

The Cost of Production: Animal Welfare and the Post-Industrial Slaughterhouse in Margaret Atwood's *Oryx and Crake*

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Abstract: This article investigates recent biotechnological advances in meat production as represented in Margaret Atwood's speculative dystopian thriller, *Oryx and Crake* (2003). The novel's near-future setting captures the relentless pursuit of science and technology that overrides ethical and humanist concerns. In what follows, I explore representations of slaughter in production as Atwood takes the animals out of the slaughterhouse and into the science lab. I aim to apply a postanimal critique to examine the ways in which the novel presents new predicaments that put animal bodies at risk for further manipulation and commodification that is shrouded in the rhetoric of "environmental sustainability." I argue that this reading discovers a new kind of animal subjugation in, what I call, the post-industrial slaughterhouse. In this space, animal bodies are subjected to cruel and unusual experiments to sustain human lives. These new forms of "slaughter" present another layer of difficulty in how we perceive animals in the future of food production.

Keywords: Speculative Fiction; Animal Welfare; Factory Farming; Genetic Engineering; Margaret Atwood; *Oryx and Crake*

Introduction

Today's meat industry is a technological marvel. The inside of a modern-day poultry slaughterhouse looks like a hellish version of Willy Wonka's chocolate factory.

- Christopher Leonard, "How the Meat Industry Keeps Chicken Prices High"

Canadian speculative fiction writer Margaret Atwood constructs fictive worlds and situations not so different from our own, stretching narratives to their utmost possibilities. According to Coral Ann Howells (2006), novels such as *The Handmaid's Tale* (1985) and *Oryx and Crake* (2003) are an "imaginative writer's response to contemporary situations of cultural crisis as [the novels] suppose what may happen at what Atwood has called 'definitive moments' after which things [are] never the same again" (p. 161). In other words, a turn in one direction or another can alter and produce a counter reality, which is one reason that Atwood prefers the term, "speculative" over "science" fiction. Science fiction, Atwood (2019) claims, is a "label that denotes books with things in them we can't yet do or begin to do, talking beings we never meet, and places we can't go—and speculative fiction," she

goes on to argue, "employs the means already more or less to hand, and takes place on Planet Earth" (p. 513). Furthermore, Atwood (2019) notes that "speculative fiction can bring us that other kind of news; it can speak of what is past and passing, but especially of what's to come" (p. 515). The prophetic qualities of Atwood's writing prevent it from existing as mere social commentary. Instead, her writing promotes a call to action. Atwood imagines cultural narratives that have the potential to shape the future, allowing us to think critically about the choices we make, the consequences of those choices, and the ways that exigency should motivate us towards advocacy.

In part, Atwood's oeuvre accounts for growing anxieties over existing technologies once considered unimaginable. The first book in the *Maddaddam Trilogy*, *Oryx and Crake*, "explores the consequences of new and proposed technologies...by showing them up and running" (Atwood, 2019, p. 515). Situated within the dystopian tradition, *Oryx and Crake* offers a picture of a world where unrestrained technologies contribute to the relentless subjugation and commodification of humans, animals, and the environment. Dystopian literature questions current social conditions and political systems either through a "critical examination

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of utopian premises upon which those conditions and systems are based or through the imaginative extension of those conditions and systems into different contexts that more clearly reveal their flaws and contradictions” (Booker, 1994, p. 3). Thus, *Oryx and Crake* illustrates a dystopian vision of consumer capitalism run amuck, particularly in reference to the evolution of large-scale meat production (i.e. factory farms).

This article explores Margaret Atwood’s *Oryx and Crake* through a postanimal lens, a theoretical concept emerging out of Critical Animal Studies (CAS). By reading the novel in this way, I trace the evolution of animal processing in a near-future setting where animal manipulation is hidden behind supposed “sustainable” practices. The novel reveals the ethical and moral implications of exploiting animal bodies in the name of “public health.” I argue that without taking animal welfare into consideration when moving beyond the factory farm, we simply swap one brand of exploitation with another.

Revisiting speculative fiction, especially in times of crisis, serves as a platform from which we can interrogate our present environmental practices and policies. For example, U.S. senators Cory Booker and Elizabeth Warren recently unveiled a bill that would drastically reduce the impact of factory farms. First introduced in 2019, the Farm System Reform Act focuses on concentrated animal feeding operations, or CAFOs, a term that the USDA applies widely to the factory farm production model. In general, this bill would place a moratorium on the creation of any new CAFOs, phase out existing facilities by 2040, and protect farmers that work in them through various buy-out programs. Booker says, “Our food system was not broken by the pandemic and it was not broken by independent family farms. It was broken by large, multinational corporations like Tyson, Smithfield, and JBS, that because of their buying power and size, have undue influence over the marketplace and over public policy” (Plant Based News, 2020). The bill is attracting attention now that COVID-19, the disease caused by novel coronavirus, is spreading

rapidly among meatpacking workers in U.S. production facilities (“CDC.gov,” 2020).

The negative impacts of factory farming, however, existed long before COVID-19 materialized; the pandemic has merely exposed the gross negligence and violence already festering behind factory doors. CAFOs are detrimental to the health and safety of workers, animals, the general public, and the environment. As opportunities arise to effect positive change post-COVID-19, unsustainable food practices and policies should be widely condemned. The bill that Senators Booker and Warren put forth is a move in the right direction, however, it does not specifically address the brutal ways in which animals suffer under this production model. As new policies replace old ones, animals will still suffer needlessly. The welfare of animals—along with the goal of total animal liberation—must be considered lest we replace the factory farm model with something far more insidious and unrecognizable.

In *Oryx and Crake*, Atwood creates a space for the existence of what I term a “post-industrial slaughterhouse,” which utilizes advancements in science to redefine how animal bodies are “slaughtered,” and how the manipulation of those bodies alters how we perceive human-animal relationships. This manipulation still contributes to the overall legitimization of capitalist logic that values profit over other animals. Through the novel, I illustrate how the post-industrial slaughterhouse is still an intensely exploitative space that contributes to the further objectification of animal bodies. To show Atwood’s bleak vision of the future, I explore parallels between biotechnologies represented in *Oryx and Crake* and current real-world advancements in genetic engineering. These parallels reveal the rhetorical tactics used by biotech firms and corporate agriculture to hide the continued suffering of other animals. Technologies that manipulate animal bodies in the name of public and environmental “health” are not saving animals, but further endangering them.

The post-industrial slaughterhouse represented in

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Oryx and Crake at once eradicates the suffering of farmed animals and at the same time, introduces new predicaments that put animal bodies at risk of further manipulation and commodification. While real-world biotechnology in agriculture is in its infancy, the field is nonetheless successfully developing alternatives to large-scale farming. It is largely unknown, however, how animals will be treated under these new, and highly technologically advanced models put forth by biotech firms around the world. *Oryx and Crake* predicts a morbid outcome if these technologies are not regulated. In the novel, animal bodies are manipulated beyond comprehension, forcing us to contemplate and re-conceptualize current understandings of essential animal qualities in an effort to confront the reality of animal suffering due to underlying anthropocentric ideologies fueled by capitalist value systems.

Reading the novel through the concept of the post-animal provides an avenue for re-negotiating the value of technology and its power over animal life in three ways: first, through the ways that current technologies support hierarchies that legitimize animal abuse; second, through the negative impact of current bioengineering practices performed on animal bodies; and third—and most importantly—that post-animal theory provides a framework for unpacking animal abuse in an advanced technological age of late-stage capitalist production. By unveiling the ideological basis for animal exploitation under capitalism, we begin to understand how these technologies continue to violate animal bodies for profit.

Postanimality does not mean looking beyond the animal in a way that further hides their suffering, but instead, functions as a way to produce meaningful dialogue meant to help us imagine a world that moves beyond the terms “animal” and “human” to uncover the ways that animals still suffer under new forms of “slaughter.” When Vasile Stanescu and Richard Twine (2012) developed the theory of postanimality, they did so to expose anthropocentric values that continue to justify the use and abuse of other animals in various contexts. These values inform

government policies that keep capitalist economic principles in place, continuing to give corporations free rein to mass produce meat at the expense of humans, nonhumans, and the environment. The basic task of postanimalism is to expose these underlying assumptions that continue to promote contentious relationships between humans and other animals. Stanescu and Twine (2012) argue that only by transcending this dichotomy, can we begin to see beyond human-animal distinctions to promote a fair, ethical, and safe path forward for all species.

Oryx and Crake multiplies the extent to which humans exploit other animals in a near future dominated by scientific advancements that resemble the current technologies driving the agriculture industry. Atwood imagines a plausible outcome for our world by illustrating the progression of unrestrained technologies and the ways that they contribute to the earth’s apocalyptic future. In the novel, biotech companies reinforce the subjugation of animal bodies through extreme genetic modification. The entire life cycle of an animal occurs inside of scientific labs, which have come to replace traditional mechanized slaughter facilities. Instead of butchering animal bodies along large-scale, electric assembly lines, scientists confine animals to labs that prolong their lives in order to manufacture a variety of products that benefit humans alone.

Representations of post-industrial slaughterhouses in the novel are, without a doubt, still very factory-like. In labs, for example, animals are developed in petri dishes, penned in “special buildings,” and “heavily secured” (Atwood, 2003, pp. 26, 202). The labs are housed in compounds, large enclosed communities, where company employees and their families enjoy clean working facilities and protected living conditions. The protagonist, Jimmy, lives with his parents in the OrganInc compound where his father is employed as a genetic engineer and his mother, a microbiologist. Jimmy’s father likens compounds to fairy tale castles. He tells Jimmy: “castles were for keeping you and your buddies nice and safe inside, and for keeping everybody else outside” (Atwood,

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2003, p. 28). Atwood creates a world that is deteriorating from environmental degradation, corporate greed, and rampant biotechnologies. In order to protect the privileged few, compound families are separated from the outside world and monitored by the CorpSeCorp, the corporations' security enforcement agencies. In contrast, the pleeblands are cities that dwell on the outskirts of compounds, filled with "the addicts, the muggers, the paupers, [and] the crazies" (Atwood, 2003, p. 27). These labels divide individuals into two classes: scientists with their families, and everyone else. Scientists, part of the elite class, control nature, while the marginalized classes are lab rats in the world's grandest science experiment.

Compound science labs specialize in an assortment of innovative technologies that are developed for mass consumption. Some engineer animals for food to sustain a growing population and others manipulate animals to manufacture desirable commodities that extend human life. In typical Atwood fashion, even compound names are tongue-in-cheek reflections of the ways that words can be manipulated to represent something new, just like the animals who reside in those facilities. For example, OrganInc Farms is a bioengineering facility where scientists create new species of animals and manipulate existing species. Part of this space is dedicated to a team of scientists who genetically modify pigs "to grow an assortment of foolproof human-tissue organs" (Atwood, 2003, p. 23). Similarly, NooSkins, a subsidiary of HelthWyzer Inc., is another type of facility that uses animals to develop skin-related biotechnologies.

In this world, genetic engineering encroaches upon all forms of life, provoking those in power to exercise absolute control over nature to sustain life and promote public "health." The children of families who live within the compound are trained at special institutions that groom the next generation of scientists for this purpose. For instance, the Watson-Crick institute, a place for especially bright young scientists, experiments on a variety of flora and fauna. The institute includes divisions such as

Botanical Transgenics, NeoGeologicals, BioDefences, and NeoAgriculturals or "AgriCouture" as nicknamed by the students. In NeoAgri, scientists create and breed animal-like creatures for food. Ironically, inside these highly surveilled and regulated compounds, scientists indulge in experiments that are constrained by nothing but the profit margin. In *Oryx and Crake*, science has the capacity to engineer an animal host that can generate and regenerate body parts in order to improve human life, lessening the animal's intrinsic value and extending their suffering. Atwood stretches agriculture industry operations to their grossest manifestation by portraying a world in which the animal body itself is a factory. In "Dis/Integrating Animals" (2006), Traci Warkentin suggests that this "treatment of animal bodies as biofactories is a clear expression of the strong reductionist trend in Western sciences in general, and biotechnologies in particular, which has resulted in a predominant view of organisms as machines" (p. 84). Much like the novel, modern factory farms in American society increase violence against animals in monstrous ways, changing the light in which animals are perceived. The confinement of large sociable animals like cows, sheep, and pigs, to small spaces leads to a variety of problems including the spread of zoonotic diseases, unsanitary living conditions, and the manipulation of an animal's genetic makeup, forcing them to adapt to unnatural living situations. Modifying animal bodies to accommodate industrial production practices changes the way that other species are valued, a common practice performed by scientists in *Oryx and Crake*.

Atwood takes part in revealing the adverse effects of the animal industrial complex, as the speculative nature of the novel gives rise to questions concerning ongoing economic, cultural, and ethical implications of these innovations. "Improvements" made to the farming industry over the last 100 years continue to negatively impact animals, human workers, and the environment because animal welfare is not taken into consideration. Atwood taps into the growing anxieties associated with current trends in in-

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dustrialized food production to bring awareness to the unethical practices of the industry; however, she does not stop there. Atwood creates an environment where food production befits the industry's move toward biotechnological practices that butcher the animal body beyond recognition.

The technological advancements that manipulate animal bodies for human use not only hide the suffering of animals, but also continue to justify capitalist narratives that perpetuate violence against animals and marginalized humans. For example, the consumer capitalist model under a scientifically advanced economic system creates food-producing technologies under the guise of environmental sustainability. In *The Bridge at the Edge of the World: Capitalism, the Environment, and Crossing from Crisis to Sustainability* (2008), James Gustave Speth argues that instead of taking a direct approach to repairing or avoiding environmental damage, companies focus on rhetorical tactics that put a band-aid on an already distressed economy. Predatory corporations, like those in the novel, identify shifts in consumer spending and simply rebrand products to profit off of environmentally conscious buyers, a problem commonly referred to as "greenwashing."¹ Labels such as "made with organic ingredients," "cage-free," "grass fed," "humanely raised," "farm-to-table," and "synthetic hormone or antibiotic free" are misleading—a rhetorical tactic that Atwood playfully exploits through the novel's almost-recognizable compound names. "Green" products dupe consumers into believing that they are investing in companies that are improving the environment, not damaging it further.²

Representations of consumer capitalism targeting the "environmentally conscious" in *Oryx and Crake* act as an instigator contributing to the fall of modern civilization. Gerry Canavan (2012) discusses the novel's apocalyptic qualities to argue that the end of the world and the end of capitalism are one in the same. Canavan (2012) suggests that the book seeks to "open up new spaces for imagining a post-capitalist future through a satirical, science fictional staging of capitalism's final catastrophic breakdown—and the

subsequent emergence of other kinds of lives, after the end of history" (p. 139). Interlocking systems of corporate power and scientific manipulation become increasingly more transparent as the novel draws attention to the systematic basis driving the exploitation of Earth and oppression of marginalized bodies. In *Oryx and Crake*, the slaughterhouse evolves past assembly-line style butchering. Instead, the creation of animal-like bodies via advanced genetic engineering and cell manipulation conducted within science labs exposes just how far corporations will go to exploit animals for profit, ignoring the ethical implications of their actions.

"Nature is to zoos as God is to churches": Farms of the Future

Factory farming is an archaic tradition in *Oryx and Crake*, and yet the "factory" mentality is still upheld in the science lab. An animal's worth is measured by its use-value, and genetically modified organisms yield greater profit. In the novel, genetic engineering provides a platform for humans to exercise power over animals for entertainment purposes and supposed health benefits. Scientists are given the freedom to experiment on animals as long as the end result proves lucrative. At OrganInc Farms, scientists experiment with animals as an after-hours hobby. Scientists brag about how "create-an-animal was so much fun," that "it made you feel like God" (Atwood, 2003, p. 51). They create and destroy a number of animals like the snat (combination of snake and rat) and the rakunk (part raccoon, part skunk). Rakunks are engineered without the skunk's pungent smell and minus the "crabbiness" of raccoons; they are "clean, with a nice disposition. Placid" (Atwood, 2003, p. 51). In the novel, rakunks are well-loved "pets."

OrganInc's grandest creations, the pigeons, however, are not well-loved by the compound community; they are feared and reviled, but provide humans with vital, life-saving organs. Unlike the "cute" factor that draws humans to rakunks, pigeons are dangerous hybrids spliced with human DNA for the purpose of producing human replacement organs. In the Or-

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ganInc compound, the line between human and animal is blurred because of the pigeons' unmistakably sentient characteristics. Geneticists hope that "none of the defunct pigs ended up as bacon and sausages: no one would want to eat an animal whose cells might be identical with at least some of their own" (Atwood, 2003, pp. 23-4). They wonder if "pigeon pie...pigeon pancakes, pigeon popcorn" could end up on the lunch menu as a way of disposing of them (Atwood, 2003, p. 24). In the cafeteria, staff are weary of the intelligence that pigeons possess. If pigs are engineered with human DNA, eating a pigeon would be much like eating a human. Geneticists and staff acknowledge the ethical dilemma of their lunches only when faced with the possibility of eating a pigeon because they are fully aware of the genetic material from which these creatures are bred. Likewise, Jimmy "did not want to eat a pigeon, because he thought of the pigeons as creatures much like himself. Neither he nor they had a lot of say in what was going on" (Atwood, 2003, p. 24).

Jimmy's recognition of pigeons as sentient creatures is also a reminder that animals bred for food are whole, living, feeling, thinking beings before they are butchered, ground up, pre-packaged, and served up for a meal. Furthermore, pigeons are not the only species subjected to the exploitative practices of corporate dominance. Jimmy realizes that he, too, was born into a system that only values his capacity for production to benefit the corporations for which he is groomed.

The regulatory pressure to conform is not only exercised on animal bodies, but also on the scientists who work in compound labs. Vulnerable humans are subjected to captivity, surveillance, and punishment. Jimmy's mother is captured and executed for "treason," a deliberate act that justifies violence for the "greater good" of the community. Ironically, violence is justified to preserve life and Jimmy's mother, and others like her, are sacrificed in order to maintain the cycles of violence that keep compounds running efficiently.

The CorpSeCorps are put in place to protect the economic interests of corporations that run compound facilities and dispose of anyone who poses a threat to those interests, like Jimmy's mother. His mother has a psychological breakdown and "retires" from her work as a microbiologist when she recognizes that the laws of nature are being violated to meet consumer demand. She tells Jimmy's father, "you're interfering with the building blocks of life. It's immoral. It's sacrilegious" (Atwood, 2003, p. 57). Jimmy's mother eventually runs off to join the eco-religious group, the God's Gardeners, a theological community that defies compound corporate culture in favor of a harmonious relationship with the Earth. Jimmy's mother is motivated to rebel because of her insider knowledge of the industry, but this same knowledge makes her a threat to the institution from which she is running. The CorpSeCorps men flag Jimmy and his family as dissenters. The element of control that is exercised over human bodies is the same force that empowers elite groups to practice science unethically. In Atwood's world, everyone is at risk of being "slaughtered."

Since the novel's original publication over 16 years ago, there is striking similarity between Atwood's imaginative future and what is currently underway in the field of bioengineering. In an interview on *Science Friday* (2016), a weekly radio show dedicated to science and technology, Atwood discusses the novel's genetically advanced world. She reminds us that "the things in the book that people may think are very weird—and they may think that I just made them up—some of them already existed when I was writing the book" (*Science Friday*, para. 7). Atwood's fictional inventions, like the crackers, pigeons, ChickieNobs, wolvogs, and rakunks, etc., are inspired by real genetic wonders.³ Atwood's far-fetched fictional world—that is not so very far-fetched anymore—reveals the extreme lengths that humans will go to commodify animal bodies. Interfering with the "building blocks of life," as Jimmy's mother calls it, is considered a necessary evil for the purpose of manufacturing cutting edge products at the expense of

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animal welfare. While genetic changes may one day spare farm animals from the factory farm, these technologies legitimize new forms of “butchering.”

“What the hell is it?”: Cultured Meat and the Morality of Meat-eating

Genetic modification is one of many developing scientific achievements explored in *Oryx and Crake*. In recent years, reports show that gene editing is also advantageous. Gene editing allows researchers to customize a living organism’s own genetic sequence for a variety of purposes. In the meat industry, editing an animal’s genetic code yields more efficient bodies befitting an industrial environment, eliminating parts of the animal that are “unnecessary.” For example, a firm out of St. Paul, Minnesota is creating a “strain of hornless Holstein cattle” (“Factory Fresh,” 2016, para. 7). According to the firm, Holsteins are popular milking cows, but horns “make them dangerous to work with, so they are normally dehorned as calves, which is messy, and painful for the animal” (“Factory Fresh,” 2016, section “Technology Can Improve...” para.4). Similarly, a company called Recombinetics manipulates genes to produce “castration-free pigs.” This species of pig is not subjected to the painful castration process because piglets “never go through puberty,” making castration unnecessary (Choi, 2018, para. 7).⁴ Instead of addressing why these processes are necessary in the first place, the animal body is manipulated to fit the industry, an industry that does not provide adequate space or stress-free living conditions for animals.

Experiments at the cellular level (lab-grown meat or in vitro meat) are also attracting attention due to the industry’s “environmentally friendly” appeal. Bioengineering promotes an ethical alternative to factory farming, but continues to justify the desire to manipulate animal bodies to satisfy the industry and meat-eating culture. Scholars have incorporated the term postanimal to challenge the anthropocentric ideologies that lab-grown meat perpetuates. In the article, “In Vitro Meat: Power, Authenticity, and Vegetarianism,” John Miller (2012) argues that lab grown meat merely preserves a meat-eating culture, what

he calls a “carniculture.” Advancements in bioengineering render factory-farming operations unnecessary, and yet, these tech-savvy practices still contribute to the human-animal divide that devalues animal bodies.

Current anxieties over bioengineering legitimize concerns brought to light in the fictive world that Atwood creates. At the end of her essay on Atwood and environmentalism, Shannon Hengen comments that “nature—physical or human—seen as a commodity always represents betrayal in Atwood’s works, and betrayal has consequences” (84). In the novel, regardless of technology that promises “environmentally friendly” and “sustainable meat,” the industry’s questionable practices lead to a consumer culture that spirals out of control. The novel illustrates how cultured meat is used to appease industry desires through Atwood’s invention of chicken-like creatures, called ChickieNobs. These specimens are grown and genetically altered in science labs.

The ChickieNob is unlike a real chicken and among students in “NeoAgriculturals,” it is described as a “large, bulblike object that seemed to be covered with stippled whitish-yellow skin. Out of it came twenty thick fleshy tubes, and at the end of each tube another bulb was growing” (Atwood, 2003, p. 202). Crake confirms for Jimmy that these bulbs of flesh are indeed “chickens...chicken parts. Just the breasts, on this one. They’ve got ones that specialize in drumsticks, too, twelve to a growth unit” (Atwood, 2003, p. 202). Jimmy is perplexed by the absence of a head, but the scientist confirms that the head is in the middle: “There’s a mouth opening at the top, they dump the nutrients in there. No eyes or beak or anything, they don’t need those” (Atwood, 2003, p. 202). The scientist also points out that they have eliminated brain functions that had nothing to do with “digestion, assimilation, and growth,” so the “animal welfare freaks won’t be able to say a word, because the thing feels no pain” (Atwood, 2003, p. 203). Scientists’ efforts to design creatures that appease the “welfare freaks” are countered by the God’s Gardeners mere weeks after the “fall.” News

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reports that captured widespread riots and raids included a video of the God's Gardeners breaking into a ChickieNob production facility to liberate ChickieNobs (Atwood, 2003, p. 340).

ChickieNobs are fascinating inventions, as they raise an important question regarding the moral and ethical treatment of animals, posing a challenge to the central philosophy posited by animal rights philosopher Peter Singer: Are pain and suffering the sole determinants of how animals are treated? In the context of the novel, this question is challenged through the illustrations of compound mentality and the counter actions of the God's Gardeners. American writer, feminist, and animal rights advocate, Carol J. Adams confirms that the "focus on suffering creates a new category, 'humane meat,'" that nullifies the problem: "they aren't suffering so it's okay to eat them" (1990, p. 14). Furthermore, ecophilosopher Russell Edwards (2015) notes that, "despite the total neutralisation of pain and suffering [in the ChickieNob], inflicting such an existence upon another living being seems worse than most horrible forms of factory farming currently practised" (para. 3). The creation of ChickieNobs calls into question capitalist value systems that uphold human exceptionalism. As Edwards (2015) reminds us, "humans are just one of many species making up the ecological community; we are not the masters of the community, or the masters of its members" (para. 10). A lack of respect for other species and the ecological community itself is the driving force behind the violent treatment of nonhuman animals. Despite the absence of eyes and a beak, the use of ChickieNobs draws a strong reaction from the God's Gardeners and even Jimmy in the moment they are revealed to him, and yet, he continues to consume the chicken product throughout the novel.

Jimmy's contradictory behavior embodies the meat-eating culture that prevails regardless of "environmentally friendly" tactics touted by production facilities in the novel. The creation of ChickieNobs not only reduces nonhuman animals to, what Warkentin (2006) describes as "biomachines," but also normal-

izes the practice. Warkentin (2006) contends that "the mechanization of nature will lead to the mechanization of ourselves, our sentiments, judgments, fear[s], and dreams" (p. 100). Reducing other species to inanimate objects will create an ethical void and diminish care for the integrity of life, which is why Stanescu and Twine (2012) propose a postanimal perspective to consider ways of exposing the "ultimate capitalization of animal bodies" (p. 6). Without recognition of the interrelated forms of species oppression, humans become desensitized, not only to the unethical treatment of other animals, but also to various forms of violence that take place outside of the science lab.

In *Oryx and Crake*, violence does not exist in a vacuum, and so the questionable ethics involved in slaughterhouse operations also run rampant throughout various entertainment mediums that glorify violence. The processes that prevent ChickieNobs from looking and acting like chickens parallel the ways in which humanity negotiates relationships with their own species. As teenagers, Crake and Jimmy enjoyed entertainment in the form of video games and reality television like *Extinctathon*, *Queek Geek Show*, and *Nitee-nite.com*. These entertainment mediums present violence in various ways. While watching executions on *Hedsoff.com*, Jimmy and Crake question the validity of the actions they are viewing:

Jimmy: "Do you think they're really being executed?" He said. "A lot of them look like simulations."

"You never know," said Crake.

"You never know what?"

"What is reality?"

(Atwood, 2003, p. 83)

Violent actions are sensationalized through mediums that show various forms of bodily mutilations on a continuous loop. Perceptions of reality are lost in the repetitive nature of actions viewed on the screen. Under such circumstances, these violent actions take on an unrealistic quality, leading to emotional

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dullness. Violence against bodies is normalized in a society that performs violent actions on a regular basis, and the viewer becomes desensitized to this violence.

Queek Greek show, in particular, features a contest where humans eat live animals, and prizes of “hard-to-come-by-foods” are awarded (Atwood, 2003, p. 85). “Real” products are so rare in this world that the public resorts to unthinkably violent contests just to taste some semblance of authenticity. Jimmy watches and thinks: “it was amazing what people would do for a couple of lamb chops or a chunk of genuine brie” (Atwood, 2003, p. 85). Entranced by what he sees, Jimmy flips from the Queek Greek show to pornographic videos until the mutilations of bodies are synchronized:

The body parts moving around on screen in slow motion, an underwater ballet of flesh and blood under stress, hard and soft joining and separating, groans and screams, close-ups of clenched eyes and clenched teeth, spurts of this or that. If you switched back and forth fast, it all came to look like the same event. Sometimes they’d have both things on at once, on a different screen.

(Atwood, 2003, p. 86)

The imagery in this scene illustrates fragmentation, mutilation, and violence. Body parts, whether human or nonhuman, are indistinguishable from each other. Screams, groans, and spurts of blood signify both slaughter and sex; there is no distinction between the two acts. This imagery is also reminiscent of how slaughterhouse production is typically described: “flesh and blood under stress,” “groans and screams,” and “clenched eyes and clenched teeth.” Bodies are violated, commodified, and degraded for the sake of entertainment. The internet-based shows described above are readily available in Jimmy’s world, revealing a level of brutality that commodifies these actions under a capitalist value system for the sake of desire.

Regardless of the desensitizing capabilities that genetic engineering may provide, concern for the

existence of living beings needs to move beyond sentiency to avoid the apocalyptic demise of humankind. While shrouded in “environmentally friendly” rhetoric, lab-grown meat presents a major moral crisis. If we continue to regard the environment as a commodity, we run the risk of opening ourselves up to other harmful acts, including the continuation of abuses performed on other species and humans, a narrative trajectory that Atwood fulfills in *Oryx and Crake*.

While ChickieNobs are represented as extreme examples in the novel, cellular regeneration of animal protein in labs around the world has grown exponentially in recent years. Unlike plant-based imitations, lab-grown meat “starts with an animal” (Servick, 2018, para. 2). Cultured meat was a technological concept popularized by Jason Matheny in the early 2000s, and unveiled as “slaughter-free meat” in 2013 by Mark Post, a professor from Maastricht University in the Netherlands. Post unveiled the first hamburger made from muscle cells grown in a lab. According to Post, technological improvements already underway will “increase the density of muscle cells that can be grown in a reactor, (with) hopes that Mosa Meat [Post’s company]...will have hamburger mince ready for sale...in five years’ time” (“Factory Fresh,” 2016, section “Where’s the Beef?” para. 3). The hefty price tag involved in manufacturing these products, however, has forced them to renegotiate this timeline if the company wants to distribute widely. Nonetheless, the popularity of lab-grown meat is increasing. A firm out of California, Memphis Meats, created a similar product with the first lab-grown meatball (“Factory Fresh,” 2016, section “Where’s the Beef?” para. 3). In fact, Bill Gates, and recently, the Tyson Corporation, invested in Memphis Meats in January of 2018. As foreshadowed by Atwood, technology and agriculture companies are already partnering to profit from this new industry. Bill Gates, the billionaire tech giant and Tyson, one of the largest chicken firms in the country, are buying into a new version of meat production that allegedly promises benefits for humans and the environment (Durisin, 2018).

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onment (Durisin, 2018).

The introduction of in vitro meat has offered a vision of a future that eliminates most animals from the meat-making process, however, the process still poses a risk to the animal population if the wellbeing of the animal is subsequently disregarded. Animal cells from the original host are extracted, so animals are required, at least for the foreseeable future, in the process of mass-producing lab-grown meat for the public at an affordable price. Mosa Meats claims that only 150 cows would be needed to “satisfy the world’s meat demand,” but admits that “this would be scaled up as the population grew” (Woollven, 2020). The initial process of cell extraction is a controversial process that involves using fetal bovine serum or FBS, which is derived from the fetuses of cows (Woollven, 2020). This process is one of many hurdles that cellular agriculture must overcome to gain consumer trust. Woollven (2020) reports that Mosa has since “moved on from its initial use of FBS and “claims to have developed a serum-free medium, which it is now optimising. However, it acknowledges that consumer reticence is still a challenge.”

While promising, lab-grown meat companies should progress with caution. Susan McHugh (2010) reminds us that information about the in vitro process is constantly changing and is not readily available, creating “profound misunderstandings not only of how people and animals [are] presently involved in these processes, but also of meat’s liminal life among human and animal bodies” (p. 187). Professor of Philosophy Ben Bramble argues that lab-grown meat presents a “serious moral problem from the fact that we will likely switch over to lab-grown meat...thanks to its benefits for human health or the environment...[but] we will do it for our own sake and not for the sake of animals” (Bramble, 2017, para. 5).

The impact of lab-grown meat may likely reflect positively on the bioengineering industry because of its innovative way of eliminating the need for slaughtering animals, an effort to end their suffering in the future. If we switch over merely for the benefit of hu-

man health as Bramble (2017) contends, however, we risk failing to take action against factory farms for moral reasons, which “could leave us open to committing other atrocities, or harming ourselves in various ways” (para. 11).

Replicating real meat ultimately legitimizes and sustains the public’s appetite for animal protein. It does not interrogate the anthropocentric value system that empowers a meat-eating culture. Stanesco and Twine (2012) explain that “far from a critique of factory farming, anthropocentric privilege, and human chauvinism, in reality, the fabrication of in vitro meat serves merely to hide the reality of both capitalism and speciesism, promising, although never delivering, a world in which the instrumentality of nonhuman life has become rendered ‘sustainable’” (p. 6). Essentially, the cellular agriculture industry found a way to appeal to environmentally conscious buyers by rationalizing their use of animals in order to make money.

In “The Artificial Meat Factory—the science of your synthetic supper” (2019), Tom Ireland states that “just one cell could, in theory, be used to grow an infinite amount of meat. When fed a nutrient-rich serum, the cells turn into muscle cells and proliferate, doubling in number roughly every few days” (para. 9). Just as the title of his article implies, the artificial meat industry is, indeed, a factory, and must operate as such in order to produce industrial-scale products. The danger, however, lies in the power of creation for the sake of creating. Ireland notes that with, “using ‘cellular agriculture,’ there’s no reason why scientists couldn’t grow artificial meat with characteristics from a combination of animals, or enhance lab-grown meat with healthier fats, vitamins, or vaccines. We could even taste the flesh of rare animals that nobody would dream of slaughtering for food. Panda burger, anyone?” (para. 5). This statement, while tongue-in-cheek, should give us pause for two reasons: first, in order to replicate cells, real animals must be used, and second, experimentation involved in combining different animals for novelty purposes is, and should be, forbidden.

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As Stanescu and Twine (2012) reiterate, anthropocentric privilege and human chauvinism are at work here if animal products are created for amusement and novelty. With knowledge of recent developments in cellular agriculture, *Oryx and Crake* exists as a prescient novel leading us towards a future Atwood rightly foreshadows.

“Not real can tell us about real”: Manipulation of Reality and Concluding Thoughts

Oryx and Crake explores a society that is accustomed to consuming genetically engineered products and the potential consequences that accompany these consumption practices. Jimmy is accustomed to food like ChickieNobs, Sveltana No-Meat Cocktail Sausages, and chocolate flavored energy bars, all foods created in a lab, and foods that he resents. This resentment brings forth a nostalgia for “real” meat. Because meat-eating is deeply embedded in Western culture, technological “fixes” that involve producing fake meat in the novel are met with a longing for what is no longer easily accessible due to environmental degradation. Jimmy’s exposure to the industry’s careless manipulation of animal bodies is ironically met with a fascination with “real” meat.

In this environmentally toxic world, “real” meat is scarce and only the elite have access to it, explaining Jimmy’s fascination. In “*Oryx and Crake* and the New Nostalgia for Real Meat” (2009), Jovian Parry notes that “animal flesh is accorded a special prestige, and a special set of meanings” in the novel (p. 243). In Atwood’s near future setting, “real” meat is manufactured as a rare and privileged commodity. As an adult, Crake invites Jimmy to dinner. Jimmy marvels at what he is eating: real oysters...real Japanese beef, rare as diamonds” (Atwood, 2003, p. 289). Even Jimmy’s privileged status does not afford him the opportunity to experience the taste of “real” meat. Just as “pleebs” are geographically separated from the socially elite who live in compounds, “real” meat is served up only for the rich and powerful.

Jimmy’s insatiable appetite for meat is simultaneously met with a realization about meat-eating, be-

cause in order to eat meat, an act of violence against animals must take place. In a manifestation of his lost childhood memory, Jimmy helps readers to reconnect with meat’s original source. The novel’s “Bonfire” chapter is one of the most poignant for illustrating violence against animal bodies and the ways in which readers may experience a sense of unease at this re-connection between animal and meat. Jimmy witnesses burning piles of animals as they were intentionally infected with a virus by a genetic engineering company in order to possibly “drive up meat prices” (Parry, 2009, p. 244). Here, consumer capitalist markets benefit off of “disasters [which] can potentially be as lucrative as they can be devastating,” and so *Oryx and Crake* exposes not only the disconnect between meat and meat-eater, but also between consumer capitalism and the power that it has over the manipulation of bodies for profit, even during global health and economic crises (Parry, 2009, p. 244).

This scene re-captures the connection between live animal and meat, the essence of meat production that is deeply hidden behind the mechanized and highly scientific processes that transform animals into food. Jimmy’s experience allows us to reclaim the reality of suffering that is associated with meat-eating, however, Jimmy’s empathy is later replaced with apathy as the system erodes his ability to decipher what is real from what is fake. Jimmy remembers pigs, cows, and sheep burning in enormous piles, “flames shot up and out, yellow and white and red and orange, and a smell of charred flesh filled the air” (Atwood, 2003, p. 16). The smell reminded Jimmy of the way that his hair smelled when he burned it. Jimmy feels anxious about the animals and asks his dad if they suffered, and his dad replies: “the animals were dead. They were like steaks and sausages, only they still had their skins on” (Atwood, 2003, p. 16). Through Jimmy’s retelling of this moment, readers are made aware of the connection between suffering, sentience, and food production. As a child, Jimmy is confused by his father’s words: “steaks didn’t have heads. The heads made a

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difference: he thought he could see the animals looking at him reproachfully out of their burning eyes... the lit-up, suffering animals” (Atwood, 2003, pp. 18-9). Jimmy’s experience brings about a re-awareness of where meat comes from, and the animals that suffer to provide humans with the food that they desire.

The advancements in biotechnology that infiltrate the agriculture industry in Atwood’s fictive world call attention to the realities that we face today. Continual abuse of the land, and the unabashed extraction of the Earth’s natural resources are contributing to the acceleration of climate change, the annihilation of species, pandemics, and complete environmental destruction. For the global economy to continue profiting off of the Earth’s destruction, industries must continue to mask the atrocities that humanity commits against animals by employing “greening” tactics that further the manipulation of bodies and perpetuate damaging ideologies. Warkentin (2006) argues that “if we continue along the biotechnological path without questioning its ideological basis...we gamble with becoming machines ourselves” (p. 101).

If the world’s current methods of producing, distributing, and consuming animal products are unhealthy for the Earth and its inhabitants, what comes next? Do we embrace technologies furthering the manipulation of other species in order to eliminate current farming practices that contribute to global warming at accelerated rates, or is there a better way? Animal agriculture, alone, is the second largest contributor to “human-made greenhouse gas emissions after fossil fuels and is the leading cause of deforestation, water and air pollution, and biodiversity loss” (“Climate Nexus.org,” para. 1). To protest the animal industrial complex just to replace it with something that continues to harm the lives of animals is not good enough; we must do better, especially at a moment when change is inevitable. Food production could be unrecognizable in a post-pandemic world, and an interdisciplinary approach led by animal rights scholars, students, and activists should be the driving force behind changing the ways that food is produced and

distributed to ensure the safety of humans, animals, and the environment.

Notes

¹ Greenwashing is a widespread marketing tactic which “enable[s] companies to present themselves as caring environmental stewards, even as they [are] engaging in environmentally unsustainable practices” (Watson, 2016).

² While the organic food industry currently makes up almost 6% of the U.S. market, it is difficult to target exact market size because it is not always easy to identify whether an organic food product sold is actually organic (Food Industry, 2019; Gelski, 2019; USDA Agriculture Marketing Service, 2020). Likewise, when it comes to animal welfare, the organic industry lacks in transparency. Environmentally conscious buyers spend more on organic animal products with the expectation that specific rules will be enforced to ensure that animals have access to the outdoors and other animal welfare related benefits, however, this is not necessarily the case. Organic regulations involving “food” animals are vague and the USDA has lagged on providing the meaningful animal welfare regulations and enforcement that consumers expect (ASPCA, 2020).

³ Alba, the glowing bunny created by Eduardo Kac (Copeland, reporting for The Washington Post). Spider goats, created by Randy Lewis, produce milk with a silk protein that can be refined and spun into a fiber. A taxidermy version of a spider goat, Freckles, is on display at the Center for PostNatural History in Pittsburgh, Pennsylvania (Rutherford reporting for The Guardian); Scientist Juan Carlos Izpisua Belmonte wants to use CRISPR gene editing to create human-animal hybrids that we can harvest for parts; (Hayasaki, reporting for Wired).

⁴ According to reports, pig castration is necessary because once the piglet goes through puberty, the meat takes on an unpleasant order known as “boar taint,” so pigs are castrated, a procedure that is commonly performed without painkillers. Altering the ge-



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netic makeup of the pig would eliminate this act, a so-called victory for animal advocates. Reported by Candice Choi from Phys.org, a leading journal in biotechnology.

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