Creative Extinction

Serial Cycles of De-Extinction and Re-Extinction in Resurrection Business

Michael Fuchs

Abstract

This article discusses the videogame *Jurassic World Evolution* (Frontier Developments, 2018). As a business simulation, *Jurassic World Evolution* makes playable—and asks players to perform—a serialized cycle of de-extinction and re-extinction: dinosaurs are resurrected only to be wiped out again when a successor that is "better, louder, with more teeth" (to quote Jurassic World's operations manager Claire Dearing) becomes available. The revenue players generate is thus founded on a cycle of extinction, de-extinction, and re-extinction. In so doing, the videogame suggests that de-extinction does not promise a future primarily defined by the overcoming of extinction and the becoming-real of the dream of re-establishing natural abundance through techno-scientific means, but rather a future characterized by an exponential growth in serialized extinctions, made possible by techno-science. That the videogame puts players in charge of both finances and developing their dinosaur "assets" draws players' attention to molecular biology as a new place of production. Hence, resurrection science and its biocapitalist entanglements not only exploit past extinctions but rather suggest that this biocapitalist venture is based on speculation—reaping seemingly unlimited future profits from a potentially never-ending cycle of extinctions, de-extinctions, and re-extinctions.

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Michael Fuchs

In *Frankenstein* (1818), Victor Frankenstein "examine[s] the causes of life." In the course of his studies, he concludes that "life and death" are "ideal bounds" that he needs to "break through" before he will be able to "bestow animation upon lifeless matter."[1] Frankenstein showcases hubris in this passage and embodies an all-too prevalent tendency among enlightened human beings inhabiting the Global North: to view limits—especially "naturally" imposed ones—as challenges that need to be overcome before mastering and controlling them. By embracing this spirit, humankind has "become a global geophysical force," which "represents a profound shift in the relationship between humans and the rest of nature."[2] However, with great power comes great responsibility, and humanity has not been up to the task. Global warming, ocean acidification, plastic pollution, biodiversity loss—we all know the phenomena associated with the environmental crisis. And while many of these consequences of anthropogenic activities may have been unintended, humans are not innocent actors on the stage of life. After all, as the extreme metal band Cattle Decapitation puts it on their Anthropocenic album *Death Atlas* (2019), today, "we know that we're wrong, / we know what we've done, / yet we still carry on."[3] Indeed, one of the reasons why we still continue topping our greenhouse gas emissions (among others) on an annual basis (unless a pandemic stops us) is that the various dimensions of the environmental crisis are so massive in scale that they seem incomprehensible. Since these phenomena cannot be fully understood (or not grasped at all), they can neither be controlled nor mastered. The Anthropocene condition may thus evoke feelings of powerlessness and cause paralysis.

But it doesn't have to be all gloom and doom. In the introduction to his edited volume *After Extinction* (2018), Richard Grusin raises a seemingly simple but, in fact, very complex and profound question: "What comes after extinction?"[4] While some might say, "There is no 'after extinction.' Extinction is the end," others might answer, "De-extinction!" De-extinction—the resurrection of extinct species—might sound like little more than a fantastic technology in (soft) science fiction that is akin to magic, but

it is something that scientists have been working on in the real world. By promising to undo one of the more terrifying prospects of the Anthropocene (i.e., extinction; in particular human extinction, for the idea of the Anthropocene relies on the premise of "the *human as fossil to come*"[5]), de-extinction has the potential, as I have argued elsewhere, to "offset the constant state of 'out-of-controlness' characteristic of the Anthropocene condition and promises humans to regain control over the fate of the planet."[6] After all, de-extinction radically "challenge[s] our fundamental sense that human life is unidirectional, proceeding ineluctably from conception to death," as Susan Squier notes with reference to progress in the manipulation of embryonic stem cells.[7] Since de-extinction allows human beings to reconfigure this monodirectional conception of life and replaces it with a (potentially) serial notion in which an individual's death may not be final but rather lead to rebirth, de-extinction may well be "the quintessential environmental imaginary of our biocybernetic age, one in which science and science fiction repeatedly double back on each other in the urge to restore lost worlds."[8]

This is the "good Anthropocene" that, for example, the Breakthrough Institute's "Eco-Modernist Manifesto" imagines: "A good Anthropocene demands that humans use their growing social, economic, and technological powers to make life better for people, stabilize the climate, and protect the natural world."[9] The original *Jurassic Park* novel (1990) anticipated these discourses by addressing a different issue haunting our age—the anthropogenic extermination of species. In the book, the narrator explains that "by 1985, it seemed possible that quagga DNA might be reconstituted, and a new animal grown."[10] The prospect seems barely fathomable: the quagga, a subspecies of the plains zebra hunted to extinction in the nineteenth century, might return to the plains of South Africa, a century after it had disappeared from them. "If that was possible," the *Jurassic Park* narrator wonders, "what else was possible?"[11]

De-Extinction and Re-Extinction

In our material reality, the biotechnological power that is de-extinction has one "successful" animal resurrection project to its record. The Pyrenean ibex, referred to as *bucardo* in Aragonese and Spanish, was declared extinct on January 6, 2000. In the nineteenth century, the Pyrenean ibex's numbers dwindled due to anthropogenic activities and their effects, including overhunting and habitat loss, and in the latter half of the twentieth century, populations were hit hard by sarcoptic mange outbreaks, bringing the species to the brink of extinction. Following a series of failures to clone specimens of the species, a hybrid of a domestic goat and another ibex subspecies calved a Pyrenean ibex on July 30, 2003. The *bucardo* was no longer extinct. However, the little creature died after a few minutes due to a deformation of her lungs.[12] A "hideous progeny" produced by crossbreeding and other forms of human

tampering with life,[13] the calf saw the light of day without any chance of survival. The first de-extincted animal immediately transformed into the subspecies' second endling, as the subspecies went extinct for a second time minutes after it had become de-extinct.

Nevertheless, the momentary de-extinction of the *bucardo* was a biotechnological milestone. Commenting on "the development of molecular biology" since the late twentieth century more generally, Stephanie Turner has suggested that "species such as woolly mammoths . . . are not lost after all, but continue to exist as genetic codes residing in their remains."[14] Reflecting on Dolly the sheep, Sarah Franklin has noted that the successful cloning of a mammal produced a hype; it "signifie[d] a reaching beyond, or an expansion of range. Dolly [was] in this sense both a frontier and a horizon—a relational someplace and no place signaling future possibility and direction."[15] Similarly, the story of the resurrection of the Pyrenean ibex has fueled the imagination. Indeed, although scientists have yet to succeed in replicating the feat achieved in 2003, the Pyrenean ibex was quickly overshadowed by other possible de-extinction projects in the public imagination—the de-extinction of the passenger pigeon, thylacine, aurochs, and the woolly mammoth, among others. As a matter of fact, popular science books, magazines, and newspapers have turned the woolly mammoth into the icon of de-extinction, as articles about its potential resurrection appear with surprising regularity—even if evolutionary molecular biologist Beth Shapiro's book *How to Clone a Woolly Mammoth* (2015) presents a clear argument that "we will never bring something back that is 100 percent identical—physiologically, genetically, and behaviorally identical."[16]

In this context, the company Colossal Laboratories & Biosciences has been repeatedly in the news in recent months, as its scientists are planning to create "a cold-resistant elephant with all of the core biological traits of the Woolly Mammoth. It will walk like a Woolly Mammoth, look like one, sound like one, but most importantly it will be able to inhabit the same ecosystem previously abandoned by the Mammoth's extinction."[17] The company's website provides ten good reasons for resurrecting the mammoth, including "prevent[ing] the emission of greenhouse gases trapped within the permafrost layer—up to 600 million tons of net carbon annually," "establish[ing] a proven link between genetic sciences and climate change," and "equip[ping] nature with a resilience against humanity's adverse effects on vital ecosystems."[18] The various texts about the mammoth on Colossal's website exemplify Adam Searle's observation that "the mammoth is already engaged in multiple meanings, subject to potentialization as a symbolic project, already guiding scientific and technological innovations of the future. Its resurrection is discussed by de/extinction practitioners with an air of certainty and inevitability, allowing cultural imaginaries to develop as the virtual is interwoven into ideas of wildlife and extinction. The mammoth is cur-

rently actualized in narratives of research and epistemological function; as a means of developing scientific understandings of ecological niches, (paleo)climatology, climate change resilience, human health and epidemiology, and even the prospects of space exploration and terraforming."[19]

Commodifying Resurrection

In this article, I am less interested in how the biotechnological revival of the woolly mammoth becomes connected to mitigating effects of the environmental crisis; rather, I would like to highlight a different part of Colossal's website to introduce my main topic. On Colossal's launch page, users can see a stylized motion background, while in the foreground, two lines in large letters proclaim, "Colossal. The science of genetics. The business of discovery" (Illustration 1).[20] The emphasis on "the business of discovery" makes explicit that much of the fascination with de-extinction is based on speculation. "Speculation" has two meanings in this context: on the one hand, asking questions such as, "What if scientists really were to succeed in bringing these creatures back to life?"; on the other hand, there are financial connotations—de-extinction is an investment that has substantial risk of losing value but also holds the promise of reaping significant profits in the future.

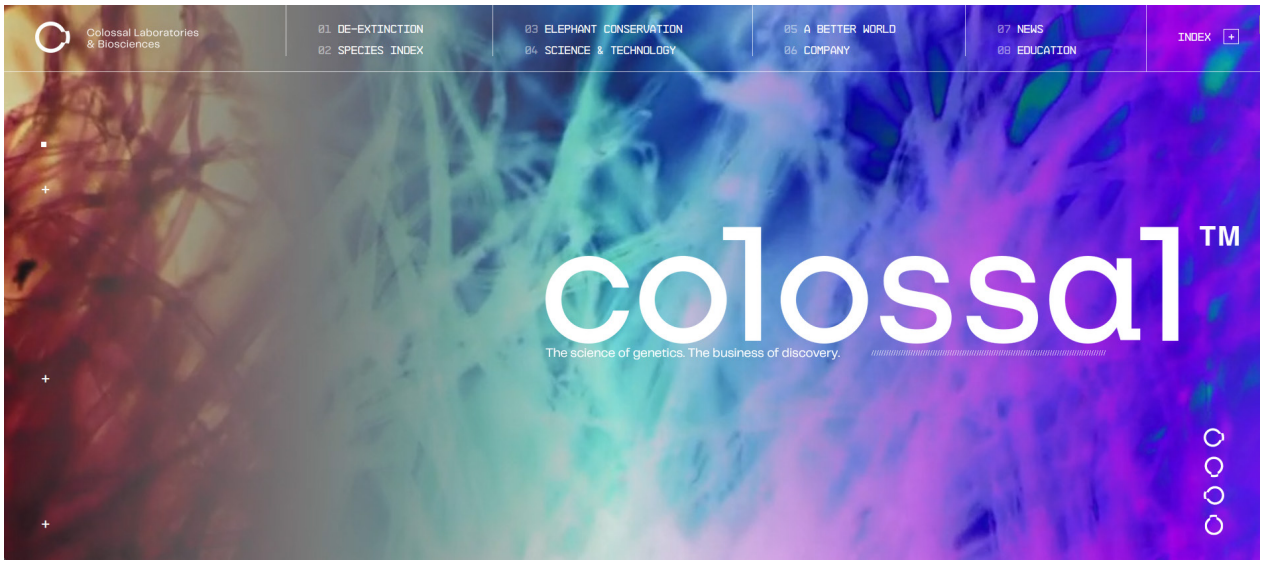

Illustration 1: The launch page of Colossal Laboratories & Biosciences' website.
Screenshot, https://colossal.com. Image used in accordance with Austrian copyright law pertaining to the use of images for critical commentary.

Ashley Dawson has observed that "the extinction crisis offers an opportunity to capital for a new round of accumulation. In the name of coping with the decimation of flora and fauna around the planet, the most advanced sectors of capital are rolling out new biotechnologies that…promise to revive charismatic extinct species like the mastodon."[21] This connection between the biotechnological manipulation of life and

capitalism is at the heart of the Jurassic Park/World franchise, which has strongly influenced the public perception of de-extinction science. The introduction to the original novel acknowledges that "biotechnology promises the greatest revolution in human history," but he also makes clear that he considers this new tool dangerous, in particular because of the "astonishing speed" with which "the commercialization of biotechnology" has taken place.[22] Despite the explicit criticism of extracting genetic information from dead (or extinct) animals in order to generate profits, Universal Pictures has turned the dinosaur-populated world into a multi-billion-dollar franchise that exploits the public fascination with dinosaurs. While the prehistoric creatures are not the franchise's only draw, its reliance on dinosaur-related action (and, outside the diegesis, dinosaur-based merchandise) recalls Nicole Shukin's argument that "the soaring speculation in animal signs as a semiotic currency of market culture" occurs "at the same time that animals are reproductively managed as protein and gene breeders under chilling conditions of control."[23]

Drawing on Shukin's notion of animals "as simultaneously sign and substance of market life,"[24] this article discusses an ancillary text to the Jurassic World trilogy, the videogame *Jurassic World Evolution* (Frontier Developments, 2018). While *Jurassic World Evolution*, similar to the movies, features the critical voices of chaos theoretician Dr. Ian Malcolm (Jeff Goldblum), raptor whisperer Owen Grady (Chris Pratt; voiced by A. J. LoCascio in the videogame), and Jurassic World operations manager-turned-dinosaur conservationist Claire Dearing (Bryce Dallas Howard), the game puts players into the role of what I would like to call necropreneurs. Whereas a standard definition of entrepreneurs suggests that they "add value to the economy,"[25] the videogame illustrates that this may be the fact in the short run, but in the long run and considering externalities, negative value is the typical end result of capitalist processes. After all, the videogame is based on a necrocapitalist logic that centers on the accumulation of extinctions, for *Jurassic World Evolution* has a serial cycle of de-extinction and re-extinction inbuilt: as soon as, in the words of Claire Dearing's operations manager persona, the scientists that players manage have developed an "asset" (i.e., dinosaur) that is "bigger, louder, [and has] more teeth" and thus promises to increase visitor numbers and boost revenue,[26] the old "products" are phased out and replaced by their successors. In *Jurassic World* (2015), Simon Masrani (Irrfan Khan), CEO of the company that owns Jurassic World, muses that the dinosaur-populated theme park does not seek to generate profits, but rather "exists to remind us how small we are, how new."[27] However, the necropreneurial figure that players control while playing *Jurassic World Evolution* does not leverage the power of de-extinction to confront players with the potentially uncomfortable reality that "the human is but a momentary blip in a history and cosmology that remains fundamentally indifferent to this temporary eruption," as Elizabeth Grosz put it[28]; nor do players

and their virtual stand-ins work toward undoing the eradication of species that vanish around the planet at an alarming rate. Instead, they seek to increase profits while serially de-extincting and re-extincting dinosaurs.

Extracting Resources

Jurassic World Evolution is a relatively simple entertainment park management simulation whose main selling points are its affiliation with the franchise and the idea of managing (and seeing) dinosaurs come alive in the virtual world. Accordingly, players are tasked with creating theme parks populated with dinosaurs across a number of (fictional) tropical islands off the coast of Costa Rica. Players need to construct roads, build hotels, security and surveillance infrastructure, shops to sell merchandise, and provide restaurants for their visitors to dine in. Most importantly, players need to set up research infrastructure to uncover fossils and extract the genetic information of the prehistoric creatures to breed the animals and then release them into their enclosures. Once the animals have been released, players need to ensure that the dinosaurs—their investments—remain well-fed, healthy, and content with their lives in captivity.

All of that might sound innocent enough (it's speculative and a game, after all), but this basic outline of the game brings some problematic implications to the fore. Apart from the neocolonial practice of constructing theme parks on remote and seemingly unpopulated islands—the idea of *terra nullius* that runs through the entire franchise draws on the narrative template of colonial "lost world" tales of the nineteenth/early twentieth century[29]—*Jurassic World Evolution* requires players to acculturate to the virtual world and its operating principles and thus teaches them to act accordingly.

Writing about the massively multiplayer online role-playing game *World of Warcraft* (Blizzard, 2004), Patrick Jagoda has explained that "the game generates, in the player, a heightened experience of a dominant economic situation that it does not simply represent but to which gameplay centrally belongs. The game privileges mechanics that train players to become entrepreneurs of themselves who acculturate to its virtual space (at lower levels) by aspiring to a higher rank, following instructions, engaging in war making, and accumulating private property, and (at higher levels) by team building, managing a guild, optimizing combat strategies, and administrating resources."[30] A similar process is at work in *Jurassic World Evolution*, as the videogame instructs players to generate revenue, extract fossils, produce dinosaurs, and eventually replace them with better "models" as soon as they are available to generate more revenue, etc. As Cabot Finch, head of public relations and crisis management and the guiding voice in the game's tutorial explains, "Create dinosaurs, which

attracts visitors to your facilities, brings in capital—*money*, which means you can do more research to build better facilities and create more dinosaurs, and there you go: a circle of life; development and resources; nature and commerce."[31] This notion of players controlling the "circle of life" tries to veil the fact that players, in fact, manage a circle of death centering on designing and killing prehistoric creatures.

The production of dinosaurs is underpinned by neocolonial extraction networks. Although the majority of dig sites are located in North America, there are also sites in places such as Argentina, Mongolia, and Niger that may be harvested with reckless abandon (Illustration 2). The videogame ignores legal complications as to whether one digs on federal, state, private, or tribal land in the United States and that (real-world) Mongolian law considers fossils "part of the nation's cultural heritage," which is why they "cannot be exported."[32] The costs of expeditions differ in the videogame, but the expenses seem to be primarily related to how attractive the dinosaur in question will be for visitors—and thus profitable for players, suggesting that the resources are available for the players' extractive practices if they are willing to invest some money. While Souvik Mukherjee has rightfully explained that play provides "a way of constantly subverting the 'centres' that colonialism tries to construct,"[33] *Jurassic*

Illustration 2: Map of the extraction sites (light blue, green, and red dots) in *Jurassic World Evolution*.
Illustration composed of several screenshots from *Jurassic World Evolution* © Frontier Developments, 2018 (Xbox Series X version). Image used in accordance with Austrian copyright law pertaining to the use of images for critical commentary.

World Evolution's inconsiderate replication of colonial systems, which exploit the colonies to enrich the corporate imperial center, requires players to re-enact colonial fantasies.

At the same time, these underlying ideas expose paleontology as "a mode of accumulation, on one hand, and of dispossession, on the other"[34]—a colonialist form of extraction par excellence. Indeed, an increasing number of geologists and paleontologists have acknowledged that colonialism has shaped the geosciences.[35] In the context of the United States, Lawrence L. Bradley has demonstrated that "the emergence of vertebrate paleontology as a scientific discipline can in part be attributed to large vertebrate fossils discovered on land inhabited by indigenous populations," which is why "vertebrate fossils are yet another natural resource dispossessed from subjugated peoples like the Sioux of the Northern Great Plains of the United States."[36] The location of the fossil sites in *Jurassic World Evolution* connects the videogame with these historical contexts by aligning the dig sites with the westward expansion of the nineteenth century and the iconic Bone Wars, in which Edward Drinker Cope and Othniel Charles Marsh competed over fossil finds.[37]

Similar to the colonial myths and racial hierarchies that provide the basis for the exploitation of "less developed" countries and their peoples, animals have long and often figured as life forms that are inferior to (White) humans in Western discourse, as "we eat, hunt, torture, incarcerate and kill animals because it is our sovereign right won from total victory; our sovereign pleasure."[38] In Jurassic World (i.e., the park), this disregard for animal lives results in a situation in which every facet of the dinosaurs' lives is structured in ways that allow the park management (i.e., players) maximum surveillance of the animals and effectively absolute control to intervene in their lives. Although players cannot directly kill the dinosaurs (by shooting, euthanizing, or poisoning them), they may let a specimen that is no longer wanted die of thirst or starve to death, or they may transport it into the enclosure of a large carnivore that is certain to kill it. Quite literally, players have the "power to *foster* life or *disallow* it to the point of death," as Michel Foucault notes in his elaborations on biopolitics. Notably, Foucault also suggests that capitalism "would not have been possible without the controlled insertion of bodies into the machinery of production."[39] While Foucault refers to human labor in this instance, the statement applies to Jurassic World's dinosaurs, as well, as the animal's bodies are what makes possible the park's capitalist venture.

Necropreneurship

In order to progress in this capitalist endeavor, the videogame employs a mechanic that is typical of strategy games: the technology tree. For the uninitiated, "the eas-

iest way to conceive of a technology tree," Will Slocombe writes in an article on representing and simulating science in the Civilization series, "is to imagine a genealogical tree of technologies in which earlier research provides the basis for a civilization to discover more advanced technologies. That is, each technology . . . is discrete and leads to others."[40] In *Jurassic World Evolution*, players first need to build a research center to access the technology tree, which has eight branches: buildings, building upgrades, global operations, medical treatment, genetic research, fossils, paleobotany, and enclosures (Illustration 3). In order to unlock new stages in the various branches, players have to invest money and/or complete certain goals in the game, such as reaching a certain park rating, completing missions, and/or completing the genome of dinosaur species.

Illustration 3: Part of *Jurassic World Evolution*'s technology tree.

Screenshot from *Jurassic World Evolution* © Frontier Developments, 2018 (Xbox Series X version). Image used in accordance with Austrian copyright law pertaining to the use of images for critical commentary.

The research areas most relevant for this article are the ones directly related to dinosaurs: fossils, medical treatment, and genetic research. Genetic research allows players to alter certain traits in dinosaurs. For example, changing the dinosaur's skin pattern increases its rating, which attracts visitors; in addition, the increased dinosaur variety makes visitors happier. Likewise, making a carnivore more aggressive by tampering with its genes requires additional security measures but allows the park to generate more income. Medical research allows players to develop breeding countermeasures and treatments for various diseases, which also increases visitors' satisfaction, as they do not like to see sick or wounded dinosaurs. Research in fossils,

finally, unlocks new excavation sites, where players send dig teams (after building an expedition center) to search for fossils. From the fossils, scientists extract genetic information. Once a dinosaur species' genome is completed to fifty percent, specimens of that particular dinosaur may be produced, although the risk of unsuccessfully "manufacturing" dinosaurs (as Ian Malcolm puts it at one point[41]) is higher the more gaps in the genetic sequence there are. Accordingly, the game incites players to complete the dinosaurs' genomes, in particular because completing the genomes of specific species is key to taking the final steps in the biotechnological mastery of prehistoric life: genetic hybrids, which were introduced to the storyworld in *Jurassic World*. Of course, as geneticist Henry Wu (BD Wong) is quick to emphasize in the movie, "nothing in Jurassic World is natural; we have always filled the gaps in the genome with the DNA of other animals,"[42] but *Jurassic World* introduced a creature to the franchise that combines the genetic information of various dinosaur species—the Indominus rex, which was followed by the Indoraptor in *Fallen Kingdom* (2018). To unlock the Indominus rex in the videogame, players have to complete the genomes of the Tyrannosaurus rex and the Velicoraptor; in order to produce Indoraptor specimens, the Indominus must be developed first and the reputation of the security team in the park on Isla Sorna must reach a certain point. To the two hybrids known from the movies, *Jurassic World Evolution* adds the Ankylodocus (complete genomes of Ankylosaurus and Diplodocus required), Spinoraptor (Spinosaurus and Velociraptor), and Stegoceratops (Stegosaurus and Triceratops) (Illustration 4). The proliferation of dinosaur hybrids suggests that Jurassic World's scientists have truly cracked the code of life, which results in their "growing capacities to control, manage, engineer, reshape, and modulate … living creatures," to draw on Nicolas Rose's reflections on genetic engineering.[43]

Beyond simplifying complex technological developments into discrete series of steps, what is crucial here is that the spatial limitation of the theme parks asks players to resurrect dinosaurs in serialized fashion: to de-extinct dinosaurs only to re-extinct them as soon as a more profitable successor is waiting in the petri dish, as the de-extinct species (usually) becomes de-extinct again (de-extinct^2?) upon release of the next generation. In so doing, *Jurassic World Evolution* taps into a very basic understanding of what economist Joseph Schumpeter termed "creative destruction." Schumpeter observed an "evolutionary character of the capitalist process" that he described as a "process of industrial mutation … that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one."[44] Schumpeter primarily focused on groundbreaking innovations in manufacturing that lead to the dismantling and/or complete re-configuration of an industry. However, the term has, in particular in the more recent past, taken on a life of its own and taken on different connotations. What has remained unchanged,

Illustration 4: Hybrid species in *Jurassic World Evolution*.

Screenshots from *Jurassic World Evolution* © Frontier Developments, 2018 (Xbox Series X version). Images used in accordance with Austrian copyright law pertaining to the use of images for critical commentary.

though, is that "creative destruction" suggests progress and economic growth by constant innovation, which, following a Social Darwinist logic, punishes those who cannot keep up.

However, what usually remains unsaid is that Schumpeter drew on Karl Marx and Friedrich Engels's writings in his conceptualization of creative destruction (even though Schumpeter makes this point clear). In the *Communist Manifesto* (1848), Marx and Engels suggest that bourgeois society cannot exist without constantly revolutionizing its means of production and, thus, constantly re-configuring society.[45] The emerging crises that capitalism produces result in the growing disproportionateness of the economic development of society and its relations of production, which, in turn, leads to "the destruction of capital, not by relations external to capitalism, but rather as a means of self-preservation."[46] In short, Marx saw capitalism's self-destructive tendencies. In his contribution to the volume *Anthropocene or Capitalocene* (2016), tellingly titled "Accumulating Extinction," Justin McBrien draws on these ideas to develop the concept of the Necrocene.[47] One of McBrien's key points is that capitalist production draws on past extinctions in the form of fossil fuels (albeit extinctions that occurred millions of years before dinosaurs dominated the planet) and leads to present and future extinctions by the seemingly endless need to grow.

Jurassic World Evolution transforms this idea into its central game mechanic, as the business that players run is based on the idea of resurrecting extinct species, only to kill them when a more profitable species or modified specimen has been developed. This *is* accumulating extinction. As such, *Jurassic World Evolution* asks

players to perform what I would like to label necropreneurship. This concept draws on the notion of the Necrocene and what Bobby Banerjee has called "necrocapitalism," which, in turn, draws on Achille Mbembe's concept of necropolitics, which he defined as "contemporary forms of subjugation of life to the power of death."[48] Banerjee's notion of necrocapitalism centers on "violence, dispossession, and death that result from practices of accumulation."[49] While Banerjee's focus is a regime of capital in which Black, Brown, and Indigenous bodies are disposable—in particular if that guarantees the continued accumulation of capital—I would argue that a similar process (*possibly* sans dispossession) is at work when it comes to animal life. In part due to the underlying capitalist principle of "cheap nature,"[50] animals are disposable. Animal deaths fuel the capitalist economy, no matter whether they may be killed to be served as food, because their habitats are destroyed to grow more soy or palm trees, because animals used for production can no longer produce, or because their organic remains transform into materials that humans turn into fossil fuels. Death is part of the system. Accordingly, necropreneurship is not so much a radical change in the conceptualization of entrepreneurship, but rather uncovers what entrepreneurial practice in a capitalist system is all about: death, destruction, and extermination (rather than extinction).[51] Capitalism ultimately destroys its material foundations and thus itself.

Necrofuturism

Drawing on Dolly Jørgensen's work on recovering lost species, one might say that de-extinction "look[s] to the past in the service of the future."[52] De-extinction embodies hope by promising to undo extinction; however, *Jurassic World Evolution* illustrates that de-extinction projects past mistakes into the future, which may be repeated—not *ad infinitum*, because there is an end to this cycle of extermination and destruction.

William E. Connolly has concluded that "we are participating in a new mass, cross-species extinction event, triggered by extractive capitalism."[53] *Jurassic World Evolution* is not at all critical of how extractive capitalism has caused biodiversity loss across the globe but rather turns this ecological disaster into another source of virtual income. This idea very much continues the Western path of progress, which is based on "an economic system and culture founded on a drive to annihilate everything in its path."[54] In our world of turbo-capitalism, there does not seem to be the need to consider long-term effects—not in terms of human lifetimes, definitely not on the scale of geological time. After all, to quote John Maynard Keynes out of context, "*in the long run* we are all dead," anyways.[55] Indeed, as Ramachandra Guha details, capitalism may "have brought, in some areas and for some people, a genuine and substantial increase in human welfare," but these processes "have also been

marked by a profound insensitivity to the environment, a callous disregard for the needs of generations to come."[56]

De-extinction oozes nostalgia for a past that never was and promises a future in which biodiversity loss is a problem of the now-turned-past, a problem left in the rear-view mirror of technoscientific progress. Despite its visual focus on lush greens and paradisiacal islands, deep down, *Jurassic World Evolution* implies what Gerry Canavan has called necrofuturism—the game "premediates the . . . economic and ecological future that will emerge out of current trends." Canavan, writing about the film *Snowpiercer* (2013), suggests that necrofuturism "resigns us to a coming disaster we can anticipate but not prevent."[57] As a videogame, which "without the active participation of players and machines" would "exist only as static computer code,"[58] *Jurassic World Evolution* takes this idea a step further, however: we explicitly play our part in bringing about this economic and ecological future. In order not to become imbricated into this system, one would need to decide not to play along by either putting down the controller or shutting off the system.

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Notes

1 Mary Shelley, *Frankenstein*, in *Frankenstein: Norton Critical Edition*, 3rd ed., ed. J. Paul Hunter (New York: W. W. Norton, 2022), 94.

2 Will Steffen, Paul J. Crutzen, and John R. McNeill, "The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?" *Ambio* 36, no. 8 (2007): 614, DOI: 10.1579/0044-7447(2007)36[614:TAAHNO]2.0.CO;2. In the vein of David Kidner, the "human" and "we" that I use here conform to the "fundamental tenets of industrialism, including a ravenous appetite for consumption, the expectation of an ever-growing material standard of living, and a belief that all other forms of life exist to serve us." David W. Kidner, "Why 'Anthropocentrism' Is Not Anthropocentric," *Dialectical Anthropology*, no. 38 (2014): 472.

3 Cattle Decapitation, "Time's Cruel Curtain," *Death Atlas* (Sherman Oaks: Metal Blade Records). On the lack of clarity who the "we" mentioned in the lyrics is, see Anna Marta Marini and Michael Fuchs, "The Disease Becomes the Host: Cattle Decapitation's Pandemic Discourse from Song to Music Video," *Popular Culture Review* 33, no. 2 (2022): 85–86, 89–91, DOI: 10.18278/pcr.33.2.4.

4 Richard Grusin, "Introduction," in *After Extinction*, ed. Richard Grusin (Minneapolis: University of Minnesota Press, 2018), loc. 54.

5 Kathryn Yusoff, "Geologic Life: Prehistory, Climate, Futures in the Anthropocene," *Envi-*

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