

**De/constructing the Human: Self, Identity and Other:
How does Olafur Eliasson's Glacial Melt Series (1999-2019) and Alex Garland's
Annihilation (2018) present the theme of non-anthropocentrism?**

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Submission Date: December 15th, 2022

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Introduction.

This essay will access and compare Olafur Eliasson's photography series called 'The Melting Glacier Series' (1999/2019) and Alex Garland's film 'Annihilation' (2018) in relation to the themes of non-anthropocentrism and non-human thinking. Within the essay, I explore how anthropocentrism is driven by theorists including Aristotle and Ivan Pavlov. Anthropocentrism is an established concept in our modern world, humans exploit the world through many means including deforestation and battery farming. It is a humancentric concept that most people are born into, an established structure that is known from birth. However, more recently humans have been inclined to think non-anthropocentrically, questioning the normalisation of anthropocentrism. This is especially present in the increasing calls for change in relation to issues like climate change. Eco-logical guilt and grief has become a common phenomenon as we witness the earth dying at the hands of humans, as exemplified in Eliasson's Glacial Melt Series. There is the potential to find a balanced middle ground between anthropocentrism and non-anthropocentrism. This balance can be achieved through embracing non-anthropocentrism and non-human thinking.

The Anthropocentric World.

Humans live in an anthropocentric world, our systems and constructs are cemented by the “philosophical viewpoint arguing that human beings are the central or most significant entities in the world” (Boslaugh, 2016). Anthropocentrism puts humanity at the centre of everything, superior to the other living things which co-inhabit the world including plants and animals. The world’s anthropocentric perspective supports the belief that humans are higher beings.

Although humans share the same biological make-up of cells, tissue and organs with other living things like plants and animals, it has been widely disputed whether humans and non-human living things have the same emotional capacity. It has been argued that animals cannot experience pleasure and enjoyment beyond their instinctual needs which reinforces the concept that humans are higher beings. Humans, unlike animals, can appreciate and create art, music, film and dance. Humans even feel the desire to seek out means of pleasure through watching movies, viewing exhibitions, or learning how to play an instrument. This is “because a beast’s pleasures do not satisfy a human being’s conceptions of happiness. Human beings have faculties more elevated than the animal appetites” (Mill, 1863, p.6). Mill argues that humans are more complex beings with more complex emotional intelligence and therefore require more complex sources of happiness. Studies on animals such as the ‘Pavlov’s Dogs’ experiment would suggest that animals are like robots that can be conditioned to respond to certain stimuli. Ivan Pavlov, neurologist and physiologist, developed a form of classical conditioning called Pavlovian Conditioning. McLeod (2013) explains that Pavlov noticed that his dogs would salivate at the sight of food, which was an unconditioned response and an instinctual habit. Pavlov then began an experiment, which involved ringing a bell every time the dogs were fed so that they would associate the food with the sound of the bell and therefore be conditioned to salivate at the sound of the bell. The result of this experiment suggests that animals are driven more by instinct and need rather than want and emotion.

To support this, Aristotle approaches animals as the “*ta aloga* – the irrational ones. If they act in a manner which appears rational, this is because they act according to nature – moved by an innate or instinctive cleverness, not rationality” (Workman-Davies, 2010, p.20). Aristotle is suggesting that animals are driven by empiricism that is inherently instilled into their nature of being which would imply that they do not or cannot perceive the world in the same manner that humans do. This would also suggest that when we observe animals acting or behaving similarly, it is our human perspective’s interpretation of what we are seeing. This would suggest that when observing animals embracing, our human observation is that they embrace to communicate feelings of love and affection, but Aristotle would argue that they are embracing for warmth as it is their survival instinct.

Humans have displayed their anthropocentric power through the genetic manipulation of other living things. Darwin explains that the “key is man’s power of accumulative selection: nature gives successive variations; man adds them up in certain directions useful to him. In this sense he may be said to make for himself useful breeds” (Darwin, 1873, p.19). In this text, Darwin is making the point that humans have used living things such as plants and animals and manipulated them through ‘man’s power of accumulative selection.’ Humans have invented a humancentric version of natural selection to create species that function for human benefit.

With roots in the belief that humans are higher beings with higher emotional intelligence than animals, humans have taken on an anthropocentric view of the world, and this has become embedded in our everyday lives. Without even questioning it, humans live in an anthropocentric world. Anthropocentrism is present in our everyday lives, since early humans walked the earth, humans have exploited the planet and centralised themselves. Over time, the issue has only gotten worse with battery farming animals for self-sustainment, destroying rainforests for minerals and farming, overwhelming the Earth through accelerating climate change, and littering the environment with human presence alone.

Recently humans have begun thinking in a non-anthropocentric way, possibly accelerated even more by the recent pandemic as this time allowed humans to be removed from the structure of everyday life and forced to accept widespread change. Sugawara (2021) states that due to the constraints on human activity issued by the government, Japan's CO2 emissions decreased by about 17% in 2020 compared to 2019. The constraints put on human activities led to a decrease in CO2 emissions related to buildings and traffic. Data shows that residential areas around Yoyogi experienced a 20% decrease in CO2 levels. Similar anomalies were observed in countries all over the world.

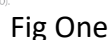
Global greenhouse gas emissions by sector

This is shown for the year 2016 – global greenhouse gas emissions were 49.4 billion tonnes CO₂eq.

Our World in Data

OurWorldinData.org – Research and data to make progress against the world's largest problems.
Source: Climate Watch, the World Resources Institute (2020). Licensed under CC-BY by the author Hannah Ritchie (2020).

Fig One



Embracing non-anthropocentric observations of the world, we can refer to naturalism. Naturalism is an empirical-based philosophy. The naturalist believes that the “world is a single system of things or events every one of which is bound to every other in a network of relations and laws” (Madden, 2013, p.4). The naturalist observes the natural world as the source of explanation for everything. Naturalism, at its core, uses ontology and knowledge through

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observation. Naturalism is an essential part of scientific research as we use empirical study to realise observations about ourselves and the world around us. Through observation, especially in animals, empathy and embodiment are present. Humans tend to deeply feel when another person is suffering, and it is often the same case when observing animals and other non-human beings. The sight of an animal suffering often evokes sympathy which involves feeling the sorrow alongside the creature. We enter a non-anthropocentric perspective, not unlike Deleuze and Guattari's concept of 'becoming'. Becoming is explained with "writing is a becoming, writing is traversed by strange becomings that are not becomings-writer, but becomings-rat, becomings-insect, becomings-wolf, etc" (Deleuze and Guattari, 1987, p.240). This suggests that we must undergo the process of 'becoming animal' in order to write. The act of 'becoming' can be interpreted as a metaphor for rejecting anthropocentrism, becoming both human and non-human, an awareness and an absence of awareness at the same time.

It is argued that animals have less complex brains and therefore a lower emotional and intelligent capacity than humans because they lack the language humans use which is directly associated with thought and intelligent thinking. However, although animals do not express thought and emotion in the same language that humans do, they express and communicate through their unique languages which often manifest in behaviours and sound. Behavioural observations of birds have shown that they communicate using "soft notes like lullabies while calmly warming their eggs or nestlings; mournful cries while helplessly watching an intruder at their nests; harsh or grating sounds while threatening or attacking an enemy...Birds so frequently respond to events in tones such as we might use that we suspect their emotions are similar to our own". (Skutch, 1996, p. 41–42). This suggests that human language is only an anthropic illusion that has created a barrier between humans and non-humans.

Furthermore, recent studies on the brains of animals have suggested that they can think in more complex ways than previously thought. Studies from Hampton's research group have proved that monkeys have the ability to recall images. After being taught to recognise shapes, when presented with partial images of the shapes, they were able to complete them quite accurately (Lents, 2016, p.316-317). The behaviours shown in this study would suggest that the animals have the same ability to process and conjure images internally as humans do. This is an example of complex thinking and perception.

Reevaluating Pavlov's Classical Conditioning, the concept that non-human animals are less intelligent than humans becomes invalid when considering that conditioning can also occur in humans. A study by Edwin Twitmyer suggests that humans, like non-human animals, are equally susceptible to conditioning. Clark (2004) describes Twitmyer's experiment, whilst attempting to study knee-jerk reflexes under certain conditions, which involved ringing a bell before imposing the hammer which triggered the knee-jerk movement. Twitmyer observed that the subjects, after repetition of the experiment, would move their leg involuntarily after the sound of the bell and without the stimulus of the hammer. This study which proves that humans are equally susceptible to conditioning, contradicting theories that animals are lower beings than humans.

Case study 1: Olafur Eliasson's 'The Glacier Melt Series' (1999-2019).



Fig Two

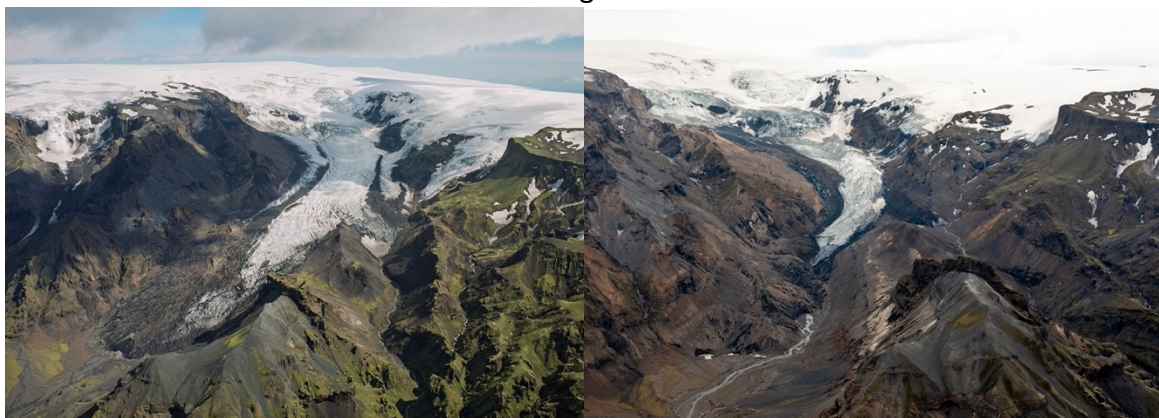


Fig Three

Fig Four

In Olafur Eliasson's photograph series, *The Glacier Melt Series* (1999 – 2019), the devastating anthropocentric-related effects of climate change are abundantly clear. Eliasson started this project in 1999 when he took images of multiple glaciers in Iceland, then twenty years later he took images of the same glaciers (OlafurEliasson.net). The photographs, a part of Eliasson's 'In Real Life' (2019-2020) Exhibition, are displayed in the sequencing of pairs, the left image depicting the 1999 image and the right depicting the 2019 image (example seen in figures three and four). The sequence of the images creates a powerful juxtaposition, a feeling of deep sadness and grief for the parts of the glacier that have been lost. These works present the issues of anthropocentrism and how human-centrism has and continues to interfere with the Earth's natural order. This is a form of non-human thinking triggered by the artist's work which is mirrored in the artist's process of making the work.

Eliasson presents the theme of non-anthropocentrism in the literal sense that there are no signs of human life present in the images. On the surface, the images are raw and natural displaying idyllic Icelandic landscapes. However, there is a subdued presence of humans in each pairing secondary image implied in the anthropocentric effects of the diminishing glaciers inflicted by humans. The composition which Eliasson creates is a powerful one, the non-anthropocentric world and the anthropocentric world. The effects are suddenly so prominent, and the guilt is undeniable.

These works evoke a deep inner pain, suggesting that the Earth is feeling and suffering. Sympathy comes from a personification of the Earth, and its relation to humans. The Earth becomes a being that humans can embody as if empathising with another human. There is something bodily about the forms of the landscapes, the mountainous lumps and bumps and cracks and peaks are reminiscent of skin and impressions of the body. An embodiment occurs, a phenomenological occurrence where knowledge of the Earth as a living thing meets emotional perception. Feeling the pain of grief at the Earth's loss. Eliasson "intentionally selects points of view that highlight viewers' bodily relations to the pictured scenes, choosing disembodied aerial shots or close-ups...Eliasson ultimately foregrounds our own presence in the face of these colossal change" (Guggenheim, 2000). By bringing the issue into our direct perspective, the collective illusion of climate change as a far away and untouchable concept will dissipate.

There is a sense of death that manifests in the spaces between these images. Comtesse et al (2021) describe this emotion as 'ecological grief' which occurs as a response to intangible effects of climate change including the diminishing or disappearance of landscapes. This type of grief works similarly to how humans experience the loss of other humans associated with emotions of guilt and anxiety. With the effects of climate change worsening, it is possible that environmental-related anxiety, guilt and grief will increasingly become a problem in relation to mental health. The visual disappearing of the landscapes reinforces the concept that there is a death that has occurred. Its ethereality is what makes it human. Humans will perceive the ice as bodiless until its death which makes it human. It is not until the occurrence of its death that we realise that it was once living. Landscapes are equally living and feeling beings. Lobel's reading of Aristotle's 'De Anima' explains that "the soul actually perceives the value of what is pleasant...Even a plant moves towards its good; when it takes in water and nutrients it is active towards its good through its nutritive soul" (Lobel, 2017, p.16). This suggests that all living things have a soul, even plants feel that they want to provide themselves with nourishment for growth.

It could be suggested that Eliasson experienced a form of 'becoming' whilst making these works. During an interview, Eliasson explains that during the makings of this work he discovered that "Nature is not disconnected from me at all and everything I do is interconnected and not outside but inside me. I am nature too" (Ormarsson, N/A, p.39). I interpret this as Eliasson undergoing an experience of 'becoming', becoming-world. It is as if he became part of the Earth to capture the photographs, considering a non-anthropocentric perspective. It could also be suggested that Eliasson becomes-bird as he takes the images from a birds-eye view. The act of "creative expression is a result of tuning into the non-organic and micromolecular intensities...liberate perceptions and affections from their imprisonment in bodies that are overwhelmed by molar identity formation" (Ivanova, 2016, p.229). The act

of making art requires a 'becoming' as it requires a person to take on a unique state of perspective which allows for new ideas and non-human thought. To add to this, the creative process even triggered non-human thinking within Eliasson as he says, "we probably need a new legislative system as well for living things and a different application of the rules of law" (Ormarsson, N/A, p.37). By contemplating the diminishing life of the ice, Eliasson was able to consider a non-anthropocentric way of seeing the world.

However, the work could also be suggested to be anthropocentric because the images are curated for the purpose of being displayed in a gallery. Although the images raise awareness of the issue of climate change, it is still from an anthropocentric perspective. The concept of an art gallery is built on human-constructed societal systems. Although the intention of the work is a non-anthropocentric one, raising awareness of climate change impacts, the work has been created for an anthropocentric purpose. The physically distant glaciers become lost in the Tate Modern's vast collection of artwork, like people lost in a never-ending world of man-made anthropocentric systems. In this context, the work becomes an anthropic commodity. A thing that can be bought and sold and owned and consumed. Fisher writes "capitalist realism has successfully installed a 'business ontology' in which it is simply obvious that everything in society, including healthcare and education, should be run as a business" (Fisher, 2009, p.17). Capital realism is especially evident in the art world, creative outputs will evidently become products with assigned values which means that even the non-anthropocentric matter of the work is eclipsed by the anthropocentric value of art according to capitalism.

Case study 2: Alex Garland's Annihilation (2018).



Fig Five

The film *Annihilation* (2018), a movie adaptation of Jeff VanderMeer's 2014 novel, presents a non-anthropocentric world that has evolved beyond humans. Alex Garland creates a dystopian utopia called the 'shimmer', where living things undergo a molecular metamorphosing. Identities, represented as biological structures, are deconstructed and reconstructed into something other. The film is terrifying and beautiful with imagery of a fungal-human hybrid scaled across the swimming pool wall, shark-toothed alligators and the thick iridescent barrier of the shimmer which is reminiscent of oil spills, somehow both eerie and sublime.

Both Garland and Eliasson use provocative imagery of non-human matter as bodily. Eliasson creates a sense of the ice being living through its death. Whereas the shimmer presents bodily figures of plant matter which, although more literal, are not unlike Eliasson's bodily landscapes. In *Annihilation* (2018) the characters discover flowers growing in the shape of human forms (see figure five). The figures, although strange, evoke a sense of familiarity due to their organic formations. The familiar nature of these forms allows us to personify them. Through this use of visual metaphor, human and plant have become equal. Where Eliasson portrays the death of the ice, Garland portrays the life that becomes. Humans, animals, plants, and other living things are biologically similar. Animal and plant cells have similar structures and organelles and the metaphoric visual of the human-formed flowers is essential to illustrate the concept that all living things are made of the same stuff. Where Eliasson presents death as an end, Garland presents death as a type of re-birth. There is a feeling of acceptance of the unbecoming of human's current state and becoming of something else. This is alluded to in the scene where Josie refracts into one of the human-plant forms. Josie's character seems to enter an acceptance of becoming in contrast to the other characters who try to fight against their molecular becomings. It could be suggested that Josie represents embracing non-anthropocentric thought, survival through adaptation.



Fig Six

Both Eliasson and Garland's works present the theme of destruction, but they are presented in different ways. Eliasson displays destruction as a negative consequence of human impact on the environment. Garland introduces an acceptance of destruction and suggests that it is a factor in the next stage of evolution. This is depicted through the process of 'refraction' which is when the DNA of living things is deconstructed into becoming something other. The process of 'refraction' takes a very literal approach to the concept of 'becoming animal.' As Hon-Lee Poon (2018) explains, there is a process of 'becomings' through molecular mixing which deconstructs and collapses identities and mutations of DNA structure. There is a very literal hybridisation between the human and non-human. This becomes especially prominent when the characters discover a human-fungal hybrid (see figure six). The traces of a human that has morphed with mould and rot expanding across the wall, echoing the duplication and growth of cells seen in the film's opening scene. The body looks as though it has been torn apart as the fungus flourishes in the spaces where the body has decayed. The film implies that we must 'mutate' to survive, the found entity is both living and not at the same time. The literal imagery of metamorphosis symbolises undergoing a metaphoric 'becomings' by embracing the non-anthropocentric. In the shimmer "all matter becomes susceptible to radical change at its very core, as former demarcations of species types disappear, including the hierarchies that usually structure them" (Boon, 2020, p.9). The molecular deconstruction of living things is the metaphoric destruction of anthropocentric ways of thinking.

Language is one of the factors which contributes to the separation between humans and non-human living things. Pennycook (2018) explains how humanist constructs like language have established barriers between thought and speech and therefore a separation between the self (the internal) and the world around us (the external). Language has created the illusion that there is an imaginary fence which divides humans and non-humans. Braidotti suggests a need for a post-anthropocentric language which would cause a "collapse of the nature-culture divide...with new figurations to refer to the elements of our posthuman embodies and embedded subjectivity" (Braidotti, 2013, p. 82). This suggests a new linguistic system that relies less on humanist systems of language and semiotics and relies more on embodied empirical knowledge. In *Annihilation*, posthuman language is communicated through empirically gained knowledge. As shown in the visual component of molecular fusing as a bodily process that does not use anthropocentric mechanisms to occur.

To add to this, when the characters enter the shimmer, they experience interferences on phones and the radio. Even memories are fractured, possibly representing a shift into non-anthropocentrism. The shimmer defies all humanist ontological knowledge with material bodies seeming to no longer exist, everything is scrambled and meshed. Hadj (2021) makes the point that contrary to other films within this genre, which use technology as the ultimate saviour of humanity and reinforce human exceptionalism, *Annihilation* deems technology as useless as the shimmer obstructs and refracts radio waves. Once humans have entered the shimmer, humans must adapt or withdraw. No longer able to rely on technology or even their memory, the shimmer creates a world where anthropocentrism and human exceptionalism are no longer an option. This could be foreshadowing a future need for change or even a current need to change. With the only two shimmer survivors, Kane and Lena, having to undergo biological metamorphosis for survival, it could be suggested that *Annihilation* is concluding that humans will need to learn to adapt or face extinction.

However, *Annihilation* is not completely non-anthropocentric. The film requires human characters for narrative and plot drivers such as foreshadowing and suspense. Plus, the film likewise to Eliasson's photography was created by and for the anthropocentric viewer, for purchase and consumption at the cinema, DVDs, or through monthly-paid for streaming services. Carried through various humanist constructs and systems. Like Eliasson's work, the film is a commodity too. Despite its apparent non-anthropocentric themes, it cannot escape the hands of anthropic capitalism.

Conclusion.

Eliasson's photography series displays the negative anthropocentric impact humans have on the environment through a non-anthropocentric lens. Spectators of the artwork are invited to 'become', become-glacier, as Eliasson did when he became-bird and became-nature, through embracing the non-anthropocentric thought that all living things are equal. Using provocative imagery that documents the death of several glaciers, observers are inclined to experience eco-logical grief. It is not until the earth is seen dying or dead that we can accept that it was once living.

Annihilation introduces a non-anthropocentric utopian dystopia where spontaneous biological metamorphosis occurs between plants, animals, fungi and humans. This is a form of 'becoming' associated with the fading away of the nature-culture divide. Human characters and audiences are projected into an uncertain state of mind without hierarchy or logical structure, forced to accept and adapt to the non-anthropocentric future ahead or face annihilation.

Both works attempt to present non-anthropocentrism to a human or anthropocentric audience. However, the artists are not obliterating the anthropocentric world as humans know it but instead encouraging expressions of non-human thought. Non-human thinking can be revealed through means such as eco-logical grief or rethinking established anthropocentric structures which allow humans embrace non-anthropocentric ideas. Both Eliasson and Garland's works imply that as environmental and climate change issues increase, non-human rational solutions may be the only option.

With implications of a need for change away from anthropocentric thought, a balance must be reached between the anthropic world that we currently find ourselves in and the non-anthropocentric complete annihilation of humanity. Zeitz suggests a balanced approach to non-anthropocentrism by calling for a lesser human future. Zeitz explains that Annihilation "summons a radical becoming-nonhuman of the human, displaces the human exceptionalism of an autonomous subject, and *promises* not so much a future without humans as a lesser human future" (Zeitz, 2019, p.54). For humans to embrace non-anthropocentric thought, an essential part of becoming is the change from human to other. We are still human and yet we can also become-other, a lesser human other. There is a need for a co-inhabited space where all living things can thrive. To achieve this, humans must become less human and embrace the thought that, as Eliasson says, "I am nature too" (Ormarsson, N/A, p.39).

Figures.

Fig. One: Ritchie, H. (2020) *Emissions by Sector*. Available at: <https://ourworldindata.org/emissions-by-sector> (Accessed: 24 November 2022).

Fig. Two, Three and Four: Eliasson, O. (1999-2019) *The Glacial Melt Series* [Photography Series]. Tate Modern, London. 2019-2020

Fig. Five and Six: Garland, A. (2018) *Annihilation* [Screenshot of Film]. Paramount Pictures.

Bibliography.

Boslaugh, S.E. (2016) "*anthropocentrism*" *Encyclopedia Britannica*. Available at: <https://www.britannica.com/topic/anthropocentrism> (Accessed: 16 November 2022).

Boon, M. (2020) 'Chromophilic Annihilation', *Pulse: the Journal of Science and Culture*, 7, pp. 1-24. Available at: https://www.academia.edu/49037623/Mashya_Boon_CHROMOPHILIC_ANNIHILATION_Posthuman_Prisms_and_New_Materialist_Refractions_of_Reality (Accessed: 20 November 2022).

Braidotti, R. (2013) *The Posthuman*. USA: Polity Press.

Clark, E. R. (2004) 'The Classical Origins of Pavlov's Conditioning', *Integrative Physiological & Behavioral Science*, 39(4), pp. 279-294. DOI: 10.1007/BF02734167.

Comtesse, H. et al. (2021) 'Ecological Grief as a Response to Environmental Change: A Mental Health Risk or Functional Response?', *International Journal of Environmental research and Public Health*, 18(2), pp. 1-10. DOI: <https://doi.org/10.3390/ijerph18020734>.

Darwin, C. (1873) *The Origin of Species*. 6th Ed. London: John Murray Press.

Deleuze, G. and Guattari, F. (1987) *A Thousand Plateaus: Capitalism and Schizophrenia*. Minneapolis: University of Minnesota Press.

Fisher, M. (2009) *Capitalist Realism*. Hants: John Hunt Publishing Ltd.

Guggenheim (2000) *Olafur Eliasson The Glacier Series*. Available at: <https://www.guggenheim.org/artwork/9361> (Accessed: 2 November 2022).

Hadj, E. B. (2021) 'The (Im)Possibility of Adaptation in Alex Garland's *Annihilation*', *Period: Media and the Anthropocene*, 2, pp. 76-91. Available at: <https://jps.library.utoronto.ca/index.php/theneutral/article/view/36474> (Accessed 4 December 2022).

Ivanova, N. (2016) 'Non-anthropocentric creative mechanisms in multispecies symbiotic assemblages', *Technoetic arts: A journal of Speculative Research*, 14(3), pp. 225-233. DOI: 10.1386/tear.14.3.225_1.

Lents, N.H. (2016) *Not So Different*. New York: Columbia University Press.

Lobel, D. (2017) *Philosophies of Happiness*. New York: Columbia University Press.

Madden, J.D. (2013) *Mind, Matter and Nature*. Washington: University of America Press

McLeod, S. (2021) 'Pavlov's Dogs Study and Pavlovian Conditioning Explained', *Simply Psychology*, 8th October. Available at: www.simplypsychology.org/pavlov.html (Accessed 6 November 2022).

Mill, J.S. (1863) *Utilitarianism*. London: Parker, son, and Bourn.

Ormarsson, O. (N/A) 'I Am Nature Too', *Listir Visual Art*, pp. 34-40. Available at: https://glaciermelt.is/files/191012_Morgunbladid_Orri_Pall_Ormarsson.pdf (Accessed 4 November 2022).

Pennycook, A. (2018) *Posthumanist Applied Linguistics*. New York: Routledge.

Poon, H.L. (2018) 'Becoming-animal in Annihilation', Review of *Annihilation*, Directed by Alex Garland. Available at: https://www.academia.edu/39287699/Becoming_animal_in_Annihilation_2018_ (Accessed: 18 November 2022).

Saylor.Org (2021) *Anthropocentric vs. Non-Anthropocentric Environmental Ethics*. Available at: <https://learn.saylor.org/mod/page/view.php?id=8118> (Accessed: 14 November 2022).

Skutch, A. (1996) *The Mind of Birds*. USA: Texas A&M University Press.

Sugawara, H. et al. (2021) 'Anthropogenic CO2 Emissions Changes in an Urban Area of Tokyo, Japan', *Geophysical Research Letters*, 48(15), pp. 1-10. DOI: https://doi.org/10.1029/2021GL092600_

Workman-Davies, B. (2010) *Aristotelian Rationality of Animals*. Unpublished MA thesis. University of South Africa.

Zeitz, C.D. (2019) 'A Lesser Human Future: Posthuman Monstrosities in *World War Z* (2013) and *Annihilation* (2018)', *Gender Forum*, 71, pp.44-57. Available at: <https://www.proquest.com/docview/2258087695?pq-origsite=gscholar&fromopenview=true> (Accessed 25 November 2022).