insignificant: in Figure 2-1 below, we see a dramatic example of the initial reaction such creations can engender, as well as how the plastinated animal—in this case, a camel—is situated to appear lifelike in its trisection, thereby demonstrating a number of muscular and subcutaneous features that would, in general, be more useful for scientific practice *if it were not being displayed*. The dominant reaction is less one of scientific curiosity but rather, as the look on the boy's face would attest, one of *wonder*.



Figure 2-1 Plastinated Camel

Body Worlds is thus also emblematic of centuries-old fascinations with taxidermied and stuffed animals, in that these exhibits posit an ironic lack: again, their

Science, Whose Knowledge: Thinking from Women's Lives; Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective"; and Fausto-Sterling, *Sexing the Body: Gender Politics and the Construction of Sexuality*, among many others.

sutured flesh is devoid of life yet metonymically evocative of it. Rachel Poliquin, in *The Breathless Zoo: Taxidermy and the Cultures of Longing*, discusses early nineteenth-century English menageries in which exotic animals were used to evoke “worlds filled with fantastic creatures and infinite possibility,” which “exposed their creators’ yearning for wonder: wonder at the diversity of nature, wonder at the shapes and colors of exotic creatures, and wonder aroused by the secret workings of the natural world” (16). Such metonymization of nonhuman flesh would seem to strip the animal of its vitality, and indeed Belling argues that “[p]lastination elides the cultural signs we attach to human remains,” such that they take on “something of the character of other inanimate objects that occupy and decorate the spaces of the living” (18). For plastinated and taxidermied animals alike to operate within a human consciousness perennially terrified of death, we must teach ourselves “to think of them as things” (18). And yet, while this metonymization objectifies the animal, it simultaneously reinvests it with a ghostly presence in which its “natural” condition as *alive* continuously ruptures through the flesh. At the point of contact¹³ there may be a moment of absolute wonder, curiosity, confusion, and even unease: there is a disquieting realness to the animal—in both classical taxidermy and *Body Worlds*—that calls attention to its unrealness, a “hauntological” animacy that calls attention to its inanimacy.

The term “hauntology” was originally developed by Jacques Derrida in *Spectres of Marx* as a pun on “ontology,” and refers to “the question of the event as question of the *ghost*” (10, emphasis mine). Derrida’s formulation of the ghostly presence of capitalism in

¹³ Here I reference Donna Haraway’s notion of the “contact zone,” which she borrows from Mary Louise Pratt. Haraway articulates a nuanced reading of the point of contact between agents, subjects, and objects, envisioning this “flesh of mortal world-making entanglements” as the stuff of engaged ethical intra-action with the nonhuman other (*When Species Meet*).

commodity fetishism¹⁴ has been taken up by various cultural critics and even musicians as a way of thinking about the ways in which the past impinges on how we think the future. Mark Fisher, for instance, takes up the topic of a “sonic hauntology” that “is exercised by the problem of memory and its imperfect recovery” (45) and often features “crackle,” remapping sounds from early (40s and 50s-era) electronica onto contemporary soundscapes in order to understand how these “sonic signifiers of the future” figure a “nostalgia for all the futures that were lost when culture’s modernist impetus succumbed to the terminal temporality of postmodernity” (45). James Bridle, meanwhile, cautions against taking up the hauntological as a completely distinct movement from excessive *nostalgia*, lamenting the ways in which hauntology “continues to assert a backwards/forwards model of time, a resurrection of an imagined past which is still too drenched in pure nostalgia to serve any revolutionary purpose” (Hauntological Futures). Both writers figure hauntology as a kind of temporal eruption that speaks to a nostalgia for a thing ostensibly gone but still, continuously, present.

In the case of plastinated animal corpses, we might say that their use-value is always already circumscribed, and thus haunted, by the ghosts of animate matter. These works are aesthetic *as well* as scientific because the rational encounter is always haunted by the memory of flesh, hence their quasi-object status. This status not only

¹⁴ Derrida asks, in reference to Marx’s claim of the specter of communism, “What is a ghost? What is the effectivity or the presence of a specter, that is, of what seems to remain as ineffective, virtual, insubstantial as a simulacrum? Is there there, between the thing itself and its simulacrum, an opposition that holds up?” (10). Derrida is concerned with how traces of the past—ghosts—impinge on contemporary and even future-oriented commodities, and indeed he argues later that “the ‘mystical character’ of the commodity is inscribed before being inscribed, traced before being written out letter for letter;” for Derrida, “[e]verything begins before it begins,” and that attempting, as Marx does, to “know and make known . . . at what instant the ghost comes on stage” is to keep this ghost, this specter of the past, at bay, is to deny that the “repetition” of commodity use-value is the very means by which “the possibility of capital” can be comprehended (202).

uncovers the importance of the museum space to the work, but also reinforces the intimate connection between scientific and aesthetic renderings in the work. The relevant question may then be, does this process occur for all bioart, or is it particular to the kinds of taxidermy and plastination practices that seek to engage the viewer at the level of “realistic” or “scientific” discourse? That is, is it the intersection of public advocacy and scientific research that brings out the ghost of animate matter, or is it the aestheticization of the biological materials? At the point of contact, this network of interlocked relations is inextricable: all feed into one another, and teasing out their precise relationship will be the subject of this chapter.

Plastination at the Perot

To begin with, let us return to Derrida and Marx. Both—although especially Marx—are speaking of *commodities*, which is particularly apt for the current discussion of plastinated animal bodies, which are necessarily commodified as they are brought into the circulating discourses of power, politics, and corporatization that typify museum spaces.¹⁵ Consider again figure 2.1. The camel is part of a traveling exhibition entitled “Animals Inside Out,” and the photo was taken by me at the Perot Museum of Nature and Science in Dallas on 20 January, 2014. The Perot Museum was established in 2006 after a generous endowment of \$10 million from Hunt Petroleum led to the purchase of nearly five acres of land and the consolidation of three separate museums (Dallas Museum of Natural History, The Science Place, and the Dallas Children’s Museum). It is named for former independent Presidential candidate Henry Ross Perot, whose family donated \$50

¹⁵ Museums, of course, are not the only spaces in which animal bodies are commodified. Nicole Shukin, on whose work I will drawing heavily in this section, offers a brilliant and sobering analysis of the ways in which these bodies are drawn into capitalist frames of violence and technological capital in *Animal Capital: Rendering Life in Biopolitical Times*. I will discuss her notion of “rendering” in some depth momentarily.

million to what was then referred to as the Museum of Nature and Science at Fair Park; it was renamed in light of this generous endowment. On 23 October 2008, plans were announced for a controversial exhibit, the “Tom Hunt Energy Hall,” which would come to feature a Fracking ride for children and numerous stands explaining the benefits of oil drilling, fracking, and other controversial energy solutions. Intended to showcase how “we harness natural resources like oil, natural gas and alternative energies to make it all happen” (“Exhibit Halls”), the exhibit is instead a dynamic example of how capital, corporatization, and science interact within museums.¹⁶

Into this conversation enters “Animals Inside Out” and numerous other bioartistic practices, which are often featured in museums and are always already tied into questions of scientific objectivity, corporatization, and ideology, which necessarily impinge on the material conditions of their enactment within the museum space. “Animals Inside Out” is exhibited, at the Perot museum, within a historical-cultural context that consistently erupts out of its presentation as pure scientific discourse, becoming an actor in a “material-discursive” (to use Karen Barad’s terminology¹⁷) interchange that *includes*

¹⁶ In addition, critics of the Hunt Exhibit have argued that such decisions stem from “a desire to avoid stirring up controversy with donors, visitors and political representatives” (Kuchment), and that “these relationships might seem less problematic if the museums actually built firewalls between their fundraising and curatorial departments” (Harkinson). Ella Butler contends that the rhetoric employed by museums advocating an anti-science political agenda is, ironically, taken directly out of the science studies playbook, as “both science studies and conspiracy theory emerge at a moment when the academy has been engaged in demonstrating the socially constructed and historically contingent nature of scientific knowledge” (231). At stake here then is the project of science studies broadly conceived, and museums have become something a battleground for this contestation.

¹⁷ Barad uses this phrase to refer to “specific iterative enactments—agential intra-actions—through which matter is differentially engaged and articulated (in the emergence of boundaries and meanings), reconfiguring the material-discursive field of possibilities in the iterative dynamics of intra-activity that is agency” (“Posthumanist Performativity” 822-823). I am using it here to refer specifically to the complex space bioartwork like “Animals Inside Out” occupies: at once discursively constructed *and* materially substantive, we cannot speak of one without the other (or without the Other, for that matter, as we will see

scientific discourse, but also involves the appropriation of poststructuralist epistemological relativism, the corporatization of museum spaces, and, lest we forget, actual animal bodies. This hauntological (re)investment of capital within scientific-cultural spaces is an example of how bioartistic practices often—even if inadvertently—engage in a problematic *rendering* of animal bodies, such that the bodies themselves become almost secondary to the cultural capital they re-present.

Consider, for instance, Figure 2-2 on page 31, a shark on display at the Perot. The scientific value is ostensibly clear: rarely is one able to see a shark in this position up close, and it would be impossible to conduct the kind of sustained observation encouraged by the exhibit outside of a laboratory environment. Public education about animal anatomy and biological processes is an obvious good worth pursuing for its own sake, and the wonder displayed on the child's face in Figure 2-1 is one I saw repeated by many others, young and old, throughout the exhibition. However, this public good must be counterbalanced against the practices of rendering, speciesism, and bio-capital enumerated above. The shark, for all its anatomical clarity, is also clearly posed in such a way as to recall the narrative of threat that surrounds sharks: the bared teeth, open mouth, and spinal curvature evoke *Jaws* and its countless imitators, which tend to *close off* any potential moment of ethical encounter behind "lifeless eyes." This violent foreclosure of an ethical encounter with the nonhuman Other occurs *precisely because* the animal is rendered by/into a representationalist epistemological discourse that prefigures *how we will relate to the shark*. In other words, how we will read the shark is *already assumed*, and so it is possible for it to be co-opted by an always already

in Chapter Four). For more on Barad's theorization of "intra-action," see *Meeting the Universe Halfway: Quantum Entanglement of Matter and Meaning*, as well as Chapter Four of this thesis.

compromised museum space that, as we have seen, operates within a number of other discourses that trouble the boundary between scientific epistemology and capitalist commodification.

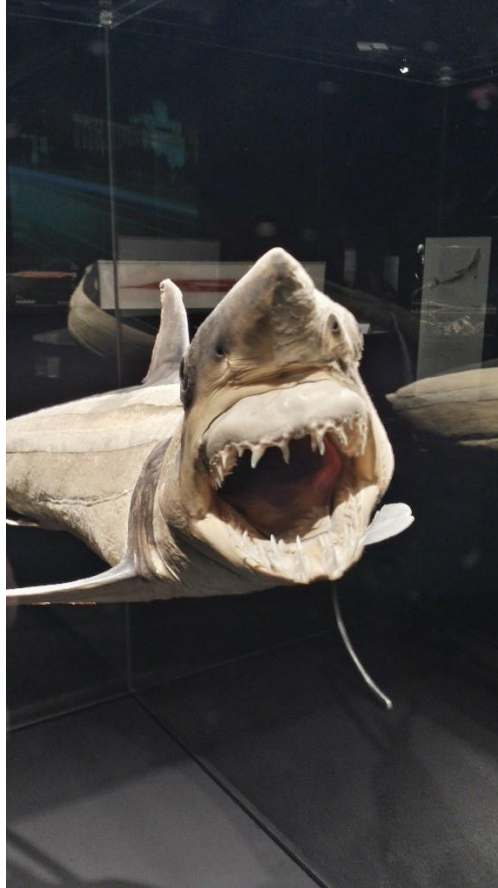


Figure 2-2 Plastinated Shark

From here it is useful to think more specifically about what Nicole Shukin, and by extension I, mean by “rendering.” Shukin understands the word to have a double meaning, entailing both “the mimetic act of making a copy, that is, reproducing or interpreting an object in linguistic, musical, filmic, or other media,” and “the industrial boiling down and recycling of animal remains” (20). Shukin’s project is expressly concerned with the *biopolitics* of animal capital (a term which has a tautological ring to it

in Shukin's ears¹⁸) and mimesis, in that "a biopolitical approach to mimesis suggests that textual logics of production can no longer be treated in isolation from economic logics of (capitalist) reproduction" (20). "Mimesis" is especially interesting to think about as a "modern logic" of capitalist rendering within the context of the *Animals Inside Out* exhibit, which operates via a scientific re-presentation of animals in "natural" poses. As Shukin argues, "the very idea of copying as an unmotivated, innocent faculty . . . becomes a fetishistic resource of capitalism," such that "mimesis constitutes the real workings of power, at least partially" (51). By this Shukin means that mimesis is coextensive with both the representational and material aspects of the double entendre of rendering, and that taken together these complex intersecting "logics" of modern capitalist economy constitute in part "complex, disassembling, and sorting practices biopolitically registering nature and labor as ever more minute units of potential value" that cannot "evade" capital (74). Mimesis and practices of rendering therefore subtend the biopolitical project of speciesism, one that according to Shukin quoting Cary Wolfe "underlines the economic and cultural power of a white European humanity over 'others of whatever sort'¹⁹" (75). Rendering as a material practice is only possible because of a system of power that systematically immunizes the human body against (nonhuman) Others. Any practice that engages in the kind of rendering discussed by Shukin would thus seem to specifically disallow an ethical encounter with the Other, as it is always already situated within systems of capital and biopower.

¹⁸ This is because both animal and capital "fetishistically repel recognition as shifting signifiers whose meaning and matter are historically contingent" (14). Both terms are slippery, despite being ostensibly clear, and are often taken together such that "market discourses . . . seek to effect a perfect mimicry of animal and capital" (15). In other words, the "ring of tautology" stems from the interimplication of these terms in market discourses, which seek to reduce both to seeming clarity while hiding their interimplication and the troubles this poses.

¹⁹ The quote is taken from Wolfe's *Zoontologies: The Question of the Animal* (2003), xx.

Cary Wolfe expounds on the notion of speciesism in biopolitical frames in *Before the Law*, in which he argues that “current practices of factory farming and the like”—into which category we might include the various practices of rendering discussed by Shukin and the problematic use of animal bodies in public-scientific discourses—“constitute not just some embarrassing sideline of modern life;” indeed, “such practices must be seen not just as political but as in fact *constitutively* political for biopolitics in its modern form,” in that “the practices of maximizing control over life and death” are on display in factory farms “as perhaps nowhere else in biopolitical theory,” leading Wolfe to conclude that “‘the animal’ is, today . . . the site of the very ur-form of that *dispositif*²⁰ and the face of its most unchecked, nightmarish effects” (46). That the animal body is rendered into these systems is not incidental to their power structures: they are indeed the very bedrock of these structures, and in fact allow for their continued cultural currency within a biopolitical and capitalist frame.²¹ Returning again to the example of the shark, we can see how its materiality has been subsumed into these discourses, such that the shark cannot “speak itself” outside of its representational figuring as monstrous. Its own materiality is in fact wielded against it by a biopolitical project that reinforces narratives of human domination over the always-already immunized-against Other. Roberto Esposito argues that this immunitary impulse is “the semiotic axis around which every social institution is constituted,” in that the “boundary between self and other” *defines* both self and Other (150). In bioart, we can thus say that it is precisely through the biopolitical and immunitary

²⁰ “*Dispositif*” comes from Foucault, and has been translated variously as “procedure” or “apparatus.” Foucault sees these apparatuses as “regulatory” mechanisms within a field of power over the ability of the subject to live and die, and includes among their number “medical, administrative, and so on” (*History* 144).

²¹ Relatedly, *Body Worlds* has faced accusations of racism in that it may have drawn some of its human bodies from Chinese prisons. This element of race is not incidental, especially given the interconnectedness between biopolitics and race for both Foucault and Wolfe.

logic of an absolute split between *zoe* and *bios*, a split that is reinforced through scientific epistemologies and finds its enactment within the practice of aesthetic rendering on display, that we can see the beginnings of an answer to the question of the relationship between science and aesthetics. The hauntological remains of the animal are circumscribed and rendered through a coextensive mixture of biopolitics, animal capital, and scientific aestheticization. We cannot speak of one without the other.

We must be wary, however, of believing that the animal body is *completely* subsumed within these systems. To understand how the animal body may exist *in excess* of even the complex interlocking structures discussed above, we need only look again at the boy's face in Figure 2-1. It is, of course, impossible to know what he is thinking, but it is possible to imagine that the sense of wonder playing out on his face is illustrative of precisely that part of the animal body's own material agency that breaks free, even despite much difficulty, of the systems of rendering and power that exert biopolitical control over it. A productive question may then be: Is it possible to imagine an aesthetic practice that foregrounds this excess? If we could imagine such a practice, we might say that it is not merely posthuman, but *posthuman(e)*.²² In the second part of this chapter, I will turn to the work of artist Damien Hirst, who frequently makes use of animal bodies, in order to excavate the radical potential (or lack thereof) for bioart to not only figure posthuman potential, but to also be humane in a posthuman sense (I will expand on what I mean by this as the chapter progresses).

Physical Impossibilities, Humane (Re)Presentations: Damien Hirst

Transgressive Potential

Death has not required us to keep a day free.

²² For this term I am indebted to a colleague of mine, Samuel Standridge, who generated it during a highly productive discussion of my thesis near the beginning of the project.

—Samuel Beckett

Damien Hirst, prominent (and controversial) British artist, quoted this statement while answering a question during a 2010 interview with *Euronews* about the importance of death in his work. He goes on to add that, “I was taught when I was younger to face things that you can’t avoid. I think death is one of the things you can’t avoid, so I think rather than not talk about it I think we need to face it, because it must be normal in some way.” One can sense this attempt to normalize death in most of Hirst’s artwork that includes animals, which typically feature bodies dipped in formaldehyde and displayed in relatively antiseptic museum spaces. Hirst’s work with animals—which includes *The Physical Impossibility of Death in the Mind of Someone Living*, *Golden Calf*, *The Tranquility of Solitude*, and *Mother and Child, Divided*, among others—is certainly transgressive, but also ironically reifies the human exceptionalism inherent in attitudes during the Anthropocene by reflecting the biopolitical and capitalist renderings common in taxidermy practices dating back to the early 18th century. In this way, his art follows as well some of the same trajectories as that of the plastinated animals at the Perot, the primary distinction being, of course, that unlike those works—from which we had to excavate some aesthetic quality despite layers of scientific and factual discourses—Hirst’s is *primarily* aesthetic, and only incidentally (if at all) instructive. It thus provides a useful counterpoint to the art discussed above, as it is easier to see the ways in which Hirst’s work operates as *bioart*, but also how it operates within the same kinds of biopolitical frames as that of the plastinated animals.

The complex intermingling of capital, animal rendering, and pop art in Hirst’s work is best exemplified by his most infamous, *The Physical Impossibility of Death in the Mind of Someone Living* (see Figure 2-3 on page 37), which features a Tiger shark in a

glass and steel box measuring 213x518x213 cm filled with 5% formaldehyde solution²³, and was commissioned for £50,000 by art collector and businessman Charles Saatchi in 1991, who later sold it to hedge fund billionaire Steven A. Cohen for \$8 million.²⁴ What is most surprising about this is not, perhaps, the relationship between corporatization and animal rendering, a relationship that was also evident in the *Body Worlds* exhibition discussed above: what *is* surprising is that work predicated on being transgressive and difficult is selling for \$8 million. This is a function of Hirst's status as one of Britain's most controversial and profitable artists, a status that can be traced back to Hirst's sometimes shocking transgressions: in the case of *Physical Impossibility*, Hirst is, by his own admission, putting death on display, confronting the audience with a dark vision of mortality. This is a feature of much of his work, including a 2006 installation, entitled "I am Become Death, Shatterer of Worlds," that features thousands of iridescent butterfly wings arranged in geometric shapes. While Hirst's work with butterflies often emphasizes the whole body, this work explicitly foregrounds an *idea* of the butterfly by leaving out "the disgusting hairy bodies in the middle" (Hirst *I Want to Spend*), literally framing the butterflies within a dual representationalist schema of artistic display and charismatic animal beauty.

²³ http://www.artchive.com/artchive/h/hirst/hirst_impossibility.jpg.html

²⁴ <http://www.nytimes.com/2006/10/01/arts/design/01voge.html?ex=1317355200&en=6fcefeb8359f9748&ei=5088&partner=rssnyt&emc=rss>

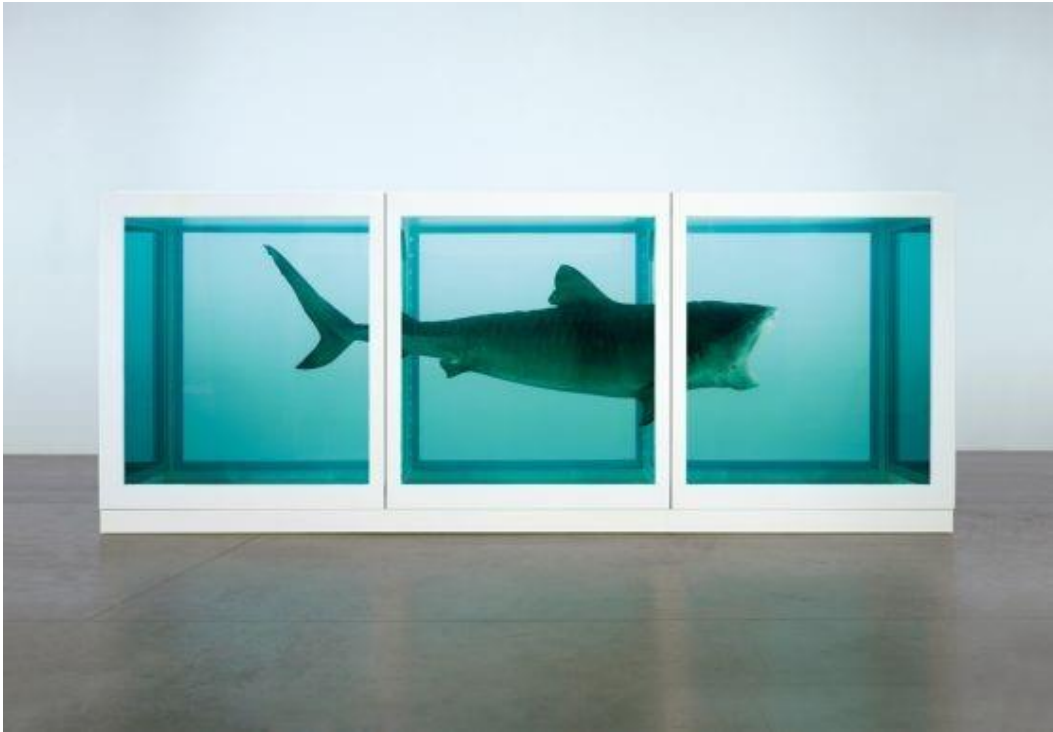


Figure 2-3 Damien Hirst, *The Physical Impossibility of Death in the Mind of Someone Living*

Crucially, within Hirst's work this is done through a willful *transgression* that aestheticizes animal corpses. Anthony Julius, despite his problematic argument against animal art,²⁵ offers a robust understanding of the appeal of an aesthetics that seeks to offend, arguing that the transgressive "challenges received ideas; it breaks up everything that is petrified, established; [and] it leads to new inventions and discoveries" (20). In this Julius follows Michel Foucault, who contends in "Preface to Transgression" that "[t]he limit and transgression depend on each other for whatever density of being they possess: a limit could not exist if it were absolutely uncrossable and, reciprocally, transgression would be pointless if it merely crossed a limit composed of illusions and shadows" (34). In

²⁵ See Chapter One.

order for Hirst's art to transgress boundaries, the boundaries themselves must be fluid; and in order for his transgressions to *matter*, they must push up against real established boundaries.

This dual nature of transgression points to the ways in which Hirst's artwork both *challenges* and *reifies* established species boundaries and biopolitical regimes that seek to immunize the population against any Other. That is, while *Physical Impossibility* certainly "violates certain beliefs and sentiments of its audience," as Julius contends when discussing his tripartite typology of transgressive art (Hirst's being of the "taboo-breaking" variety²⁶), it also *reifies* human mastery over animals and the ability of bioart, discussed in the previous chapter, to aestheticize both hidden renderings and representationalist narratives. In *Physical Impossibility*, the shark only matters insofar as it is transgressive for *any* animal corpse to be put on display; for Hirst, the focus of the installation is not the shark, but the *idea* of death, and human fears *about* death. That Hirst is breaking past these transgressions is potentially productive, in that forcing human viewers to encounter the body of the shark (or the butterfly) may offer new ways to think about the concept of death and dying; however, it is difficult to see whether his work could ultimately be *posthuman*, in the sense that I have discussed in this thesis, as his transgressions ultimately subtend even larger systems that see animals only as a raw material for human expression. In the next section, I will thus situate his work within the field of contemporary Anthropocene biopower by making reference to the work of Foucault and Wolfe, drawing on this analysis to conclude in the final section of this chapter that Hirst's work, though thought-provoking in many ways, pays little enough attention to the animal in itself that it is difficult to see posthuman potential.

²⁶ The other two types are "art that breaks art's own rules" and "a politically resistant art" (102).

Posthuman(e) Art

At the most basic level, posthumanism is about dissolving dualisms. This is the vision of posthumanism articulated by Donna Haraway in the “Cyborg Manifesto,” where she argues for “*pleasure* in the confusion of boundaries and for *responsibility* in their construction” (2270). The cyborg as a posthuman figure “skips the step of original unity” (2270), disallowing any return to an Edenic space by problematizing the boundaries between, for instance, human/animal, human/machine, and physical/non-physical. Haraway also reinforces the political dimensions of the cyborg, however, offering the tension between potential technological apocalypse (an important consideration given the time of her writing) and the collapsing of divisions between human/animal/machine as a productive site of political mobility. The cyborg as a mode of posthumanist thought paved the way for Cary Wolfe’s conceptualization of the posthuman, which is most clearly articulated in the introduction to his text *What is Posthumanism?*, in which he argues that “when we talk about posthumanism, we are not just talking about the thematics of decentering the human ... we are also talking about ... what thought has to become in the face of those challenges” (xvi). Here we can see that Haraway’s vision of a *cyborg politics* is followed in the genealogy of posthumanism by Wolfe’s attention to the *ways in which we think the world*. Specifically, in *Before the Law* (from which the remaining quotes are taken), Wolfe foregrounds *biopolitics and biopower* as means by which to articulate a posthuman awareness of the decentered human subject. Biopower, as defined by Foucault and quoted in Wolfe, “is the power to make live ... the power of regularization” (22). Biopower and biopolitics are thus concerned not with sovereignty over the life of the subject, but instead with control of entire populations: “the exercise of violence on the terrain of biopower is . . . an affair of power over and of life that is *regularized*, routinized, and banalized in the services of strategic, not symbolic, goals”

(27, emphasis added). The violence of biopolitics comes in part from the flattening, massifying effect of this kind of regularization, which has as its necessary foundation the delineation of the human as species. That is, the biopolitical at once *both* frames the human as a species set against “animalistic” others, *and* “masks and makes possible the more fundamental operations of modern politics ... by means of a machine that depends on ... the distinction between *bios* (or political ‘forms of life’) and *zoe* (or ‘bare life’),” that is to say, it both depends upon such distinctions and hides them from view (24). Significantly, then, the difference between human and animal—a difference of *species*—is the *bedrock* of the *zoe/bios* distinction and the frame of law that enacts violence by determining who possesses “rights,” a determination that is entirely political.

In this way we return to the political dimensions of posthumanism, which in Cary Wolfe’s framework constitutes a reevaluation of the ethics of engagement with nonhuman entities, and a reframing of the relationship between “agency” and “personhood.” Wolfe wants to move away from such easy distinctions, which lie at the heart of the divide between *zoe/bios*, human/animal, and human/other. This vision of posthumanism is consonant in some ways with Stacy Alaimo’s concept of *trans-corporeality*, which offers an ethical framework by which to engage with other entities without ascribing a dualistic relationship between “species.” Alaimo argues that “imagining human corporeality as trans-corporeality, in which the human is always intermeshed with the more-than-human world, underlines the extent to which the substance of the human is ultimately inseparable from ‘the environment’” (4). By reminding us of our always already extant interconnectedness with the environment, trans-corporeality as a paradigm for ethical engagement disallows the easy distinctions against which Wolfe sets his biopolitical project. Posthumanist thought thus sets as its aim not *only* a redefinition of the human, and not *only* a reconceptualization of biopower as an active agent in the construction of

political praxis: it also seeks to provide a methodology by which we might ethically engage with “the environment” when our concept of self is so radically, well, posthuman.

This formulation of the posthuman has significant bearing on how we “read” bioartistic practices, and specifically those that include animals. Consider Wolfe’s analysis of Eduardo Kac’s *GFP Bunny*. Wolfe’s typology schematizes “posthumanism” across two axes: the X axis represents “internal disciplinarity,” that is, the extent to which one’s own disciplinary practices are non-anthropocentric/non-dualistic, while the “Y” axis represents “external relations,” those methods by which theory engages with Others. Given this schema, we arrive at four (post)humanisms: Humanist Humanism, which is humanist in both its disciplinary approaches and its external relations; Humanist Posthumanism, which takes stock of the animal but does so from a continuously humanist disciplinary perspective; Posthumanist Humanism, which is posthuman in its disciplinarity but humanist in its focus; and, of course, Posthumanist Posthumanism (see Appendix B Cary Wolfe, “Fourfold Disciplinarity,” for a reproduction of Wolfe’s schema). According to Wolfe, Kac’s *GFP Bunny* is a “posthumanist posthumanism,” as his “theatricalization of visibility doesn’t evade the viewer’s ‘finitude’ and ‘humanness’ ... but rather underscores it, in the specifically posthumanist sense that the field of meaning and experiences is no longer thought to be exhausted by the self-reference of a particularly, even acutely, human visibility” (166). That is, Kac’s work decenters the kind of humanist vision that is typically privileged in artwork²⁷ by privileging the Other’s obliqueness, and our inability to “see” from its perspective.

²⁷ To show this, Wolfe compares Kac’s work to that of Sue Coe, who, Wolfe argues, privileges human visibility by aestheticizing animal suffering: “it relies on a subject from whom *nothing, in principle, is hidden*” (167).

I will return to this notion of an Other that remains un-seeable, but for the moment it is sufficient to say that Wolfe's argument, far from disclosing the un-disclosability of "posthumanist posthuman" bioart, instead divests the artwork of its material consequences; like Steve Baker, it would seem that Cary Wolfe seeks to look past the artist to analyze the forms of visualization present in the art while simultaneously rendering (somewhat paradoxically) the animal invisible. It is not simply that Kac's work opens up space to "think" posthumanly by emphasizing non-human visual imagination; we must also consider the place of the animal in this art, and that it is possible for an animal to be *harmed* in the process of creating a posthumanist posthuman bioartwork. While Wolfe offers numerous productive ways of re-mapping the conversation surrounding "posthumanism," the ultimate focus on "what thought has to become" ignores the material consequences of actions in the Anthropocene. Whatever thought might become, and whatever nonhuman visibility might be imagined, a *posthuman(e)* understanding of bioart cannot stop at the level of discursive or optic formulation. To imagine new ethical encounters in the Anthropocene, we must renegotiate the imperative to rethink visibility and thought.

This requires some further clarification. To return to the major examples of this chapter, it would be relatively straightforward to suggest, however provisionally, that *The Physical Impossibility of Death in the Mind of Someone Living* is meant to reflect not only on the human, but also on the animal: not only is death and finitude difficult for the human to consider, but it is difficult to imagine how an animal might conceive of death. By placing the shark in this context, by aestheticizing it, we can imagine a response to the work that foregrounds the radical potential in encountering death through an intelligence so utterly other that it is impossible (like death) to completely conceptualize, and yet must (like death) be faced. To "face" the Other through the prism of a hauntological death is

precisely the kind of posthumanist posthumanism that Wolfe discusses. And yet, I am given pause by the material conditions of the work. To begin with, the method by which the shark was obtained is murky at best, with some sources suggesting that it was caught specifically for the work.²⁸ This would not be a foreign concept to Hirst: in 2012, he drew the ire of animal rights activists for *In and Out of Love*, an exhibit that resulted in the deaths of over 9000 butterflies (Nikkhah). Butterflies, of course, are of a slightly different order than sharks; however, while I cannot bring myself to feel moral outrage over their deaths, it is certainly troubling when animals are used as mere allegories, or as the mere “stuff” of art. To consider animals as just another medium of art seems cruel, and not for merely “moral” reasons: there is a real danger that by objectifying the animal—and I mean this in the literal sense, of rendering animals into objects for display in the always already contestable zone of the museum—artists such as Damien Hirst are nullifying the potential for an ethical encounter with the absolute Other. The overdetermined flesh of the animal on display runs the risk in these environments of turning into allegory, of becoming an easily unpacked narrative, of falling, in other words, into our own representationalist schemas.

I do not mean to suggest here that it is impossible for Hirst’s work to operate in the “posthumanist posthuman” sense discussed above. What I *am* suggesting is that it is not enough for bioart to operate on distinct planes of post-human visualities: it must also be (somewhat paradoxically) *humane*. “Humane,” of course, generally means treating other subjects as *human*, that is, as *worthy of consideration*. I want to suggest, however, an understanding of humane that does not carry this anthropocentric weight. Cary Wolfe

²⁸ See for instance Kerrie Davis, “The Great White Art Hunter”: <http://www.theaustralian.com.au/news/features/the-great-white-art-hunter/story-e6frg8h6-1226324791182>

discusses the problems with marking “personhood” as the determinant factor in assigning rights, likening it to a biopolitical frame that not only renders the animal into “bare life,” Agamben’s term, but also *depends upon* “the common subjection and management of both human and animal bodies” (45); this Darwinist distinction, this definition of the animal as *not-person* and the person as *not-animal*, “becomes the access point, as it were, to life’s management and protection” (39). To avoid this, that is, to work *against* such frames of power and speciesism, we must reorient humane-ness to mean not just treating all things like humans, such that we reinforce the notion that only humans are worthy of care and consideration; we must think instead of humane-ness as meaning non-mechanistic feeling and non-representationalist thinking within a non-anthropocentric frame that is centered on materiality. To be humane in this sense would thus simultaneously mean to be posthumanist posthuman: hence, “posthuman(e).” This is a *humane beyond the human*, that is, a productive ethical encounter that *considers the animal too*. “Posthuman(e) ethics” is a posthumanism that focuses not only on “visuality” or “ideas” but also on *materiality*, as a way of escaping damaging biopolitical frames. Traci Warkentin, in “Dis/integrating Animals: Ethical Dimensions of the Genetic Engineering of Animals for Human Consumption,” argues that animal rights ethics paradigms—including and especially that of Peter Singer—have been used to foreclose ethical considerations of encounter with biotechnologically or scientifically mediated animals, in that with current technology, animals can be manipulated without causing “suffering.” Warkentin contends that suffering, however, is too simple a paradigm to use when assessing the rendering of animals in aesthetic/scientific practices; indeed, she insists that:

If we continue along the biotechnological path without questioning its ideological basis, we risk much more than becoming actual cyborgs, we

risk manifesting our mechanomorphism via mechanomorphosis. That is, we gamble with becoming machines ourselves, in the most reductionist sense, inheriting only the mechanistic part of our cyborg heritage and leaving all traces of humanness behind. With the loss of embodied sensibility, of our modes of social relatedness, we run the risk of eliminating our ability to ponder metaphysics, to question our own actions and fundamental beliefs, and with it the desire or need for ethics at all. In due course, we need to resist our conversion into insensate automatons and imagine what is at stake. (101)

This is, of course, the very antithesis of a posthumanist cyborgian position, and the danger of this occurring—in our art or in our science—necessitates a move past the posthuman, to the posthuman(e).

Ultimately, then, we must ask: What does it mean for the aesthetic to circumscribe the animal in Damien Hirst's work? Can his work operate in a posthuman(e) space? And what particular issues does his work transgress? To answer these questions, we must place his work, as well as that of the plastinated animals at the Perot, within a broader material-discursive context: that of the Anthropocene.

Anthropocene Art

Life itself is re-shaped in the service of our art, which means art has never had more at stake.

—David Biello, "The Art of Life in the Anthropocene"

The Anthropocene, as discussed in the Introduction, is a contemporary geochronological marker that signifies the incredible impact humanity has had on the Earth as a planetary system. As such, it is a productive lens through which to view contemporary bioartistic practices, such as those that involve to one degree or another human "mastery" over the flesh of animals; moreover, as a methodological framework, it

offers a larger-scale view of the biopolitical frames discussed in the previous sections of this chapter, in that we can now ask: What is the potential for art to be generative of strategies for contending with large-scale human impact on the environment, nature, etc? This question is fundamental to the project of this thesis: as David Biello points out, “art has never had more at stake” precisely because it may in fact be art itself that will, in the words of Eleanor Hartney, “provide a new beginning for all the partners in the health of the planet.” Despite this optimistic reading of artistic potential, we must still consider what it means to be “posthuman(e)” in the Anthropocene, which encompasses such a complicated field of interactions that there is little to no consensus on how to proceed.

Part of the problem with formulating a way “out” of the Anthropocene is that it can be read as something of a closed system: as Ben Dibley argues in “The Shape of Things to Come: Seven Theses on the Anthropocene and Attachment,” “[t]he Anthropocene is an ambivalent formulation” that “at once announces a new epoch and a new geological agent which would make any distinction between nature and society untenable” and “retains nostalgia for that very distinction” (142). Indeed, he contends, “responses to this situation seem to proceed not only as if the distinction between Society and Nature persists, but as if it is this division that must be preserved if calamity is to be averted,” a position that neglects the sobering fact entailed by Anthropocene considerations: that “Nature has ended, Man is dead,” and “the opposition which would define the human against the natural world is redundant in a context in which the human is now irrevocably folded into the Earth’s systems” (143). Dibley identifies “nostalgia” within the Anthropocene as being a longing by political actors for a “distinction between the social and natural worlds” that, the Anthropocene shows us, is always already untenable. From this nostalgia we get arguments such as those by Sarah Moore and Paul A. Robbins, who contend in “Ecological Anxiety Disorder” that rewilding projects—which seek to

repopulate “natural” spaces with indigenous species—are productive because they offer a political means by which to move forward; what they do not recognize is that such projects implicitly foreground an untenable separation between human and nature, and thus operate within the frame of an unproductive nostalgia that ironically gestures toward not the past, but an impossible future.

This nostalgia for a future that will never be has some resonances with the discussion of hauntology at the beginning of this chapter, and points toward the ways in which bioart—as an aesthetic practice taking place in the Anthropocene—can speak to the fears and politics of its epoch. Charles Beckett reminds us that “hauntology is another form of nostalgia, a nostalgia for ideas of the future that have been rendered obsolete by the march of time and the quote-unquote ‘End of History,’” and although he is primarily concerned with technology and music, his point that “our ideas of the future . . . tell us something about the way our imaginations work, and about what we really mean when we say ‘the future’ or ‘futuristic’” has significant bearing on how we conceptualize the place of animal art in the Anthropocene. The hauntological rupturing that occurs at the site of animal bodies on display—that part of the animal that may not be overdetermined by the rendering of its flesh into capitalist and biopolitical systems—speaks to the rupturing of these systems themselves: that is, such a hauntology may in fact *gesture towards* the constructedness of a nostalgia for the rendered animal Other as a comforting presence in the mixed sphere of the Anthropocene. Accomplishing such a move, however, is difficult: where can the line between such a gesture and the killing of actual animals be drawn? Is pointing out the constructed nostalgia of the Anthropocene a good in itself, or merely another presentation of the very paradigms of human mastery that such nostalgia foregrounds?

To answer these questions, let us return to Foucault's formulation of biopower, which offers a rubric by which to understand the "mastery of the Earth" entailed in Anthropocene theories. Significantly, biopower is tied for Foucault to what Giorgio Agamben calls "bare life," i.e., that category of the living which is not afforded the status of personhood and is thus denied fundamental rights. Specifically for Foucault, Darwinian evolutionary theory "became within a few years during the nineteenth century not simply a way of dressing up a political discourse in scientific clothing, but a real way of thinking about the relation between colonization, the necessity for wars, criminality . . . and so on" (257), meaning that the justification for colonization, wars, and the like *derived from* notions of evolutionary biology, and thus from notions of evolutionary *superiority*, in that "the death of others makes one biologically stronger," which "justifies the death-function in the economy of biopower" (258). The centrality of these species divisions and their foundational place within contemporary regimes of biopower speak to the potentially harmful effects of plastinated camels and taxidermied sharks, which demonstrates human power to "make live and let die" the bare life (or *zoe*) of deferred animal bodies. In short, it is only with great effort that we can see the animal itself peeking out through the abstract formulations of power that dictate its artistic enfleshment.

In conclusion, that bioart raises such issues is indicative of the central position it holds in the Anthropocene, and yet we cannot let it off the hook, as it were. The work presented in this chapter does not fall into *either* the pure productivity we might presume of something "posthuman(e)," *or* the purely problematic domain of overdetermined biopolitical flesh in the Anthropocene. While we cannot endorse such work on a theoretical level, we can begin to see ways in which it points toward a posthuman(e) ethics, as the animal, via its material signification, still haunts the artistic display. In this chapter, I have examined the ways that science and art conspire to feed into the many

systems of power and representationalist economies a rendered animal body, which is almost (but not quite) voided of its own signification. And yet, the boy's face from Figure 2-1 disallows an easy demarcation of the work presented in this chapter, and if we are in fact to develop a posthuman(e) ethics for that encounter, we must take stock of the hauntological Anthropocene futures spoken against, however softly, by the flesh of the animals themselves. In the following chapter, I will extend this discussion in a different direction, toward biotechnology and its use in bioart, in an effort to deepen our understanding of what life can be in the Anthropocene, and where we can go from here if we wish to ever answer in the positive to the question in the title of this chapter: Can bioart be posthuman(e)?

Chapter 3

The Synthetic Kingdom: Art at the Edge of Life

As portions of the tree of life dissolve, we are left with floating, mobile elements of a molecular biopolitics, fragments for a rewritable book of life.

—Stefan Helmreich, *Alien Ocean: Anthropological Voyages in Microbial Seas*

In 1996, Oron Catts and Ionat Zurr—artists, designers, and biologists—came together to form the Tissue Culture and Art Project (TC&A), a research collective interested in “exploring the manipulation of living tissues as a medium for artistic expression” via the creation of *semi-livings*, “a new class of object/being in the continuum of life” that are “constructed of living and non-living materials” and are “located at the fuzzy border between the living/nonliving, grown/constructed, born/manufactured, and object/subject” (Catts and Zurr, *Semi-Living* 232). Catts and Zurr explicitly foreground the “newness” of these creations, attending to what Alexandra Daisy Ginsberg has called more recently “the synthetic kingdom” after the development of new methods for building life from scratch following remarkable contemporary advances in synthetic biology and genetic engineering. These processes offer both scientists and artists the opportunity to synthesize biological matter in the laboratory, raising questions of ethics, biosafety, and commercialization, among many others. Similarly, questions abound concerning the animacy and liveliness of these creations. Is a semi-living “alive” in any important sense? What does adding the Synthetic Kingdom to the classification of all life do to that other life? As Stefan Helmreich notes, the tree of life is itself dissolving as we reconsider not only synthetic life, but also the deep complexity and interconnectedness of phylogenetic matter (indeed, following Helmreich, even adding another branch to the tree is too conservative). Attendant such work is therefore the very real question of what life has become in the Anthropocene epoch.

TC&A began by creating “semi-living sculptures,” in which a biomaterial chassis supports the growth of bacterial and tissue cultures over recognizable objects, such as bombs, cogwheels, spears, etc. While intriguing, by the artists’ own admission such work does not deal directly with the epistemological and ontological questions raised by the use of biological materials in art, a concern most clearly addressed in the *Pig Wings* project. According to the artists, “In the *Pig Wings* project we differentiated bone marrow stem cells to grow pig bone tissue in the shape of the three solutions [chiropteran, bird, and pterosaur] for flight in vertebrates” (Catts and Zurr “Semi-Living” 239), after which they engaged audiences in “The Killing Ritual.” As the lab-grown meat required constant monitoring in order to “survive,” Catts and Zurr determined that it would eventually have to be “killed;” rather than hide this process in a lab, they “[take] the semi-living sculptures out of their containment and [let] the audience touch (and be touched by) the sculptures” (ibid 239). According to the artists, The Killing Ritual “enhances the idea of the temporality of living art and the responsibility which lies on us . . . to decide upon their fate” (ibid 239), a statement that echoes Cary Wolfe’s argument for a posthuman ethics of responsible (but conditional) inclusion: “Hospitality, to *be* hospitality, to be real, must be something ‘determinate’ and ‘conditioned” (*Before* 103). Catts and Zurr have made a decision regarding the degree of hospitality afforded semi-livings by “killing” the pig wings, but have also brought this consideration to the surface by inviting audience participation in the ritual.

The emphasis on the “touch” between audience and sculpture—a touch that moves in two directions—also recalls Donna Haraway’s ethical framework of companion species, with its emphasis on interdependence, play, and commensurate respect at the contact zone, a point of “mortal world-making entanglements” between and among

species (*When Species Meet*). In addition, the emphasis in synthetic biology on microbial matter echoes her discussion of the many species who share our own bodies:

I love the fact that human genomes can be found in only about 10 percent of all the cells that occupy the mundane space I call my body; the other 90 percent of the cells are filled with the genomes of bacteria, fungi, protists, and such, some of which play in a symphony necessary to my being alive at all, and some of which are hitching a ride and doing the rest of me, of us, no harm. I am vastly outnumbered by my tiny companions; better put, I become an adult human being in company with these tiny messmates. To be one is always to *become with* many. (*When Species Meet*)

Haraway's posthuman²⁹ ethical frame is based on a move of mutual respect (*respecere*) in which we take stock of the importance of many others in our own mutual co-becoming. Similarly, *The Killing Ritual*, as ritual, is a solemn ceremony, literally funereal (the pig wings are stored in coffin-shaped boxes), for a lump of only technically living synthetic meat. And yet, as ridiculous as this may appear on its face, what *Pig Wings* and *The Killing Ritual* also demonstrate is the seriousness with which many bioartists take the tensions and challenges of Anthropocene technologies, which in the case of synthetic biology provide humans more power than ever to both create and manage the very concept of life itself.

Richard Twine elaborates on the central paradox of a posthuman genomic bioethics, arguing that although "transgenic technologies . . . bring into relief the porosity of previously cherished species boundaries" (31), biotechnology is also "perhaps one of

²⁹ Haraway might contest my labeling of her frame as posthuman, as she problematizes the use of this word in contemporary academic writing.

the most ambitious attempts yet to extend the human domination of nature” (43). While Twine is quick to point out that “so-called mastery may be benign, or indeed beneficial, and new scientific understanding need not be pernicious,” he is nonetheless clear that “there is a responsibility here for bioethicists to be more attentive to the power of science and medicine . . . [through] closer ties with both historical perspectives and ethical approaches that are counter to anthropocentrism” (43). The focus on responsibility puts him in good company with Haraway and Wolfe, and returns again to the question of *The Killing Ritual*, which foregrounds this responsibility and the many possibilities that follow from it. Despite this, however, serious questions remain about the extent to which such art reinforces uncritical human mastery and subjugation over not only “the environment,” but also the stuff of life itself. In the Anthropocene, such mastery cannot be taken lightly, and nor can the changes it suggests to the tree of life, which seems to be simultaneously dissolving and growing new limbs.

In this chapter, I will examine some of the effects of synthetic biology on how we conceive of life in the Anthropocene. I will begin by analyzing the science of synthetic biology and how specific biological processes and engineering mindsets contribute to a problematic assumption of human exceptionalism that is carried out, for instance, in some of the work of Eduardo Kac. I will then examine in-depth the posthuman bioethics of genetic engineering, and the fascinating intersection of science, art, and activism in the work of bioartists BCL. Finally, I will discuss the implications of such artworks on what it means to “save nature” in the Anthropocene, ultimately arguing that some bioart enacts a complex reworking of time and geography that opens the way for a posthuman(e) and ethical encounter.

Science of the Synthetic Kingdom

What is the “synthetic” in synthetic biology? What scientific principles guide the “creation” of life in a lab? What are the primary scientific reasons for investigating synthetic life? Answering these questions is absolutely vital if we wish to develop either a complex understanding of the cultural significance of contemporary lab-born life or a relevant bioethical/posthumanist response to these practices in bioart. To that end, in the following section I will sketch out a summary of some relevant scientific principles in the field of synthetic biology and analyze the cultural capital of these works. I will conclude this section by discussing in-depth how these processes are used by Eduardo Kac in his most famous bioartwork, *GFP Bunny*.

There are, in essence, two approaches to synthetic biology: “top-down” and “bottom-up.” The top-down approach “starts with existing life forms . . . and modifies them to create new and typically less complex life forms” (Rasmussen et al 665) while the bottom-up approach “involves fabrication of cellular compartments by self-assembly, using basic materials to build simple models of living systems” (656). The semi-living artwork created by Catts and Zurr uses the bottom-up approach, as it “deals with constructing artificial support systems (with the use of biomaterials) to direct and control the three-dimensional growth of tissue parts” (“Semi-Living Art” 233). The emphasis on “systems” by Catts and Zurr is significant, as “how information flows in biological systems and how this information flow is controlled” are two of the key aspects of understanding the operations of synthetic biology (Freemont and Kitney 1). Crucially, such systems are not predictable, with “interactions between molecules that occur in the complex milieu of the cell” making it difficult to dictate exactly how any synthetically designed biological matter will “evolve.” That being said, there are some key biological processes that dictate how both scientists and artists go about their work. These processes impact the cultural

capital of the synthetic kingdom and, I will argue, provide a framework for analysis based on the posthuman potential of work by artists such as Eduardo Kac.

Before I discuss these, however, a brief discussion of the history of synthetic biology and other forms of minimal life may be useful. Alistair Elfick and Drew Endy argue that synthetic biology is fundamentally no different from the adoption of tools by early hominids, meaning that the manipulation of biological materials is essentially wired into our DNA as a species. This idea is reflected by, for instance, the work of Moritz Traube in 1867, who “described a system that demonstrated the formation and growth of semipermeable membranes composed of copper ferrocyanide surrounding a seed crystal of copper sulfate,” which, while not technically synthetic *biology*, “superficially resembled a cell membrane in that it exhibited selective permeability to different solutes and responded to osmotic pressure” (Hanczyc 3). In this instance, biology as metaphor effected what amounts to a performative linguistic act by leading the design itself; this in turn shows the powerful effect that biology has on design principles even when they do not involve synthetics, as well as the extensive history of a deep preoccupation with creating life. In his article, Martin Hanczyc notes several later attempts to mimic or otherwise learn from biological processes, including Herrerra’s sulphobes, Bungenberg de Jong’s coacervates, and Crile’s autotrophic cells.

It was not until the discovery of the underlying structure of DNA by James Watson and Francis Crick in 1953, and the subsequent discovery of the “central dogma” of molecular biology in 1970,³⁰ that imagining an actually synthetic biology became possible. Following these discoveries, in 1978 the Nobel Prize in Physiology and Medicine was awarded to Werner Arber, Daniel Nathans, and Hamilton O. Smith “for the

³⁰ The central dogma states that “DNA is transcribed to RNA which is translated into proteins” (*Synthetic Biology* 162). I will discuss this process in more detail in a moment.

discovery of restriction enzymes and their application to problems of molecular genetics."³¹ Writing in the journal *Gene* the same year, Waclaw Szybalski and Ann Skalka argue that "the work on restriction nucleases not only permits us to easily construct recombinant DNA molecules and to analyze individual genes but also has led us into the new era of 'synthetic biology' where not only existing genes are described and analyzed but also new gene arrangements can be constructed and evaluated" (181-182). Although "the power of restriction enzymes could not be harnessed much beyond the serendipitous" (Elfick and Endy 19) in this early stage, scientists were nonetheless able to take the first tentative steps within the newly-minted field of synthetic biology.

As we move forward, Elfick and Endy argue that the line between nonliving and living is becoming increasingly blurred with respect to the objects used to make the stuff of the world, a fact that they illustrate via the "tree of materials" (as opposed to the tree of life). The authors posit this dissolution as one effect of the "hybridization of the tree of materials with a new branch in the tree of life," that of synthetic biology, an analogy that explicitly recalls Alexandra Daisy Ginsberg's *Synthetic Kingdom*. Interestingly, Ginsberg proposed several different potential visualizations for the synthetic kingdom after speaking with experts, which indicate different relationships between the existing tree and synthetically designed materials. These visualizations include "the kingdom as spaghetti network, a 'floating' kingdom, small weeds on the existing branches, and a more 'realistically sized' kingdom" that is smaller than the others (Ginsberg "Design" 57). All three artists see the synthetic as being a new kind of design that necessarily evolved out of the old, and will continue evolving as new techniques are discovered and the line between living and non-living continues to blur.

³¹ http://www.nobelprize.org/nobel_prizes/medicine/laureates/1978/

However, Ginsberg also argues that as a *material* for manipulation by scientists and artists, synthetic biology follows “modernist” design principles, which “eschewed diversity, individuality, context, and bottom-up self-organization, prioritizing the architect’s top-down control” (57), a claim that significantly problematizes the optimism seemingly implied by the complex but productive mixing of materials and kingdoms as visualized by the artists. According to Ginsberg, the porting of such design principles onto synthetic biology is problematic precisely because both biologists and engineers “conceptualize design as separate from environmental or social context and arguably the diversity and complexity of reality” (57). The relationship between engineering and biological principles is explicit in synthetic biology, with one major introductory text arguing that “the engineering principles of modularity, characterization, and standardization”—which “reduce a device or system to a number of component parts” that are “characterized in detail”—allow for a systematic process in which “a device does not need to be produced from scratch every time, but, rather, it can be created from existing standard parts” (Baldwin et al 19). The authors call this the Parts, Devices, and Systems approach to synthetic biology, and it bears further scrutiny.

This three-tiered approach is defined by a mechanistic mindset that necessarily hierarchicalizes the components of synthetic biological material based on complexity. “Parts” refers to “a piece of DNA which encodes a biological function,” a device is “a collection of parts that perform a higher order function, usually human-defined,” and a system is “a collection of devices that lead to a desired (usually useful) behavior” (169). So for instance, most synthetic biology of the bottom-up variety builds off of DNA synthesized using a polymerase chain reaction (PCR) that creates exponential copies of a particular DNA sequence. These individual cloned DNA strands are the *parts* on which larger *devices* are built, using the transcription process known as “the central dogma” of

molecular biology. The dogma concerns the flow of information in biological systems, and states that DNA nucleotides are transcribed into RNA, a messenger molecule, before being translated into a protein; crucially, “most genes are a stretch of DNA that codes for protein,” making this an essential process for synthetic biology (6). Biologists intervene into these processes, their aim being “to predictively design and build new biological systems that, for example, programme a phenotypic response or produce a chemical compound” (12), with their control taking place primarily at the site of “transcription of DNA into mRNA” (13), the transcription device that acts as the intermediary between DNA and RNA in the first step of the central dogma. What is crucial to understand about this process is, again, the relationship it implies between biological systems and an “engineering” mindset that is more or less utilitarian in its approach; that is, when the focus is on how parts, devices, and system can be “useful” after human-directed genetic intervention, this raises questions about the ethicality of synthetic bioart, or more accurately whether the ethical is *evacuated* from the biological via a mechanistic mindset.

Synthetic biology, even given the enormous advances in recent years, still requires a preexisting biological chassis in which to grow or change internal genetics, although there have been some strides toward creating “a living cell containing a genome entirely produced from custom-synthesized DNA,” as researchers at the J. Craig Venter Institute did; such synthetic life “is attractive for engineering biology as researchers will have far greater control and understanding of their chassis cell if they have built it up from first principles” (58). Of course, “the synthetic genome only thrived because it was put inside an existing cell, which became a crucially important part of the new ‘synthetic cell’” (Calvert 261), meaning that this is still not an example of purely synthetic life. While for this reason both scientists and artists risk overstating the transgressive potential of synthetic biology, it is nonetheless clear that the advanced knowledge of how genomes

and DNA operate can potentially lead to a new “synthetic kingdom,” even if it is not quite grown from scratch off the tree of life.

One area of research that shows great promise involves the *protocell*, which according to biochemist Sheref Mansy, as paraphrased by Jane Calvert, needs “a high degree of creativity” and requires “exposure to different perspectives, such as design and art” (261). Protocells operate at the uneasy intersection between living and nonliving matter, being a kind of synthetic biology that seems to hold the key for future developments in the generation of minimal life. According to the editors of *Protocells: Bridging Living and Nonliving Matter*, a protocell evidences three functional components: “a *metabolism* that extracts usable energy and resources from the environment, *genes* that chemically realize informational control of living functionalities, and a *container* that keeps them all together” (xiii), and are the ideal compromise between the top-down and bottom-up approaches to synthetic biology. Unlike “the products of traditional engineering,” protocells “rely . . . on the process of self-assembly,” with “the requisite materials . . . brought together under the appropriate laboratory conditions and the protocells spontaneously form[ing]” (xvi). This point is the most important one to understand about protocells: in offering an alternative to the engineering mindset, they also prove the limitations of synthetic biology as it is typically conceived.

Oron Catts and Ionat Zurr speak to this problematic relationship in “Countering the Engineering Mindset,” an essay produced from a collection I have already quoted extensively called *Synthetic Aesthetics: Investigating Synthetic Biology's Designs on Nature*. This collection is the result of a collaboration between scientists and artists that resulted in a number of fascinating design projects. Catts and Zurr speak to why such collaboration is so integral in their essay, arguing that as “life is becoming raw material for artists, designers, hobbyists, and amateurs,” we need to be careful that the engineering

mindset does not lead us to assume that scientific process will “yield full control over life and will do so with unmatched ease” (29). While they do not advocate a reactionary anti-scientific position (i.e., “Synthetic biology is too mechanistic and must be ended”), they also assert that a purely mechanistic mindset will not be useful for encountering the many ethical questions raised by the scientific process of synthetic biology. As a case in point, they offer their own work, such as *Tissue Engineered Steak*, which they argue ironizes the “industrial-scale application of engineering logic onto animals in order to maximize production” that we see in factory farming. By moving synthetic biology out of the lab and into the gallery, as it were, they raise questions of capital, rendering, and of course how we might define “organic” anything.

Beyond the relationship between engineering and art, however, what the scientific processes of synthetic biology reveal to us is the inextricable (and not *altogether* problematic) relationship between science and humanism. Recall that synthetically designed cells are ultimately deemed successful or not in the lab by how they fulfill the scripts written by humans. A significant and troubling question from this arises: Is the *very creation* of synthetic biology in the lab as part of a utilitarian project to a certain human-defined end an always already compromised action in the Anthropocene? Problematizing this question somewhat is the additional fact that, even given all of the processes above, animate matter is still not fully manipulable in the lab: surprising developments and evolutions still occur all the time. This is, of course, not altogether unexpected by the scientists working with these materials, but it does point to the ways in which life itself, as metaphor or otherwise, bleeds out around the edges of scientific humanism.

Indeed, while discoveries such as the genome or even DNA may seem to be only scientific in nature, countless cultural critics and scholars have pointed to the ways in which such discoveries quickly (and not without the complicity of scientists) become

culturally overdetermined. As bioartist Suzanne Anker and sociologist Dorothy Nelkin argue, genes *in themselves* have “become a window on human nature, a cultural narrative, a science with social and figural significance” (1). That is, genes have come to not just represent life, but *re-present* it: genes are a point on a metonymic slide of animacy, occupying the spaces of “essential-to-life” and “life-in-itself” simultaneously. This metonymy of re-presentation is not innocent in its construction: as Nelkin and Anker point out, it is culturally and scientifically contingent, bound to constructed narratives of significance and, more importantly, spatial embodiment—a point taken up by Stacy Alaimo when she points to the discourse surrounding genetic agency within the context of people with multiple chemical sensitivity (MCS). Alaimo argues that “labeling chemically reactive people as genetically defective places the onus on bad genes, instead of on injurious chemical, industrial, military, and governmental practices” (127), showcasing a clear example of the negative possibilities attendant the “genetic reductionism” discussed above.

Such reductionism is possible in synthetic biology when scientists operate under an “engineering mindset” that, to borrow from Catts and Zurr, sees biological matter as simple raw material, dissociated from environmental or political contexts. A posthuman mindset would follow Stacy Alaimo’s call for “scientific studies that disclose gene-environment interactions” via a *trans-corporeal* mattering “in which the agencies of the body always interact with the substances and agencies of particular places” (128). Stefan Helmreich makes a similar point about the dissolution of the tree of life when he states that “genetic information may not be so easily extractable from the substance in which it is expressed,” and that recent scientific advancements (such as, for instance, “the

coming into legibility of lateral gene transfer”³²) showcase “how genes are enmeshed in a swarm of material relations” (85). Helmreich argues that the focus on the flow of information in genetic engineering—what is called the “central dogma,” and which provides the foundation of the engineering mindset in synthetic biology—“has been a productive concept not because it is so exact but because its multiple meanings have reconstituted the space within which scientists break down their objects and build up their questions, within which they see the material world” (95). This *cultural* context is evidenced precisely through the discourse of “systems” and “parts” that govern the actual processes of the creation of minimal life in synthetic biology, and the profoundly *non-trans-corporeal* efforts toward the creation of this life in the lab is one example of how problematic these processes can be.

This is not only evidenced in “science” of course, and with many bioartists working in the same streams of thought we must consider how effectively or even whether such artists call attention to the complex cultural capital of the “gene.” Take, for instance, Iñigo Manglano-Ovalle’s *Jim, Calvin, and Lisa* (1998), in which the artist purports to create “a post-racial view of identity by suggesting that the real identity of people lies not in skin color but in the invisible code beneath the skin—that is, in their DNA” (33)—a feat he accomplishes by constructing “DNA portraits” of family, friends, and strangers in which bands of DNA are mapped in comparison to one another. Here observed differences in *genetic sequences* come to re-present differences between individuals, rather than physical appearance, socioeconomic class, gender, sexuality, etc.

³² Lateral gene transfer is a horizontal, rather than vertical (i.e., strictly hereditary) movement of genetic information. An example of this would be *Elysia chlorotica*, a sea slug that “incorporates chloroplasts from the algae that it ingests” (“Horizontal Gene Transfer”). Helmreich argues that such transfers significantly complicate the standard model of the tree of life, which is based almost entirely on vertical transfer.

These bands of DNA also have a disorienting effect, signifying similarity and difference simultaneously: unless one knows how to read such sequences, the effect is one of slight difference only in the placement of particular bands. More importantly, the audience loses any sense of the embodied reality of Jim, Calvin, and Lisa themselves, so that identity is at once abstracted down to the level of superficial genetic difference, and metonymically extended to encompass an entire conception of life. By suggesting that these genetic differences are the final markers of identity, *Jim, Calvin, and Lisa* elides the effects of environmental or material factors on the participants *and* the audience.

Given this context, what do we make of more ambitious bioartworks, such as the previously discussed work of Catts and Zurr, the transgenic species of Eduardo Kac, or the cloned flowers of BCL? At what point does offering a genetically engineered living organism up as art move into animal cruelty? (*Does it move into animal cruelty?*) What, in other words, are the posthuman(e) ethics of interaction with synthetic biology on the level of larger-order organisms, plants, and genomes? To address these concerns, let us now turn to bioethics and the Anthropocene.

Bioethics and the Anthropocene

Eduardo Kac and Alba

Aside from perhaps Oron Catts and Ionat Zurr, there is no more influential bioartist alive today than Eduardo Kac. I have already discussed his most famous work, *GFP Bunny*, from the direction of animal studies and posthuman(e)ity, but it will benefit us to consider it from the direction of science studies and the Anthropocene, as well. Kac was one of the initial pioneers of transgenic bioart—a category George Gessert defines as involving “organisms modified through genetic engineering” (191)—and sees the field as having “particular social ramifications, crossing several disciplines and providing material for further reflection and change,” given the fact that in such art “the animate and

the technological can no longer be distinguished” (“Life Transformation” 163). In this way, Kac’s vision of the productive potential of transgenic bioart mirrors the same potential in Haraway’s conception of the cyborg, which, as discussed in Chapter Two, problematizes the boundaries between human/animal, human/machine, and physical/non-physical, among others. According to Haraway, the cyborg myth “is about transgressed boundaries, potent fusions, and dangerous possibilities” (2274), and indeed the figure of the cyborg seeks to undo the dualisms that “have all been systemic to the logics and practices of domination of women, people of color, nature, workers, animals—in short, domination of all constituted as *others*” (2296). By figuring transgenic bioart as similarly transgressive of the underlying (and in some case, biopolitically framed) dualisms of contemporary society, Kac offers Alba the GFP Bunny as a cyborg for the modern epoch.

The comparison becomes more apt when one considers Haraway’s emphasis on polyvocalic and diglossic language as an element of cyborgian transgression: Kac, after all, emphasizes that *GFP Bunny*, as an artwork, “comprises the creation of a green fluorescent rabbit (Alba), the public dialogue generated by the project, and the social integration of the rabbit” (165). Seeing the project as a confluence of discourses and social systems offers a robust, thoroughly cyborgian appreciation of the complexity of contemporary quasi-objects, of which Alba-as-artwork certainly is. Indeed, as Cary Wolfe argues in *What is Posthumanism?*, the genetic manipulation of Alba is not what is at stake in *GFP Bunny*.

[T]he use of GFP in Kac’s work . . . operates as a kind of feint or lure that trades on the very humanist centrality of vision that Kac’s work ends up subverting . . . On display here, in other words, are the humanist ways in which we produce and mark the other . . . our carnophallogocentric

visual appetite, displayed here in the form of spectacle, which is fed in this instance by GFP (164).

In Chapter Two I critiqued Wolfe's framing of *GFP Bunny* as a non-humanist (and thus post-humanist) visualization, but it is certainly the case that Kac's work offers new ways of "seeing" life that push at the boundaries between art and science, natural and artificial, and seen and unseen. This last is clearly crucial to contemporary scholars studying Kac's work: just as Wolfe focuses on the kinds of posthuman visualization that Alba symbolizes, Jane Blocker in "This Being You Must Create: Transgenic Art and Witnessing the Invisible" discusses how the invisible plays a part in how we "read" the text of Alba: "What we see in the green glow of Alba's eyes is the ethics of bearing witness to the invisibility (and the power that accrues to it) of the scientific laboratory, the artist's studio and the private home" (207). Even more, Alba concretizes the obscured history of human intervention into the genetic history of rabbits over the course of thousands of years of co-evolution: "as an artefact of culture, Alba physically embodies the powerful reach of science, art, and the social/domestic in manufacturing, and then making seem innocently natural, culturally engineered identity" (208). Again, *GFP Bunny*, as a cyborgian construct, literalizes or otherwise gives visibility to spaces and ways of seeing that may otherwise be traditionally unavailable to us.

In this way, *GFP Bunny* also recalls Haraway's more recent posthumanist formulation: that of the companion species. Haraway has in recent years moved away from the construction of the cyborg and into the space of companion species, which refers to "the old co-constitutive link between" animals (but especial dogs) and humans, who co-evolve/become with one another, where animals "have been actors and not just recipients of action" (*When Species Meet*). In the frame suggested by companion species, all relations between humans and animals involve a "practical and ethical

imperative in an *always* specific, historical context, one that involves science, technology, and medicine at every turn” and that “designates webbed bio-social-technical apparatuses of humans, animals, artifacts, and institutions in which particular ways of being emerge and are sustained.” The companion species as ethical frame offers an intriguing counterpoint to the cyborg, which is at once more measured in its acceptance of the blurring of boundaries and less concerned with how the animal itself is operating within that blurred space. If Alba is a cyborg, then, does that necessarily entail that she is a companion species?

Certainly Kac imagined that Alba would at least be companionate. After all, he initially thought of Alba as a member of his own family, going so far as to put up posters around France asking for her to be returned to him after she was remanded by the French institute where she was born (see Figure 3-1 on page 67 below). In addition, the multiple categories listed in the interventionist posters—“Ethique,” “Art,” “Famille,” and so on—are roughly analogous to Haraway’s use of “torque” as a way of understanding “the lives of those who are subject to twisted skeins of conflicting categories and systems of measure or standardization.” In fact, we can take the analogy further: Haraway is also discussing the history of dogs in relation to humans and the multiple categories they have lived within, similar to the trajectory of human manipulation of the environment and other animals that Kac sees as being antecedent to his genetic intervention with Alba. And while *GFP Bunny* is certainly his most famous work, many of his other bioartworks deal with similar issues, albeit often on a less grand or obvious scale: the most potent, *Genesis*, “is a transgenic artwork that explores the intricate relationship between biology, belief systems, information technology, dialogical interaction, ethics, and the Internet” and was created “by translating a sentence from the biblical book of Genesis into Morse

Code, and converting the Morse Code into DNA base pairs.”³³ The sentence? "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." Clearly, the question of how artists and animals become together is an important one for Kac.

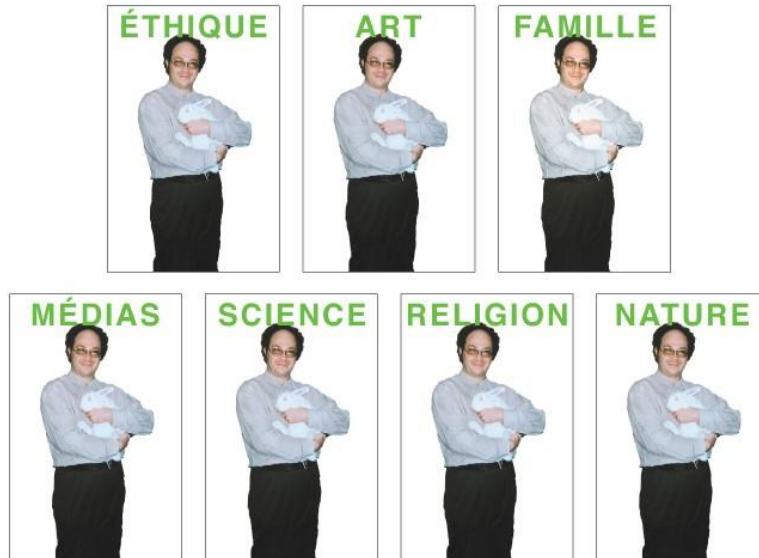


Figure 3-1 Eduardo Kac, *Paris Intervention*

Kac's work is certainly intriguing and oftentimes quite productive in terms of the questions it raises; however, in Haraway's ethical model, dogs and humans *co-evolve*: they *become with* one another. To what extent is Kac "co-evolving" with Alba, over whose genetic code (and thus over whose "life," given the metonymic relationship between the two terms) scientists have absolute control? Crucially, it appears that even despite best intentions Kac's work operates within the cultural-scientific context discussed above, and so we must question the extent to which Alba has been *used as metaphor* for "Ethique," "Famille," etc., that is, the extent to which Alba has been—to return to the critique offered

³³ <http://www.ekac.org/geninfo2.html>

by Penelope Ingram in *The Signifying Body*—subsumed into the representationalist frames of scientific and artistic mastery at the site of an industrialized and economized synthetic biology.

Addressing this problematic tension at the heart of Kac's work is essential, as "[i]n an unequal relationship, there is a tendency for the privileged to construct the identity of the other in terms of *their* own needs, desires and lacks" by "denying the difference of the other" (Twine)—or, I would also argue, by naturalizing the status of the other as *other*. Once this naturalization occurs—once the rabbit is reduced to a series of signifiers, even signifiers as well-meaning as "Family"—it becomes possible for the rabbit to be genetically modified in the name of art. Being open to difference—that is, to the irreducibility of the animal other as such—is a feature not only of the complex ontological ethical frame developed by Ingram in light of Irigaray, Fanon, and Heidegger, but also of the posthuman bioethics advocated by, for instance Cary Wolfe, who adds that in addition to this we must rethink how we conceive of the (bio)political relationship between *zoe* and *bios*. Again, for Wolfe posthumanism is "what thought has to become in the face of" challenges to human exceptionalism and anthropocentric visuality (*What is Posthumanism* xvi). *GFP Bunny* is at least questionable precisely because it continues to reify this unequal relationship by unproblematically duplicating those biotechnological processes that continue to render organic matter as little more than information in an industrial schema.

To be clear, however, I am *not* suggesting that it is possible to engage with Alba via non-linguistic or non-signifying means, or even that it is really possible to engage with Alba in a non-anthropocentric way; we are, after all, only human. However, as I indicated at the end of the last chapter, it *is* possible, as Richard Twine puts it, to consider the "tangible effects" that "discursive and representational" frames have "on animal bodies"

(90). Twine goes on to discuss the tangible effects the metaphor of “biology as information” has had on animal bodies, including for instance “the material practices of animal scientists which involve less and less lab-based work and more time in front of a computer screen doing work on database molecular information representations of animal bodies” (91). Transgenic animals especially, which involve the movement of DNA from one animal to another, are illustrative of how “DNA can come to be seen as mobile information largely detached from its original context” (91), a treatment of the animal that is in direct conflict with the embodied and highly contextual companion species ethics of Donna Haraway. Crucially, Twine argues:

if animal biopolitics has worked partly through processes of distancing and sequestration in order to sustain the possibility of our more unsettling human-animal relations, it is instructive that the proliferation of biopolitical elaboration under biotechnology draws on informatics distancing epistemology. (93)

Clearly, rendering the animal into bits and bytes of information—a process that stems from the utilitarian engineering mindset prevalent in the work of synthetic biologists, among others—does not offer much in the way of rethinking species relationships in the Anthropocene; indeed, such a mindset is endemic to the Anthropocene as an epoch in which human mastery over “nature” has reached its absolute zenith. Despite this, it is crucial that we not dismiss synthetic biology wholesale, as it is obviously *not only* in the Anthropocene that humans have exerted power over other species, and this power is *not only* malign. In the next section, I will explore bioartworks that explore *both* the “beginnings” of human aesthetic intervention into other species *and* the future of this intervention.

Saving Nature with Synthetic Biology

In George Gessert's *Art Life*, a wide variety of common coleus—a familiar house plant—are displayed in an exhibition that also includes a number of notebooks, in which visitors can write their opinions of or preferences for certain plants. Plants that are not “selected” by visitors “could end up on a compost heap, which is part of the piece,” while “surviving plants ‘selected’ by the public will be given away when the exhibit is over.”³⁴ The exhibit, which is similar in some ways to the *Pig Wings* project discussed earlier in the chapter, is an embodiment of Gessert's thesis, presented in *Green Light: Toward an Art of Evolution*, that “most domesticated creatures have been shaped by humans' aesthetic preferences” (11). Even more than this, Gessert makes the provocative claim “domestication guarantees us nothing, and never has,” as “every organism, wild or domesticated, first serves itself, and uses whatever strengths it has to serve its needs” (19). Gessert draws on the domestication of tobacco plants as an example of an almost parasitic relationship, where humans have received the questionable reward of the possibility for addiction, while tobacco is “cultivated, fertilized, and protected from predators and competition” (18). We use the tobacco, and the tobacco uses us: literal co-evolutions such as this have developed over the course of literally thousands of years of history, extending back into deep time and continuing forward into the Anthropocene (and, one supposes, beyond).

This continuity is key for Gessert, who sees contemporary genetic bioart as merely an extension of these evolutionary processes. Gessert uses the domestication of ornamental plants as a bioartistic exemplar of the history of this kind of aesthetic co-evolution, and offers the number of total domesticated plant species as being roughly

³⁴ <http://www.exploratorium.edu/genepool/art.html>

1,235.³⁵ Many of these domesticates bear something in common with *GFP Bunny*, which involved the movement of jellyfish DNA to a rabbit, in that they are interspecific hybrids, that is, “breeding complexes” of “plants that can cross and produce fertile offspring” (23), with breeders selecting for “flower color, form, size, texture, and pattern” across many species (24). Significantly, Gessert makes the point that these ornamentals serve a largely aesthetic, rather than purely utilitarian, purpose: indeed, he argues that they are indicative of the need for “certain kinds of uselessness” that “free our minds and provide a sabbath for the senses in which the wonder of things in themselves confirms the goodness of being” (31). This is a fascinating proposal precisely because it articulates a need for contact with the nonhuman other, a need that Haraway also elaborates in her theory of the companion species. In this way, we can imagine the domesticated ornamental plant as a companionate bioartistic species that *becomes with* us—indeed, that feeds some desire we have.

In this important way, a consideration of bioart also *extends* the argument made by Haraway, whose focus on her dog, though obviously admirable, does not seem to readily offer ways to think becoming-with other, less charismatic species. In this case, the “becoming with” occurs at the point of contact between the human and the *plant*—and thinking this relationship as one of companion species opens up a space to consider more seriously the “perpetual, foundational becoming that happens without will or intention or delineation” advocated by some new materialist scholars (Alaimo 145).³⁶ For

³⁵ This number includes plants domesticated for both economic and ornamental reasons, although the latter far outpaces the former.

³⁶ For instance, Stacy Alaimo is, in the context of this quote, making reference to Ladelle McWhorter’s discussion of dirt in *Bodies and Pleasures: Foucault and the Politics of Sexual Normalization*. Alaimo links this “agency without agents” to her theory of trans-corporeality, which I have already discussed in this thesis and which will get more attention in the concluding chapter.

an example, consider the trajectory of the first commercially available GM rose, the Moondust Carnation. While its blue-mauve color had "long eluded conventional rose breeders," geneticists employed by Florigene Ltd., "a Melbourne-based biotechnology company," along with Suntory Flowers, cloned the delphinidin gene from a pansy "to direct pigment synthesis in the rose into the 'blue' pathway," a process that was catalyzed by an iris enzyme and made possible by an entirely new, human-made gene that "switch[ed] off a rose gene" preventing blue coloration.³⁷ This trans-species carnation was then commercialized by the company in a variety of shades, including Moondust and Moonshadow.

Seeking to trouble this capitalistic relationship, bioartistic duo BCL (Georg Tremmel and Shiho Fukuhara) *biohacked* the carnation: they "reverse engineered it, cloned it, and released it into the wild with instructions so others could do the same" (Dunne and Raby 56). In 2008, *Common Flowers* was displayed at the Science Gallery in Dublin, where its liberatory potential was made explicit: "By freeing or 'jail-breaking' the flower from its destiny as a cut flower and establishing a feral and more 'natural' population of blue carnations, the flower will be given a chance to reconnect to the general gene-pool and to join evolution through natural selection once again."³⁸ That is, as Dunne and Raby contend, *Common Flowers* "can exist in galleries but is about the world beyond its walls" (56). BCL took a commercialized, partially synthetic flower and released it into the wild in a companionate, activist move that showcases a synthesis between in-lab engineering mindsets and liberatory biotechnological futures. What this artwork also showcases, however, is how such a synthesis is increasingly necessary in the Anthropocene: although the GM carnations will ostensibly be able to evolve and

³⁷ <http://phys.org/news3581.html>

³⁸ <https://dublin.sciencegallery.com/growyourown/commonflowersflowercommons>

become with the “natural” world, their very existence troubles any easy demarcation of the “natural” at all. That is, *the natural world to which the GM carnations return is already fundamentally changed by human influence, and will change even more with the introduction of a synthetic flower into the biome.* There is no “return to nature” for Moondust, which in its companionate co-becoming with humans is always already “naturally” compromised in the Anthropocene.

Such bioartistic projects raise important questions about what environmentalism must become in the Anthropocene. James D. Proctor notes that the difference between political methodologies hinges on the distinction (or lack thereof) drawn between “nature” and “culture,” the very distinction troubled by projects like *Common Flowers*. Proctor also argues, however, that “embrace of the Anthropocene could . . . lead to counting beyond two by letting go of nature (and culture) as metaphysical categories qua moral shortcuts” (83). Proctor’s notion of a counting beyond two “suggests that the environment we study contains all sorts of fascinating, troubling, interwoven networks of things,” each of which is “its own story waiting to be patiently understood” (91). What story might we understand about the varied strands of naturalcultural (to borrow from Haraway) synthetic life-forms that now inhabit the environment in the Anthropocene? The journey of the blue carnation is one such story, narrated across several continents, laboratories (including professional labs in Japan and BCL’s lab in their kitchen), and scales (from genes to ecosystems). All are webbed into a complex, imbricated network of companionate co-becomings, some of which are more intentional than others. Bioart in this capacity can serve as a counter-narrative to capitalist renderings that are industrial, utilitarian, and mechanistic; instead, what we see is a flowering of possibilities and co-evolutions that redefines nature, rather than setting about to “master” it.

The activism at the heart of this story, however, also raises the significant issue of what it means to “save nature” in the Anthropocene. As discussed above, “nature” has already been compromised in the Anthropocene, and especially in the age of synthetic biology. The question of what responsibility toward life we thus have is an essential one to address, as Paul Alberts argues: “The ‘Anthropocene’ . . . suggests a ‘reframing’ of normative traditions towards human and non-human life, and a challenge to reconsider collective human responsibility” (6). Responding to the challenge posed by the Anthropocene thus requires “that responsibility for life . . . deal with the enframed and interlocked condition of human and non-human” (10). Key here is that such determinations of responsibility must take into account the scale of human projects that influence “a hundred human generations to come” and “determine planetary life for perhaps hundreds of millennia” (8), a tall order indeed.

In response to the change necessitated by Anthropocene politics, ethics, and becomings, Jamie Lorimer calls for a dizzying, Deleuzian, and “pluralistic understanding of time that is open to its multiple rhythms, events and trajectories over different scales depicting a world composed of a multiplicity of forces and trajectories with the potential for differentiation” (596). This understanding in turn necessitates a reconceptualization of space as a fluid assemblage (again borrowing from Deleuze) ordered by “more-than human spatialities” that “effaces continental boundaries, links isolated island biogeographies, and reorganizes the conditions in which life has and will evolve” (597). Consider again the multiple trajectories of *Common Flower*, which was funded by an Australian-Japanese corporate collective, engineered in Japanese labs, cloned in a personal kitchen, released into the wild, and displayed in a Dublin museum. Or think back to the human platinates discussed in Chapter Two, which were often culled from Chinese prisons, taken to labs where living matter was objectified, and installed in

exhibits that travelled around the world, where they decomposed and were promptly replaced. Such multinatural geographic trajectories typify bioartistic quasi-objects in the Anthropocene.

Lorimer recognizes that mere recognition is not enough, however, as these issues are also profoundly *political* and *ethical*: “When one can no longer make recourse to Nature, what forms and trajectories of difference matter? Who decides? On what grounds? And through what processes?” (598). Such questions recall Richard Twine’s bioethics as elaborated in *Animals as Biotechnology*, especially in Lorimer’s assertion that “multinaturalism redefines Foucault’s concept of biopolitics and experimental processes of living with non-human difference in which diverse and uncertain non-human agencies threaten and are threatened by particular contemporary human activities” (598). Synthetic biology and bioart, as agents of action in the Anthropocene, engage in a constant and quite literal “experimental process” of negotiating what “counts” as life and operate across multiple multinatural trajectories of ethical co-becoming, some of which are more mechanistic and supportive of projects for human exceptionalism, and others of which directly challenge such mindsets. “Saving nature” becomes no longer a project of return to an Edenic perfection, but of reconceptualizing the spatial-temporal geographies of a tree of life that is dissolving before our very eyes.

Chapter 4

Posthuman(e) Ethics and Bioart: Three Theses

The Anthropocene intensifies, or, more accurately, it is an intensity: a complex of swirling materialities and signifiers that sweeps up (posthuman) bodies, trash, semi-living meat, plastic bottles, oil-covered seagulls, plastinated corpses, glow-in-the-dark rabbits, artists, writers, scientists, genomes, toxins, the living, and the dead. Although boundaries have always been porous, in the Anthropocene we come to understand them as viscous, trans-corporeal, and intra-active. Living in the Anthropocene requires a renegotiation of the intra-relatedness of these terms, our selves, and ourselves. I have used bioart as a case study for the kinds of renegotiation I am speaking of here, and have already argued that taking the new reality of the Anthropocene into account requires a posthumanism beyond thought and a humaneness beyond the human, a formulation that I call “posthuman(e).” I find this term necessary, as posthumanism must expose the materially contingent and intra-active intensities of the Anthropocene without resorting to mere “thought.” However, I also use this word tentatively, as it recalls an ethicality framed only around animal suffering, and not on the renegotiation of boundaries, terms, and first principles. Finding a path through this mire of anthropocentrism, representationalism, and materiality to a useful ethical frame for the Anthropocene by means of bioart has been the primary subject of this thesis, and in this conclusion I will offer a brief but comprehensive extrapolation of these themes by means of three “theses,” that is, three methodologies that I find work productively together and that are generative of important new considerations in the field of posthumanism and bioart. In the first thesis, I will show how Karen Barad’s conceptions of agential realism and intra-action form the bedrock of much of the preceding three chapters, and in so doing will excavate what her ethical frame says or means for bioartistic practices. In the second, I will connect this frame with

that of Penelope Ingram and Patricia MacCormack, two theorists whose work has also influenced my reading of bioart and who offer more concrete notions of ethics. Finally, in the last thesis I will return to the topic of the Anthropocene by linking up these frames with that of Stacy Alaimo and Claire Colebrook, to show how environmental flows and Anthropocene intensities intensify the porous, intra-active ethics of bioartistic practice. I will not offer a final determination here; rather, I will argue for the bringing together of related *relata* and theoretical investments as one way forward.

First Thesis: Agential Realism

Since different agential cuts materialize different phenomena . . . our intra-actions do not merely effect what we know and therefore demand an ethics of knowing; rather, our intra-actions contribute to the differential mattering of the world.
—Karen Barad, *Meeting the Universe Halfway*

Karen Barad's call for an ethics of mattering—that is, an ethics that takes stock of the ways in which differences matter *materially*—informs my own interest in a posthuman philosophy that moves beyond “what thought has to become.” Barad offers a productive way to think through what such a posthumanism might look like in practice, as it were—in the practice of drawing boundaries, of making art, of making ethical choices. What thought becomes is an *aspect* of this, but such thought must be *enacted* in “humane” ways—a term I adopt to denote the importance of considering animate matter *as such* as we begin to think through how to respond to and create bioart. As I have previously discussed, it is vital that we consider the implications of our bioartistic practices because in the Anthropocene, the problematicity of humanist assumptions at the heart of both scientific and artistic practices is intensified. That is, in the Anthropocene it is not only the case that “our intra-actions contribute to the differential mattering of the world”; these intra-actions also contribute to its *end*. The Anthropocene in a real sense marks the end of the world as we know it, with some scholars, such as Roy Scranton, arguing that “the reality of global climate change is going to keep intruding on our fantasies of perpetual

growth, permanent innovation and endless energy, just as the reality of mortality shocks our casual faith in permanence”—in other words, he argues, the primary ontological quandary of the Anthropocene is coming to understand “that this civilization is *already dead*.” Scranton’s apocalyptic vision is a call to take the Anthropocene seriously, to take stock, that is to say, of how the choices we have made and continue to make contribute to the intra-active differential mattering of our world in its end times.

Barad’s argument for a multiply contingent agential mattering is uniquely suited to the development of a posthuman(e) ethics for bioart in the Anthropocene. Barad is careful, for instance, to argue that one of the primary aims of her theorization is to decenter the privileged place of the human, as “forces at work in the materialization of bodies are not only social, and the materialized bodies are not all human” (235). Barad aims to show here that some theories of power attribute too much power to the social (her primary examples of this are the theories of Michel Foucault and Judith Butler). Similarly, by emphasizing that the bodies are not all *human*, Barad extends the realm of agency, demonstrating that nonhuman entities enact and are enacted by agencies. Indeed, for Barad agency is “*a matter of intra-acting: it is an enactment, not something that someone or something has*” (178, emphasis in original). This is because for Barad agency is “about changing possibilities of change entailed in reconfiguring material-discursive apparatuses of bodily production” (235), that is, agency is about the dynamic reconfiguring of the world through its differential mattering. Agency, as enactment, is about *how* differences come to matter, and the incredible array of possibilities that are enacted through intra-active agencies shows that “the world’s effervescence, its exuberant creativeness, can never be contained or suspended,” and that indeed “agency never ends; it can never ‘run out’” (177). Agency as complex enactment of material differentiability allows for a rejection, in Barad’s frame, of “absolute exteriority or

interiority,” in that “there is no geometrical relation of absolute exteriority between a ‘causal apparatus’ and a ‘body effected,’ or an idealistic collapse between the two, but rather an ongoing topological dynamics of enfolding whereby the spacetime-matter manifold is enfolded into itself” (177). Barad is not suggesting that there is no difference; rather, she is suggesting that “bodies observed” and “causal apparatuses”—so, for instance, a glow-in-the-dark rabbit and the various means, intellectual and physical, we have of grasping the rabbit—*co-constitute one another*, such that one cannot exist as such without the other. The co-constitutive topology of spacetime-matter is a manifold matrix of intersective (and intra-sective!) vertices, agencies, and lines of flight that comes to matter through its iterative differential becoming.

Barad refers to this enfolding of agencies and phenomena as “topological,” and to this I would also add that it is *topographical*, in the sense that such enfoldings are enacted through the vast, transcontinental flow of information, biological matter, and cultural capital in Anthropocene bioart. Barad suggests that “as the rings of trees mark the sedimented history of their intra-actions within and as part of the world, so matter carries within itself the sedimented historicalities of the practices through which it is produced as part of its ongoing becoming” (180), and this kind of “sedimented history” is precisely what I am referring to at the end of Chapter Three when I examine the multiple lines of flight in BCL’s *Common Flowers*. Jamie Lorimer’s conception of multinatural geographies in the Anthropocene is useful again here: recall that he argues for a “pluralistic understanding of time that is open to its multiple rhythms, events and trajectories over different scales depicting a world composed of a multiplicity of forces and trajectories with the potential for differentiation” (596), and that this understanding in turn necessitates a reconceptualization of space as a fluid assemblage ordered by “more-than-human spatialities” that “effaces continental boundaries, links isolated island

biogeographies, and reorganizes the conditions in which life has and will evolve” (597). Rethinking agential realism as topographical opens a space to link individual bioartworks with “biogeographies” and complex situated spheres of biomes amidst environmental collapse—offers, in other words, a way to think the Anthropocene together with bioart and agential realism. Specifically, we can think through the multinatural and multitemporal biogeographies and historicities that impact on and indeed “mark” bioartworks, and the bioartworks that mark and impact on these biogeographies and historicities. Alba is marked by representational frames (“Famille,” “ethique”), hidden logics of rendering (engineering mindsets), and lines of flight between gallery spaces, laboratories, and Master’s theses that traverse continents; simultaneously, Alba impacts on these spaces, leaving them marked by her presence. How are we to understand the place of Alba in these spaces, however? What about Alba materially engages with the agential co-becomings of humans, machines, and genes, among many others? In other words, instead of “Where’s Waldo?” we might ask “Where’s the animal?”

I spoke in Chapter Two of the hauntological remainder of the materiality of the animal in the literally objectified plastinated corpses on display in the *Body Worlds* and *Animals Inside Out* exhibits, and this remainder—this ghost, if you will—can also be construed as an example of the admittedly abstract theorization of agency Barad puts forth. It is not that the animal erupts from the non-animate matter in a literal way, but that the non-animate matter is produced “through complex agential intra-actions of multiple material-discursive practices or apparatuses of bodily production” (140): that is, *the plastinated animal corpse comes to be through an enactment of agency that operates via an agential cut in which the ghost of the animal is deferred and excluded from the process of mattering*. By calling out to this exclusion, the plastinated corpse also re/calls the ghost of the animal thus excluded, becoming an apparatus for the apprehension and

agential enfoldment of the biological, which is always already co-constitutive of the body on display. Crucially, then, we can say that it is precisely its un-responsibility in the creation of these boundaries—in the very *unintentionality* of the agential cuts by which such exclusions have come to matter—that we see the unethicity of plastinated animals in a posthuman(e) frame. This is not to say that such bioart is unproductive, that it “should not have been done,” or that the questions it raises are not useful: indeed, by pointing to the ways in which such cuts are enacted, such works can be very helpful in elucidating an ethical response. But in a posthuman(e) frame, *this is not enough*. We must be critical of how such cuts are enacted and how such responsibilities are framed if we are to take the intensities of the Anthropocene seriously, and we must indeed demand more humane *and* posthuman treatment of biological matter if we wish to undertake a project of mutual co-becoming that is responsible in the construction of co-constitutive boundaries and nonhuman agential worldly becomings.

Consider another example: the engineering mindset in synthetic biology is problematic precisely because “technoscientific practices are about making different worldly entanglements, and ethics is about accounting for our part of the entangled webs we weave” (Barad 384). These practices are examples of *apparatuses*, that is, “material (re)configurings or discursive practices that produce (and are part of) material phenomena in their becoming” (185). It is through apparatuses that we and the world co-constitute one another, and these apparatuses are contextual and material. Returning to our example, synthetic biology, as an apparatus, “is always in the process of intra-acting with other apparatuses, and the enfolding of (relatively) stabilized phenomena”—such as in this instance parts, systems, and devices—“constitute important shifts in” the enactment of scientific practices, and “therefore in the nature of the intra-actions that result in the production of new phenomena”; in this realization of synthetic biology,

“boundaries do not sit still” and *responsibility* in the construction of these boundaries is absolutely essential (170-171). Taking stock of the particular multinatural topologies and topographies of specific agential cuts as they are enacted by the apparatuses of synthetic biology and aesthetic practice has been one of the aims of this thesis, and is the essential praxis of posthuman(e) ethics.

Such a praxis is an enactment of what Barad calls a “politics of possibilities” in which the “ways of responsibly imagining and intervening in the configurations of power” (246) is central. Barad argues that apparatuses “enact what matters and what is excluded from mattering” (148), and one useful frame for understanding how this operates in terms of “configurations of power” has been in this thesis that of biopolitics. Indeed, when Barad argues that “intra-actions always entail particular exclusions” and “iteratively reconfigure what is possible and what is impossible” (177), her argument previews that of Cary Wolfe in *Before the Law*, who similarly argues for an ethics of responsibility in which “hospitality, to be hospitality, to be real, must be something ‘determinate’ and ‘conditioned’” (103). *We must make choices*. Biopolitical logics preclude such choices by naturalizing dichotomous and hierarchicalized relationships, especially that between *zoe* and *bios*. However, the solution to this has not been to suggest an ethics in which “the human” is demoted to the level of the animal, or in which “the animal” is elevated to the position of the human; such notions do nothing to challenge the *foundation* of biopolitical apparatuses, as they reify the hierarchicalized relationship at its center. What is needed instead in ethics of *difference*, of encounter with the Other that does not reduce the Other via apparatuses of biopolitical logics.

Barad makes difference central, such as when she argues that “knowing is a specific engagement of the world where part of the world becomes differentially intelligible to another part of the world in its differential accountability to and for that of

which it is a part” (379). Indeed, according to Barad “mattering is differentiating, and which differences come to matter, matter in the iterative production of different differences” (137). Relata enact agential cuts via apparatuses and it is through this process of mattering—that is, it is through this process of matter coming into its own materiality—that differences are produced and reverberate through mutual co-becomings. Differences matter—in all the implications of this pun. Given this, it should be no surprise that for Barad “the relationship between continuity and discontinuity is not one of radical exteriority but rather of agential separability, each being threaded through with the other. ‘Otherness’ is an entangled relation of differences” (236). Ethics, then, involves the intra-relatedness of differentially enacted matter(s), and the creation of different differences through intra-active enacting agencies opens up new possibilities for differences that can come to matter. Or, as Barad puts it in a beautiful passage that it is worth repeating in full:

What we need is something like an *ethico-onto-epistem-ology*—an appreciation of the intertwining of ethics, knowing, and being—since each intra-action matters, since the possibilities for what the world may become call out in the pause that precedes each breath before a moment comes into being and the world is remade again, because the becoming of the world is a deeply ethical matter. (185)

Barad’s frame is obviously robust and hugely useful for posthumanism, and yet difference as *difference* seems underserved here. How do we contend with the absolute alterity that is the animal, or the Other? And while it is absolutely true, I believe, that we are all mutually co-constituting one another through differential enactments of agency, my concern is that *this still does not get to the heart of difference as such*. In other words, although in Barad’s frame “different differences come to matter,” it is unclear how such

difference can be understood in the light of the animal/animate Other—whether that other is a rabbit or lab-engineered “pig wings.” For this reason, I turn in the next section to how Penelope Ingram’s conception of ethics helps difference enter more impactfully into the conversation.

Second Thesis: Absolute Alterity

Incommensurability is, above all, a relation, but it can be achieved only if a grounding cannot occur. An ethical relation ... can take place only if the corporeal and proximate are made visible.

—Penelope Ingram, *The Signifying Body: Toward an Ethics of Sexual and Racial Difference*

In *The Signifying Body*, Penelope Ingram provides “a model for a new language—a language beyond metaphysics, a language of physical signification,” by reading several literary texts through the work of Martin Heidegger, Luce Irigaray, and Franz Fanon (xi). Ingram’s work is dense and intricate, and neither the full scope of her argument nor the depth of the conversation she is responding to can be replicated here (nor is all of it relevant here: my own philosophical framework owes more to Foucault and Agamben than Heidegger and Fanon); my use of her work is therefore partial and selective. However, Ingram does offer a robust and, though complex, intuitive theorization of difference as ethics as ontology that can help “unconceal” the workings of these terms in a posthumanist frame, and indeed at the end of this section I will gesture toward the ways in which the work begun by Ingram here can be extended by putting her work in conversation with two posthumanist scholars, Richard Twine and Patricia McCormack.

I have spoken before of how an ethical encounter with the Other cannot occur as long as that Other is bound into representationalist frames that reduce its incommensurability and materiality to a mere figural shadow, an argument that follows from Ingram’s claim that “[i]t is only by imagining matter not tied to representation that we

can foresee an ontology without ground from which multiple expressions of difference in Being can rise” (xiv). In a move that echoes Barad’s call for performative conceptions of matter, Ingram argues for a matter that *signifies*, that is, a matter that is not “essentially” tied to the representational frames that naturalize its reducibility to potentially violent exclusions. Ingram vividly illustrates this by pulling from Fanon, for instance, to show the ways in which “his racial identity, or his coming to understand this identity as raced, occurs through a particular colonial lens and operation of power,” from which the question follows: “how can an ethical relation to the Other ever occur when the Symbolic is scarred by the history of these representations” (48)?³⁹ We might extend this to say: How can an ethical relation to the animal Other ever occur when the material body of the animal is always already scarred by the multiple historicities, topographies, and renderings of a biopolitical schema that enacts violent agential cuts?⁴⁰

Of course it is difficult to imagine how we might engage with animals “beyond representation” when they reside in a space of absolute alterity to our selves: indeed, for all that Barad argues for an intra-active co-becoming, or for all that Haraway speaks to the importance of companion species, it is clear that the animal *signifies* at an incommensurable level of difference. This is to say nothing of the signification enacted by non-animal animate matter (i.e., pig wings or genetically modified flowers). This is to be

³⁹ This brief summary is an example of how I am having to selectively borrow from Ingram’s argument for the purposes of this thesis. Her use of Lacanian psychoanalytic theory, postcolonial theory, and Heideggerian terminology to refer to Fanon’s experience alludes to the complexity of her argument, and the place of her work within a variety of conversations that I am not well-versed in.

⁴⁰ It is worth noting that although my analysis is not focused on gender or racial difference, Ingram’s insights also offer ways to think through these issues as they relate to bioart. For instance, consider the plastinated human corpses, which according to multiple sources were often culled from Chinese prisons. That these bodies are considered “Other enough” to be non-consensually put on display speaks to the ways in which the zoe/bios distinction impacts on humans as well.

expected: after all, “every act of representation necessarily participates in the fiction of representation. By its very nature, a representation claims to be representative, but all it represents is in fact the impossibility of representation, because a representation cannot contain the thing represented” (Ingram 10). Ingram argues that to escape the house of mirrors that is representationalism, we must think through the possibilities of bodies to signify in excess of the frames into which they are placed: that is, we must seek a body that is “signifiable, not representative . . . because there is no category to which it belongs. It is not without signification or meaning, but its meanings are unstable . . . it is unstable matter that is nevertheless outside representation. It is this kind of material signification that facilitates the ontological becoming not only of the Self but of the Other” (44). *This is precisely the kind of destabilization offered by bioart, and precisely the condition of its problematicity if we do not take it seriously.* For example, consider *Pig Wings*: as “semi-livings” they cross between boundaries of liveliness, and in “killing” them we destabilize traditional ethics of care and responsibility. What kinds of life should we afford care? What counts as “alive”? Semi-livings resist (re)inscription by refusing to sit still.

Bioart can thus be seen as a *material enactment* of the kind of signifying trouble that Ingram calls for in moving past representationalism. Indeed, Ingram argues that it is in art that we find the condition for interaction with the non-reducible signifying body of the Other, as it is “[t]hrough art [that] we approach the unconcealing of the world” (122). This unconcealing is the condition of ethicality, in that “to live ethically, the subject needs to become aware of the possibilities that have been foreclosed to it in living in the Symbolic world of the ‘they’” (50)—or, we might say in the case of the animal, the human needs to become aware of the possibilities that have been foreclosed *for* the animal in the wake of representationalism.

We see here more echoes of Barad, in this case her argument for the power of agency to enact differentially constituted possibilities; however, by thinking through the implications of Ingram's ethical frame, we can see how a recognition of the *material signification* of these different possibilities is key. Ingram is calling for a new language to think through such questions, one that is nonrepresentative and corporeally fluid, and that is "above all an experience we must undergo and through which we encounter our own Being-ethically" (120). Crucially, bioart, as *art*, has the potential to unveil the alterity of the Other and to enact a material signification beyond representationalism, even as it operates within an enfolded matrix of biopolitical agential cuts. That is to say, there is *potential* in bioart to enact the kind of ethicality advocated here by Ingram, but there is *danger* as well that the art will only reify those same representational frames and dualisms that we seek to undo.

For Ingram, working against such frames means considering dimensions of racial and sexual difference; for my work here, this means considering the *posthuman* and *humane* dimensions of bioart. To do this, I want to begin extending Ingram's frame into posthuman dimensions by considering her work in light of Patricia MacCormack, who writes in *Posthuman Ethics* that "the body reconfiguring relation and ethical emergences of bodies beyond being received through representation, external and within consciousness negotiating reality through representative perception, is the foundation and the site of the event of the posthuman encounter" (1). In other words, we can think posthumanism as *precisely the kind of non-representationalist encounter advocated by Ingram*. MacCormack seeks "joyous extensions of expression and force by encounters with and events of alterity" (1), which operates through a tripartite ethical consideration of "bodies in inextricable proximity": "the critique of the detrimental effect a claim to knowledge of another body perpetrates; address as creative expressivity opening the

capacity for the other to express; acknowledgment and celebration of the difficult new system of bio-relations as an ongoing, irresolvable but ethical for being so, interactive, mediative project of desire” (3). There is a lot to unpack here: MacCormack is essentially arguing that it is the very irresolvability of “bio-relations,” their complex networked intra-relations, that makes the need for address *of that difference* so crucial. For MacCormack, as for Ingram, “alterity and openness ... are essential to ethical encounters” (17). Opening this alterity to the realm of animals and non-animal animate matter provides a space for thinking posthumanly with encounter between human and nonhuman Other.

Again, crucial here is Ingram’s point that it is through art that such an encounter can take place. MacCormack concurs, arguing that “the ethical encounter with art comes from silences and the tenebrous illumination that discloses the planes which art unfurls to deliver us from our humanness toward pursuits of altered perception” (43). Art *alters perception*, and in so doing allows for an “ahuman” encounter. *Bioart matters*, especially as it brings the human into potential encounter with the animal, which always already exists in absolute alterity to the human. Alterity is necessary because it is only through an encounter with a signifying, material, and non-representational Other that we can begin to think the ethics of encounter with that Other. However, I want to clarify that I am not suggesting we reinstate the hoary dualism between human and animal, or that these dualisms are somehow “natural.” As Richard Twine argues, we must be careful in thinking difference with animals and other nonhuman animate matter, as “a pendulum swing to difference simply reinforces the dualism” between human and animal, “while an overemphasis on similarity may risk an uncritical anthropocentrism” (29). Ingram offers a way to think outside these dualisms: bioart presents signifiers that are *unstable*, that do not just trouble the dichotomy of *zoe* and *bios* but recast the intra-active possibilities of an animacy that exists, *materially*, outside this distinction. That is to say, by bringing

Ingram's ethics into the fold of posthuman theory, I am attempting to take seriously the problems of biopolitics and the Anthropocene, in which it is clear that merely raising the animal to the level of the human, or decentering the human to the level of the animal, is not enough. My claim, therefore, is not that the human is absolutely "different" from the animal, or that humans, animals, and other animate matter do not mutually co-constitute one another in their becoming; rather, I am arguing that if we are to develop an ethics of interaction with bioart, we must begin from the point of alterity inherent in thinking animals in a signifying, material, non-representationalist frame.

In the final thesis, I will take this notion and return it to the Anthropocene to demonstrate again why a practical, intra-active, and signifying ethics is necessary at the end of the world.

Final Thesis: Anthropocene Intensities

The globe or earth as the planet that was blessed with the contingency of life, including the human species whose global imagination has done so much to create destructive systems beyond its own power and comprehension, cannot be saved. Insofar as it is imagined as a globe or living whole with its own order and proper potentiality that might be restored, the earth will continue to be sacrificed to the blindness of an organic thinking that can only insist upon its own self-evident value.

—Claire Colebrook, "A Globe of One's Own: In Praise of the Flat Earth"

What is the Earth in the Anthropocene? What are we? How can we conceive of the world after the Anthropocene, after all of the old metaphors—of globalization, of isolation, of the bounded planet—only serve to further inoculate us against the encroaching end times, against the capacity for change? What must we become to survive the apocalypse? Claire Colebrook argues that we cannot stay what we have been, or think as we have been thinking; to think the Anthropocene necessitates a thinking of the whole Earth, and "the usual figures of the bounded earth, the ideally-self-balancing cosmos, the interconnectedness of this great organic home of 'ours,' are modes of narrative self-enclosure that have shielded us from confronting the forces of the

present" (32). This is the promise and the danger of the Anthropocene: now, more than ever, we are in a position to "[shatter] the globe, with an attention to forces that resist recuperation, incorporation and comprehension," and indeed "only this radical destruction can save us from ourselves" (39). We cannot return: there is no Eden, and more to the point there never was. Continuing to believe in Edenic return or a "natural state" or balance may in fact circumscribe and erase the radical potential for rethinking our selves in the Anthropocene. As I said at the start of this chapter, the Anthropocene is an intensity and an intensifier: a swirling contingent mix of intra-active material agencies, and an agent (or apparatus) for the renegotiation of harm, responsibility, care, and wonder. At the end of the world, there is no space for an ethics or politics that does not offer, intensely and brightly, an opportunity to rethink life itself from first terms.

Put another way, in the Anthropocene there is no space in which we are not implicated; there is no outside to which we can run. In the Anthropocene we must rethink scales of influence, as "we hardly have the luxury of imagining any expanse of land or sea as beyond the reach of humanly-induced harm. Matters of environmental concern and wonder are always 'here,' as well as 'there,' simultaneously local and global, personal and political, practical and philosophical" (15). Alaimo contends with the messy scales of intra-action via her notion of trans-corporeality, which "reveals the interchanges and interconnections between various bodily natures ... by underscoring ... the often unpredictable and unwanted actions of human bodies, nonhuman creatures, ecological systems, chemical agents, and other actors" across multiple (and multiply constituted) trajectories (2). Because trans-corporeality has to do with the flows of materiality through bodies, it "may seem anthropocentric;" however, within this frame "the ostensible center is extended throughout multiple, often global networks" (16), accomplishing in part a reworking of global politics, ethics, and definitions.

I have brought posthumanism, bioart, and the Anthropocene together in this thesis because these terms interanimate one another, and taken together call for a reworking of ethics, materiality, and animacy. Alaimo's posthuman environmental ethics, "in which the flows, interchanges, and interrelations between human corporeality and the more-than-human world resist the ideological forces of disconnection" (142), speaks to the kinds of productive troubling I have undertaken here. In the Anthropocene, such interrelations are tenuous but firmly enfolded, and they require an ethics that is respectful, attentive, and forcefully new. Or, as Alaimo puts it, "trans-corporeality demands more responsible, less confident epistemologies" (22). These "less confident" epistemologies and methodologies are not, to be clear, confused or less forceful; rather, they operate with the knowledge of contingent materiality and becoming, groping with caution to open a space for the integration of potential others in the phenomenal mattering of the world.

Making such choices is difficult and always compromised in the Anthropocene, to the point that MacCormack argues that "thinking the nonhuman in posthuman ethics should, indeed can, only concern itself with the human and its decentered and delimited futures," as the animal as absolute other is unthinkable by the human (57); in fact, she goes so far as to argue that "posthuman ethics of grace requires nothing more than leaving all animals alone; in interacting with them, in thinking them, in involving them at all with a human world" (69). However, I find this position extremely problematic. In the Anthropocene, there can be no "grace," no "stepping aside." Instead, if we take the responsibilities inherent in enacting agential cuts seriously, if we take seriously the importance of the realm of art, if we take difference to mean not that no care or hospitality is possible but rather that such care must be *deliberate*, *conditional*, and *ethical*, then we

are closer to a posthuman ethics that is also humane, and that operates without a ground in the cyclicity of discourse surrounding the bounded earth and Edenic return.

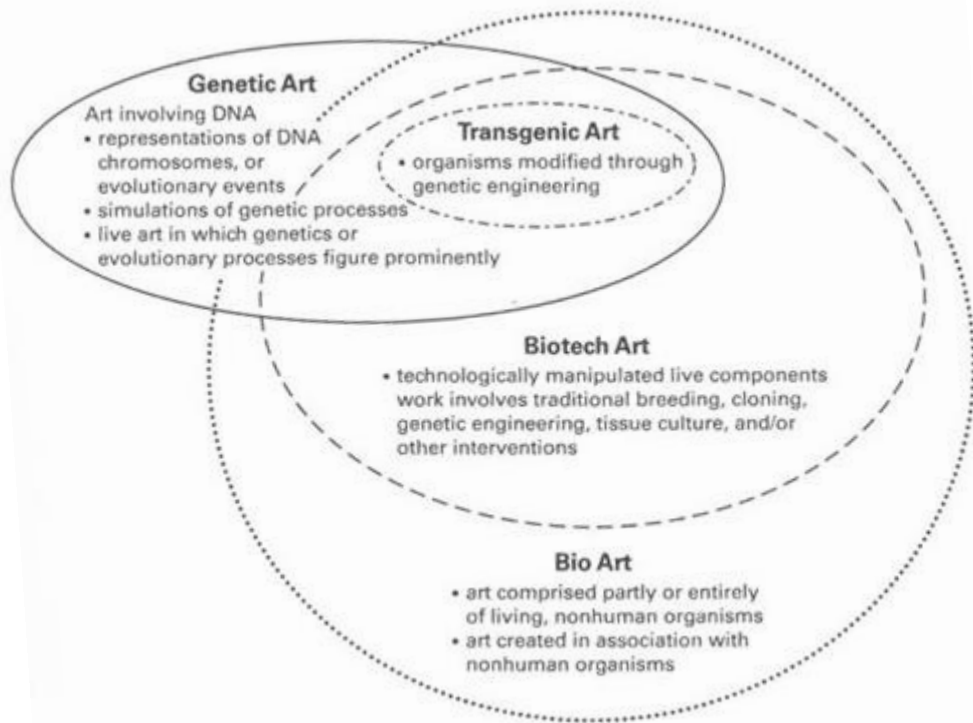
Again, such an ethics must be conditional and complex, and I have only just begun to hint at the varied intersections and developments that are still necessary. For instance, in the second thesis I advocated Ingram's notion of difference as the non-grounded ethical encounter that escapes representation and moves to material signification. I also contended that bioart is a productive space in which such encounters may occur. However, with this positive reading I risk ignoring forms of violence that are profoundly *non-representationalist*, such as animal rendering. Bioart must *unconceal* these hidden logics if it is to be productive in the Anthropocene; otherwise, as Claire Colebrook warns, we will continue to follow "modes of narrative self-enclosure that have shielded us from confronting the forces of the present" (32). What would a bioart that unconcealed these logics "look" like? What methods do we have of encountering such art? I have made gestures toward an answer to this in my analysis of Damien Hirst, Eduardo Kac, and BCL, but there are many more scenarios, and many more agential worldings, of which we must take stock as we continue to explore the ramifications of biopolitical and other apparatuses in the bioart. Most importantly, the complex intersecting theories of ethicality that I have enumerated in this chapter still have many strands to pull and untie; the work of unpacking the intra-relatedness of the work of Barad, Ingram, Twine, MacCormack, Colebrook, and Alaimo is ongoing, perhaps even infinite.

I cannot help but make one final observation. Early in *Bodily Natures*, Alaimo argues that "[c]oncern and *wonder* converge when the context for ethics becomes not merely social but material—the emergent, ultimately unmappable landscapes of interacting biological, climatic, economic, and political forces" (2, emphasis added). Later,

she returns to this idea by advocating for alternative conceptions of agency that “accentuate the lively, active, emergent, agential aspects of nature,” and that in so doing “foster ethical/epistemological stances that generate concern, care, *wonder*, respect, caution (or precaution), epistemological humility, kinship, difference, and deviance” (143, emphasis added). In my second chapter, I spoke of a young boy gazing with wonder at a trisected camel at the *Animals Inside Out* exhibit. My analysis of multiple trajectories of bioart has in one sense flowed from that first moment, one of encounter with an animal other that is processed and objectified and presented in a problematic and contingent space of intersecting material agencies, economic forces, and biopolitical logics. And yet the moment of encounter remains, strangely powerful in its magnetic pull, disarmingly innocent in its initial construction. We cannot read too much into this moment of connection, of course, but if nothing else we *can* see this as the opening gambit in a potential ethical encounter that has come to define “the emergent, ultimately unmappable landscapes of interacting biological, climatic, economic, and political forces.” This is the power of bioart: operating at the very moment of wonder, the very instant of connection between self and Other, bioart has the potential—even if this potential is not always realized—to unconceal the intensities of difference in our epoch, to redefine life, to materialize nonhuman agencies, to engender, ultimately, a posthuman(e) ethical encounter in the Anthropocene.

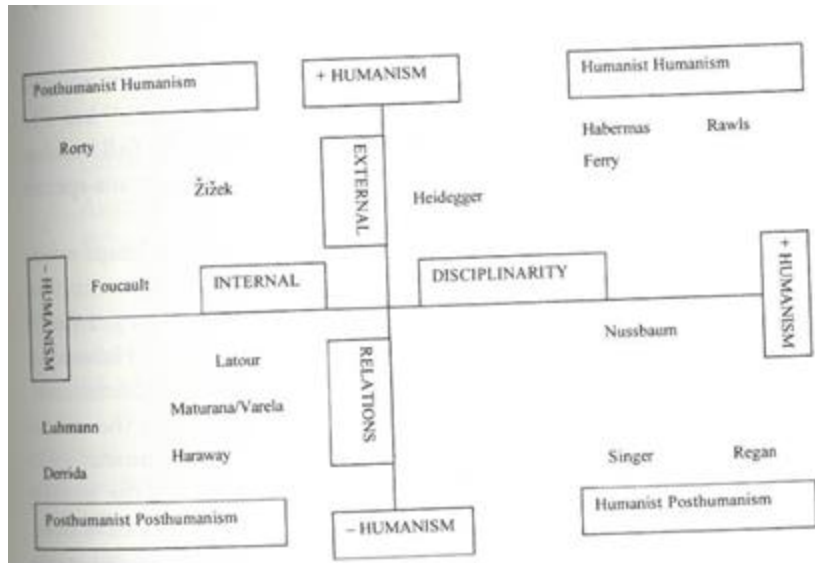
Appendix A

George Gessert, "Bio Art Terminology"



Appendix B

Cary Wolfe, "Fourfold Disciplinarity"



References

- Alaimo, Stacy. *Bodily Natures: Science, Environment, and the Material Self*. Bloomington: Indiana UP, 2010. Print.
- Alberts, Paul. "Responsibility Toward Life in the Early Anthropocene." *Angelaki* 16.4 (2011): 5-17. Print.
- Anker, Suzanne, and Dorothy Nelkin. *The Molecular Gaze: Art in the Genetic Age*. Cold Spring Harbor, NY: Cold Spring Harbor Laboratory, 2004. Print.
- Baker, Steve. *Artist/Animal*. Minneapolis: U of Minnesota P, 2014. Print.
- Baldwin, Geoff, et al. *Synthetic Biology: A Primer*. London: Imperial College P, 2012. Print.
- Barad, Karen. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Duke UP, 2007. Print.
- Beckett, Charles. "Hauntology." *How to Think About the Future*. WordPress. Web. 03 Oct. 2014.
- Belling, Catherine. "Being Non-biodegradable: The Lonely Fate of Metameat." *Controversial Bodies: Thoughts on the Public Display of Plastinated Corpses*. Ed. John D. Lantos. Baltimore, MA: Johns Hopkins UP (2011). 17-24. Print.
- Biello, David. "The Art of Life in the Anthropocene – The Los Angeles Review Of..." *The Los Angeles Review of Books*, 13 Apr. 2013. Web. 03 Oct. 2014.
- Blocker, Jane. "This Being You Must Create: Transgenic Art And Witnessing The Invisible." *Cultural Studies* 17.2 (2003): 193-210. Web.
- Bridle, James. "Booktwo.org." *Booktwo*. 20 Mar. 2011. Web. 03 Oct. 2014.
- Bryant, Levi. "Of Quasi-Objects and the Construction of Collectives." *Larval Subjects*. 18 June 2011. Web. 03 Oct. 2014.

- Butler, Ella. "God Is in the Data: Epistemologies of Knowledge at the Creation Museum." *Ethnos* 75.3 (2010): 229-51. Web.
- Calvert, Jane. "Evolution or Design?" *Synthetic Aesthetics: Investigating Synthetic Biology's Designs on Nature*. Alexandra Daisy Ginsberg et al, eds. Cambridge: MIT Press, 2014. 259-267. Print.
- Catts, Oron and Ionat Zurr. "Countering the Engineering Mindset: The Conflict of Art and Synthetic Biology." *Synthetic Aesthetics: Investigating Synthetic Biology's Designs on Nature*. Alexandra Daisy Ginsberg et al, eds. Cambridge: MIT Press, 2014. 27-37. Print.
- . "Semi-Living Art." *Signs of Life: Bio Art and Beyond*. Ed. Eduardo Kac. Cambridge, MA: MIT Press, 2007. 231-247. Print.
- . "Life as a Raw Material: Illusions of Control." *Somatechnics* 2.2 (2012): 250-62. Web.
- Colebrook, Claire. "A Globe of One's Own: In Praise of the Flat Earth." *SubStance* 41.1 (2012): 30-39. Web.
- Derrida, Jacques. *Specters of Marx: The State of the Debt, the Work of Mourning, and the New International*. New York: Routledge, 1994. Print.
- Dibley, Ben. "'The Shape of Things to Come': Seven Theses on the Anthropocene and Attachment." *Australian Humanities Review* 52 (2012). Web.
- Dixon, Deborah P. "The Blade and the Claw: Science, Art and the Creation of the Lab-borne Monster." *Social & Cultural Geography* 9.6 (2008): 671-92. Web.
- Dunne, Anthony, and Fiona Raby. *Speculative Everything: Design, Fiction, and Social Dreaming*. Cambridge (Mass.): MIT, 2013. Print.
- Elfick, Alistair and Drew Endy. "Synthetic Biology: What It Is and Why It Matters." *Synthetic Aesthetics: Investigating Synthetic Biology's Designs on Nature*. Alexandra Daisy Ginsberg et al, eds. Cambridge: MIT Press, 2014. 3-25. Print.

- Esposito, Roberto. *Immunitas: The Protection and Negation of Life*. Cambridge: Polity, 2011. Print.
- Fisher, Mark. "The Metaphysics of Crackle: Afrofuturism and Hauntology." *Dancecult* 5.2 (2013): 42-55. Web.
- Foucault, Michel. "Preface to Transgression." *Language, Counter-memory, Practice: Selected Essays and Interviews*. Ithaca, NY: Cornell UP, 1977. Print.
- . *The History of Sexuality*. London: Penguin, 1992. Print.
- Gessert, George. *Green Light: Toward an Art of Evolution*. Cambridge, MA: MIT, 2010. Print.
- Ginsberg, Alexandra Daisy et al, eds. *Synthetic Aesthetics: Investigating Synthetic Biology's Designs on Nature*. Cambridge: MIT Press, 2014. Print.
- Ginsberg, Alexandra Daisy. "Design as the Machines Come to Life." *Synthetic Aesthetics: Investigating Synthetic Biology's Designs on Nature*. Alexandra Daisy Ginsberg et al, eds. Cambridge: MIT Press, 2014. 39-70. Print.
- Hanczyc, Martin M. "The Early History of protocells: The Search for the Recipe of Life." *Protocells: Bridging Nonliving and Living Matter*. Cambridge: MIT Press, 2009. 5-17. Print.
- Haraway, Donna. "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s." *Norton Anthology of Theory and Criticism: First Edition*. Ed. William E. Cain et al. New York: W.W. Norton Company, 2001. 2269-2299. Print.
- . *When Species Meet*. Minneapolis: U of Minnesota, 2008. Print.
- Harkinson, Josh. "Science Museums Celebrate the Wonders Of...Fracking?!" *Mother Jones* 3 Dec. 2012. Print.
- Heartney, Eleanor. "Art for the Anthropocene Era." *Art in America* Feb. 2014. Web.

- Helmreich, Stefan. *Alien Ocean: Anthropological Voyages in Microbial Seas*. Berkeley: U of California, 2009. Print.
- Hirst, Damien, Gordon Burn, Stuart Morgan, Jonathan Barnbrook, and Robert Violette. *I Want to Spend the Rest of My Life Everywhere, with Everyone, One to One, Always, Forever, Now*. New York: Monacelli, 1997. Print.
- . "Damien Hirst on Art Sharks and Cash Cows." Interview. *Euronews*. Youtube, 25 Dec. 2010. Web. 3 Oct. 2014. <<https://www.youtube.com/watch?v=6jQ6isqr2OY>>.
- Ingram, Penelope. *The Signifying Body: Toward an Ethics of Sexual and Racial Difference*. Albany: State U of New York, 2008. Print.
- Julius, Anthony. *Transgressions: The Offences of Art*. Chicago: U of Chicago, 2002. Print.
- Kac, Eduardo. *Signs of Life: Bio Art and beyond*. Cambridge, MA: MIT, 2007. Print.
- Kuchment, Anna. "Museums Tiptoe Around Climate Change." *Dallas Morning News* 14 June 2014. Print.
- Latour, Bruno. *We Have Never Been Modern*. Cambridge, MA: Harvard UP, 1993. Print.
- Lorimer, Jamie. "Multinatural Geographies for the Anthropocene." *Progress in Human Geography* 36. (2012): 593-612. Print.
- MacCormack, Patricia. *Posthuman Ethics: Embodiment and Cultural Theory*. Farnham, Surrey, England: Ashgate, 2012. Print.
- "Mission & Objectives." *Mission and Objectives*. Institute for Plastination. Web. 03 Oct. 2014.
- Mitchell, Robert. *Bioart and the Vitality of Media*. Seattle: U of Washington, 2010. Print.
- Mitchell, W. J. T. *What Do Pictures Want?: The Lives and Loves of Images*. Chicago: U of Chicago, 2005. Print.

- Nikkhah, Roya. "Damien Hirst Condemned for Killing 9,000 Butterflies in Tate Show." *The Telegraph* [London] 14 Oct. 2012. Print.
- Pashaei, Shahyar. "A Brief Review on the History, Methods and Applications of Plastination." *International Journal of Morphology* 28.4 (2010): 1075-079. Web.
- Poliquin, Rachel. *The Breathless Zoo: Taxidermy and the Cultures of Longing*. University Park, PA: Pennsylvania State UP, 2012. Print.
- Proctor, James D. "Saving Nature in the Anthropocene." *Journal of Environmental Studies and Sciences* 3.1 (2013): 83-92. Web.
- Rasmussen, Steen et al, eds. *Protocells: Briding Nonliving and Living Matter*. Cambridge: MA, 2009. Print.
- Robbins, P., and S. A. Moore. "Ecological Anxiety Disorder: Diagnosing the Politics of the Anthropocene." *Cultural Geographies* 20.1 (2013): 3-19. Web.
- Shukin, Nicole. *Animal Capital: Rendering Life in Biopolitical times*. Minneapolis: U of Minnesota, 2009. Print.
- Szybalski, Waclaw and Ann Skalka. "Nobel Prizes and Restriction Enzymes." *Gene* 4 (1978): 181-182. Print.
- Thrift, Nigel. "Practising Ethics." *Using Social Theory: Thinking Through Research*. Ed. Michael Pryke, Gillian Rose, and Sarah Whatmore. London: SAGE Publications Inc., 2003. 105-121. Print.
- Twine, Richard. *Animals as Biotechnology: Ethics, Sustainability and Critical Animal Studies*. London: Earthscan, 2010. Print.
- van den Hengel, Louis. "Zoogeography: Per/forming Posthuman Lives." *Biography* 35.1 (2012): 1-20. Print.
- Warkentin, Traci. "Dis/integrating Animals: Ethical Dimensions of the Genetic Engineering of Animals for Human Consumption." *Ai & Society* 20.1 (2006): 82-102. Web.

Wolfe, Cary. *Before the Law: Humans and Other Animals in a Biopolitical Frame*.

Chicago: U of Chicago, 2013. Print.

—. *What Is Posthumanism?* Minneapolis: U of Minnesota, 2010. Print.

—. *Zoontologies: The Question of the Animal*. Minneapolis, MN: U of Minnesota, 2003.

Print.

Zalasiewicz, Jan, Mark Williams, Will Steffen, and Paul Crutzen. "The New World of the Anthropocene." *Environmental Science & Technology* 44.7 (2010): 2228-231.

Web.

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