Human-Nonhuman Interdependent Relationship during Fictional Pandemics in *The Animals in That Country* (2020) and *How High We Go in the Dark* (2022) in Comparison with COVID-19

Tammapas Kalawantawanich
Independent Scholar
Email: tammapas_k@outlook.com

Received: May 19, 2024
Revised: November 20, 2024
Accepted: November 23, 2024

Abstract

This paper examines the human-nonhuman relationship during the pandemic in McKay's *The Animals in That Country* and Nagamatsu's *How High We Go in the Dark*, pandemic narratives published during COVID-19. It employs material ecocriticism and ecophobia to examine this interspecific relationship. While the widespread nature of a virus unquestionably causes tremendous impact on humans and the natural environment, this paper proposes that the agential virus in a pandemic discloses and highlights the undeniable entangled relationship between humans and other living beings. During the viral pandemic crisis, both novels depict humans' unwavering attempt to separate themselves from other living lives, for they fearfully believe that other animals are the origin of the virus. Both texts, nonetheless, illustrate the human need for nonhumans to survive this bleak situation. Since the two pandemic-related novels were published during the presence of the COVID-19 pandemic, this paper concludes that the human-nonhuman relationship reflected in fictional pandemics calls for a reconsideration of human-nonhuman entanglements to prevent future disasters.

Keywords: Laura Jean McKay, Sequoia Nagamatsu, pandemic, human-nonhuman relationship, COVID-19

> Recent [pandemics] demonstrate the extent to which human and non-human agents are inextricably entangled in the Anthropocene.
> Heather Alberro (2020), "The Anthropocene Fights Back"

Diseases and plagues have appeared in the literary world for centuries. They have coexisted with us throughout the history of humankind and have appeared in literature across the globe (Estok, 2021b; Morgan, 2021). When diseases appear in fiction this may bore readers since this subject is common in the way that several people experience the same situation in their daily lives (Sigerist, 1943). Despite the commonality and boring way that this theme is

perceived, literary diseases, can represent something beyond themselves. They can represent the way we live, behave and interact with one another, both humans and nonhumans. The large-scale outbreak in literature can be an exploratory space where it is demonstrated how the global outbreak affects multinational people and how they deal with the global crisis. To clarify, René Girard (1974) wrote in his article that the contagious disease in literary texts has a function in making change. Its existence typically drives society to chaos, to destruction or to "the process of undifferentiation" (p. 833). Plague disrupts the social order by turning things upside down (Girard, 1974; Schell, 1997). What is moral becomes amoral. The virtuous becomes lecherous. The friendly becomes unfriendly and murderous. Religious and political institutions gradually erode. For Girard (1974), accepted knowledge and belief become invalid. The virus, as the starting point of the pandemic, indeed brings a collapse of the social order (Schell, 1997). For Anne-Marie Thomas (2000), the virus, to some extent, does not only lead society to its end, it also brings society to an evolution. This view of a virus is similar to what Susan Sontag famously wrote: "'virus' is now a synonym for change" (Sontag, 2002).

Within a few months after the spread of the coronavirus, the outbreak was pronounced a pandemic and gradually caused a destructive impact across the globe. People and their lifestyles were tremendously affected and changed by it in one way or another. Not only did humans feel the impact of this pandemic but animals, especially bats, were affected by this disastrous crisis since they were believed to be the cause of this pandemic. They were hunted and purged, for people found it necessary to prevent the spread of the coronavirus (Tuttle, 2020). In this jarring situation, science fictional novels unexpectedly gained popularity since they offered form of escapism for readers during the lockdown (Wright & Kirkpatrick, 2021). In addition, pandemic-themed fictions repeatedly appeared. Some real outbreaks—e.g. SARS (2003), Swine Flu (2009), Ebola (2014) and Zika (2015-2016)—fed into authors' imaginations to create recent pandemic-focused fictions namely Colson Whitehead's *Zone One* (2011) and Emily St. John Mandel's *Station Eleven* (2014) (Morgan, 2021). Debatably, the coronavirus pandemic is believed to have been predicted in Dean Kootz's *The Eyes of Darkness* since it mentions a newly emerging virus disrupting the respiratory system in Wuhan, China. Given the connection between COVID-19, its devastating effects on humans and animals and sci-fi's depiction of pandemics, this article focuses on the pandemic-themed sci-fi novels—Laura Jean McKay's *The Animals in That Country* and Sequoia Nagamatsu's *How High We Go in the Dark*— to explore the representation of fictional pandemics and the presence of nonhuman lives and argues that the fictional pandemics implicitly reveal the humans' unpleasant perception of and interdependent relationship with nonhumans.

Among many genres, science fiction is the one that repeatedly depicts the global pandemic as its main theme. Science fiction typically covers numerous themes e.g., space-travel and futuristic, apocalyptic and dystopian imagination. Speaking of apocalyptical ideas, sci-fi fiction serves as an experimental space for authors to think about any possible harbinger of global events and the solutions to deal with and end a crisis (Wright & Kirkpatrick, 2021). As already mentioned, a pandemic is a pathological phenomenon that authors employ to exercise the imagination. Science fiction also touches on the interplay between human beings and their natural surroundings. Among other literary tropes, Ursula K. Heise (1999) states in "Forum on the Literatures of the Environment" that this genre apparently brings nature and ecological issues into question. It has, she continues, "[the] most persistently and most daringly engaged environmental questions and their challenge to our vision of the future" (p. 1097). Patrick D. Murphy (2000) explains that pieces of science fiction, at a certain level, "provide factual information about nature" and "provide thematically environmentalist extrapolations of conflict and crisis based on such information" (p. 41). The ramifications of human beings' destructiveness and the eradication of living creatures and the reconsideration of the land and human-nonhuman relationships are, therefore, common components that appear in this genre (Page, 2014). Due to the connection between sci-fi, pandemics and environmental concerns, this study aims to contribute an academic view of the pandemic in literature by centering on two sci-fi novels published during the widespread coronavirus.

At the dawn of COVID-19 in 2020, Laura Jean McKay (2020) launched *The Animals in That Country* which depicts a new viral pandemic "Zooflu" and its impact on humankind. This new outbreak enhances humans' sensorial ability resulting in an unprecedented ability to fully understand and communicate with animals ranging from tiny insects to huge mammals. Within the world afflicted by the outbreak, the novel centers its focus on Jean Bennett, who works as a zoo ranger who becomes infected and her dingo Sue. Through Jean's eyes, the novel encourages readers to see how humans react to the pandemic crisis and how they position their relationship with other living beings during the surge of Zooflu. Contrary to individuals who hold negative views toward animals and mistreat them, Jean and Sue showcase a harmonious and interdependent friendship.

Another text is by Sequoia Nagamatsu (2022). In 2022, the downtrend of the coronavirus, he debuted his first novel *How High We Go in the Dark*. This recently published novel is set in the Arctic pandemic that unexpectedly emerges from the discovery of ancient viral particles in the melting Siberian permafrost. The mysterious virus dangerously disrupts the host's body system. It alters the functions of the major organs and replaces them with another: from the lung to the heart and from the heart to the brain. The novel depicts the experiences of characters that are affected by the pandemic across the globe and life in space

for humankind and the need for a new planet to inhabit. The novel guides readers to see the relationship from different parties' viewpoints: between friends, couples, doctors and patients or even between humans and nonhumans.

Building upon the interplay between fictional pandemics, humans, and nonhumans, the article's aims are: 1) to study the representations of fictional pandemics in two sci-fi novels within the COVID-19 context; and 2) to find ecological thoughts and human-nonhuman relationships reflected in the fictional pandemics.

Theoretical Frameworks

To critically analyze the primary texts with the focus on pandemic and human-nonhuman issues, ecophobia and material ecocriticism are employed in this article. It will first apply Estok's ecophobia to rationalize human perception and the relationship with nonhumans during two pandemic-featured novels. Material ecocriticism will be used to explain how pandemics that start from viral particles highlight the entanglement between humans and nonhumans on the planet.

Ecophobia is used since both novels exemplify human reactions and responses toward emerging pandemics through the feeling of fear. Ecophobia is a term first coined by American journalist George F. Will in a 1988 *Chicago Sun-Time* article. According to Simon C. Estok's *The Ecophobia Hypothesis* (2018), Will simply defines ecophobia as the inhospitable becoming of the planet Earth. Building upon Will's term, Estok (2009) expands the idea and proposes that ecophobia is the irrational human view of nature as an antagonist or enemy that attacks, hinders, threatens or even kills us. This natural enemy can appear in many forms: natural geographies, animals, severe weather phenomena, processes or products of a creature's body or the land/air/seascape. As a decade passed, Estok (2019) wrote in "Introduction: Theorizing Ecophobia, Ten Years In" that "the origin of our environmental crises is deeply rotted and darkly ecophobic" (p. 380).

Apart from humans' emerging fear, the pandemics in both novels are read through material ecocriticism. Serenella Iovino and Serpil Oppermann (2014), two leading scholars, broadly define this theoretical approach as the study of "the intra-actions" between the material forms themselves and between the material and human dimension creating "configurations of meaning and discourses" (p. 7) that are as readable and interpretable as stories. Those material forms are wide-ranging. They can be bodies, things, elements, chemical and toxic substances, (in)organic matter, landscapes or biological beings. Material ecocriticism asserts that those entities, those matters are rather viral, active and alive (Iovino & Oppermann, 2012b). Plus, matter is a "site of narrativity, [...] a site where the world displays an expressive dynamism that debunks the claims of human superiority" (Oppermann, 2018, p. 11). Matter, in other words, is

conditioned as text that is comprised of multiple agencies (Iovino & Oppermann, 2012a). To read and interpret narratives behind the matter, Iovino and Oppermann (2012a) propose that there are two basic ways: firstly, focusing on the descriptions and representations of matter's or nature's agency in different types of texts; and secondly, focusing on the power of matter's story in producing meanings and substances that interact with humans in the shared space of emerging interactions. Reading the narratives embedded in matter, maintains Oppermann (2018), paves the way for us to realize and change the way of living that reduces the harmful consequences on nature.

Discussions

The Paradoxical Status of Animals during Pandemic

While the COVID-19 pandemic led people to view bats as culprits to be purged to prevent the spread of the virus, animals in McKay's (2020) and Nagamatsu's (2022) pandemic appear to be an essential support in the sustenance of human life. After fear is instilled in humans due to the widespread nature of Zooflu, this negative feeling sharply divides the boundary between humans and nonhumans. At first, fear does not fully appear, for the story about the flu remains unclear. However, the fear of Zooflu is successfully instilled and potentially driven by the news as Jean Bennett, the protagonist, recounts:

> It's all over the news too—those people down south letting poor old Fluffy go. Cows wandering pie-eyed all over the roads. Some messed-up macaque monkeys, half shaven, refusing to be caught. Those newsreaders go over it a billion times, then BREAKING comes over the screen. 'Superflu has reached epidemic stage in only five days' […] The TV news flashes between the flu and the animals. Fever-y people lined up outside the hospitals. CCTV footage of others breaking into the zoos and the farms. Elephants and zebras. Pigs and chickens. […] The news keeps saying the same thing again and again—the animals, the flu, everywhere (McKay, 2020, pp. 22-23)

The fearful feeling gradually starts emerging when the news repeatedly mentions "the animals [and] the flu" (McKay, 2020, p. 23). Focusing on the circulation of emotion in a society, Sara Ahmed (2004) in "Affective Economies" explains that emotion functions similarly to "a form of capital", since it does not "reside positively in the sign or commodity" but it is produced only as an effect of its circulation. She asserts that "emotions circulate and are distributed across a social as well as a psychic field" (p. 120). When emotions are circulated, they create the effect of stickiness to a sign, an object or a body. This sticky effect results in the formation of a collective body in a society. Regarding fear, Ahmed (2004) views that fear has a linkage with the "passing-by" of the object. If people fear something and "pass by" that feeling, "then the

others might pass their way into the community and could be anywhere and everywhere" (p. 124). Dahlia Schweitzer (2018) adds that the emergence of fear requires many enhancers to make it spread. It can be "word-of-mouth rumor, print media, radio, film, or television" (p. 2). Comparable to Schweitzer (2018), Brian Massumi (2005) in "Fear (The Spectrum Said)" asserts that television primarily functions in driving "the spontaneous mass coordination of affect" (p. 33) in a time of crisis. Schweitzer (2018), however, points out that the feeling of fear is not always stimulated by certain situations but is produced through social construction that has been shaped by "cultural scripts that instruct people how and of what to be afraid" (p. 2). Ralph Adolphs's "The Biology of Fear" (2013) also views the origin of fear similarly as most stimuli that trigger fear in humans being "learned socially" (p. R86). This posits that the object does not contain fear and triggers humans when they encounter it but the narrative—socially and culturally learned—instills fear in humans.

Based on Ahmed's (2004), Schweirzer's (2018), Massumi's (2005, 2018) and Adolph's (2013) views, people do not project fear without a trigger that is the constructed narrative behind the object. When fear emerges due to some stimuli, the media crucially plays a part in spreading and circulating that feeling in society. McKay demonstrates the fear emerges by employing broadcasting news to spread words about its symptoms, and its causative connection with animals. Animals, as a result, inevitably become victimized as Bennett narrates, "Horses, cows, pet rabbits [...] left outside in the rain, scratching at the door but [owners] won't let the animals back in [...] Abandoned pets everywhere" (McKay, 2020, p. 33). In some places, "[s]ome of the animals have been captured, but others have been hurt or killed" (McKay, 2020, p. 22). Being fearful of viral disease, people start "letting those animals loose or killing them" (McKay, 2020, p. 38). As the response toward fear shows, Adolph (2013) explains that this reaction aims not to control fear in the human mind but to abolish a fearful feeling from them. People's response in setting animals free or killing them, thus, does not aim to control the negative feeling in themselves but to eradicate the feeling from them. It can be said that the more widely the disease spreads and the more frequently the news reports about the disease, the wider the boundary between humans and animals becomes. Animals consequently become the enemy of humans. The fear of animals during fictional pandemics correlates with Estok's thoughts in "Covid-19 and Ecophobia Reflex" (2023). He perceives that a pandemic like COVID-19 "awakens a lot of dominant fear—primarily about microbes but also about *animals* [emphasis added]" (Estok, 2023, pp. 4-5). When it is believed that animals give birth to the viral disease inflicting fear upon humans, the disease, thus, intensifies the negative perception of the animals.

Although humans purge animals to prevent the spread of the virus, McKay presents the human need for animals as sustenance during the Zooflu

pandemic. As the story progresses, it reveals that humans do not hunt animals to abolish the cause of the disease; they hunt for food supplies. This can be seen in the scene where Beanie, a croc, wants to play with Angela, a zoo Manager, in a pond. He gets killed because he attempts to bite Angela. His meat becomes dinner for zoo staff. During the meal, one member of staff proudly says, "I'll show those animals who's *boss* [emphasis added]" (McKay, 2020, p. 101). This bold statement reflects humans' pride in their superiority as they triumph over animals. However, it is paradoxical since humans require animal meat to alleviate their hunger. Another scene illustrating the human reliance on animals is when Jean is rescued by her dingo, Sue. As her son and her granddaughter, manipulated by whales' voices, swim in the sea to communicate with whales, Jean goes to help them. Jean, as a result, gets lured by a whale. Seeing her friend in danger, Sue rushes to help Jean in the sea. She "bounds up behind [Jean] and into the water" and whispers "(Bad / Dog.) Stay / with its pack" (McKay, 2020, p. 209)[1] Another occasion is Jean's encounter with a swarm of insects. Up to this point, Jean is extremely tired physically from the Zooflu infection and mentally from the loss of her son. When the insects attack, it is Sue who stays and helps her at insects' approach as Jean narrates: "The thing [Sue] that's been sitting in my chest gives an almighty scream, pushes me, fighting, to a stand" (McKay, 2020, p. 241). These rescuing scenes and the whale's manipulation scene dismisses humans' strong belief in being superior to animals. McKay not only depicts human supremacy but also challenges this belief and encourages readers to rethink this idea.

Although Nagamatsu's text does not illustrate humans' fear of animals and does not have a scene of purging and slaughtering animals compared to McKay's, Nagamatsu portrays human-animal interdependency during the pandemic through a lab pig. Since Nagamatsu's Arctic plague drastically alters major organ functions in the infected, one temporary solution for patients is an organ transplant. Pigs become the scientists' choice for clinical research and organ sources for patients: "The pigs are all destined to help infected people […] whose organs have given way to the plague" (Nagamatsu, 2022, p. 83). These lab pigs are "genetically modified […] for accelerated growth and organ donor optimization" (Nagamatsu, 2022, p. 84). Although the text does not provide the reason for using the pig as an organ donor, Helen Tiffin (2007) points out in "Pigs, People and Pigoons" that pigs are anatomically and physiologically similar to humans. They even have emotional responses to certain situations: expressing happiness or losing or gaining weight during depression. In some cases, pig organs namely "heart valves and brain *dura mata* are used to prolong human lives" (Tiffin, 2007, pp. 245-246). The anatomical and physical

[1] In *The Animals in That Country* (2020), McKay distinguishes human and animal languages by using different fonts; this article does the same to respect author's intention and to keep the originality of the primary text.

similarities between pigs and humans may be a reason why these pigs are purely grown for medical purposes in this novel. Replacing human organs with pigs' sounds weird but this xenotransplantation is not a novel medical procedure. It can be traced back to the early twentieth century when a patient in France had her kidney replaced with a pig kidney (Tiffin, 2007, pp. 258-259). This physiological similarity can be a reason supporting the use of pig as a source of organs for sustaining severely infected patients in Nagamatsu's story.

Similar to McKay's Zooflu, allowing humans to see the similarity of themselves in animals through languages, Nagamatsu counters this belief by adding humanistic traits to a lab pig to demonstrate human-animal similarity. Through a genetic engineering process, one lab pig named "Snortorious" unexpectedly becomes literate since his "brain is continuing to grow in size and complexity at an alarming rate" (Nagamatsu, 2022, pp. 83, 92). Discovering that Snortorious is special, researchers "treat him like a child". They eagerly "break lab protocol […] remove [their] mask and gloves" and "set up a television and a computer equipped with programmed paddle buttons specially modified for pig feet" (Nagamatsu, 2022, p. 85). Snortorious is even considered "[their] pig son" (Nagamatsu, 2022, p. 94). Researchers apparently care for this intellectual pig and empathize with him when he feels lonely. This unequal treatment between common lab pigs and Snortorious sparks a question: If animals are similar to humans in terms of intellectual ability, does this mean that humans will treat those animals like their children? Does it mean that if every lab pig is literate like Snortorious this project will cease? These different views toward the human-like pig and other normal pigs emphasize the anthropocentric idea. Researchers' medical experiments on the lab pigs for xenotransplantation clearly discloses how humans view animals as their subordinates whom they can use and exploit. Not only does Nagamatsu highlight the anthropocentric idea, but also points that this idea lingers. Although he introduces the humanistic portrayal of Snortorious to visualize a glimpse of the similarity between humans and animals, the fate of lab pigs in his story tells readers otherwise. While Snortorious is rescued from the lab to avoid an organ removal, other lab pigs are left to their designated fate. This disparity postulates that the change in human perception towards animals has a long way to go.

These exemplary scenes from both novels exhibit that although humans fear and kill animals to prevent infection or use animal organs to sustain their lives, it is undeniable that they are reliant on animals in one way or another. The killing of and the reliance on animals in both pandemic-featuring novels resonate with Estoks' ecophobic thoughts to some extent. In Estok (2023)'s view, a pandemic reminds humans that "we are not so different from the rest of the animal world" (p. 119). He continues, "When danger appears, a flock of birds takes flight, a school of fish flees, a colony of mudskippers retreat to their holes, and people stay at home—we are not all that different from other

animals" (Estok, 2021a, p. 91). Estok's words emphasize John Berger (2009)'s idea written a decade before. He writes that "animals are born, are sentient and are moral". He continues, "In these things, they resemble man. In their superficial anatomy—less in their deep anatomy—in their habits, in their time, in their physical capacity, they differ from man. They are both like and unlike" (p. 13). This can be said that human-nonhuman similarities are highlighted when danger takes place. They are negatively affected in either way. The discomfort and loss that danger like pandemic brings to humanity stir humans' supreme position to some extent; they lost control of their lives. For example, McKay's (2020) zoo officers lost their jobs and their close bond with animals due to the zoonotic diseases while Nagamatsu's (2022) characters are worried about the uncertain contagiousness of the Arctic virus. Estok's and Berger's perception of human-nonhuman similarities is blurred in both novels, since humans seek for solution to regain their normal life. The purge of animals seems to be one solution. It reinstates human characters' supreme position because they can control other lives to their will and use them to fulfil their needs. While McKay's Zooflu weakens the boundary between humans and animals by allowing humans to communicate and understand animals, human characters find their way to restrengthen the human-nonhuman boundary by dimming those animals' lives. Still, McKay ridicules humans' belief in their supremacy by presenting humans' essential need for animal meat and animals' help for survival. Similar to Estok's and McKay's view on human-nonhuman relations, Nagamatsu's genetically engineered pig with human intellectual and speaking ability in a pandemic setting charts the way for readers to question the similarities between humans and animals. However, the fact that most human characters in both novels cannot notice such similarity implies the embedded anthropocentric perception in society. To deal with such a perception, Nagamatsu implies through the empathetic relationship between researchers and Snortorious. Massumi (2018) explains that this kind of human empathy can be transferrable if humans see "similarities in the neurological makeup of animal and human" (p. 268). In this way, if humans view animals as their kin, maltreatment and exploitation of animals may be lessened.

The Animals' Fate in Fictional and Real Pandemics

Humans' maltreatment and exploitation of animals, seen in McKay's and Nagamatsu's novels, echo the real situation during the COVID-19 pandemic. As bats are believed to be responsible for the COVID-19 pandemic, people in some areas in the USA, for example, "[have] burned, poisoned, or sealed caves, killing millions of bats at a time" (Tuttle, 2020, para. 5). It is reported that the Peruvians, strongly believing that bats harbor coronavirus, have burned bats in the caves which leads the authorities to stop this destructive action (Phys.Org, 2020). Some countries in Asia e.g., China and Indonesia, have responded

similarly to the presence of bats because they fear a viral transmission (Lundberg et al., 2021). Though killing animals during pandemics is considered a promising solution in both in McKay's 2020 novel and the reality, those innocent animals remain necessary for humans. While McKay's animals are a food source for humans, bats, in reality, provide a great benefit to the environment. Bats, in fact, provide great economic and ecological advantages. In some areas (e.g. the USA, Costa Rica, the Philippines, Laos, etc.), the flight of bat colonies is a part of ecotourism attracting a great number of tourists every year. They are pollinators and pest control, indirectly preventing farmers' crops from insect damage. In some isolated areas where biodiversity and ecological redundancy are low, bats play a significant role in dispersing seeds (Mildenstein et al., 2016). If the bat population decreases, the diminished population consequently affects both economic and ecological dimensions (Mildenstein et al., 2016; Tuttle, 2020). The parallel fate of animals between McKay's fiction and reality emphasizes humans' reliance on animals. Even though they are in a situation where animals pose fear and threat to them, humans cannot completely detach themselves from these living creatures. Human reliance on animals in McKay's pandemic narrative underscores the fact that humans require animals in either way. Animals have their value and provide a great benefit to this world. Though humans have not noticed the necessity of animals in this world yet, McKay—to some extent—provides a scenario for readers to see that humans and animals cannot be completely detached from each other.

The animal's fate in Nagamatsu's novel is similar yet different. While McKay's animals are used as sustenance, Nagamatsu demonstrates humans' need of animals during the pandemic in the form of scientific and medical experiment to cure the viral disease. This kind of experiment normally happens when it comes to the development of the medicine. The COVID-19 vaccine is similar On its official website, the European Animal Research Association [EARA] (2020) posts that animal testing is essential for vaccine development. Animal testing is required after the preclinical phase to test the effectiveness of the vaccine before applying it to humans in the next phase. EARA (2020) claims that the animal testing phase is less harmful because the repeated tests are already conducted during the preclinical trials. On the contrary, there are alternative methods for vaccine and drug development. Franz Gruber and Thomas Hartung (2004) state that there is no regulation for forcing scientists and researchers to employ animals as research subjects although there is a rule emphasizing the safety of drugs and medicine. Instead of animal testing, they explain: "[t]here are many examples of successful alternative methods in basic research" (p. 4). Sonali Doke and Shashikant Dhawale (2015) provide some promising alternative methods: computer models, cell and tissue cultures and alternative organisms (lower vertebrates, invertebrates and microorganisms). While Doke and Dhawale (2015) explain that the use of nonmammals poses

"less ethical problems" during the experiment (p. 226), the debate goes on how excessive the experiment on the alternative organisms can be. No matter how long the debate will take, it seems as if these alternative methods prove difficult to become practical. This is because they require a huge investment in finance to build developed laboratory and technology transfer so that alternative research can take place. Besides the lack of appropriate technology, financial support plays a crucial role in alternative research. Sadly, organizations do not heedfully pay attention to such methods. Gruber and Hartung (2004) opine that, "A financial incentive is necessary to change procedures in basic research to animal-free procedures. Ethical consideration alone will bring little movement or change" (p. 4).

What is discussed here does not judge or conclude which methods are the best option, this study, however, draws readers to see that there are choices, choices that may yield potential effects but are sadly undeveloped. The COVID-19 pandemic and Nagamatsu's fictional pandemic imply to the readers the essential role of animals in human lives since they are utilized to sustain humanity. Though the COVID-19 vaccine production did not clearly televise the lab animals during the research, Nagamatsu's xenotransplantation makes the presence of lab animals more visible to readers to see how important they are to them. Without animal testing, there would not have been the ultimate version of a vaccine for humans. Like Nagamatsu's depiction of xenotransplantation, vaccination during the real pandemic was undeniably a procedure of blending the bits of animals into human bodies. While Tiffin (2007) views meat consumption in a way that animals "'produce' us; their 'meat' contributing to the construction of our flesh" (p. 251), the lab animals during vaccine trials played a part in boosting humans' immune system.

The Highlight of Human-Nonhuman Interdependency through the Virus

As discussed so far, McKay's (2020) and Nagamatsu's (2022) representations of the human-nonhuman interdependent relationship during the desperate viral pandemic matches the idea of material ecocriticism. Since Iovino and Oppermann (2012b) view any material forms—be they small or huge— as a text that can be read and interpreted to see the interaction between those materialities and the world in which they reside, the virus in both novels can also be read in this light as to what it represents. While Schell (2002) puts the virus in a way that it "reside[s] meaninglessly, inert, in our cultural texts" (p. 807), the material ecocritical lens, on the contrary, suggests that the virus is a site of narratives that weave the threads of storied agencies—humans, nonhumans and the natural world—into a piece of woven fabric. In other words, the presence of the virus represents the connection between multiple agencies in the world. From all ecological phenomena, Iovino and Oppermann (2014) note, the viral outbreak in the light of material ecocriticism is one of the material

forms that emerge in the assemblage of different forces, agencies and matter. One may think that the virus is simply an inert miniscule entity that solely causes significant damage to humankind; however, Iovino and Oppermann (2012b) do not think so. They affirm that "[e]very existing thing and occurrence—in short, every 'emergence'—is seen as the concretization of material and semiotic-discursive dynamics, and therefore bequeathed with the possibility of carrying meanings and with an historically (namely narrative) dimension" (p. 451). Despite the destructiveness that virus can pose to humankind, the emerging virus reveals a close bond between humans' and other beings' agency. The coming of real pandemics is, therefore, a threshold that leads humans to see that complicated bond entangling the more-than-human world and themselves.

Not only do McKay's Zooflu and Nagamatsu's Arctic plague visualize Iovino and Oppermann's material ecocritical view by illuminating how viral pandemics lay bare the entanglement between human and nonhuman lives, these fictional pandemics also call for a change in human perception and behaviour towards other living beings. McKay utilizes her fictional pandemic Zooflu to underline the paradoxical relationship between humans and animals. As explained, McKay's human characters deem themselves superior to other living beings. Due to their zoonotic origin, humans, equipped with fear, hunt and kill plenty of animals to stop the outbreak and minimize its impact. Human characters repeatedly act as a boss to those animals; however, this boss is still in need of those animals to satisfy its unavoidable hunger. Regardless of the fear of animals, human characters require them for food. Humans' relationship with animals is, thus, not independent but rather *inter*dependent.

Despite the dissimilarity of virus origin compared to McKay's pandemic, Nagamatsu's viral pandemic also functions in resurfacing the humans' dependency on animals. In his fictional pandemic, it is undeniable that humans depend on animals for medical research. Humans use animals to fulfil their needs without thinking about the impact on those animals. Through Snortorious's intellectual and speaking ability, Nagamatsu charts a way for us to not only see animals' sentimentality but also see the unequal treatment of each animal and encourage readers to question the similarities between humans and animals. Massumi (2018) explains that empathy for animals is transferrable if there are "similarities in the neurological makeup of animal and human" (p. 268). What Massumi implies here is that humans empathize with animals when they see a glimpse of themselves in those animals. In this case, lab researchers see their humanistic traits in Snortorious. Researchers, as a result, view Snortorious not as a lab subject but as a human that can think and speak in human language. Viewed in Massumi's idea, humans and animals are alike to some extent but we do not pay close attention to such a similarity. The humanistic features in Snortorious lead humans to empathize with him;

however, Nagamatsu does not visibly write how much humans are like animals. The successful xenotransplantation in his novel, at least, emphasizes human-animal similarity. Arguably, humans may not need to act like animals or to be aware of animalistic traits in themselves to feel empathetic with animals; we simply need to wear their shoes.

The examination of the fictional and real viruses reveals that humans and animals are interdependent in either way. Based on McKay's and Nagamatsu' story, humans need animals for sustenance while animals sometimes need human help when they are hunted. However, animals either in the fictional or real world are directly subject to the consequences of human actions. They are used, exploited and killed in one way or another. The fictional and real pandemics emphasize the human position that is neither superior nor outside of the ecosystem. Pandemics disclose the bond, the linkage between humans and the world as several scholars' terms correlate with Deleuze and Guattari (1977)'s statement saying that "no distinction between man and natural [...] [T]hey are one" (p. 4). The emergence of pandemics either real or fictional resonates with several scholars namely Jeff Sebo (2023)'s, Judith Butler (2021)'s and Karen Barad (2007)'s idea of interconnectedness that humans do not depart from other (non)living beings yet live and interact with them one way or another. Through the representation of human-nonhuman interdependency during the fictional pandemics as well as the COVID-19 pandemic, these quotations are legitimately clearer than ever.

Conclusion

Focusing on McKay's and Nagamatsu's viral pandemic, this paper concludes that this ecological disaster, to some extent, unveils and underlines humans' negative perception of nonhuman lives and human-nonhuman interconnectedness. Viewing a viral pandemic as a nexus connecting human and nonhuman realms reveals that humans' and nonhumans' lives are woven into the same piece of cloth. They have suffered a devastating impact from the emergence of the pandemic likewise. However, both novels show that animals are not only victims of a pandemic but also of humans. On the one hand, humans as seen in McKay's text collectively become fearful of animals, for they believe animals are of viral origin. They are used and exploited by humans, deeming themselves superior, to sustain their life, on the other. Though humans establish a boundary between animals and themselves, their need for animals for survival makes such a boundary penetrable. In the real-world situation, the emergence of COVID-19 shares similar situations with McKay's and Nagamatsu's fictional pandemic. While bats are unapprovingly considered a cause of the recent virus, they are swept away from humans sight. Nonetheless, bats are crucial for humankind for different reasons. Like Nagamatsu's depiction of lab pigs as organ donors, animals are necessary for vaccine development in

the real world. This hate-love relationship strongly posits that human lives cannot detach from animals. While they have a negative impact like humans, they are unequally treated. As long as animals are affected by the crisis, they too should be included and paid attention to. A calling for a change in humans' actions toward the nonhuman world is needed. Humans should, instead of thinking about themselves only, be more inclusive in thinking about their surroundings. The reconsideration should not be delayed and overlooked. Both novels exemplarily showcase human involvement with animals. This bond is inseparable. One needs the other in either way.

References

Adolphs, R. (2013). The biology of fear. *Current Biology*, *23*(2), R79-R93. https://doi.org/10.1016/j.cub.2012.11.055

Ahmed, S. (2004). Affective economies. *Social Text*, *22*(2), 117-139. https://muse.jhu.edu/article/55780

Alberro, H. (2020, June 11). *The anthropocene fights back: Non-human agents still have the power to destroy us*. LSE COVID-19 blog. https://blogs.lse.ac.uk/covid19/2020/06/11/the-anthropocene-fights-back-non-human-agents-still-have-the-power-to-destroy-us/

Arnold, J., Buell, L., Cohen, M. P., Dodd, E., Estok, S. C., Heise, U. K., Levin, J., Murphy, P. D., Parra, A., Slaymaker, W., Slovic, S., Sweet, T., & Westling, L. (1999). Forum on literatures of the environment. *PMLA*, *114*(5), 1089–1104. https://www.jstor.org/stable/463468

Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Duke University Press.

Berger, J. (2009). *Why look at animals?* Penguin Books.

Butler, J. (2021, April 21). *Creating an inhabitable world for humans means dismantling rigid forms of individuality.* Time. https://time.com/5953396/judith-butler-safe-world-individuality/#

Deleuze, G., & Guattari, F. (1977). *Anti-Oedipus: Capitalism and schizophrenia* (R. Hurley, M. Seem, & H. R. Lane, Trans.). University of Minnesota Press.

Doke, S. K., & Dhawale, S. C. (2015). Alternatives to animal testing: A review. *Saudi Pharmaceutical Journal*, *23*(3), 223–229. https://doi.org/10.1016/j.jsps.2013.11.002

Estok, S. C. (2009). Theorizing in a space of ambivalent openness: Ecocriticism and ecophobia. *Interdisciplinary Studies in Literature and Environment*, *16*(2), 203–225. https://doi.org/10.1093/isle/isp010

Estok, S. C. (2018). *The ecophobia hypothesis*. Routledge.

Estok, S. C. (2019). Introduction: Theorizing ecophobia, ten years in. *Interdisciplinary Studies in Literature and Environment*, *26*(2), 379–387. https://doi.org/10.1093/isle/isz034

Estok, S. C. (2021a). Ecophobia and covid-19. *International Journal of Fear Studies*, *3*(2), 90–99. http://hdl.handle.net/1880/114017

Estok, S. C. (2021b). Introduction to the special cluster "never really far from us—epidemics and plagues in literature". *Neohelicon*, *48*, 435–442. https://doi.org/10.1007/s11059-021-00612-y

Estok, S. C. (2023). Covid-19 and ecophobia reflex. In H. A. Karasar & Ş. Oğuz (Eds.), *Imagining a common horizon for humanity and the planet* (pp. 111-132). Cappadocia University Press.

European Animal Research Association. (2020, December 22). *Making vaccines safe—animal testing plays a vital part*. Retrieved July 11, 2023, from https://www.eara.eu/post/feature-delivering-a-safe-vaccine-how-animal-testing-plays-a-vital-part

Girard, R. (1974). The plague in literature and myth. *Texas Studies in Literature and Language*, *15*(5), 833–850. https://www.jstor.org/stable/40754299

Gruber, F. P., & Hartung, T. (2004). Alternatives to animal experimentation in basic research. *ALTEX*, *21*(1), 3–31. https://doi.org/10.14573/altex.2004.suppl.3

Iovino, S., & Oppermann, S. (2012a). Material ecocriticism: Materiality, agency, and models of narrativity. *Ecozon@*, *3*(1), 75–91. https://doi.org/10.37536/ECOZONA.2012.3.1.452

Iovino, S., & Oppermann, S. (2012b). Theorizing material ecocriticism: A diptych. *Interdisciplinary Studies in Literature and Environment*, *19*(3), 448–475. https://www.jstor.org/stable/44087130

Iovino, S., & Oppermann, S. (2014). Introduction: Stories come to matter. In S. Iovino & S. Oppermann (Eds.), *Material ecocriticism* (pp. 1–17). Indiana University Press.

Lundberg, P., Ojala, A., Suominen, K. M., Lilley, T., & Vainio, A. (2021). Disease avoidance model explains the acceptance of cohabitation with bats during the COVID-19 pandemic. *Frontiers in Psychology.*, *12*(Article 635874), 1–9. https://doi.org/10.3389/fpsyg.2021.635874

Massumi, B. (2005). Fear (the spectrum said). *Positions: East Asia Cultures Critique*, *13*(1), 31–48. https://muse.jhu.edu/article/185296

Massumi, B. (2018). Becoming-animal in the literary field. In B. Boehrer, M. Hand, & B. Massumi (Eds.), *Animals, animality, and literature* (pp. 265–283). Cambridge University Press.

McKay, L. J. (2020). *The animals in that country*. Scribe Publications.

Mildenstein, T., Tanshi, I., & Racey, P. A. (2016). Exploitation of bats for bushmeat and medicine. In C. C. Voigt & T. Kingston (Eds.), *Bats in the anthropocene: Conservation of bats in a changing world* (pp. 325–376). Springer.

Morgan, G. (2021). New ways: The pandemics of science fiction. *Interface focus*, *11*(6), 20210027. https://doi.org/10.1098/rsfs.2021.0027

Murphy, P. D. (2000). *Farther afield in the study of nature-oriented literature*. University Press of Virginia.

Nagamatsu, S. (2022). *How high we go in the dark*. Bloomsbury Publishing.

Oppermann, S. (2018). The scale of the anthropocene: Material ecocritical reflections. *Mosaic: An Interdisciplinary Critical Journal*, *51*(3), 1–17. https://www.jstor.org/stable/26974107

Page, M. (2014). Evolution and apocalypse in the golden age. In G. Canavan & K. S. Robinson (Eds.), *Green planets: Ecology and science fiction* (pp. 40–55). Wesleyan University Press.

Phys.Org. (2020, March 25). Peru saves bats blamed for coronavirus. https://phys.org/news/2020-03-peru-blamed-coronavirus.html#google_vignette

Schell, H. (1997). Outburst! A chilling true story about emerging-virus narratives and pandemic social change. *Configurations*, *5*(1), 93–133. https://doi.org/10.1353/con.1997.0006

Schell, H. (2002). The sexist gene: Science fiction and the germ theory of history. *American Literary History*, *14*(4), 805–827. https://www.muse.jhu.edu/article/1992

Schweitzer, D. (2018). *Going viral: Zombies, viruses, and the end of the world*. Rutgers University Press.

Sebo, J., & Patter, L. V. (2023). Animals, pandemics and climate change. In A. Morgan (Ed.), *What matters most: Conversations on the art of living* (pp. 203–210). Agenda Publishing.

Sigerist, H. E. (1943). *Civilization and disease*. Cornell University Press.

Sontag, S. (2002). *Illness as metaphor and AIDS and its metaphors*. Penguin Books.

Thomas, A.-M. (2000). To devour and transform: Viral metaphors in science fiction by women. *Extrapolation*, *41*(2), 143–160. https://doi.org/10.3828/extr.2000.41.2.143

Tiffin, H. (2007). Pigs, people and pagoons. In L. Simmons & P. Armstrong (Eds.), *Knowing animals* (pp. 244–265). Brill.

Tuttle, M. D. (2020, March 27). *A viral witch hunt*. Issues in Science and Technology. https://issues.org/a-viral-witch-hunt-bats/

Wright, D. F. B., & Kirkpatrick, C. M. J. (2021). Science fiction has become reality: Best practice for future viral pandemics. *British Journal of Clinical Pharmacology*, *87*(9), 3385–3387. https://doi.org/10.1111/bcp.14997