The Ethics of De-Extinction

AP Seminar

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People living with dinosaurs - something only children dream of while playing with action figures could become reality with advancing technology. Granted, dinosaurs could not be recreated, due to a lack of pure DNA, but rather other animals from long ago, like wooly mammoths, dodo birds, and even Neanderthals. De-extinction is the process of scientifically engineering an organism that resembles or is an extinct species, while also experimenting with artificial selection, back-breeding, and precise hybridization, per Benjamin Novak of the Australian Animal Health Laboratory. Humans would have the capability to re-construct ecosystems, bending nature to the will of man. However, many experts struggle to support such efforts. Not only is the process expensive, but it will disrupt modern ecosystems, defy natural order, and inflict mass moral hazards. Moreover, "de-extinction's main purpose is to restore ecological functions, while altering the ecosystems that have adapted in the function's absence" (Novak, 2018 p. 5). This alteration will lead to more extinctions, loss of human food sources, and drastic climate change. Are these catastrophes worth allowing humanity right its past errors?

The primary moral reasoning behind de-extinction is the possibility or righting ecological wrongs of humankind. Bruce Jennings, director of bioethics for the Center of Humans and Nature, contended, "human technological power heretofore has been used destructively in the biosphere…but humankind can repair and enhance" (Jennings, 2017 p. S55) with de-extinction technology. Douglas Richman, Mikkel Holger Strander, and Thomas Gilbert, biologists affiliated with the University of Copenhagen, agree with this thinking, stating, "[manmade extinction] may be perceived by some to be ethically wrong acts which we as a species have a duty to right" (Richman et. al., 2016 p. 23). It is instinctive to be empathetic for the loss of life, especially in forms of population obliteration. This applies to animal extinction, as millions have died since the rise of mankind. With this empathy and causation, humans now recognize their faults and

search for ways to mend what has been broken. If given the opportunity, scientists can reverse these wrongs, satisfying the world's moral guilt, with genetic engineering procedures. Furthermore, said engineering can be manipulated to acquire useful survival traits, otherwise known as artificial selection. With said traits, “ecosystems will be less susceptible to human stressors and more resilient in future interactions with our rapacious species” (Jennings, 2017 p. S55). To put it bluntly, animals will be born with the proper phenotypes and genotypes required to survive today. Thus, humanity could correct centuries' worth of errors, while preventing history from repeating itself.

Despite these moral satisfactions, the de-extinction effort is a double-edged sword. Being able to modify nature includes an extreme danger to the necessary knowledge and moral desire. Paul E. Ehrlich, in his Yale Environment debate, introduced the term “moral hazard” and applied it to de-extinction. Per Ehrlich, “moral hazard is a term for a situation where one becomes more willing to take a risk when the potential costs will be partially borne by others. For example, if a person can get government flood insurance, they are more likely to build a beachfront property, worrying less about the risk of sea level rise” (2014 para 12). Applied similarly to de-extinction, if a person can obtain scientific re-generation, they are likely to be less environmentally conscious, worrying less about the risk of mass extinction. Additionally, there is the question of whether or not humans should tamper with natural order. Markku Oksanen and Helena Siipi, an academy research fellow and a lecturer in philosophy, elaborated further on Ehrlich’s concerns when they stated, “since it is unclear how the term ‘damage’ should be understood in an environmental context, the ideas of reparation, compensation and harm reduction also require further analysis” (Oksanen and Siipi, 2014). In simpler terms, the line between damage and reparation is indiscernible. Humans generally act with the greater good in mind, but inevitably

end up making the situation worse. Furthermore, coexisting with these inexorable actions, there comes a worry about what constitutes too much knowledge. The Director of the Stanford Initiative on Climate Change, Britt Wray, brought an eye-opening analogy to this debate, comparing humans with knowledge to the myth of Icarus and the Sun (Wray, 2019 p. 155). Icarus, who has wings of wax, ignores Daedalus' warning: do not fly too close to the Sun. Doing so anyway, Icarus' wings melt and he died falling into the sea. In terms of de-extinction, there is a concern that humans will doom themselves with gained knowledge. Relating to Okasenen and Sipii's research, society will not know when to stop once their hopeful intentions take an unexpected turn.

Regardless of the possible moral dangers, the benefits of such rebuilding projects would be numerous. According to Stanford biologist and Whole Earth Catalog editor, Steward Brand, "Children growing up in [future centuries] might have a view of the relation of humans with nature that is not tragic, for a change" (Brand, 2014). If de-extinction succeeds, future youth will have hope for humanity, something that many lack in the modern day and age. Additionally, in the scientific aspect, environments would be able to return to their formal glory with their proper contributors. Humanity could reinstate species that "have important ecological roles, or that people love, or [are] emblems to protect whole endangered ecosystems" (Brand, 2014). Moreover, replicating animals from an ancient time, which many people associate with fantasy, would gain public interest. Complementing Brand's ideals, Douglas Ian Campbell and Patrick Michael Whittle of the University of Canterbury themselves believed, "extinct species like the woolly mammoth were cool when they trod the Earth long ago, so that we would be recovering something cool by resurrecting them" (Campbell & Whittle, 2018 p. 98). With this "coolness factor", the general public would care about conservation, stopping animals from going extinct in

the future whilst saving animals from the past. However, Claudio Campagna, Daniel Guevara, and Bernard Le Boeuf, associates of marine environmentalism at the University of California, Santa Cruz, dispute these possibilities, "At least sixty-nine species listed in the IUCN Red List exist only in zoological or botanic collections, as their natural populations have been annihilated or their habitat destroyed" (Campagna et. al., 2017 p. S50). These environmentalists asserted that even if scientists had de-extinction technology, a majority of the subjected animals' habitats would be nonexistent, and their natural state unthinkable. In order to restore every desired species, intense environmental renovation would have to take place. Habitats reformed and food chains altered, to every ecosystem on Earth. All require dedication, resources, funding, and scientific development. One could argue that it is implausible to adjust every location to fit needs of every necessary species. Moreover, the world has adapted greatly since these animals left the populous, that it is unfeasible to combine all of these time periods to fix a moral whim.

In terms of an ideal, de-extinction seems wonderful, with the possible benefits covering many fields of interest. Heather Browning of the University of Southhampton agreed when she categorized said gains into four categories: "ecological—the improved quality of ecosystems; aesthetic—human preference for the presence of such species; restorative—that we are in some sense righting the wrongs we have committed in sending such species extinct; and scientific—leading to advancement of knowledge and technology" (2018 p. 14). Despite this satisfaction, concerns cannot be ignored. Ronald Sandler, professor of philosophy and Director of the Ethics Institute at Northeastern University, raised comparison to Browning's possible benefits versus plausibility and limitations. In fact, Sandler maintained that "Among the challenges are projecting possible outcomes and assigning probabilities to them, assigning values to those outcomes, and converting different types of environmental values into a common

comparable metric" (Sandler, 2017 p.1). There are many variables to dealing with extinct species, especially because of uncertainties and unknowns involved. Furthermore, due to the number of required environmental adjustments, de-extinction cannot be executed to the perfection it requires. Instead, humanity should focus on preventing extinction. Spending time, money, and resources on something attainable is far more important than investing in something that is neither plausible nor necessary.

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