To what extent can de-extinction be theologically and morally justified?

Submitted by Gareth Thomas Richards, to the University of Exeter as a thesis for the degree of Masters by Research in Theology and Religion, June 2022.

I certify that all material in this thesis which is not my own work has been identified and that any material that has previously been submitted and approved for the award of a degree by this or any other University has been acknowledged.

Dedication & Thanks

For Alex, whose support and encouragement have ensured that this project could never go the way of the dinosaurs.

With thanks to my parents, Kathie and Ian, and my grandparents, Jean and Wynford, who have always inspired in me a love of learning.

And finally, thank you to my tutor, Professor Christopher Southgate, whose guidance, wisdom and good humour have always been "most satisfactory".

Abstract

No longer condemned to the realms of science-fiction, de-extinction projects across the globe continue to excavate the very real possibilities for restoring lost creatures to the biosphere. From ambitious endeavours to resurrect the mammoth to the manipulation of genetic codes in order to 'back-breed' other species, it is clear to see why such projects capture the imagination. This thesis will seek to address the key concerns raised by the issue from a theological standpoint as well as engaging with the ethical dimension elicited by such engagement. The theology of de-extinction is an area that has not seen overly extensive research in the discipline and one of the aims of this project will be to establish a framework for the theological vocation in relation to the restoration of lost species. This will be guided by an engagement with thinkers from across the Christian theological spectrum such as Schaefer, Southgate, McLaughlin and Jenkins. Additionally, a survey and critical engagement with theological ethics will argue that a theocentric approach, akin to that developed by James Gustafson, offers the most attractive and adaptable approach to the issue, as well as to our relationship to the wider creation. The project will conclude that whilst de-extinction could well be sanctioned under the theological vocation, theocentric ethics would counsel restraint, for the time being.

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CHAPTER I

Introduction

1.1 What is de-extinction?

Earth has seen five mass extinctions in its long history. The most recent, and perhaps most well-known, took place around 66 million years ago, wiped out the dinosaurs and was almost certainly caused by the apocalyptic fallout of an asteroid impact with the planet. And yet the most severe extinction event, The Permian-triassic, which took place approximately 250 million years ago, was even more devastating, extinguishing 96% of marine species and 70% of land species from the Earth. More worryingly, the sixth great extinction may already be underway. Not only is the human population growing at a rate which could outpace the resources available, but human expansionism, the exploitation of natural resources and even the poaching of species all threaten the continued existence of innumerable species on earth – indeed some creatures may have gone extinct before they could be discovered and catalogued by human beings.

In terms of academic treatment, de-extinction has been the subject of few book-length studies. The most prominent works being Oksanen and Siipi's *The Ethics of Animal Recreation and Modification: Reviving, Rewilding, Restoring* (2014); *Mendel's Ark: Biotechnology and the Future of Extinction* (2014) by Fletcher and *Resurrecting Extinct Species: Ethics and Authenticity* (2017) by Campbell and Whittle. Theological and ethical considerations of extinction and related technologies have also been offered by Skrimshire's essay, 'Rewriting mortality:

A theological critique of geoengineering and de-extinction',[1] while Lisa Sideris has presented several papers[2] reflecting on the relationship between de-extinction technologies and the link between wonder and humanity's hubristic tendencies.

De-extinction technology has captured the imagination of both scientists and the public alike. Much of this popularity, as well as my own interest, has been inspired by the by the best-selling *Jurassic Park* novels and the subsequent movie franchise. In Michael Crichton's original story, scientists engineer a way in which to extract dinosaur DNA from fossilised amber with initially awe-inspiring (and later horrifying) consequences. Almost thirty years on from the first film adaptation, this year will see the release of the final film in the series which will explore the consequences of a new world wherein genetically engineered dinosaurs live alongside humans in the modern natural world. Other authors have also been inspired by the prospect of similar bioengineering projects, Margaret Atwood's *Oryx & Crake* trilogy explores a post-apocalyptic world inhabited by cross-bred species and even over a century ago, authors such as Arthur Conan Doyle considered how humans would interact with what were thought to be extinct species in *The Lost World*. Whilst none of these tales have yet been realised, over the past few decades several projects have been underway seeking to restore creatures lost by both natural and anthropogenic means.

One such scientist, Ben Novak, a researcher and member of the 'Restore and Revive Project' which is attempting to bring back the passenger pigeon, has set

[1] S. Skrimshire, 'Rewriting mortality: A theological critique of geoengineering and de-extinction', *in Theological and Ethical Perspectives on Climate Engineering: Calming the Storm*. Lanham, ed. F. Clingerman and K. O'Brien, pp. 103-126, MD: Lexington Books (2016).
[2] L. Sideris, "The Ethics of De-Extinction: Wonder as a Resource and Moral Corrective." Meeting of the International Society for the Study of Religion, Nature, and Culture. Cork, Ireland. 13-16/06/2019.

out a comprehensive definition of de-extinction, which, to help clarify the focus of this project, would be worth citing at length:

"de-extinction is the ecological replacement of an extinct species by means of purposefully adapting a living organism to serve the ecological function of the extinct species by altering phenotypes through means of various breeding techniques, including artificial selection, back-breeding and precise hybridization facilitated by genome editing. The goal of de-extinction is to restore vital ecological functions that sustain dynamic processes producing resilient ecosystems and increasing biodiversity and bioabundance.[3]

The prospect of restoring lost creatures through de-extinction technologies pose enormous questions not just morally, but also theologically and draw upon the fundamental challenge levied at science in terms of its purpose and limitations. In 1818, the publication of Mary Shelley's 'Frankenstein' begged us to consider the promethean dangers inherent in scientific pursuit. Two centuries on, humanity has borne witness to incredible scientific achievements from the eradication of deadly diseases to deep space exploration. At the same time, science has also been responsible for some of the most terrible of endeavours, none so much perhaps as the fruits of the Manhattan Project whose shadows still hang over our world to this day. Although de-extinction technologies may not present such an existential threat to life on earth, the consequences of such projects are still profound and raise questions which require deep philosophical and theological reflection. Are we right to 'Play God'? Should we prioritise lost species over those whose existence is threatened today? Is it even possible to re-create species or

[3] B.J. Novak 'De-extinction' in *Genes* (Basel). 2018 Nov; 9(11): 548. Published online 2018 Nov 13. doi: 10.3390/genes9110548. Available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6265789/ [Accessed 27/07/20].

will we simply be birthing new, proxy sub-species? These questions, along with many others that will be explored in this thesis, demand a reflection on the place of human beings and from there an enquiry into how we ought to relate to the rest of the natural world.

As such, this project will begin with an outline in Chapter 2 of the current possibilities in de-extinction science and consider the success and failures of such projects as well as the related issue of re-introduction. The latter will inform later considerations of what we are 'to do' with restored species. Chapter 3 will involve a critical engagement with a wide variety of theologians to ascertain the status of the human vocation. I will evaluate key ideas in order to set out my own position on the theological vocation of human beings centred on the propagation of the virtues and our role as 'created co-creators'. Combined, these will support the idea that *theologically* de-extinction technologies can be deemed permissible. In Chapter 4 I will turn to the ethical dimension of the project. I will evaluate the work of three contemporary writers and apply their theological ethics to the issue of de-extinction. Perhaps~~,~~ surprisingly considering the outcome of the previous chapter, I will show that *morally* de-extinction technology should not be presently pursued. Finally, in Chapter 5, I will bring together a synthesis of the work I have undertaken in order to establish my own view of the human vocation as well as a theological ethic grounded in a theocentric approach. This final move may surprise some, largely due to the perceived 'un-Christian' nature of such a stance. However, it is my firm belief that such a stance can not only be maintained, but can even enhance the Christian approach to theological ethics and particularly the challenges facing environmental ethicists today.

CHAPTER II

De-extinction and the current possibilities

This chapter seeks to examine the feasibility, process and goals of de-extinction, which will then be subject to evaluation through a theological lens in subsequent chapters of this thesis.

2.1 What is extinction?

The Shorter Oxford English Dictionary gives the relevant definition of extinction as 'coming to an end, or dying out'. In biology this terminology is applied to the loss of a species, when there is no longer a breeding population with the range of phenotypes characteristic of that species, and finally the last individuals are lost.[4]

Before proceeding it would seem prudent to offer a distinction between the various forms of extinction that can play out in the natural world. As well as providing clarity, this will sharpen the focus on the ethical issues raised by de-extinction technologies as, after all, they seek to overhaul a process which has been at the heart of the evolutionary process for millennia.

There are, generally, two types of extinction in the natural world. The first, 'natural extinction' refers to loss of species that cannot be assigned to the influence of human beings. Perhaps the most famous example is 'Mass extinction', in which a large number of species are lost over a relatively short time period. The extinction of the dinosaurs, 66 million years ago, is the most recent example of such an apocalyptic event. Occurrences like these are attributed to cataclysmic

[4] This is not an entirely straightforward issue, given the controversy in biology over the existence of 'species'. Where there is the possibility of interbreeding, the issue is still more complicated. Polar bears interbreed with grizzly bears at the edge of their habitat, and this will complicate the question of when polar bears become extinct.

events such the impact of a meteorite, volcanic eruptions and drastic changes to the climate. Such events have grave theological consequences, for how are we to reconcile the annihilation of large proportions of life on earth with the existence of an omnibenevolent God? One possibly satisfactory resolution is to see such destruction as a harm which has been allowed by God to bring about certain benefits. Such a view has been proposed by Southgate as 'The Only Way' argument and will receive further discussion below (see p. 122). Natural extinctions are still underway, referred to as the 'Background Extinction Rate'. This refers to the level of extinction one would expect to see if humans did not exist. Such natural extinction is often precipitated by reproductive issues such as the impact of temperature changes in various species of reptiles, and low reproductive rates in other species, such as pandas. Indeed, it is worth noting that if it were not for the conservation efforts of human beings, many such species would have already become extinct.

The second type of extinction is 'anthropogenic', a loss of species in which human influence is an important factor. Alarmingly, the WWF suggest that the rate of species loss today is between 1,000 and 10,000 times higher than would otherwise be anticipated.[5] Human-generated climate change is having a profound impact on extinction rates, as are environmental pollution, poaching, and habitat loss through expansion of human population. From the dodo to the northern white rhinoceros, the effects of poaching and habitat destruction by human beings has led to the extermination of countless species in the short time we have walked this earth.[6] In his writings 'The Story of My Boyhood and Youth',

[5] WWF, 'How many species are we losing?' Available at: https://wwf.panda.org/discover/our_focus/biodiversity/biodiversity/ [Accessed 29/07/2022].

[6] Though clearly, given that humanness itself emerged gradually, the distinction between the two forms of extinction is blurred during the period of emergence, and remains hard to implement with absolute precision.

the naturalist John Muir recalls the savagery with which humans hunted the now extinct passenger pigeon. He quotes the writing of Pokagon, the Potawatomi writer:

"I saw one nesting place in Wisconsin one hundred miles long and from three to ten miles wide. Every tree, some of them quite low and scrubby, had from one to fifty nests on each… When the pigeon hunters attack the breeding-places they sometimes cut the timber from thousands of acres. Millions are caught in nets with salt or grain for bait, and schooners, sometimes loaded down with the birds, are taken to New York, were they are sold for a cent apiece."[7]

In terms of this project, such extinction is particularly pertinent as, for humans, concepts of salvation, redemption and atonement for the destruction of created beings are at the cornerstone of a theology of de-extinction. Restoring that which has been lost by human action in particular, may prove to be the most compelling argument for human intervention in the extinction process.

Southgate has also offered a useful comment on extinction which highlights the value that is lost when a species becomes extinct, for him "a whole strategy of being alive on the planet, a whole quality of living experience is lost when any organism becomes extinct."[8] This perhaps, more than any other definition that I could offer highlights the potential rewards of de-extinction technology – the opportunity to restore ways of being alive, ways that without such endeavours, would be gone forever. A natural extinction is a loss to species in relationship with that species, and hence to the relevant ecosystem as a whole; it may also be

[7] J. Muir, 'The Story of My Boyhood and Youth' in *Journeys in the Wilderness: A John Muir Reader*, Edinburgh: Birlinn Press (2009), p. 93.
[8] C. Southgate, *The Groaning of Creation: God, Evolution & The Problem of Evil*, Louisville, KY: WJK Press (2008), p. 9.

seen as a loss to God of that particular creature's 'song of praise'; it may also be seen as a loss to human beings of the value attached to contemplation and study of that species. At the same time, it is useful to recognise that natural extinction has, over the history of the biosphere, sometimes opened up niches for other creatures, and has therefore been a source of new possibilities of flourishing, and of evolutionary novelty.

2.2 What are the current possibilities for de-extinction technology?

There are currently several de-extinction projects, each at various early stages, underway across the world. Essentially the methods of de-extinction can be divided into three main approaches: cloning, the modification of existing living beings, and direct de-extinction through cell nuclei extraction. In order to get a sense of the issues that will be dealt with in the theological and ethical discourse, it would be prudent to briefly outline the various methods and objectives of projects underway.

The method which has perhaps come closest to de-extinction thus far used the process of cloning. Using similar technologies to those which were applied to create 'Dolly the Sheep' in 1996, Alberto Fernandez-Arias succeeded in the first ever instance of what can be considered species resurrection in July 2003. The species concerned was the Pyrenean ibex or 'bucardo'. Fernandez-Arias managed to oversee the birth of a clone of a female bucardo, the last of which had died three years previously. After taking two skin samples from the last bucardo in existence, scientists attempted to transfer nuclei from the now frozen cells into the ova of goats and allowed them to develop into the earliest stages of embryos. These embryos would then be transferred into the wombs of surrogate mothers. Of the forty-four surrogate nanny goats used, only one managed to carry

to full term. However, shortly after the birth of the resurrected ibex, the kid died. A post-mortem determined that the cause of death had been the development of a third lung which inhibited proper respiratory function.[9] Such malformations are one of the significant dangers and ethical hurdles of the cloning method for de-extinction.

To overcome the moral and practical difficulties posed by direct surrogacy, George Church in his project on the mammoth intends to create an artificial uterus. Elephants pose great gestational challenges for his project due to their six-hundred-day pregnancies and high rate of miscarriages as well as the declining number of Asian elephants, the intended surrogate species. Church's team would assemble an artificial umbilical cord which would then supply blood and nutrients to the foetus which would be submerged in a liquid capable of imitating the conditions provided by amniotic fluid.[10] Before reaching this stage however, Church must take mammoth DNA and combine it with cell cultures (fibroblasts) of an Asian elephant. He has succeeded in doing so with the use of his CRISPR genome engineering technology. To enable thick fur, higher levels of body fat and blood cells capable of functioning in arctic conditions, Church and his team will modify the traits and characteristic of an existing species of elephant to create their mammoth.[11] The latest report from Revive & Restore (the umbrella organisation for several de-extinction projects) states that "Mutations for mammoth haemoglobin, extra hair growth, fat production, down to nuanced climate adaptations such as slightly altered sodium ion channels in cell

[9] Folch J, Cocero MJ, Chesné P, et al. First birth of an animal from an extinct subspecies (Capra pyrenaica pyrenaica) by cloning. *Theriogenology*. 2009;71(6):1026-1034. doi:10.1016/j.theriogenology.2008.11.005 Available at: First birth of an animal from an extinct subspecies (Capra pyrenaica pyrenaica) by cloning - ScienceDirect [Accessed 05/08/2020].
[10] https://reviverestore.org/projects/woolly-mammoth/progress/ [Accessed 06/08/2020].
[11] Ibid.

membranes have already been engineered into fibroblast cell lines."[12] The next steps, before incubation, include the merging of these fibroblasts with stem cells which can then be manipulated to engender mutations in the direction of mammothdom. Essentially the task is to now alter the Asian elephant genome in such a way as to make it cold-resistant. The extent to which this creature actually is the woolly mammoth previously lost to the ages is something that will be discussed later in the project. Perhaps all that Church is really able to do is to engender a new sub-species, neither woolly mammoth nor Asian elephant.

In a bid to avoid the accusation of the creating of nothing more than a 'hybrid' species, Mike Archer, the famed palaeontologist, has shown how it may be possible to create a genuine thylacine. Archer proposes the use of somatic cell nuclear transplantation, which would involve extracting the dead nucleus from an extinct species, such as the thylacine, and then using it to replace the nucleus of an egg cell in a host. The embryo that developed would then be implanted into a surrogate, probably from another marsupial species, such as the Tasmanian devil. Archer is convinced that the resultant being would not be a hybrid as the nuclear DNA would come entirely from a thylacine.[13] It would seem that Archer presents us with the most credible project to restore a genuine member of a lost species. However, his proposal has not been without its detractors. In a 2009 edition of *Quadrant*, Allen Greer took aim at Archer's lack of reality regarding the process. He notes, for example, Archer's boundless optimism, and his claims that we would see the successful recreation of a thylacine within a decade – a comment made in 2000. Moreover, he points out the false claims regarding the

[12] Ibid.

[13] M. Archer, TED Talk, '*How we will resurrect the gastric brooding frog and the Tasmanian tiger.*' (2013) https://www.ted.com/talks/michael_archer_how_we_ll_resurrect_the_gastric_brooding_frog_the_tasmanian_tiger [Accessed 10/08/2020].

success of his work. After claiming that his team had isolated the entire genome of the thylacine in significant quantities, a hasty retreat was soon made when they released that much of the sample had ben contaminated by micro-organisms, fungi that had contaminated the thylacine pup which had been preserved in alcohol. These, along with other examples of Archer's willingness to overstate the success of his project have led many scientists, such as Steve Cooper, to consign de-extinction technology to the realms of science fiction.[14] Moreover, far from helping to combat and reverse the destruction wrought by climate change, ecologists such as Euan Ritchie, have warned that de-extinction projects that aim to restore lost species to the wild threaten to put the biosphere in jeopardy once again and take the focus away from the vital work needed to save threatened species.[15] Meanwhile, Corey Bradshaw, professor in global ecology at Flinders University, recently criticised Archer's plans: 'Even if you can do it [in the lab] - and I have my doubts about that - how do you create the thousands of individuals of sufficient genetic variation you need to create a healthy population?"[16] Such scepticism pose serious challenges to de-extinction projects, most notably concerning the criteria for success, to which I will turn in Chapter 2.3.

Thus far no reference has been made to the possible de-extinction of any species of dinosaur. This is largely due to the fact that there exist no viable sources of DNA which could facilitate the application of de-extinction technology. Indeed,

[14] A. Greer, 'Cloning the Thylacine', Quadrant Online, 01/07/2009. Available at: https://quadrant.org.au/magazine/2009/07-08/cloning-the-thylacine/ [Accessed 17/08/2022].
[15] S. Groch, 'The de-extinction club: Scientists plot to restore the Tasmanian tiger and other extinct species', Genetic Literacy Project, 13/08/2021. Available at: https://geneticliteracyproject.org/2021/08/13/the-de-extinction-club-scientists-plot-to-restore-the-tasmanian-tiger-and-other-extinct-species/ [Accessed 30/08/2022].
[16] A. Morton, 'De-extinction: scientists are planning the multimillion-dollar resurrection of the Tasmanian tiger', The Guardian, 16/08/2022. Available at: https://www.theguardian.com/australia-news/2022/aug/16/de-extinction-scientists-are-planning-the-multimillion-dollar-resurrection-of-the-tasmanian-tiger [Accessed 30/08/2022].

many leading palaeontologists such as Michael J. Benton have all but given up hope, “The methods can all be identified, but DNA does not survive for long, and so there is currently no prospect of obtaining any dinosaurian DNA. Without the genetic code in the DNA, the whole … scenario collapses.”[17] However, there are a very small number of projects utilising technology which could conceivably lead to the recreation of life not seen for sixty-six million years. By altering the genetic code of species descended from dinosaurs, some scientists hope to engineer creatures reminiscent of that lost age. Palaeontologists such as Jack Horner continue to advocate technologies that are capable of reversing the evolutionary process. Essentially his team would seek to control which genes become active during the development of embryonic chicks, a process known as atavism activation. Believing that relevant residual data still resides within species, his team’s complex genetic engineering would aim to redirect the inherited material towards the desired characteristics. Notably only in the very early stages of the research, Horner’s team are currently attempting to restructure the rump present in modern birds into a tail, indeed embryonic chicks initially have a proportionally long tail, which evolutionary development in the chicken has curbed.[18] The project is far from achieving its goals and, of more importance for my research, it is plagued with ethical problems, most notably whether it would even be permissible to allow a partially modified creature to hatch. The modified creatures may partially resemble dinosaurs but the question of whether they would be able to survive and thrive remains unanswered.

[17] M. J. Benton, *The Dinosaurs Rediscovered: How a scientific revolution is rewriting history*, London: Thames & Hudson (2020), p. 152.
[18] J. Horner, TED Talk, ‘*Building a dinosaur from a chicken.*’ (2011). https://www.ted.com/talks/jack_horner_building_a_dinosaur_from_a_chicken?language=en [Accessed 10/08/2020].

2.3 The Role of Epigenetics

A final, albeit brief acknowledgement must also be given to the impact of epigenetics on any restored species. As this project is theological in nature, I will not look to evaluate the implications of this branch of biology. My intention here is to simply draw attention to the phenomena and highlight their potential for facilitating unintended consequences. Early genetic research suggested that genes were the 'masters' who dictated structure and function. Such genetic reductionism is best illustrated by Richard Dawkins's 'The Selfish Gene' (1976), which asserts that evolution is happening at the level of the gene. Epigenetics, in contrast, is the school of thought which argues that genes are only ever operating in a particular context, which itself can have a profound impact on development. The dangers of genetic reductionism are paralleled in de-extinction projects, such as those of Fernandez-Arias and Archer. And so I feel it is important to indicate the significance of epigenetics in order to highlight considerations which are perhaps being overlooked in the quest to restore life to lost creatures. The Centre for Disease Control (CDC) defines epigenetics as "the study of how your behaviours and environment can cause changes that affect the way in which your genes work."[19]

Jablonka and Lamb's illuminating work on the various patterns of evolution posit that evolution is possible through Epigenetic Inheritance Systems (EISs). To illustrate this, they develop the 'Jaynus Thought Experiment'.[20] Imagining a newfound world, they conceive of a biosphere consisting of diverse, if not terribly complex, life-forms. Reproduction amongst these species is entirely asexual,

[19] CDC, 'What is Epigenetics?' Available at: https://www.cdc.gov/genomics/disease/epigenetics.htm [Accessed 11/11/2021].

[20] E. Jablonka & M. Lamb, *Evolution in Four Dimensions: Genetic, Epigenetic, Behavioural and Symbolic Variation in the History of Life*, Cambridge, MA: The MIT Press (2005), pp. 114 – 116.

largely via bulbs or the detachment and division of cells. Nevertheless, every organism has precisely the same sequence of DNA and yet a great variety of life has developed and thrived.[21] This colourful thought experiment is then paralleled with examples from our own world. Intriguing results were found in mice that were provided with a small amount of additional DNA (from a transposon) which interfered with the normal formation of pigment, resulting in yellow fur. This, in itself was far from ground-breaking, however, a remarkable happening was soon observed. Yellow mothers produced yellow offspring, suggesting that epigenetic factors could be passed on, if the "epigenetic slate was not wiped clean before each new generation."[22]

In humans, epigenetic patterns can be observed in smokers. Clinical trials in the Unites States have found that "smoking-associated DNA methylation changes are a result of prolonged exposure to cigarette smoke, and can be reversed following cessation. The length of time in which these signatures are established and recovered is dose dependent."[23] A second study, found that the effects of prenatal nutrition during the Dutch famine (1944-1945) had long term consequences in relation to metabolism and the cardiovascular and central nervous systems: "The findings suggest that risk factors for chronic degenerative diseases have their origins in utero, but that they are programmed through different environmental influences."[24] The research highlights that fact that there

[21] Ibid, p. 114.
[22] Ibid, p. 142.
[23] McCartney DL, Stevenson AJ, Hillary RF, Walker RM, Bermingham ML, Morris SW, Clarke TK, Campbell A, Murray AD, Whalley HC, Porteous DJ, Visscher PM, McIntosh AM, Evans KL, Deary IJ, Marioni RE. Epigenetic signatures of starting and stopping smoking. *EBioMedicine*. 2018 Nov;37:214-220. doi: 10.1016/j.ebiom.2018.10.051. Epub (2018). PMID: 30389506; PMCID: PMC6286188. Available at: https://pubmed.ncbi.nlm.nih.gov/30389506/ [Accessed 14/11/2021].
[24] T.J. Roseboom, (2019). Epidemiological evidence for the developmental origins of health and disease: effects of prenatal undernutrition in humans, *Journal of Endocrinology*, 242(1), T135-T144. Available at: https://joe.bioscientifica.com/view/journals/joe/242/1/JOE-18-0683.xml Accessed: [14/11/2021].

may be factors beyond genomic sequences that may result in unanticipated variations in species which deviate from the intended outcome. This poses significant questions in relation to the authenticity of de-extinct creatures, particularly those restored through processes involving surrogacy and cloning. However, when one considers domesticated animals from cattle to cats and even bearded dragons, we can see how a vast array of species alive today have been affected by the process of epigenetics. For Novak, however, such concerns are vacuous:

If a cloned Bucardo is a proxy of a Bucardo, then every species epigenetically altered by human activities is now extinct and has been replaced with anthropogenic proxies. This means every recovery facilitated by translocation, captive breeding, habitat restoration and so forth, are not recoveries at all but have … substituted them with new forms.[25]

This is a critical juncture for the debate on what can be considered a successful outcome for de-extinction projects. Whilst it is acknowledged that when individuals of a species have no descendants then, at a biological level, an extinction has occurred, the key question is whether other individuals that sustain 'the way of being' of a lost creature can be considered a true way of bringing that individual back? If Church et al. were to create a 'mammoth' that looked and acted in a way that we would expect a mammoth to, and yet it did not contain 100% mammoth DNA, would we say that they had successfully resurrected a mammoth? On the one hand, when we consider that the possession of 100% of the DNA as the prerequisite for categorisation as a member of a species, then

[25] B.J. Novak 'De-extinction' in *Genes* (Basel). 2018 Nov; 9(11): 548. Published online 2018 Nov 13. doi: 10.3390/genes9110548. Available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6265789/ [Accessed 27/07/20].

we may well find that, due to the persistence of Neanderthal DNA in human beings, for example, that many of us would not be classified as *homo sapiens*. Such a bar sets an impossible standard and one that does not really help as the measure of success achieved by a project. Alternatively, a 'mammoth' that is little more than a 'hairy elephant' would probably fail to gain the widespread consensus that would be a marker of the achievement. And yet, perhaps, in time, if such 'hairy elephants' were to breed with one another, then generations down the line we may behold something worthy of the title 'mammoth'. As more and more of the desired mammoth traits and DNA are passed on, at the expense of elephant DNA, we might then have a being that more comfortably fits the classification. Beth Shapiro has written extensively on this issue and reached the conclusion that a 100% 'authentic' mammoth clone will never be forged, as there are no living cells from which to create a copy.[26] However, in her view, a mammoth would not require the complete genetic makeup, instead it "just needs the characteristics which will distinguish it enough from an elephant such as those which will enable it to live where a mammoth once lived."[27] Ultimately, herein lies one of the biggest challenges facing de-extinction projects: Could it really achieve its aim? Or will it simply result in genetic hybrids? In my view, for the foreseeable future at least, any claims to have re-created a lost being are at best going to have engineered a hybrid species. A balance needs to be struck between having a significant enough genetic presence to distinguish it from an elephant alongside simply acting in the way we expect the mammoth to behave. A high threshold for genetic distinctiveness will set an impossible goal, but not enough of it will lead to serious questions about the authenticity of the result. However, I am open to

[26] B. Shapiro, *How to Clone a Mammoth: The Science of De-extinction*, Princeton: Princeton University Press (2015) pg. 11.
[27] Ibid. pg. 130.

the idea that with further refining of the genome and the diminishing of elephant DNA in the mammoth-hybrid's sequence, we could, one day, see a creature that could be comfortably described as a 'mammoth' march across the arctic wastes once again.

2.4 De-extinction and then what?

One of the most critical consequential issues raised by any efforts to resurrect lost species is the question of what is to be done with restored creatures? To my mind, there are several possibilities: I will later examine the ethics of conserving such animals in zoos or on reserves, through the work of David Clough (4.1.2). Additionally, de-extinct creatures could conceivably be housed specifically for scientific research. Who knows what medical properties may be harboured in the blood or venom of animals with whom we have never engaged in a research context? A third, highly emotive possibility is that of re-introducing species in to the wild in areas where they have been lost. At this point, a critical distinction must be made to emphasise the scope of de-extinction projects. The re-introduction of beavers and white-tailed eagles discussed below demonstrates the potential of reintroduction programmes in cases where a species has been eradicated from a particular region (local extinction). Such projects are possible as there are extant populations of the same species elsewhere from which a new base population can be drawn. De-extinction and the subsequent re-introduction of a species elevates these issues to entirely different sphere. As outlined above (see 2.1), the creatures such projects seek to restore have been utterly lost. No more of their number exist anywhere in the world and, in many cases, have not done so for thousands, if not millions of years. As such, parallels with present reintroduction projects need to be drawn lightly. One case in point will illustrate the stakes. If we imagine, despite all the evidence to the contrary, that it were

possible to restore a triceratops to the world, where would we look to release such a creature? Not only do the creatures upon which it was interdependent no longer exist, nor does its habitat and food source. We cannot be sure that it would be able to digest the different plant life that exists today and any attempt to recalibrate its digestive processes would surely detract from our claim to have recreated a triceratops at all. Mass extinctions have had a profound and irreversible impact on our biosphere; to assume restored creatures can be assimilated into an environment far removed from the one they inhabited in eons gone by highlights the complexity of the challenge as well as the potential for hubristic folly inherent. Full ethical evaluation of re-introduction projects goes beyond the scope of this thesis. However, the briefest survey of positive and negative case studies is worth exploring in the interest of signposting further consequences and areas for debate as a result of de-extinction technology.

One of the most successful efforts to re-introduce a species driven extinct by human activity is that of the beaver in the United Kingdom. Beavers have been extinct in Britain since the Middle Ages, when they were exterminated by hunters who sought their fur, meat and castoreum (a secretion used in perfumes, food and medicine).[28] Projects in the UK have all met with success despite the various concerns and setbacks they have encountered. The case for their introduction has been made largely based on the idea that they perform the work of natural engineers in their environment. As a 'keystone' species, "they play a vital role in enriching biodiversity by restoring and managing river and wetland ecosystems."[29] Beavers provide several key benefits: they are herbivores and so

[28] RSPB 'Beaver Reintroduction in the UK'. Available at: https://www.rspb.org.uk/our-work/policy-insight/species/beaver-reintroduction-in-the-uk/ [Accessed 08/11/2021).
[29] North Wales Wildlife Trust, 'The beavers are here!' Available at: https://www.northwaleswildlifetrust.org.uk/news/beavers-are-here [Accessed 03/11/2021].

do not negatively impact fish populations; the damming of rivers has been shown to reduce the risk of flooding; damming has the additional benefit of creating new wetlands; beaver dams have also been shown to improve water quality.[30] The case has been successfully made in Wales, where a population has been reintroduced to create a beaver hub - a small, monitored and fenced off reserve.

A larger project has been underway in Devon for several years (2015-2020). Prior to the scheme, much concern had been raised over the risk of flooding and subsequent damage to agricultural production. In fact, the research has confounded much of the anxieties of sceptics. A reduction in the peak flows of the River Otter has substantially reduced the danger of flooding to a village with properties at risk from flooding. There has, furthermore, been no evidence of any negative impact to infrastructure monitored by the Environment Agency.[31] In the small minority of circumstances where the potential for negative flooding has been identified, the situation has been swiftly remedied through low level intervention. This has included the slight lowering of dams and the removal of trees felled by beaver activity.[32] So called 'beaver deceivers' have also been employed sporadically, with the intention of reducing water height behind dams whilst not disturbing the presence of beavers. A pipe, protected by a submerged cage, is used to funnel water underneath or around the dam.[33]

This is not to claim that re-introductions are a risk-free process. The various attempts to reintroduce the white-tailed eagle to parts of the British Isles have faced several setbacks and serious opposition. The eagle has been extinct for

[30] Ibid.
[31] Brazier, R.E., Elliott, M., Andison, E., Auster, R.E., Bridgewater, S., Burgess, P., Chant, J., Graham, H., Knott, E., Puttock, A.K., Sansum, P., Vowles, A., (2020) 'River Otter Beaver Trial: Science and Evidence Report', p. 6. Available at: https://www.exeter.ac.uk/research/creww/research/beavertrial/ [Accessed 03/11/2021].
[32] Ibid, p. 8.
[33] Ibid, p. 111.

approximately two hundred years largely due to habitat loss and its persecution as a danger to domestic animals. As recently as October 2021, efforts to release a small population in Norfolk were cancelled due to concerns over the predator's impact on other birds[34] as well as the impact it may have on local shooting interests by predating on pheasants and partridges. There were also worries that young livestock, such as lambs and piglets could be at risk from the talons of what would be Britain's largest bird of prey.[35] Such reticence from local interest has received backing from wildlife and conservation agencies themselves. In 2018, the HIWWT, whilst declaring a general support for reintroduction and acknowledging the potential benefits, warned that:

Any proposed reintroduction programme should look to bring benefits for wildlife as a whole and therefore must incorporate stepped action to restore and improve habitats and species populations, address existing pressures and put in place measures to achieve a sustainable and healthy environment for these birds and for the rest of the wildlife of the island.[36]

Unheeding of these concerns, a small population of white-tailed eagles were released on the Isle of Wight, with predictable consequences. With such a large range, it came as no surprise to find that the birds were ranging far and wide across the south of England and beyond. Indeed, during April 2021, one of their number was spotted crossing the English Channel to Boulogne before again being identified further inland at St. Quentin, east of Amiens.[37] Far less amusing

[34] H. Horton, 'Norfolk white-tailed eagle reintroduction project cancelled'. Published in *The Guardian* on 18/10/2021. Available at: https://www.theguardian.com/environment/2021/oct/18/norfolk-white-tailed-eagle-reintroduction-project-cancelled [Accessed 09/11/2021].
[35] Ibid.
[36] Hampshire & Isle of Wight Wildlife Trust, 'Wildlife Trust views on the reintroduction of the white-tailed sea eagle'. Published on 3/12/2018. Available at: https://www.hiwwt.org.uk/news/wildlife-trust-views-reintroduction-white-tailed-sea-eagle [Accessed 09/11/2021].
[37] BBC News, 'Isle of Wight sea eagle makes Channel crossing to France'. Published on 07/04/2021. Available at: https://www.bbc.co.uk/news/uk-england-hampshire-56659943 [Accessed 09/11/2021].

repercussions have also been noted. Of the thirteen birds reintroduced as part of the project, almost a quarter have already died.[38] There are signs of hope: statistics point to the encouraging survival rate of the restored eagles. In Scotland, 37% of the reintroduced eagles have reached maturity at five years old.[39] From just these few case studies alone, it is more than clear that the longer-term consequences of de-extinction need also to be considered, not only those concerned with the ethics of the bioengineering process itself. The fate of creatures, once they are resurrected, is as important as their genesis.

2.5 Concluding Remarks

This chapter has sought to sketch out the prospects for de-extinction in the twenty-first century. Having briefly explored efforts in the fields of cloning, surrogacy and genetic 'back-breeding', it is evident that much work still remains to done in order to make any of these dreams of resurrection a reality. It is more than evident that the drive and ambition is present in those seeking to perfect the science, however, at present this seems to outpace the technology and resources available at the moment. The brief considerations of what may become of restored species has hopefully set the scene for some of the ethical considerations which are to follow in this project. Despite this survey which, at face value, may seem to consign de-extinction technologies to the realms of science-fiction, the fact that such technologies are being investigated and trialled demands a consideration of our own place in this process. And so, it is to a discourse on the theological vocation of human beings to which I will next turn, in

[38] Ibid.
[39] Bird Guides, 'Isle of Wight eagle project suffers setback'. Published on 24/10/2019. Available at: https://www.birdguides.com/news/isle-of-wight-eagle-project-suffers-setback/ [Accessed 09/11/2021].

an effort to consider the proper relationships and responsibilities that humans should seek to foster with the natural world.

CHAPTER III

Theological Ethics of the Human Vocation

3.1 In Search of a foundation to the Theological Vocation of Humans

3.1.1 Introduction & Rationale for Inclusion of Thinkers

The dramatic rise of environmental ethics in the middle of the last century has seen the emergence of a plethora of approaches to the vocation of human beings on this planet. As Holmes Rolston III highlights, "just when humans, with their increasing industry and technology, seemed further and further from nature…the natural world emerged as a focus of ethical concern."[40] Recent developments in the field have led to the recognition of theological inconsistencies in the accepted wisdom of an anthropocentric view of the universe, traditionally mined from Genesis, where man is famously made in the 'image of God' and commanded to rule over the created order (Genesis 1:26). Furthermore, the human vocation has remained unclear as tensions have arisen around a standard tension in conservationism, where concern for the whole can lead to the overlooking of the individual beings that make up the species. A more sacramental role for humans is being explored with the value of life seen on a cosmocentric scale, where all lifeforms, both sentient and not, are given consideration. This perspective, when coupled with eschatological concern for life, has revolutionised thinking on the human vocation.

This chapter will explore a spectrum of theological thought concerning the human vocation. This will largely concern Catholic, Anglican and Orthodox ideas and perspectives, and will be followed by a critical engagement of the key ideas

[40] H. Rolston III, *A New Environmental Ethics: The Next Millennium for Life on Earth*, London: Routledge (2012), p 2.

collectively in order to posit a few essential principles which underlie the theological vocation of humans. Additionally, a significant portion of the chapter will be given over to a critique of ecofeminist thought (an introduction and rationale for which can be found in 3.2.1) as well my reasons for rejecting such a stance. A brief rationale for the inclusion of the initial four thinkers of this chapter follows.

The merging of traditional Catholic thought with the challenges presented by the ecological crisis prompted the inclusion of the Catholic theologian and ethicist, Jame Schaeffer. The goal of her work *"Theological Foundations for Environmental Ethics: Reconstructing Patristic & Medieval Concepts"* is to contribute to what she sees as the need for "more greening of the Catholic faith".[41] The work is of particular significance as it goes beyond biblical sources to develop a theological ethic of the human vocation based upon the works of great theologians (such as Augustine and Aquinas) who have so shaped the Catholic faith.

Schaefer's methodology involves five careful steps:

(i) An examination of the patristic/medieval concept under consideration.

(ii) A consideration of the world-view of the relevant theologian.

(iii) A reflection on the coherence of the concept for our time. If the model is seen as inconsistent with our modern understanding of science, then a reconstruction may be necessary.

(iv) The concept is then adapted to an ecological concern.

[41] J. Schaefer, *Theological Foundations for Environmental Ethics: Reconstructing Patristic & Medieval Concepts*, Washington: Georgetown University Press (2009), p. 2.

(v) Basic behaviour patterns are established, on the basis of a contemporary appropriation of the patristic/medieval concept.[42]

The anthropocentric bias of patristic and medieval theologians is recognised from the outset. To overcome this, Schaefer intends to work by acknowledging that humans, like all bodies, "had their material beginnings in the furnaces of stars billions of years ago".[43] A humility is necessary, but one which does not overlook the fact that humans are different from other species, and that they should act as "hearer and informed responder to God's call".[44]

Perhaps the most dynamic view of our four representative scholars is Ryan Patrick McLaughlin, author of *Preservation and Protest: Theological Foundations for an Eco-Eschatological Ethics*. The basis for his work is centred on his belief that theology has reached an impasse regarding environmental ethics. For McLaughlin there exist two basic tensions; one between anthropocentrism and conservationism, a second between conservation and transfiguration. The former concerns the value of life, the latter its purpose.[45] Arising from this conflict, he identifies four paradigms; Anthropocentric conservationism, Cosmocentric conservationism, Anthropocentric Transfiguration and Cosmocentric Transfiguration, the last of which he favours for his development of a human vocation.

The Anglican theologian Christopher Southgate has grappled with the theological vocation in such a way as to provide a critical framework for my own thinking in this project. The spectrum of stewardship which he develops in his essay

[42] Ibid, pp. 3-5.
[43] Ibid, p. 9.
[44] Ibid, p. 9.
[45] R.P. McLaughlin, *Preservation & Protest: Theological Foundations for an Eco-Environmental Ethics*, Minneapolis: Fortress Press (2014), p.62.

'*Stewardship and its Competitors'*[46] enables me to identify a theological vocation that would allow for de-extinction technology as a kind of 'strong stewardship'. Furthermore, such a stance will be harmonised with an understanding of human beings as 'created co-creators'.[47] This is critical not only to my development of a theological vocation but also the discussion of theological ethics in Chapter 4. Moreover, Southgate's significant engagement with theodicy provides critical tools for engaging with the more serene pictures of ecosystems that are sometimes characteristics of ecofeminist thought.

Finally, in his 2008 work, *Ecologies of Grace*, Willis Jenkins, Professor of Religion, Ethics & Environment at the University of Virginia, laboriously charts the theology of grace with an examination of three distinct models: stewardship, redemption and deification. His work attempts to build upon the writings of esteemed theologians from the three main Christian traditions (Catholicism, Protestantism and the Orthodox Churches) to establish a pattern of behaviour and theology that is suitably equipped to deal with not only the ecological crisis, but how humans should more broadly relate to the rest of creation. His engagement with Orthodox thinkers such as Sergei Bulgakov ensures that the project encapsulates a diverse array of traditional Christian thought and also pertinently draws out the importance of lamentation for lost species as a possible driver for de-extinction technologies.

3.1.2 Jame Schaefer: The Theological Vocation and Virtues

Of interest to our investigation are the ways in which humans can show reverence towards the sacramental universe. Schaefer notes that Basil and Augustine

[46] C. Southgate, 'Stewardship & its Competitors: A Spectrum of Relationships between Humans and the Non-Human Creation' in *Environmental Stewardship: Critical Perspectives Past & Present* ed. R.J. Berry. London: T&T Clark (2006), pp. 185 – 198.
[47] P. Hefner, *The Human Factor: Evolution, Culture & Religion*, Minneapolis: Fortress Press (1993).

argued that the world reflects God, through which humans can gain a limited capability to know God.[48] For John of Damascus, due to the Incarnation, all of matter is filled with God's reverence and grace. The created order is thus sacramental.[49] Our vocation is therefore to preserve species and ecosystems so that they can continue to mediate God's presence and character in the future.[50] Such reverence for the created order could have profound implications for the theological justification for de-extinction, the subject of our present enquiry. Schaefer notes that a reverential behaviour pattern should lead us to "lament the extinction of yet another species".[51] Whether these lamentations could extend beyond grief and regret, to actually attempting to reverse the process, is unclear.

A second element relevant to the cosmocentric perspectives that we shall soon encounter is the kinship that humans share with other species. Drawing on the hagiographies of Christian desert fathers, Celtic wanderer and English hermits, Schaefer argues that we are compelled to show piety towards all creatures. This piety will manifest itself through a variety of behaviour patterns including loving individual creatures for themselves, standing up for them, showing compassion for their suffering and acting generously without interfering with their self-expressions.[52] These behaviours are to be developed towards creatures as individuals and species. As such they could provide an excellent test for the justification of de-extinction. It reminds us to ask ourselves: for whose benefit would we be undertaking the project? Would it genuinely be an act of piety towards creatures, or would it be reflective of human selfishness? Schaefer's

[48] J. Schaefer, *Theological Foundations for Environmental Ethics: Reconstructing Patristic & Medieval Concepts*, Washington: Georgetown University Press (2009), p. 70.
[49] Ibid, p. 72.
[50] Ibid, p.83.
[51] Ibid, p. 88.
[52] Ibid, p. 176.

work here is critical for keeping the human vocation towards the created order in register with other aspects of Christian doctrine and ethics.

A final relevant pattern of behaviour set out by Schaefer involves a call for humans to live virtuously within the Earth Community. In particular, Schaefer focuses on the virtue of prudence. For her "a prudent person makes decisions based on counsel, forming a good judgement and then commanding."[53] This, in turn, leads to the sub-virtue of temperance, where one curbs irrational desires.[54] These are contrasted with the vices of pride (a failure to subject oneself to God and God's rule) and cowardice (a failure to recognise the danger of death and to preserve life).[55] Ultimately, for Schaefer, living justly involves speaking for the voices which cannot be empowered or heard because they do not yet exist.[56] This echoes the view of Hefner, that the call of created co-creators "is to be the agency, acting in freedom, to birth the future that is most wholesome for the nature that has birthed us."[57] Moreover, in his essay, 'The New Days of Noah', Southgate espouses the view that the Christian concern for the poor can be understood as a responsibility to future generations both human and non-human, "the latter whose voice is barely heard when humans are considering their medium term interests."[58] By extension, in my view, a just human calling would be one where they speak for those creatures silenced by extinction.

To conclude, Schaefer draws together the ten patterns for behaviour identified and then begins to post overall theological models for behaviour. Her work here

[53] Ibid, p.232.
[54] Ibid, p. 232.
[55] Ibid, p. 232.
[56] Ibid, p. 244.
[57] P. Hefner, *The Human Factor: Evolution, Culture & Religion*, Minneapolis: Fortress Press (1993), p. 264.
[58] C. Southgate, 'The New Days of Noah? Assisted Migration as an Ethical Imperative in an Era of Climate Change', in *Creaturely Theology: On God, Humans and Other Animals*, ed. C. Deane-Drummond & D. Clough, pp. 249-265, London: SCM Press (2009), p. 259.

is integral to identifying a theological ethic for the human vocation. Such models of behaviour should be grounded in faith, be consistent with modern scientific findings, recognise humanity's interconnectedness with other species and point to a motivation for positive change.[59] Her example of the Virtuous Co-operator who is habitually prudent, just, moderate and courageous as well as co-operative on local, national and international levels,[60] can help overcome some of the hubristic challenges levelled at humans accused of 'playing God' as 'co-creators'. Informed by the sciences, humility will be shown in front of other species as we strive to live justly and consider the impact of our actions on the suffering and those yet to be born.

3.1.3 McLaughlin: Vocation, Incarnation & Eschatology

Before examining McLaughlin's favoured Cosmocentric Transfiguration, it would be prudent at this point to briefly outline the other three positions: Anthropocentric conservationism, Cosmocentric conservationism and Anthropocentric Transfiguration.

St. Thomas Aquinas is presented, perhaps unfairly when one considers his Medieval context, as the villain of the piece, guilty of promoting the first paradigm of Anthropocentric Conservationism which has so compromised the human vocation towards the environment. For McLaughlin, there are three basic principles of this view; first the non-human creation exists for the sake of humanity. Second, non-human creatures exist for the entire human community. Finally, the Eschatological purpose of sharing in God's life is reserved for rational creatures only, namely humans.[61] Whilst some have suggested that Aquinas'

[59] J. Schaefer, *Theological Foundations for Environmental Ethics: Reconstructing Patristic & Medieval Concepts*, Washington: Georgetown University Press (2009), p. 268.
[60] Ibid, p. 274.
[61] Ibid, p. 79.

view is more theocentric, McLaughlin maintains that this has only served to give anthropocentrism a mandate.[62] With regards to conservation, Aquinas' view is that non-human animals are good as they are, even as predators, and that the whole of the cosmos belongs to humans. Conservation is simply a by-product of living properly, in accordance with the virtues.[63] The purpose of the cosmos is therefore to bring about the redemption of mankind. Although at this point it is tempting to see creation as a 'means to an end' this would be inconsistent with Aquinas' wider ethics.[64] After all, no 'good' is being violated, as the non-human creation's 'good' is to facilitate humanity's redemption.

In McLaughlin's discussion of the second paradigm, Cosmocentric Conservationism, Thomas Berry is accused of "a dethroning of humanity with regard to an essentially unique dignity."[65] Berry's view maintains that humans are special in the sense that they are the way in which the universe (through evolution) has become conscious of itself. All of the cosmos is to be understood as a family unit; we are the universe.[66] Redemption for Berry is not some kind of escape from the horrors of evolution. Rather, humans are guilty of believing that they can overcome the natural order, that they are deserving of a better world. Suffering reflects the sacrifice of Christ, which is seen in nature where "every living creature is sacrificed for other living beings".[67] It is thus our duty to establish and conserve a "community of the living."[68] McLaughlin is right, in my view to oppose this notion. Thomas Berry and Peter Ellard's worldviews seem to downplay the sheer terror and suffering in nature. It is all too easy to claim that

[62] Ibid, p. 64.
[63] Ibid, p. 99.
[64] Ibid, p. 390.
[65] Ibid, p. 104.
[66] Ibid, p. 110.
[67] Ibid, p. 111.
[68] Ibid, p. 118.

such violence is good, or that the divine can be manifested in the suffering caused by cancer[69] when one is so far removed from the reality. I feel that Berry would not be so sure if he were confronted with a pack of starving wolves in the wastelands of Siberia. He is guilty of holding the Western 'Ivory-tower' perspective that his pantheistic model of the cosmos sets out to undo.

The third paradigm identified by McLaughlin is that of Anthropocentric Transfiguration. It is a view largely found in Eastern Orthodox theology and entails the movement of a fallen creation to its eschatological purpose and is highly sacramental in nature. Proponents of the paradigm, such as Maximus the Confessor, hold that humans are priests who can unite the cosmos with the divine and are as such a 'microcosm' of the created order. The Fall has, however, derailed this purpose.[70] The Incarnation allows humans to rediscover their destiny, to offer the cosmos back to God in worship, drawing the non-human creation into the divine life. For thinkers like Staniloae, nature has been sanctified through the liturgy (bread and wine for communion, water for baptism) and as such finds its meaning in humanity.[71]The ethical implications of this paradigm, as highlighted by McLaughlin, are therefore that nature is not a resource to be squandered for self-gratification. One should only take what is needed.

It is the fourth paradigm, however, that is significant for our study. McLaughlin, after a lengthy investigation into the theologies of Jürgen Moltmann and Andrew Linzey, posits a fourth paradigm, that of Cosmocentric Transfiguration. Simply put, it is the view that all life (arguably both sentient and non-sentient) will participate in eschatological redemption. McLaughlin espouses what can only be

[69] Ibid, p. 112.
[70] Ibid, p. 128.
[71] Ibid, p. 143.

described as a re-writing of Christian doctrine, in light of the horrors of the natural world and the hope for an end to such suffering for all life.

For McLaughlin, The Fall is "the consecratory distance into isolation that develops not directly from a will but via chance in creation's development within its own integrity."[72] Building on Moltmann's model of the suffering God, McLaughlin suggests that God *suffers* the created order to exist with its own integrity – a decision which entails risk, the risk that it will not reflect the divine plan. The Fall is not result of human action, or indeed that of a rebellious angel. Moreover, it also accounts for the presence of predation and extinction *before* the time of humans. As a theodicy it successfully shows that the dynamism in creation means that God is not responsible for the evil and suffering caused by natural processes such as evolution.[73] Nevertheless, this view begs the question that God could and should have used another process for the creation of life. With regards to this view, Southgate, Attfield and even Richard Dawkins have all pointed out that in order to formulate the life existent in the universe, God might well have had no other choice than to use the tools which result in necessary suffering for the flourishing of life.[74] This is a powerful response to the Problem of Evil, which potentially absolves God of responsibility for even the intensity and pointlessness of evil suffered by creatures, such as William Rowe's ill-fated fawn which was trapped and consumed by a forest fire.[75]

Moltmann and McLaughlin are desperate to cling to God's omnibenevolence and this may mean discarding traditional beliefs about the nature of God. Most

[72] Ibid, p 326.
[73] Ibid, p. 327.
[74] C. Southgate, *The Groaning of Creation: God, Evolution & the Problem of Evil,* Louisville, KY: WJK Press (2008) pp. 47-48.
[75] W. Rowe, 'The Problem of Evil and Some Varieties of Atheism' in *Philosophical Quarterly,* Vol. 16 No. 4, pp. 335-341 (Oct, 1979) p. 337.

famously, Moltmann depicts a passible and mutable God who suffers humiliation, helplessness even to the point of death.[76] Moreover, McLaughlin's view of creation could lead us to question the very creative role of God as he is keen to highlight that God did not will evolution in the form it has emerged. To do so would implicate God in the suffering and death of billions of creatures since the dawn of time.

The Incarnation is therefore to be understood as Christ entering the isolated creation and experiencing the depth of suffering therein, "there is distance, but no longer forsakenness."[77] Death and extinction are hereby shared in by Christ. The Spirit allows for God to be within the creation and yet remain distant from it, acting as "the safeguard against annihilation". The Spirit fulfils a threefold role:

(i) Acting as the immanent presence of the divine, sharing in the suffering of creation.

(ii) Consecrating those who follow Christ.

(iii) Working through the consecrated to facilitate sacramental movements of eschatological communion whilst the creation lies in isolation.[78]

Ultimately this provides eschatological hope for the end of death and suffering leading to a transfiguration of the created order as well as a model for human behaviour. This final communion will not see a numerically different creation but will have some discontinuity between the current state of the world and the one in a state of eschatological communion.[79] All of time will be collected together so that spatial and temporal isolation is overcome in the *creatio nova.*

[76] J. Moltmann, *The Crucified God,* London: SCM Press (1974) p. 211.
[77] R.P. McLaughlin, *Preservation & Protest: Theological Foundations for an Eco-Environmental Ethics*, Minneapolis: Fortress Press (2014), p.334.
[78] Ibid, p. 338.
[79] Ibid, p. 341.

Thus, the role of humans is to act as cosmic priests, becoming, in creation, the image of God, the anticipated presence of eschatological hope for the entire cosmos,[80] even those that have been made extinct. It is this sentiment in his work which will be of particular use for considering the theological justification of de-extinction, in conjunction with Southgate's concept of humans as the priests of the biosphere.[81]

3.1.4 Southgate on Stewardship

It is clear from the opening of Southgate's essay, '*Stewardship and its Competitors'*, that 'stewardship', as the vocational role of humans, is far from widely accepted. From McDonagh's claim that stewardship enables the manipulation of creation, to McKibben's stance that it offers no guidance for behaviour,[82] it quickly becomes the challenge for Southgate to find a role for what had long been considered the standard position in traditional Christian ecological thought.

Two extremes are here identified. On the one side, the idea of humans as 'co-creators' and 'co-redeemers'. This view, espoused by thinkers such as Hefner and Peters, argues that the calling of humans is to create a future state of affairs that exceeds anything in the past or present.[83] Human ingenuity is God-given and as such we are duty bound to use technology and medicine to modify and enhance creation for good. This would seem to justify de-extinction as a way to make reparation for the extermination of species caused by humans in the past.

[80] Ibid, p 345.
[81] Southgate, C. The Groaning of Creation: God, Evolution & The Problem of Evil, Louisville, KY: WJK Press (2008), pp. 110 -113.
[82] C. Southgate, 'Stewardship & its Competitors: A Spectrum of Relationships between Humans and the Non-Human Creation' in *Environmental Stewardship: Critical Perspectives Past & Present* ed. R.J. Berry, pp. 185-195, London: T&T Clark (2006), p. 185.
[83] Ibid, p. 186.

However, it does hide an important caveat; error and misjudgement are often a cause of collateral damage in our attempt to discover the "right use of humans' gifts in respect of the non-human world."[84] We only need look at how efforts to prevent the extinction of species through ecotourism has had a drastic impact on local human population, such as the Dukha People of Mongolia whose dependence on hunting for food, clothing and shelter is overlooked to the extent that *their* very existence is now at risk.[85]

At the other end of the spectrum lie the biocentric attitudes towards creation. Rather than promote an idyllic future, these radical conservationist views call for the preservation of "a harmonious present", based upon a nostalgia for a supposed past.[86] All life is seen as being of equal worth and integrity. However romantic this notion might seem; Southgate is right to point out the fundamental and practically irreconcilable tensions caused by the movement. For one, should human survival be seen as less to be preferred than that of other species? Is 'harmony' even achievable in a natural system which appears to thrive on predation and suffering?[87] Perhaps the harmony of the natural world is preserved through the very predation and suffering that seems so problematic to us. Of course, conservation should be an integral part of our ecological thinking, but such thinking or action requires humans to conserve ourselves in the process.

Stewardship, for Southgate, sits somewhere between these two extremes. The model is itself split into two distinct strands, namely 'Strong' and 'Weak'

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[84] Ibid, p. 187.
[85] M. Gauthier & R. Pravatto 'We have nothing but our reindeer': conservation threatens ruination for Mongolia's Dukha" https://www.theguardian.com/global-development/2016/aug/28/reindeer-conservation-threatens-ruination-mongolia-dukha The Guardian 28/08/2016. Accessed 20/11/2019
[86] C. Southgate, 'Stewardship & its Competitors: A Spectrum of Relationships between Humans and the Non-Human Creation' in Environmental Stewardship: Critical Perspectives Past & Present, ed. R.J. Berry. London: T&T Clark (2006), p. 188.
[87] Ibid, p. 188.

Stewardship. The former involves the change, as well as the conservation, of the non-human environment. The latter implies the mere act of conserving and preserving nature.[88] This tension is important to consider for our reflections on de-extinction, as such a programme would demand a markedly 'strong' model of stewardship as it could require an immense effort to establish (or even recreate) the necessary biosphere to support some of the extinct life – an ecological de-extinction.

A further relevant issue for my investigation is also linked to stewardship, namely, what ought a non-human system look like? Ecofeminists such as Sallie McFague have painted a picture of a harmonious creation where God desires the 'flourishing' of all species[89] and envisages a "friendship across ontological barriers".[90] Sideris, Southgate notes, has been highly critical of such idealistic views and instead supports Rolston's assertion that humans should not interfere with the processes of wild nature.[91] For me, a middle-ground seems to make more sense. Rolston is right, to an extent, to call for a 'letting be' of nature regarding predation. After all, the lion, snake and wolf must eat meat to survive. However, it seems unnecessarily cruel to leave a trapped animal to its fate. Rolston discusses the case of the blinded bighorn sheep of Yellowstone National Park. Afflicted by a myopic disease, many of the sheep faced death on the dangerous mountain slopes. Wildlife veterinarians called for the creatures to be treated, they were refused on account of it being a natural disease.[92] Rolston

[88] Ibid, p 189.
[89] S.McFague, *Models of God: Theology for an Ecological, Nuclear Age,* Minneapolis: Fortress Press (1987), pg. 108.
[90] Ibid, p. 164.
[91] C. Southgate, 'Stewardship & its Competitors: A Spectrum of Relationships between Humans and the Non-Human Creation' in *Environmental Stewardship: Critical Perspectives Past & Present* ed. J. Berry, pp. 185-195, Louisville, KY: T&T Clark (2006), p. 190.
[92] H.Rolston III, *A New Environmental Ethics: The Next Millennium for Life on Earth*, London: Routledge (2012), p. 72.

goes on to argue that such a decision was correct, "to have interfered… would have weakened the species",[93] as these ill-adapted creatures would have undermined the gene pool. Be that as it may, Rolston's view is arguably callous. This was most certainly an opportunity for compassion, for humans to act in a priestly manner toward the created order, to reflect, as McLaughlin might say, the 'image of God'. Moreover, this could also have been a chance for humans to "grow in the co-redeemerly role" that Southgate imagines.[94] Such scenarios enable humans to participate in the 'healing' of wild nature, to follow the example of Jesus who healed those who suffered.[95] For Southgate, God's action to preserve His creation would presumably be through humans and this would certainly entail the prevention of extinction.[96] Although it could be argued that this is also Rolston's intention, it seems that his focus is on a 'species-level', which ignores the suffering and torment of individual creatures. One is reminded of Jesus' parable of the lost sheep (Luke 15: 1-7) - individual redemption is as important as that of the whole.

Despite the questioning and sceptical approach to a unified concept of stewardship that has become evident in my analysis of Southgate's spectrum, I am still of the opinion that stewardship does have a role to play in the human vocation. I have great sympathy with the moves made by key thinkers towards an understanding of humans as 'created co-creators'. Not only does the view enjoy scriptural support (see 3.1.6), but, to my mind, it is still anchored to the spirit of stewardship advocated by Schaefer and which is also prevalent in much

[93] Ibid, p 83.
[94] C. Southgate, 'Stewardship & its Competitors: A Spectrum of Relationships between Humans and the Non-Human Creation' in *Environmental Stewardship: Critical Perspectives Past & Present* ed. J. Berry, pp. 185-195, London: T&T Clark (2006), p. 195.
[95] Ibid, p. 193.
[96] Ibid, p. 191.

contemporary ecological thought. My contention is that de-extinction necessarily demands a manifestation of stewardship in an extreme or 'strong' sense. This is unavoidable, but by no means does it detract from the human vocation I wish to espouse. I have already raised my concerns with Rolston's argument that indiscriminate 'letting-be' is the right course of action. The technological abilities unlocked by de-extinction provide human beings with the tools that could not only undo past wrongs, but give life to those creatures annihilated through no fault of their own. How can we truly claim to lament the loss of life at the hands of our ancestors if, when presented with the tools to rectify such damage, we simply choose dismiss such efforts as vainglorious, hubristic and doomed. Of even greater import is the fact that such a model could also reconcile itself with a theocentric understanding of the universe. By striving to act as prudent, tempered and discerning created co-creators, humans can further elucidate the will of God. As we shall see in my analysis of theocentric ethics (see 4.1.12), however, this may lead to some surprising conclusions, despite the support for de-extinction as part of the theological human vocation argued for in this chapter.

The prevention of extinction can be understood as part of the healing of creation.[97] As stewards of the biosphere, humans are to act as cultivators and managers, who, through their role as reflectors of the image of God, are encouraged to be innovative and to enhance their biotechnological ingenuity.[98] De-extinction could certainly assist in Southgate's vision of a priestly stewardship. Not only by caring and acting as a safety net for already endangered species, de-extinction could also assist humans in their other 'priestly role', that of relieving the 'groaning of creation' (Romans 8:22). As such, Southgate closes by calling

[97] Ibid, p. 194.
[98] Ibid, p. 193.

on us to imagine the feelings of the very last *homo floresienses,* as they realised their fate. Perhaps it is our duty, as co-redeemers, to eradicate this experience from the biosphere,[99] especially if we discover that non-human creatures can share such emotions of forsakenness and despair. Such a claim is not as ludicrous as it may first appear; elephants have been observed grieving for ancestors and is clear that many intelligent marine creatures endure feelings of abandonment when kept in captivity. To fulfil our vocation would require the acquisition of much new knowledge and wisdom. Conceivably, this new knowledge and wisdom could be accumulated through the development of de-extinction technology.

3.1.5 Willis Jenkins and Ecologies of Grace

This section will focus on two aspects in particular; namely Willis's novel interpretation of Aquinas and how co-creatorship could find support in the deification writings of Sergei Bulgakov, before reflecting on the difficulty of displaying true grace towards Creation.

Jenkins's mapping of stewardship entails a reinterpretation of Aquinas' writings on the purpose of the non-human creation and the tradition of anthropocentrism which clouds his work. Long has Aquinas been accused of "subordinating irrational nature before humans"[100], yet, Jenkins maintains, Aquinas is concerned with preserving "the phenomenal world of scripture".[101] The implication being that a creature has a natural desire to call God in its own distinct way. Jenkins refers to the ravens calling God in Psalm 146 and argues that when a raven call upon God, it does so by building nests and stealing owl eggs – by being a raven. This

[99] Ibid, p. 194.
[100] W. Jenkins, *Ecologies of Grace*, Oxford: Oxford University Press (2008), p, 118.
[101] Ibid, p. 119.

is what establishes the integrity of nature.[102] For Millbank and Pickstock, here cited by Jenkins, "[a] thing is fulfilling its telos when it is copying God in its own manner." This is not to say that God steals owl eggs any more than to claim that God builds nests. Rather it is to emphasise the idea that when creatures act in accordance to their own telos, they do so in a way which reflects God's purpose for the created order. This clearly has significance for the theological justification of de-extinction. If Southgate is correct in calling for humans to "grow in a co-redeemerly role"[103] as a model for human stewardship, then an act of creation (the de-extinction of species) could well be an example of humans fulfilling their *telos* as those beings made in the image of God (Genesis 1:27), redeeming a lost, scarred and embattled creation.

Furthermore, Aquinas' ecojustice demands a diversity of species on Earth, as God's goodness could never be represented in one creature.[104] The ability of humans to name and 'call' God requires them to find "in each creature the excelling principle of whose form the effects fall short,"[105] thus improving our understanding of their contribution to the good of the whole. This demands what Jenkins terms as "ecological literacy"[106]. A language for which we are yet to find the Rosetta Stone, but could still be translated with the help of de-extinction, as a way of exploring the excelling principles of creatures destroyed by nature and our own maleficence.

Despite some possibly helpful tools for theologically justifying de-extinction through Jenkins's reading of Aquinas, there is also a stark warning. Jenkins notes

[102] Ibid, p. 120.
[103] C. Southgate, 'Stewardship & its Competitors: A Spectrum of Relationships between Humans and the Non-Human Creation' in *Environmental Stewardship: Critical Perspectives Past & Present* ed. J. Berry, pp. 185-195, London: T&T Clark (2006), p. 195.
[104] W. Jenkins, *Ecologies of Grace*, Oxford: Oxford University Press (2008), p, 123.
[105] Ibid, p. 129.
[106] Ibid, p. 129.

how the extinction of species limits our ability for naming and praising God. However, he cautions, if we find ourselves left with only the names derived from things we have made in our own image, we are left with a narrow field of excellences to praise God. In such circumstances, "idolatry comes more easily… [the] traces of God become even more vestigial."[107] This hints at a nagging theological concern for de-extinction; when might co-redemption become idolatrous, or even hubristic?

The second element important to our investigation relates to Jenkins' exposition of the work of Sergei Bulgakov and could possibly help with the challenge of human arrogance levelled at co-redeemership. Essentially his work builds upon the concept of Sophia (The Divine Wisdom) as the immanent presence of the divine love in an effort to integrate grace, creativity and science.[108] Bulgakov attempts to recover an animate cosmos by reconnecting the groaning of creation with the salvation of humanity.[109] By recovering creativity in this way, Jenkins argues that Bulgakov points to a solution for addressing the "practical creativities of everyday life".[110] As creation is a reciprocal act of self-giving, creatures respond by living by the glory of God, which, if perfected, will allow them (and us) to attain the character of the divine life, the love within God, or the divine Sophia.[111] This ability for humans to 'hypostatize', or unite themselves with God and his personal love prevents humans from becoming gods themselves. Transformative human activity "brings forth nature's essence, responding to its longing for liberation"[112], Jenkins surmises of Bulgakov's view.

[107] Ibid, p. 131.
[108] Ibid, p. 210.
[109] Ibid, p. 211.
[110] Ibid, p. 211.
[111] Ibid, p. 213.
[112] Ibid, p. 213.

This concept links neatly with Jenkins's reading of Aquinas, as outlined above. Not only could de-extinction be seen as a way of bringing forth nature's essence so that creatures eradicated from the earth may still 'call' to God, Bulgakov's hypostatic imagery allows humans to be seen as co-redeemers without a theosis invoking excessive identification with the divine. Further conditions to human creativity are set out by Bulgakov who qualifies this hypostacity within an ascetic framework. It is imperative that any notion of the apotheosis of man are renounced, which quickly dispenses with any 'saviour delusions' humankind might have of itself.[113]

Jenkins's work by his own admission is largely explanatory and offers very little in the way of evaluative discussion of the strategies he presents. Nevertheless, his concluding remarks on the importance of theological lament as a result of his studies offers a source for useful reflections on the prospect of de-extinction. Jenkins asks us to consider why we should care about the extinction of species when there have been several great extinctions in the past. For him, one of the critical concerns is that human-caused extinction ruptures the covenant between God and his people – "it wounds the soul."[114] Using the pollutive desecration of the Muskegon lake in Michigan, Jenkins illustrates how attempts to restore the land offers humanity a kind of "forgiveness from the land." The removal of the dam, planting of trees and, importantly for our reflections on de-extinction, the reintroduction of trout and salmon, have restored much of the ecosystem, all combining as an example of ecological grace. Such an example may fill us with optimism for the potential reintroduction of species such as the thylacine in Tasmania, but Jenkins issues yet another caution. Such actions could be

[113] Ibid, p. 217.
[114] Ibid, p. 231.

considered not as models of grace but as a "quick-fix atonement"[115], where human expiation is nothing more than a demonstration of further dominion over the natural world. Jenkins is right to assert that restoration must entail the remembrance of the ecological wounds inflicted by humans and an endeavour to reclaim and enrich previous failed or lacklustre attempts at ecological grace. A pertinent message for the theological justification of de-extinction is provided here by Jenkins: "good theology must guard against cheap grace".[116] De-extinction may heal the lesions inflicted by callous human behaviour, but if the stitching is superficial, hasty or careless, the wounds will re-open and creation will groan in agony.

3.1.6 Critical Reflections on the Theological Vocation of Humans

I will now look to engage in a critical comparison of the ideas explored thus far. My comparison of the writings discussed will focus on two issues in particular: Biblical support and the vocation of humans. Both of which will aim to establish a theological ethic for humanity's relationship to the non-human creation.

Biblical support

As one of the four sources of theological insight, scriptural support is an integral source for the justification of any theological ethics. Southgate embeds his view of the vocational role of humans in scripture, emphasising that such theological reflections on stewardship should centre on several key passages. He identifies the special status of humans espoused by Genesis 1 and 2 where humans are created last and first respectively, highlighting the fact their importance in

[115] Ibid, p. 232.
[116] Ibid, p.232

creation. Additionally humans are given the responsibility of naming the animals (Genesis 2:19), and are famously created in the image of God (Genesis 1:26) and "a little lower than the angels" (Psalm 8).[117] Not only is human priesthood grounded in such texts but so is their vocation which is, as they grow, to alleviate the "groaning" of creation as it awaits the "freedom and the glory of the children of God" (Romans 8:21-22).[118]

Such Biblical support, despite his protestations, is not enjoyed by McLaughlin, who tries to anticipate, unsuccessfully, the challenge of scriptural authority to Cosmic Transfiguration. McLaughlin claims that as humans and animals share the same day of creation, they are of equal worth.[119] This ignores the fact that creatures of the air and sea are created on the preceding day, suggesting a hierarchical value system to the created order. Furthermore, it fails to acknowledge that humans are made after other land animals, where God confers on them a special status and vocation (Gen 1:26, 28) highlighted by Southgate. Furthermore, McLaughlin highlights the command for a vegetarian diet (Genesis 1:29) as a key basis for the ethics of Cosmic Transfiguration. He pays no heed to the fact that after the apocalyptic flood in Genesis, humans are given permission to eat meat, "every moving creature that lives shall be food for you" (Genesis 9:3) and the subsequent food laws in Leviticus which outlines further the rules for following an omnivorous diet.

McLaughlin's deviation from traditional doctrine could perhaps be redeemed by the methodology of Schaefer, who argues that all dialogues with Early Church and Medieval Theology can be made more coherent by being informed by

[117] Ibid, p. 192.
[118] Ibid, p. 194.
[119] R.P. McLaughlin, *Preservation & Protest: Theological Foundations for an Eco-Environmental Ethics*, Minneapolis: Fortress Press (2014), pg.351.

scientific thought.[120] Despite a lack in reference to biblical texts, Schaefer still establishes a scriptural and apostolic authority by basing her work on the writings of the formative scholars of Catholic Christianity. Writers such as Augustine and Aquinas have influenced Catholic doctrine to such a degree that the scriptural support for her work is hard to question, as much of their teachings are themselves embedded in the Biblical tradition. Her explicit intention is to create a dialogue between our modern, post-enlightenment worldview and those of Patristic and Medieval writers. To her credit, she works hard to identify corresponding scientific thought, and to then formulate patterns of behaviour. One might challenge her on the fact that she wishes to engage with worldviews so far removed from our own, the hagiographies and writings of Church Fathers are often coloured by their superstitions and fantastical beliefs. And yet, as beautifully illustrated by her work on human kinship with other creatures through the lives of the saints such as Francis, Schaefer is able to 'de-mythologise'[121] the accounts and provide fresh meaning and insight for the modern human vocation.

Vocation of Humans

For Schaefer, the vocation of humans is clearly developed in the theologies of Augustine and Aquinas. Following the latter's belief in a hierarchical structure to life on earth, Schaefer states that higher creatures receive more goodness from God, which they have the responsibility of redistributing towards the common good.[122] This supports Southgate's view, mentioned above, that humans ought

[120] J. Schaefer, *Theological Foundations for Environmental Ethics: Reconstructing Patristic & Medieval Concepts*, Washington: Georgetown University Press (2009), p. 5.

[121] Here I borrow the phrase from Rudolf Bultmann, who called for a 'de-mythologising' of the Bible in order to discover the deeper meaning of apparently supernatural events such as the resurrection, so that they could inform Christian belief in a modern, scientific age.
R. Bultmann, 'New Testament and Mythology' in H.W. Bartsch (ed.), *Kerygma and Myth,* New York: Harper & Row Publishers (1953) p. 3.

[122] J. Schaefer, *Theological Foundations for Environmental Ethics: Reconstructing Patristic & Medieval Concepts,* Washington: Georgetown University Press (2009), p. 24.

to reflect the image of God by acting innovatively to enhance their biotechnical research and invention. It is therefore conceivable to think that humans are compelled to use their intelligence to save or even restore 'lower creatures'. This is developed later in Schaefer's work when discussing how humans ought to co-operate with the integrity of Creation. Again, developing the work of Aquinas, Schaefer identifies further elements of the human vocation, in particular how living agents (such as humans) co-operate with God by acting as secondary agents to carry out God's plan. With regards to humans this co-operation is in order to fulfil their temporal, and achieve their eternal, goods.[123] In my view, Schaefer does just enough to avoid slipping into the anthropocentric view held by the patristic and medieval writers, although could be accused of slipping into a theocentric model. Even if it could be argued that by going to great lengths to distance herself from the anthropocentric implications of the works of medieval and patristic writers, Schaefer has drifted towards a more theocentric model, this is not necessarily problematic. Of course, thinkers such as McLaughlin might associate this with permitting greater anthropocentric practices.[124] This is because, as argued by Clough, such a model implies that humans can do what they want with the created order believing it is what God intended by their relationship.[125] However, such fears are unduly warranted, as a true theocentric view would demand a level of wisdom and prudence as to preclude such abuses (see 4.1.12).

The extent to which this is true in Schaefer's work is debatable. Several times she notes how human action towards the biosphere should be based upon needs

[123] Ibid, p. 126.
[124] R.P. McLaughlin, P*reservation & Protest: Theological Foundations for an Eco-Environmental Ethics*, Minneapolis: Fortress Press (2014), p. 63.
[125] D. Clough, *On Animals Volume I: Systematic Theology*, London: Bloomsbury Press (2012), p. 4.

and not wants.[126] And yet the prospect of meeting the needs of creation simply to fulfil the human desire for redemption sits uncomfortably. Is she not advocating a use of creation for humanity's own ends? There is clearly a conflict of 'goods' here, between human wants and the needs of other species. I am not convinced that Schaefer satisfactorily addresses this issue, particularly as the Catholic Church has recently issued a Catechism stating that animals can be used to sustain man's needs, which can include food, clothes, labour and leisure.[127] The point is also addressed by McLoughlin who rejects this, stating that 'need' establishes the good or justifies a violation of the good, [128] which is in turn predicated on the telos of Cosmic Transfiguration – namely to participate in the divine life. [129]

Common ground, however, can more clearly be found in the works of McLaughlin and Southgate. The former explores Linzey's concept of 'functional anthropocentrism', the idea that human beings are "essential in order to liberate animals".[130] Peaceable actions towards sentient creatures provides a "glimpse of the possibility of world redemption".[131] It is therefore our unique role to act as cosmic priests not by bringing about the eschatological reality but by anticipating it, for creation. Therefore, when considering the human vocation, McLaughlin would argue that any practice that witnesses to the hope of freedom from suffering is good, while any that embraces such pain is not.[132] Priests of cosmic transfiguration must preserve nature and yet protest the suffering and death

[126] R.P. McLaughlin, P*reservation & Protest: Theological Foundations for an Eco-Environmental Ethics*, Minneapolis: Fortress Press (2014), p. 31.
[127] Ibid, p. 384.
[128] Ibid, p.383.
[129] Ibid, p. 386.
[130] Ibid, p. 276.
[131] Ibid, p. 276.
[132] Ibid, p. 393.

therein.[133] He avoids anthropocentrism by showing that although only humans are capable of doing this, it is because of their *functional* role rather than as a result of some kingly privilege bestowed upon humanity.

Cosmic transfiguration and humanity's 'function' as co-redeemers could certainly be intertwined. For Southgate, co-redeeming is informed by our experiences as priests and fellow praisers.[134] The human vocation is to act as priests or stewards of the whole biosphere. We know what would be needed to bring about the destruction of species and it is our responsibility to see that it does not come to fruition.[135] We must endeavour to eradicate the suffering and loss caused by extinction. As such, we are to *preserve* species by preventing extinction and must *protest* the horrors of such events not only by showing compassion but by striving for more knowledge to facilitate this end.

To that end, de-extinction could allow humans to fulfil their role as co-redeemers whilst preserving species that have been lost and protesting against the suffering and terror of the evolutionary process, relieving a groaning creation.

3.1.7 Summary

The three models of human behaviour for establishing a theological ethics present one another with challenges as well as areas for possible growth. All are clear on the interdependence of humanity and the rest of the created order as

[133] Ibid, p. 399.
[134] C. Southgate, 'Stewardship & its Competitors: A Spectrum of Relationships between Humans and the Non-Human Creation' in *Environmental Stewardship: Critical Perspectives Past & Present,* ed. R.J. Berry. London: T&T Clark (2006), p. 195.
[135] Ibid, p. 192.

well as the fact that humans have a particular telos which involves some degree of stewardship.

To play on Schaefer's ten concluding models of the human in an age of ecological degradation, perhaps the way forward involves a pattern of behaviour where humans act as 'Virtuous Co-redeemers'. An effort to cultivate the virtues of prudence, justice, moderation and courage, entwined with Southgate's call for humans to cleanse the earth of extinction events and McLaughlin's identification of the human telos as sacraments of the Eschaton, offer four principles for the human vocation:

(i) Humans take counsel on the implications of de-extinction, weighing up the potential dangers to the *preservation* of existing life as well as to the species undergoing de-extinction.

(ii) They consider fairly the rights of both individuals and whole species throughout the process. This would involve paying attention to the purpose of de-extinction.

(iii) Such activity should be done with moderation and for the sake of the non-human species in question. The use of de-extinction should therefore be to reverse or prevent the utter decimation of a species. The use of de-extinction for capitalistic gain or animal experimentation should be *protested*.

(iv) Courage would be needed to defend the rights of de-extinct creatures and to fulfil the responsibilities we have towards the rest of creation as stewards of the biosphere.

As such the works of Southgate, Schaefer and McLoughlin can, jointly, contribute to a theological ethic for the human vocation. Based upon a renewed vision of

the human role as stewards, in light of the pressing environmental crisis and boundless advances in human ingenuity and biotechnology, they offer a groundwork for further consideration of the theological justification for de-extinction.

Rather than simply moving forward with this intermediary conclusion, the focus of the project will now shift to examine other perspectives on the human vocation with the purpose of justifying the rejection of certain contemporary lines of thought such as ecofeminism whilst acknowledging theologies centred on ecology and grace in the search for further valuable contributions that could sure up the theological vocation discussed heretofore. A leaning towards a more theoceontric model will become evident, however, this will be explored in far more detail in Chapter 4.

3.2 The Contribution of Ecofeminist Theology

3.2.1 The Ecofeminist Movement in Theology

The rise of Environmental Ethics as a discipline in its own right has accelerated rapidly since its conception in the 1960s. The debate has included considerations of the value of individuals, species, and ecosystems, and has often focussed on questions of conservation and preservation. These two are distinguished by how they understand the way in which the biosphere should be protected. Exemplified by Gifford Pinchot, conservation is often seen as a means of managing natural resources for long-term sustainable commercial use – essentially seeing that nature has instrumental value and needs to be put to proper use. One of the most well-publicised forms of conservation in recent decades has been that of ‘re-wilding’, which has made a concerted effort to not simply slow, but reverse,

decline of habitats and wildlife populations. Alastair Driver, of Rewilding Britain, has argued that "traditional conservation practices on their own are not enough to achieve significant wildlife recovery" and as such points to key practices that humans can undertake in order to proactively conserve species and habitats such as re-introducing keystone species, such as beavers, and ensuring collaboration between local projects to create a more widespread and 'joined up' conservation programme.[136] Fundamentally, the emphasis is on the need for human beings to interfere and manage the environment. Preservationist approaches, pioneered by John Muir, contend that the land is more than simply a means to an end and that nature should be valued (and preserved) for its deeper spiritual and philosophical value[137] As such, nature is need of protection from use. Another key figure in the preservationist movement has been Aldo Leopold, whose 'Land Ethic' emphasised the intertwined relationship between people and the land. As such, a moral code of conduct is needed to establish the framework of this relationship.[138] In more recent times, Arne Naess's 'Deep Ecology' has furthered this by challenging us to recognise how cut off we have become from nature and how a new understanding of the self is now needed.[139] It should be noted that there are those who do not fit neatly into either field, one of whom is Fred Pearce, whose controversial work 'The New Wild',[140] argues that nature should be 'let be' and that nothing should be done to harness the growth of invasive species. The introduction of alien species through natural or anthropogenic means is simply another step in Gaia's evolution and we would do well to allow nature to take its

[136]Rewilding Britain, 'What is Rewilding?' Available at https://www.rewildingbritain.org.uk/explore-rewilding/what-is-rewilding/rewilding-and-conservation [Accessed 12/08/2022].
[137] H. Rolston III, *A New Environmental Ethics: The Next Millennium for Life on Earth,* London: Routledge (2012), p. 23.
[138] Aldo Leopold Foundation, 'The Land Ethic', available at https://www.aldoleopold.org/about/the-land-ethic/ [Accessed 12/08/2022].
[139] A. Naess, *Ecology of Wisdom*, London: Penguin Modern Classics (2016).
[140] F. Pearce, *The New Wild: Why invasive species will be nature's salvation*, London: Icon Books (2015).

own course in the circumstances. His carefully selected examples, which range from Ascension Island to Japanese Knotweed, are used to illustrate that invasiveness need not necessarily be equated with degradation and destruction. Emerging as movements in their own right, more radical positions have also developed. In particular ecofeminist theology stands out as an area worthy of further consideration for this project. Its focus on interdependence, as well as the theological language with which it describes such relationships, offers intriguing insights into how human beings should relate to other creatures, understand the role of suffering and relate our actions in a way consistent with a Christian approach.

This section aims to explore three key themes through the writings of significant proponents in ecofeminist theology, which will in turn assist in the synthesis of the theological approach to be taken in this project. The first is how each ecofeminist theologian understands the Nature of God and their efforts to divine God's will. Second, it will scrutinise how ecofeminist theology understands the relationships evident in the biosphere. Finally, reflections will be offered on the pragmatism of ecofeminist theology and in which ways (if any) it can inform the de-extinction debate.

Ecofeminists take the stance that there is a strong link between the oppression of women and the destruction of the environment. For example Rosemary Radford Ruether has suggested that the domination of women is symbolically linked to the dominion man has desired and pursued over the earth.[141] Whether this is a fair assessment or not is something I wish to examine later in this essay, but for now it is certainly undeniable that we are, as Rolston notes, living on a

[141] R. Ruether, *Gaia & God: An Ecofeminist Theology of Earth Healing,* London: SCM Press (1992), p, 3.

planet where “one species can jeopardise the planet’s future”.[142] Other writers in the field such as Sallie McFague have taken the ‘healing’ process of the earth even further. Not content with the reordering of social and natural structures, she has designed metaphors to help our understanding of the world and our responsibility towards the cosmos as a whole, a cosmos which we should look upon as the ‘body of God’. An additional ecofeminist perspective has also emerged in the writings of Anne Primavesi whose valiant defence of the Gaia Hypothesis and identification of ‘gift exchanges’, which she terms as “a response to life support systems with ritual expressions of gratitude and sharing of gifts”,[143] have done much to undermine the anthropocentric entitlement assumed by humans.

In light of the rise of Ecofeminist thought, other figures have emerged to sprinkle a dose of biological realism on the debate. In particular, Lisa Sideris has emerged as a prominent critic of the writings of McFague and other ecofeminist theologians. Her pragmatic approach, heavily rooted in evolutionary science, puts humanity firmly in its place, not above other species per se, but as ‘participants’ in nature who have both obligations and even discriminations to carry out as responsible members of the natural world.

3.2.2 Ruether and Humans as ‘Healers’

In *Gaia and God* Rosemary Radford Ruether sets out to map the religious and scientific histories and futures of the world in a bid to find common ground between all members of the created order and establish a new process of healing for its members. For Ruether, this commonality can be found in the notion of

[142] H. Rolston III*, A New Environmental Ethics: The Next Millennium for Life on Earth,* London: Routledge (2012), p.1.

[143] A. Primavesi, *Gaia’s Gift: Earth, Ourselves & God after Copernicus*, London: Routledge (2003), p. 114.

kinship. This can be understood in two distinct ways. First, in the sense that despite the fact that humans are the "evolutionary growing edge of the impulse to consciousness and kindness", it "does not separate us from the common fate we share, of organisms that grow and then die."[144] Any environmental ethic, she argues, must accept this fact. Second, kinship can also be demonstrated through the fact that elements of our bodies were once part of the bacteria floating in the primal seas, our relation to other creatures is founded upon a process of co-evolution.

More controversially, however, Ruether identifies competition in nature as being used, wrongly, to justify the primacy of the strong over the weak in society.[145] Calling this a "vastly distorted picture of nature",[146] she attempts to illustrate that the biosphere is sustained "within a larger pattern of mutual limits", for example herbivores avoid stripping a plant entirely of its foliage, for in doing so, it will eventually starve. Likewise, small prey have become adept at eluding their hunters and so keep predator populations in check.[147] However, by drawing only on the relatively benign examples of defence mechanisms in nature such as the "unpleasant tastes", piercing thorns and numbing nettles used by plants to "discourage" their eating by herbivores, Ruether fails to convey the true horror of natural processes. A more pertinent discussion from Ruether would have been to look at some of the crueller defences and tactics elicited by any one of a plethora of examples in nature. The roots of the Dicotyledon (Water Hemlock), far from simply being distasteful, act remorselessly quickly upon the central

[144] R. Ruether, *Gaia & God: An Ecofeminist Theology of Earth Healing*, London: SCM Press (1992), p, 31.
[145] Ibid, p. 56.
[146] Ibid, p. 55.
[147] Ibid. p. 55-56.

nervous system, killing humans and cattle if ingested.[148] Furthermore, Ruether's quaint picture of interdependence, such as birds being allowed to ride on the back of bison in order to pick off the insects that pester the mammal,[149] is undermined by the cruelty of some of the reproductive processes in the natural world. One such example that has remained with me for many years first caught my attention at the London Natural History Museum's exhibition "Venom: Killer & Cure". The Emerald Wasp, which displays a charming instance of interdependence, whereby it zombifies cockroaches in order to use their live bodies as a host for its larvae,[150] beautifully encapsulates the darker side of the interdependence of creatures in the biosphere. Ruether's call for the interdependence in nature to act as the inspiration for environmental ethics displays a naivety about the natural world at best, or worse a wilful ignorance of the malevolent machinations at work.

Ruether's answer to the environmental crisis is for humans to act as healers of the world. This process of healing emerges from the reconstructed covenantal and sacramental traditions which have been tainted by their inherent patriarchalism.[151] Despite our role, the earth ultimately still belongs to God, and we abuse it at our peril, indeed God, not man, is in charge of nature.[152] In relation to our search for a theological ethics concerning de-extinction, the covenantal tradition would seem to warn humans about the dangers of 'playing God', or more specifically any attempts to exert our own will upon the forces of nature. In other words, humans should know their place.

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[148] The Editors of Encyclopaedia Britannica, "Dicotyledon", https://www.britannica.com/plant/dicotyledon, Published 31 January 2020 [Accessed 6 April 2020].
[149] R. Ruether, *Gaia & God: An Ecofeminist Theology of Earth Healing,* London: SCM Press (1992), p, 56.
[150] K. Pavid, "Rainbow Nature: The Glory of Green", https://www.nhm.ac.uk/discover/Rainbow-nature-glory-of-green.html. Published 15 August 2016 [Accessed 6 April 2020].
[151] R. Ruether, *Gaia & God: An Ecofeminist Theology of Earth Healing*, London: SCM Press (1992), p, 205.
[152] Ibid, p. 210.

Primarily, Ruether draws our attention to Shabbat, which is given so that humans *and* animals may rest.[153] Moreover, she identifies the Jubilee Year (every seventh year) as a model of redemptive ecojustice. Not only labourers, but animals were also able to rest. It was an opportunity for social structures to be righted, and could set an example for environmental ethics today as it emphasises that although humans may drift into unjust relations between one another and exploit nature, this should not be allowed to become a permanent state.[154] From this Ruether extrapolates that the biota of earth must be protected by human enlightened guardianship – a task she believes to be ordained by God.[155] Indeed, the spread of humans across the globe has rendered it impossible for humans to simply let nature 'be'.[156] Taking this even further, Ruether then argues that a covenantal relationship exists between humans and all other life, "as one family united by one source of life".[157] We should encounter other species in the same way that we encounter each human being, this guards against us seeing the various elements of nature as "'things' under our power".[158]

Additionally, Ruether identifies the sacramental tradition and traces a complex understanding of the interconnectedness of life through the work of Teilhard de Chardin and process theologians to develop an ecofeminist theocosmology. Ruether argues that as we observe the "absolute minimum", the tiniest particles, we also recognise the "absolute maximum", the web of all interconnectedness in the universe. Between these two extremes exist human beings, who she describes as the "mediators" between worlds, essentially the "minds of the

[153] Ibid, p. 211.
[154] Ibid, p. 213.
[155] Ibid, p. 223.
[156] Ibid, p. 222.
[157] Ibid, p. 227.
[158] Ibid.

universe."[159] Our distinct reflective consciousness is our privilege and our danger, one that men have abused for centuries.[160]

To draw together her model of a healed world, Ruether envisages a fundamental restructuring of relationships in the world, based on equality between men and women, human groups and biotic communities. This may in turn require a rediscovery of old technologies and a rejection or at least a limitation on the use of new technologies. A dramatic change in attitude would certainly be necessary, and perhaps we are seeing the first signs of that at the moment, as more and more of us begin to wake up to the seriousness and immediacy of climate change. And yet, more than this is required for Ruether, indeed she wishes for the emergence of a committed love, one devoted to the development of concrete communities regardless of 'trends'.[161] It is hard to fathom, therefore, how de-extinction can be justified at the present time in light of Ruether's healing vision. The priority for her would seem to be the biotic community that exists now and that all our efforts should be geared towards a reformation of social attitudes to facilitate its survival. Nevertheless, in the longer term, there is perhaps more grounds for optimism. If humanity is, as a worldwide community, able to heal the wounds caused by their mismanagement of the world then perhaps this 'healing' could at the very least be used to restore the creatures we have driven extinct. This would need to be done in light of a *metanoia*, a change in consciousness that rejects domination, and therefore does not seek to demonstrate some kind of show of power or control over nature, but rather offers an act of contrition and love for the created order with which we are so inextricably bound.

[159] Ibid, p. 248.
[160] Ibid, p. 249.
[161] Ibid, p. 275.

Sideris, however, has taken issue with several key elements of Ruether's view. Aside from the naïve understanding of the evolutionary relationship between all creatures in the biosphere, as discussed above, she attacks the covenantal basis of the argument. The examples of Sabbatical and Jubilee Year restoration are flawed. They serve only to establish humans as guardians until the fulfilment of the Peaceable Kingdom envisaged by Isaiah. For Sideris, the need for guardians is completely at odds with Ruether's own vision of nature. On the one hand she seems to call for humans to remove conflict and yet at the same time to deny such discord exists in the communities of nature.[162] If the interdependence of all life exists in the manner described by Ruether, then surely that would call for "a more modest role for humans than that of arbiters of justice and purveyors of health in nature."[163] As we shall soon see, rather than interfering with nature wherever we may perceive injustice, humans need to recognise their role as participants in nature and the responsibility and restraint that entails.

3.2.3 McFague, Metaphors and the Body of God

Sallie McFague has become one of the key proponents of theological ecofeminism, famously developing her new model of the Trinity as Mother, Lover and Friend in her 1987 work, *Models of God*. The work is additionally significant for its espousal of the panentheistic understanding of God, where the cosmos is seen to be part of the 'body of God', metaphorically birthed from her and as such subject to her nurturing and sustaining ways. This realisation should lead to a "sacramentalism that is painfully conscious of the world's vulnerability, its

[162] L. Sideris, *Environmental Ethics, Ecological Theology & Natural Selection*, New York: Columbia University Press (2003), p. 58.
[163] Ibid, p. 60.

preciousness, its uniqueness."[164] It is in her later work, *The Body of God*, that McFague develops this more fully into an environmental ethic.

Keen to promote the 'planetary agenda', McFague points out that "we are not lords of the planet, but products of its processes".[165] Recognising the scale of the problem, she initially calls for us to set out our own "house rules" and to restrain from an interfering "fix-it mentality". This, she argues would be the prudent approach. An interesting term to use, which coincides with one of the key virtues developed by Schaefer.[166]Discussed earlier in the project, she seeks the development of our character as "the virtuous co-operator", who is habitually prudent, just, moderate and courageous. Moreover, Celia Deane-Drummond has also highlighted the significance of prudence, or 'practical wisdom', in an attempt to show not only the significance it holds for humans as arbiters of environmental justice but also to illustrate the significance of non-human animals whose worth is shown by the degree to which they have the capacity to 'make' moral judgements and even to reflect, again by degree, the image of God.[167] Parallels with which are more than evident in McFague's understanding of our role in the planetary agenda.[168]

Our duty towards other life forms on earth is bound up in what McFague terms as the 'Common Creation Story'. The Common Creation Story encourages a basic stance towards reality that privileges embodiment, which is itself incredibly

[164] S. McFague, *Models of God: Theology for an Ecological, Nuclear Age*, Minneapolis: Fortress Press (1987), p. 77.
[165] S. McFague, *The Body of God: An Ecological Theology*, London: SCM Press (1993), p. 6.
[166] J. Schaefer, *Theological Foundations for Environmental Ethics: Reconstructing Patristic & Medieval Concepts*, Washington: Georgetown University Press (2009), p. 232.
[167] C. Deane-Drummond, 'Are animals moral? Taking soundings through Vice, Virtue, Conscience and Imago Dei' in *Creaturely Theology: On God, Humans and Other Animals*, ed. C. Deane-Drummond & D. Clough, pp. 190-210, London: SCM Press (2009), p. 210.
[168] J. Schaefer, *Theological Foundations for Environmental Ethics: Reconstructing Patristic & Medieval Concepts*, Washington: Georgetown University Press (2009), p. 277.

diverse. To see ourselves alongside all other members of the biosphere in such a way is a move towards a more inclusive sense of justice for all human beings.[169] Here McFague makes a bold claim, namely that human ethics can be derived from the perceived community and interdependence observed in natural world, a major point that I shall return to below. Sideris has claimed that McFague demonstrates a poor understanding of the evolutionary process and that she ignores the terrifying realities of Natural Selection in her picture of the biosphere.[170] This, however, is to misrepresent her work as there are several examples of such acknowledgements. She talks of the "malevolence of the process,"[171] of how life is "indeed a wonderful life…regardless of why or how it has evolved"[172] and of "biological evolution, in which millions are wasted, individuals are sacrificed for the species, and even whole species are wiped out in the blinking of an eye."[173] Rather, Sideris is guilty here of ignoring the works of McFague which deal with the darker side of Natural Selection. Regardless of this, ultimately, as Sideris points out, "while a human model of community may entail care for individuals, nature does not".[174] Far from the co-operative, co-dependent image of nature espoused by McFague, evolution and the process of Natural Selection simply do not work this way.

Before examining the shortcomings of her call for humans to act as liberators and healers nature, it is important to examine exactly how McFague attempts to apply Natural Selection to her environmental ethics. In the first instance this is done by linking the suffering of species to the oppression of the most vulnerable in our

[169] S. McFague, *The Body of God: An Ecological Theology,* London: SCM Press (1993), p. 48.
[170] L. Sideris, *Environmental Ethics, Ecological Theology & Natural Selection,* New York: Columbia University Press (2003), p. 69.
[171] S. McFague, *The Body of God: An Ecological Theology,* London: SCM Press (1993), p. 81.
[172] Ibid, p. 79.
[173] Ibid, p. 177.
[174] Ibid, p. 81.

society, partnering Liberation Theology with evolutionary science. This, she endeavours to illustrate, is possible through the process of cultural evolution which we are also subject to even today. For McFague, cultural evolution is the ability "to evolve into a sharing, caring human population living with other life forms in a fashion that our planet can sustain".[175] A radical "re-mythologising" of the doctrines of God is therefore necessary in the light of contemporary scientific understanding.[176] A metaphorical organic model (the world as the body of God) is therefore appropriate because fundamentally we are bodies that experience. This experience takes place with other bodies and is therefore a reliable model for living as "we can wager it is true, as well as being good for human beings and other forms of life"[177] in our effort to create a just world.

In light of this, McFague states that "nature is the new poor", not in the sense of taking the place of poverty-stricken humans but in addition to them. We have a duty to alleviate this suffering as it is us who have made nature sick.[178] This could have very significant implications for de-extinction. Indeed, de-extinction technologies could offer a means by which humans heal the very wounds they have inflicted through anthropogenic extinctions of species such as the dodo, Tasmanian tiger and passenger pigeon. However, whether this is permissible whilst the human poor continue to suffer is an issue I will explore in the later 'Ethics' chapters of this project (see 4.1 – 5.3.3).

McFague wishes us to extend the parables of Jesus to nature. His ministry, in her view, demonstrates that "bodies count" as they call for the overturning of

[175] Ibid, p. 80.
[176] Ibid, p. 81.
[177] Ibid, p .91.
[178] Ibid, p. 165.

oppression as well as sustaining and functioning in terms of bodily need.[179] The body of God, which includes nature, must be sustained and "must be fed."[180] It is at this point that cultural evolution must take over. Humans can choose to override the harsh evolutionary principles and show solidarity with the oppressed. For McFague, "Christian solidarity with the poor is counter-evolutionary",[181] likewise, it could be argued that de-extinction could be seen as such, it is an opportunity to side with the oppressed, the voiceless, to will the very essence of Liberation Theology – 'a preferential option for the poor'. From this development of an ethic towards nature based upon a solidarity with the oppressed, McFague moves to suggest that the metaphor of the cosmic Christ, inherent in the universe as the body of God, implies that salvation must take place in creation. This releases the Incarnation from containment within a thirty-year period.[182] This ethic, however, is a something of a stretch when we look at what McFague is actually proposing. Up to this point McFague has been set on the use of the Body of God as a metaphor to help us understand how to approach the oppression we see in nature. Now, however, she is arguing that this 'metaphor' is in fact an actuality to demonstrate that the creation is the site of salvation. McFague here moves from a metaphorical understanding to one that is descriptive.

This concern is further supported by Sideris' critique of the metaphorical use of Jesus' ministry in McFague's ecotheology. For McFague our role is to be the ones who have emerged as "the caretakers of the rest,"[183] and calls for us to look at the world through Christ, recognising our role in the "liberation from our destructive oppression, the healing of its deteriorating bodies, and the sharing of

[179] Ibid, p. 168.
[180] Ibid, p 170.
[181] Ibid, p. 172.
[182] Ibid, p. 180.
[183] Ibid, p. 185.

basic needs with all the planet's inhabitants."[184] Mirroring Christ's role as liberator of the oppressed, healer of the sick and one who shared meals, we are able to form an ethic coherent with the planetary agenda. Sideris is likewise critical of McFague's shift from metaphorical to practical language here. Whilst Sideris recognises the benefit of metaphors for helping our understanding of the nature of God, it is not, in her opinion, appropriate to apply them to the environment of which we have scientific knowledge and experience.[185]

Additionally, Sideris accuses McFague of presenting "a picture of nature that is scientifically inaccurate and then develops an ethical picture… only to depart from it."[186] This is evident, points out Sideris, in her view of viruses (such as AIDS) and sentient creatures (such as the chicken slaughtered for meat), which illustrate the fundamental hierarchy in her quest for a 'I-thou' relationship between humans and the natural world, the disease cannot be loved on the same level as a chicken or a human being.[187] Indeed the very fact that McFague does not give a justification for the eating of animals shows how difficult it is to apply, let alone endorse McFague's ethic. This in many ways sums up the key problem with McFague's metaphors. Even when they are applied to environmental issues such as the deforestation or animal-testing, they do not provide a practical solution. The liberation and healing of oppressed human beings could entail the suffering of animals for medical research, likewise the protection and preservation of individuals or species could prohibit the poverty-stricken from cutting down the

[184] Ibid, p. 190.
[185] L. Sideris, *Environmental Ethics, Ecological Theology & Natural Selection*, New York: Columbia University Press (2003) p. 74.
[186] Ibid, p. 79.
[187] Ibid, p. 78.

trees, or farming the land, that they need to sustain themselves and their communities.

3.2.4 Gaia's Gift: Primavesi & Gift Exchange

The Irish theologian Anne Primavesi also writes extensively on the interdependence of life on earth and been a champion of James Lovelock's controversial 'Gaia Theory'. In her work 'Gaia's Gift', Primavesi develops a theological ethic for the environment which seeks to recognise humanity's role as participants in natural cycles and how what we 'give' to nature affects what nature gives to us.[188]

The fundamentals of her work owe much to the work of Lovelock. His theory essentially postulates that Gaia, or Earth, is alive. It is alive because it, like all living things, is composed of other living things. Whether this is an adequate definition of 'living things' is debatable, as many of us would find it hard to accept that bacterial chromosones or mitochondria could be considered to be 'living' in the same sense as a human, cat or even a sea urchin. However, for Gaia theorists, just as we are made up of cells, so Gaia is made up of a plethora of living organisms. Furthermore, life is social "it exists in communities and collectives".[189] This is summed up by the holistic view taken by Lovelock:

> *It took the view of the Earth from space, either directly through the eyes of an astronaut, or vicariously through the visual media, to give us the personal sense of a real live planet on which the living things, the air, the oceans, and the rocks all combine in one as Gaia.*[190]

[188] A. Primavesi, *Gaia's Gift: Earth, Ourselves & God after Copernicus*, London: Routledge (2003), p. 3.
[189] J. Lovelock, *The Ages of Gaia,* Oxford: Oxford University Press (1988), p. 18.
[190] Ibid, p. 19.

For Primavesi, Gaia's gift is existential reality, the experience of being alive, an experience we share with all living things.[191] Christianity, in her view, has much to answer for, as it has been responsible for the hierarchical view of humanity's overwhelming importance. The only way for this monolithic structure to be torn down is to enter into a gift-giving relationship with the Earth. Humans need to be reminded that "we are gifted with life, rather than in control of it".[192] A paradigm shift is needed to remedy our relationship and Primavesi is convinced that Lovelock's theory is up to the task. Primavesi's examination of the Copernican model of the universe illustrates how, even though it significantly undermined the anthropocentric view, the revolution was incomplete, our understanding of the universe still remains centred on our own species.[193] This is in no small measure due to the failure to take seriously the Copernican-style revolution in Philosophy led by Kant: that there are limitations to our human faculties of sight, hearing and reason.[194] Our bodies have trapped and tricked us and such a homocentric view of the universe must be cast aside.

It is therefore necessary for us to spark a "revolution within ourselves",[195] whereby, after relinquishing our homocentric view of the universe, we adapt a heliocentric and ultimately earth-centred view of ourselves. This view would transcend the scientific view and primarily enable us to embrace our relationship to the sun, on which our very existence depends as does that of other species with which we are co-dependent.[196] For Primavesi, Gaia Theory is most helpful here. Not only does it help to deepen our understanding of what it means to be a

[191] A. Primavesi, "*Gaia's Gift: Earth, Ourselves & God after Copernicus*", London: Routledge (2003), p. 3.
[192] Ibid, p. 8.
[193] Ibid, p. 58.
[194] Ibid, p. 54.
[195] Ibid, p. 70.
[196] Ibid.

member of the community of interdependent life on our planet but it also gifts us a sense of "earth ancestry"[197] which depends upon a continuous bond between life and its environment. Moreover, this bond depends on the gift of energy from the sun. In formulating an environmental ethic, Primavesi contends that we must see our lives as sun-centred and as such "live as consciously as possible in the light of this knowledge".[198] Once adopted, a more selfless view of the body is taken as we begin to understand that we owe our ongoing existence to much simpler forms of life. Our bodies no longer belong to us and no other, we are no longer isolated life forms but are able to acknowledge our place on earth. To enable this shift in perception requires one to relate to earth "as if" my whole existence depends upon that relationship.[199]

The heart of Primavesi's theology evolves from this understanding of our place into the idea of 'gift exchanges'. These are defined as a response to the life support systems through ritual expressions of gratitude and the sharing of gifts.[200] Primavesi gives the example of Native American tribes, such as the Kwakiutl, Tlingit and the Haida that inhabited the Pacific Coast of North America before it was opened to white traders by Captain Cook in the late 1700s, to illustrate the point. These tribes depended heavily on the annual arrival of salmon in their local rivers. They believed that salmon dwelt in a huge lodge under the sea. Annually they would change from human bodies into fish bodies and swim to the mouth of the rivers where they sacrificed themselves so that their land siblings may have food for the winter ahead. Native American tribes understood this relationship through a ritual of gift cycles. The first salmon was welcomed by the community,

[197] Ibid, p. 72.
[198] Ibid.
[199] Ibid, p. 82.
[200] Ibid, p. 114.

it was caught, paraded to an altar where an elaborate ceremony was conducted before the priest gave a piece of the fish to everyone present. The complete skeleton was then returned to the sea where their mythology dictated that the fish would reassemble, return to its home and revert to its human form. The ceremony establishes a gift relationship with nature; "the objects of the ritual will remain plentiful because they are treated as gifts."[201] It is important to note here that Primavesi is not calling for us to return to some form of earth worship practised by our ancestors. Rather, such cases illustrate how our relationship with nature today has become corrupted. We no longer value the earth and its resources as gifts but merely commodities. For Primavesi, "surely anything that helps establish our identity as earth centred, rather than heaven centred… must be considered helpful in responding to environmental crises."[202]

Gift exchange offers a model for environmental ethics which is coherent with how we currently understand our role as participants in natural cycles, as Primavesi notes "what we give to nature affects what nature gives to us".[203] This is made plain in David Wallace-Wells' apocalyptic vision of our planet in *The Uninhabitable Earth*.[204] From wildfires and unbreathable air to floods and droughts, the impact of humanity's ceaseless exploitation and pollution of the Earth is destined to have cataclysmic consequences for life, not least our own species. Disconcertingly Primavesi's observation echoes the Old Testament warnings of King Solomon that "those who plant injustice will harvest disaster" (Proverbs 22:8) and Hosea; "You have planted wickedness, you have reaped evil," (Hosea 10:13). Without a dramatic change in our attitude, indeed without

[201] Ibid, pp. 116-117.
[202] Ibid, p. 119.
[203] Ibid, p. 123.
[204] D. Wallace-Wells, *The Uninhabitable Earth: A Story of the Future*, London: Penguin Books (2019).

‘giving back’, or at least acknowledging gratefully the gifts we receive from the Earth, there can be little reason for hope.

‘Gift exchange’ is far more than simply another anthropocentric model which masks the exploitation of nature under new guise. Clearly, the notion of ‘gifts’ is a human one. We give gifts to one another, and to see nature as doing the same is misleading. However, I would argue that this not merely a case of swapping anthropocentric terminologies. Primavesi’s understanding provides us with a distinctly *theological* way of understanding the interactions creatures have with each other, including those human beings have with nature, but also the way creatures benefit from sunlight, from rivers, etc. Granted, the language may be anthropomorphic, but this is because she is making a theological claim, not a biological one.

De-extinction, therefore, could act as part of the gift exchange process. The giving back of annihilated species to the ecosystem where the gaping hole left by their demise remains, or even the gift of life itself to those long-lost beings, would not only be a gift to the natural world but also to humans who are, as a by-product, able to redeem their exploitative and damaging behaviour towards the world. Furthermore, such a gift exchange could be seen to correspond to environmental theologies discussed earlier in this project, namely that of humans as ‘co-creators’ and ‘co-redeemers’. Despite not necessarily being ‘God-centred’, Primavesi’s theology supports the theocentric stance in its rejection of the anthropocentric worldview. Primavesi is also adamant that gift-exchanges are “determined by the attention I pay to those around me”,[205] attention itself could be considered the greatest gift. Arguably, by focussing on species that have

[205] A. Primavesi, “*Gaia’s Gift: Earth, Ourselves & God after Copernicus*”, London: Routledge (2003), p. 129.

already perished we are risking the loss of species that could benefit from our help now. Surely, it would be immoral to spend millions of pounds on the 'resurrection' of an extinct species when creatures on our very doorsteps, such as hedgehogs and bees, face annihilation partly through our lack of attention to their needs and our damaging impact upon their habitats. As the Royal Horticultural Society has warned, bee populations in the UK are in grave danger due to the destruction of habitats through urbanisation, and the use of pesticides as basic as weed-killer.[206] If we were to adopt Primavesi's gift-exchange approach and tend to our actions even within our own gardens by planting more 'bee-friendly' flowers and curbing the use of pesticides, then surely this would be a much more rewarding process as well as one which could help to reconnect us with nature. It would be alarming to believe that we could carry on as normal and simply rely on future de-extinction technologies to bring back species that we could prevent the demise of in the first instance. This is echoed by Primavesi when she writes that we are taken the 'givenness' of many species for granted.[207]

3.2.5 Critical Evaluation and the Contribution of Lisa Sideris

Two key elements of Lisa Sideris's *Environmental Ethics Ecological Theology and Natural Selection* can be used to further develop the concept of gift-exchange which, as we have seen, offers a promising basis for a theology of de-extinction. These concern the nature of human interdependence with life on earth and Sideris' concept of how we can demonstrate a love of the biosphere as participants in nature. The bulk of Sideris's book acts as a critical survey of current environmental thought. We have already seen how Sideris has critiqued much

[206] "*Pollinators: decline in numbers",* Published by The RHS at https://www.rhs.org.uk/advice/profile?pid=528 [Accessed 12/04/20].
[207] A. Primavesi, *Gaia's Gift: Earth, Ourselves & God after Copernicus*, London: Routledge (2003), pg. 130.

ecofeminist thought as lacking scientific understanding, accusing them of writing "as if Darwin had not existed."[208] Sideris is clear that she wishes to develop a more limited and less interventionist kind of love towards the natural world which recognises both the evolutionary kinship that we share with other creatures, as well as the need for a form of loving discrimination at times.[209] Essentially she wishes to put forward a 'tough love' approach for ecotheology, one which recognises the needs of the species over that of the individual.[210]

Ecofeminists, in her view, have a confused idea of interdependence. The reality, argues Sideris, is that there are two interpretations of how we are to understand our connectedness to other beings. The first is an ecological, systemic view whereby, as Aldo Leopold's pyramid structure of the ecosystem illustrates, each level is sustained by a process of eating and being eaten.[211] Using Callicott's observation that the structure reaffirms participation in nature by "accepting life as it is given, without sugar coating"[212], Sideris argues that participation in land ethics similarly implies "moral action as well as moral limitation".[213] As such, and contra to much ecofeminist thought, we cannot eradicate the necessary suffering and violence that are inherent in the system. Developing the theocentric thought of James Gustafson, Sideris points out that once we accept this state of nature, we must then learn to accept that "it is not the task of humans to promote harmony

[208] L. Sideris, *Environmental Ethics, Ecological Theology & Natural Selection*, New York: Columbia University Press, (2003) p. 217.
[209] Ibid, p. 218.
[210] Ibid, p. 254.
[211] Ibid, p. 228.
[212] J.B. Callicott in L. Sideris, *Environmental Ethics, Ecological Theology & Natural Selection,* New York: Columbia University Press, (2003) p. 228.
[213] L. Sideris, *Environmental Ethics, Ecological Theology & Natural Selection*, New York: Columbia University Press, (2003) p. 228.

in our interventions in natural processes".[214] Interdependence requires restraint, even when we our actions might be considered loving and well-intentioned.

The second type of interdependence focuses on evolutionary continuity, the concept that we share a basic nature with other living things. This sameness was identified by none other than Darwin himself, who collated dozens of examples of animals showing mental, moral and emotional behaviour. Regardless of this, Sideris notes how Darwin was largely ambivalent when it came to issues of animal welfare such as vegetarianism and vivisection.[215] She therefore examines whether 'sameness' or evolutionary continuity, can provide us with the framework for environmental ethics. This is largely achieved by drawing on the work of Mary Midgley who argued that humans, like other species, naturally seek to form bonds. Along with animals, we demonstrate a preference for members of our own species but can also do so across species boundaries.[216] Moreover, Midgley identifies two kinds of instinct in humans and other animals. 'Closed' instincts are not learnt and include innate behaviour such as nest building. 'Open' instincts, on the other hand, are not fixed, they involve learning. General directives may exist, but gaps remain in which learning takes place, examples of such behaviour would include hunting, walking and caring for the young. For Midgley, humans have 'open' social instincts.[217] This idea, coupled with Midgley's belief that humans demonstrate neotenous behaviour (they retain the juvenile curiosity about their environment) leads Sideris to conclude that "our tendency to be attracted to animals does not necessarily tell us how we should treat them".[218] This is particularly true in relation to wild animals but could subsequently inform the de-

[214] Ibid, p. 224.
[215] Ibid, pp. 230-231.
[216] Ibid, p. 236.
[217] Ibid, p. 238.
[218] Ibid, p. 241.

extinction debate. Are attempts to engineer de-extinction technology spurred on by neotenous desires? If this is the case then we should tread carefully; just because we could restore diminished life does not necessarily mean that we should, especially if attempts to do so are motivated by a juvenile wonder of not only other species, but also our own power. For Sideris, humans may well have a basic response to nature which involves love, wonder and awe, but at the same time it needs to be scrutinized. Time, or perhaps prudence, temperance and wisdom are needed in order to take a step back from our innate responses, always bearing in mind the fact that our desired outcomes might not come to pass after we deliberate on our obligations.[219]

A love of nature must therefore involve a certain amount of restraint. Sideris argues that we need to view our love for other animals in the context of the natural processes that must always be respected.[220] It is loving to discriminate in certain circumstances. Compassion and the kind of love for other species called for by McFague and Ruether is not enough if it is not discriminating on issues such as the introduction of exotic species. They are guilty of being "species blind in a bad sense" and provide us with an 'ethic' that does not tell us how to act at all.[221]

3.2.6 Summary

This chapter has provided a rationale for rejecting ecofeminist theology as a basis for a theology of de-extinction. It has enabled us to examine a contemporary radical movement in contrast to the more traditional Catholic and Anglican theologies explored heretofore, an important aspect of this survey, if we are to develop a comprehensive theology of de-extinction. Nevertheless, three useful

[219] Ibid, p. 243.
[220] Ibid, p. 251.
[221] Ibid, p. 252.

lessons have still been drawn from this section. The first is from the work of Ruether whose emphasis on the interdependence of beings in the biosphere highlights a common fate that we all share. The extinction of one species can affect many. Moreover, as the recent extreme heat waves across Europe and the treacherous flooding in Pakistan have shown, human beings are likewise not immune to extinction. Ruether's call for us to act as 'healers' is certainly noble. And yet, such interventions could easily become heavy-handed, and perhaps risk causing further disruption to an already fragile system. A second lesson is drawn from McFague, who in line with the project's argument, thus far, supports the need for prudence and shares in many of the other values central to the concept of the 'Virtuous Co-Creator'. McFague's assertion that nature has become the 'new poor' is not without complication. Whilst it is crucial that the severity of the plight of all kinds of species is raised, is the primacy McFague calls for justified? Is it really moral to commit valuable time and resources to rescue species that may well disappear as a consequence of natural, background extinction anyway? This becomes an especially pointed criticism when one considers that human poverty is far from being eradicated. However, the third lesson does offer some hope for a more pragmatic approach. Primavesi's 'gift exchange' does present us with an opportunity for some correlation with Sideris's more 'hands-off' approach to nature. Describing wild nature using the term "charismatic" in light of its original meaning in Greek ('a gift'), Sideris argues that love of wildness should acknowledge that there are "vast ranges of creation that have nothing to do with satisfying our personal desires" and that "God is not for us alone."[222] She seems to recognise nature as a gift of sorts and our thanks for this gift can be a recognition of an interdependence that does not desire, nor need, human

[222] Ibid, p. 253.

assistance. Perhaps by not giving nature our interfering attention we may be given it the greatest gift we can – the ability to flourish. We must accept that dependence and conflict are inseparable and that perhaps a loving gifting towards nature requires our consent to this process. This may seem to imply that de-extinction, as an example of strong-stewardship, or interference in the biosphere, should be rejected. However, the overriding message of this chapter has been the illustration that love, but not blind love, can provide the basis for a pragmatic theological environmental ethics. The work of Sideris stresses that it is not *always* appropriate to 'let nature be', rather we must ensure that when we do interfere, we do so cautiously. The idea that it is loving to discriminate in certain circumstances, can also provide a guiding theological principle when tasked with selecting which creatures to prioritise for de-extinction, should the theory become a reality. How are we to choose between restoring the mammoth or the thick-tailed chubb? 'Loving discrimination' encourages us to consider the impact not simply for the resurrected creature but also the wider biosphere. It is likely that both the aforementioned species were driven extinct by human means. Yet, the Revive and Restore Project intends to utilise mammoths to help combat the effects of climate change (see 4.1.5 and 5.3.3). The task of the 'Virtuous Co-operator', manifesting their vocation as 'created co-creators', is to look at the specific details of the case, assess conflicting values and examine the broader ecological context. These criteria, along with the Four Principles of the Human Vocation outlined earlier (see 3.1.6), offer a basis for a theology of de-extinction, which itself could be the greatest gift exchange that humans could provide to the species driven to destruction by our exploitation of Gaia.

CHAPTER IV

Theological Ethics & De-Extinction

4.1 Reflections on Contemporary Christian Theological Ethics

4.1.1 Rationale for Inclusion of Ethicists and Choice of Same

To build upon the theological vocation of human beings, the project will now critically examine the work of three key writers in the arena of Christian environmental ethics, before applying their theological ethics to the issue of de-extinction theology. The purpose will be to test the application of each theory. This will be done by 'inputting' the moral concerns raised by de-extinction, applying the theory and assessing the possible outcomes of their application. The three writers who will form the core of this section are: David Clough who has proposed a radical theological ethic based on much intriguing reflection on core Christian doctrine and scripture; Celia Deane-Drummond, in light of her work on the 'Multispecies' community and James Gustafson, a leading proponent of theocentric ethics. A rationale for the selection of each thinker is outlined below.

David Clough's recent, two volume work, *On Animals*,[223] sets outs his concern for non-human animals on an individual basis. This presents an interesting contrast to the work of Deane-Drummond's concern for creatures on a multispecies level. Grounding his theology in his own interpretation of the biblical account of the Fall and a nuanced understanding of Christ's incarnation as 'flesh'

[223] D. Clough, *On Animals, Volume 1: Systematic Theology,* London: T&T Clark (2012) and D. Clough, *On Animals, Volume 2: Theological Ethics,* London: T&T Clark (2019)

rather than simply as a human being, Clough develops a concern for each individual being as well as the species, all of whom have a vested interest in Christ's saving power. In this project, I will briefly engage with his doctrinal views before examining his own application of his ethics to the treatment of wild animals. This will, in turn, inform my own application of his concern for flourishing and the status of non-human animals as 'neighbours', 'covenant partners' and 'the poor'[224] to the use of de-extinction technologies.

Clough's writings firmly establish him in the Barthian tradition, and so reflects the significance and impact of one of the most prominent theologians of the twentieth century. His reappraisal and adaption of Barth's work offers a contemporary perspective from the Protestant tradition, further infused with his own Methodist leanings. As such, and once again in contrast with Deane-Drummond, Clough's work is heavily dependent on an engagement with some of the vast array of biblical teachings that are relatable to the environment crisis and our relationship with non-human animals.

In her first volume of her trilogy, *The Evolution of Wisdom*, Celia Deane-Drummond has endeavored to make the case for what she terms a "multispecies lens"[225] through which human beings are to engage with, and respond to, other animals. Deane-Drummond's concern for species and systems as a collective provides a useful lens through which to examine the moral case for restoring extinct creatures. Her writing will force me to consider the impact of such bioengineering projects not only on the individual restored creature, but on the

[224] D. Clough, *On Animals, Volume 1: Systematic Theology,* London: T&T Clark (2012), pp. 26-29.
[225] C. Deane-Drummond, *Theological Ethics through a Multispecies Lens: The Evolution of Wisdom, Volume I,* Oxford: Oxford University Press (2019).

species as a whole. Additionally, a multi-species approach will have to consider the ramifications for other species in the environment into which a restored creature may be released. Moreover, as human beings, our own species' interdependence with other creatures and the consequences of such interference will also need to be addressed.

As a writer in the Catholic tradition, Deane-Drummond's work is important as a representative of the largest denomination of the Christian tradition. Moreover, her tendency to connect much of her work with that of Aquinas[226] will serve to further elucidate a contemporary Catholic response rooted in the traditions of the Church. Much of Deane-Drummond's work has sought to establish an evolutionary explanation for the virtues that can be married with faith. As such, her work will coincide with that of Jame Schaefer, whose reinterpretation of the virtues in light of the environmental crisis forms much of the groundwork for the theological vocation of humans set out in Chapter 1. A final point that further establishes Deane-Drummond as a writer appropriate to my project is her focus on a multi-disciplinary approach to theological ethics. The majority of *Theological Ethics*, is given over to a critical engagement with cutting edge research in evolutionary biology and psychology. It therefore seems natural for a project dealing with the intersection of theology and science to engage with a writer who prioritises such dialogue.

The final theologian whose ethical thought will be analysed and applied to de-extinction is James Gustafson. A more radical thinker than Deane-Drummond and Clough, Gustafson's development of a theocentric theology and ethics has,

[226] Ibid, See Chapter 6 'Wild Justice, Justice as Virtue and Natural Law'.

in my view, a valuable contribution to make to a debate where the anthropocentric view can, despite the best intentions, still come to the fore. Gustafson demands that "we are to relate ourselves and all things in a manner appropriate to their relations to God."[227] As such, it would seem a natural course of ethics to follow on from my own endeavours to argue for a theological vocation of human beings that situates us in a less domineering and more interdependent relationship with non-human animals.

Gustafson's contribution is also valuable in the sense that he offers a reinterpretation of the traditional Reformed tradition. His reimaging of the doctrine of predestination as the "forces that bear down upon us"[228] and his insistence on the preservation of the importance of piety[229] allow for a unique and far-reaching ethical consideration of our relationship with the natural world. As part of his efforts to relate traditional Reformed thinking with the contemporary climate emergency, Gustafson has argued passionately for the need for dialogue and co-operation between theology and the sciences. His 1996 book, *Intersections*[230], sets out the arenas in which science and theology collide and further illustrate his vision of a theocentric ethic in action. Moreover, his ethic offers a useful practical guide, which could provide critical guidelines for de-extinction projects. His constant reminders of the fragility of nature, our interdependence with it and our own finitude as a species will perhaps offer a more sobering approach than that of the other ethicists covered. An additional benefit of Gustafson's work is its pluralistic appeal. The climate emergency and related ethical conundrums will

[227] Gustafson, J. *Ethics from a Theocentric Perspective, Volume 2: Ethics & Theology*, Chicago: The University Press of Chicago (1984), p. 2.
[228] Ibid, p. 9.
[229] Gustafson, J. *Ethics from a Theocentric Perspective, Volume 1: Theology & Ethics*, Chicago: The University Press of Chicago (1984), Chapter 4 'A Preference for the Reformed Tradition'.
[230] Gustafson, J. *Intersections: Science, Theology & Ethics*, Cleveland: The Pilgrim Press (1996).

affect human beings of all faiths and none. By establishing what could be understood as a non-exclusivist theory, Gustafson may well offer an approach that can appeal to those who do not confess the Christian faith. Indeed, his key questions for environmental ethics ("Good for whom? Good for what?"[231]) may even provide a basic toolkit for a more secular age.

4.1.2 A Contemporary Protestant Approach: Clough

Clough's recent two volume work will be the initial focus of this chapter. I will seek to sketch an outline of the systematic theology that underpins his work, followed by an exposition of his ethics and its application. Two areas of controversy, which also provide the basis for Clough's theology, and in turn his ethics, are the Incarnation and the relationship between animals and sin. The consequences of his view on both of these issues are profound. In the first instance, Clough would have all non-human animals as beneficiaries of the Incarnation, due to his development of the interpretation of 'flesh' (based on Jn 1.14). Yet, and typical of his biblical sourcing, Clough fails to note the negative view of body and flesh such as is found in John 6:63, where it is described as counting for "nothing." Second, Clough is convinced that there are signs in the natural world that point to non-human animals having the capacity to sin. As such, they need reconciliation, a reconciliation offered to them through the saving power of the Cross on which the God made flesh, died and atoned for sin in all its guises. I will examine the application of his ethics to the use of zoos and nature reserves as this most fully explores the spirit of Clough's attitude towards wild animals and his perception of the inter-species relationships in such spheres. After all, if extinct creatures were

[231] Gustafson, J. *A Sense of the Divine*, Cleveland: The Pilgrim Press (1994), p. 49.

to be restored, careful consideration would have to be given to where such beings would be homed. In light of Clough's application, I will then scrutinise the use of de-extinction technologies in the same manner in an effort to establish whether contemporary Protestant ethics, as exemplified by Clough, would allow for the restoration of creatures lost to time.

To establish the broad nature of the image of God, and how non-human animals may share in this, Clough attempts to broaden the ambit of the Incarnation. He argues that the traditional grounds for human distinctiveness such as self-consciousness, relationality and morality are no longer clearly defined as such characteristics in humans and non-human animals can be measured on a continuum.[232] As I write, my bearded dragon, Qyburn, is sitting on the window-sill. He is a curious creature, his head darts in the direction of the birds, joggers or cars that pass by. He appears to recognise my voice and allows me to carefully handle him. There is some capability of relationality within him. And yet, compared to my one-eyed feline companion, Luna, his abilities seem quite limited. Luna is able to attract my attention for food (often by sitting on my keyboard as I attempt to write) or by pawing at the keys in the door to let me know that she wishes to go outside. In the evenings she sits with us contentedly and I daresay seems to enjoy (or perhaps tolerate) our company. But again, compared to the relationships I am able to have with other human beings, her capacities are somewhat limited. That said, it is worth bearing in mind that as a result of my own limited human capacity for understanding the relationality between other creatures, it could well be the case that her ability to relate to other cats could be very advanced.

[232] Ibid, p. 72.

The continuum suggested by Clough can also be seen in our own species: babies, infants, the elderly and individuals with compromised mental faculties are all capable of self-consciousness, relationality and rationality to varying degrees. These examples illustrate that a clear distinction between humans and non-human animals is very difficult to accurately define. Therefore, Clough's assumption is that the way in which humans can be seen to be in a sense 'different' from other creatures must be found in humans' calling, in their efforts to image God. This does not deny the vocation of other creatures, but attributes a unique vocation to human beings made in the image of God. This kind of approach helps to close what Moritz identified as the "anthropocentrism of the gaps",[233] So far, Clough's view sits well with the theological vocation established in the first part of my project, which strove to characterise the nature of that vocation as a creature that recognises the interdependence of all creatures.

Clough is more than aware of the problems he faces regarding the Incarnation. He notes the traditional belief that God became incarnate as a human to deal with human sin and to benefit humans as a result.[234] Clough argues that discrimination against non-human animals on the basis of God's incarnation as a human is absurd "…if we judge it illegitimate to discriminate between Jews and Gentiles or women or men on the basis of the kind of creature in whom God became incarnate."[235] The core of his argument is that the Christ event is presented, by the New Testament writers, as a cosmic event.[236] Indeed, this is correct in so

[233] J.M. Moritz (2012), 'Human Uniqueness, The Other Hominids, and "Anthropocentrism of the Gaps" in the Religion & Science Dialogue.' Zygon®, 47: 65-96. https://doi.org/10.1111/j.1467-9744.2011.01240.x [Accessed 28/07/2021]
[234] Ibid, p. 81.
[235] Ibid, p. 84.
[236] Ibid, p. 86.

much that Christ is declared “the first born of all creation” in Colossians (1:15), whose death will be of universal benefit (2 Corinthians 5:15, John 12:47, Colossians 1:19-20). Of greater importance to Clough’s argument is his understanding of the word ‘flesh’, which he takes to encapsulate not just human beings, but all creatures which consist of fleshy matter. Lesser and Southgate have noted that such an understanding clearly denotes the Incarnation as “having universal consequence” and being of a “cosmic nature.”[237] Clough’s argument can be considered of particular use for in the cases of extinct creatures. As fleshy beings of the past, they too can be considered to have the possibility of sharing in the redemption initiated by the Incarnation.

However, Clough’s biblical support and interpretations can be challenged. Just as Clough is able to sift through the material and draw out supporting passages, the same can quite easily be done to the contrary. Within Hebrews, a work cited by Clough several times as supporting his view, passages can be identified which undermine his claim. Hebrews 2:14 states: “Therefore, since the children share in flesh and blood, He Himself likewise also partook of the same”. The use of “children” (παιδία) strongly supports the idea that the biblical writers had in mind the salvation of human beings. There is no such mention of the calf, chick, cub or infant of any other species in such context. Indeed, this passage clearly states that it is human beings that share in flesh and blood with Christ, not the offspring of other species. A further sticking point is that Clough is ultimately reliant on a high-Christological understanding of the Incarnation. As I shall discuss in greater depth in Chapter 5, a metaphorical understanding of the Incarnation, which points

[237] E.G. Lesser & C. Southgate (2021), ‘On Animals: An extended review of David Clough’s two-volume work.’ In Studies in Christian Ethics 34 (1):88-98.

to the importance of Christ as a moral teacher, seems far more cogent than an appeal to the unverifiable and unfalsifiable claim of a human being giving birth to the Son of God.

Building upon Anselm's understanding that the Incarnation was motivated by human sinfulness,[238] Clough determines that as the Incarnation is a cosmic event then non-human animals, by consequence, are to be considered capable of sin and in need of redemption. This is a significant move by Clough and one not without controversy. To establish a theological precedent to his claim, Clough draws on two accounts found in Genesis; The role of the serpent in The Fall as described in Genesis 3 and the apocalyptic deluge of Chapter 6.

The passage clearly lays blame for the destruction at the feet of humankind who had grown "great in wickedness". And yet, animals are to suffer the same consequences. What sin could animals have possibly committed to have made them worthy of annihilation? The punishment of non-human animals is not justified in the biblical text. Clough concedes that the Biblical passages are ambiguous in this case, and so it is hard to see how such a passage can be a steady foundation for an argument in favour of animal sinfulness. Also, of particular interest is his very brief discussion of the serpent in Genesis 3, whom he implies shares in the guilt for events that unfold, stating that "even in Eden there is a non-human animal that is acting in opposition to God's purpose."[239] This is a significant passage, for if Clough is correct, it would then provide a pre-lapsarian example of sin in nature.

[238]D. Clough, *On Animals, Volume 1: Systematic Theology,* London: T&T Clark (2012), p. 104.
[239] Ibid.

To develop his argument for the existence of sin in animals, Clough draws on what he sees as the sinful behaviour observed in chimpanzees. He highlights the grotesque example of cannibalistic behaviour that has been observed in the species. He retells the account given by Jane Goodall, who witnessed, on several occasions, adult chimpanzees biting into the skulls of several babies before consuming their flesh.[240] The fact that this took place multiple times is evidence for Clough of wilful, harmful behaviour – "the chimpanzee infanticides were not merely actions forced by instinct or emotion, they were sinful."[241] Whereas Clough presents good reasons for comparing this behaviour to human sin, the problem for me is the way in which this is then extrapolated and applied to all other non-human animals. The same could be said of animal predation. Southgate notes the way in which orcas prey on sealions. To consider their hunt sinful would again appear inappropriate. After all, Southgate notes that the prey as an individual suffers, but the process results in the development of strategies that enable other individuals of the species to flourish.[242] As a result it seems inappropriate for Clough to generalise non-human animal sin based on the example he provides.

Having posed my challenge to Clough, he has explained his use of the chimpanzee case in particular. He points out that:

"…chimpanzees exhibit behaviour that is in clear continuity with behaviour in humans we would identify as sinful. It seems to me that we can preserve a belief

[240] D. Clough, *On Animals Volume I: Systematic Theology*, London: Bloomsbury Press (2012), pp. 112-113
[241] Ibid, p. 114.
[242] C. Southgate, *The Groaning of Creation: God, Evolution & The Problem of Evil,* Louisville, KY: WJK Press (2008), p. 46.

in the unique capacity of humans to sin only by deciding that no such evidence of cognitive or behavioural continuity could ever be relevant to this belief. I'm not clear of the theological rationale for such certainty."[243]

The problem of extrapolation still stands. First, even if we accept sinful tendencies in chimpanzees, it does not follow that sin is prevalent in other species from lions to plankton. At best, the chimpanzee example could be used to evidence degrees of sinfulness between species, though I remain unconvinced of their wilful breaking of divine law. Second, there is theological grounding which can further challenge Clough's claim. Romans 2 speaks of how every human has God's law written upon their heart. From this we understand that every human has the potential awareness of God and his calling. To my mind, where this is *resisted*, there sin thrives. The murderer 'sins' by resisting God's commandments against killing others, likewise, the atheist 'sins' by rejecting God, as well as in any action or inaction that is at variance with God's law. However, babies and those who have a severe learning disability cannot be said to 'sin' at all, because their ability to have awareness of, and respond positively (or negatively) is underdeveloped or compromised in some way. The same can be said of chimpanzees and other creatures. The chimpanzee is unaware of God's condemnation of murder, just as the jewellery-stealing magpie is ignorant of God's prohibition on theft. They are unable to be aware of God's will and so cannot be said to be 'resisting' it in a way which could be construed as sin.

This is crucial to undermining Clough's argument. By not accepting non-human animal sin, it becomes difficult to maintain that they require redemption and that

[243] Personal correspondence with D. Clough, via email. Received 16/12/2020.

the ‘flesh’ into which God manifests Godself can only refer to that of human beings.

The practical application of his theology becomes the concern of Clough’s second volume. Inspired by Messer’s question: “To whom are we called to be neighbour?”,[244] Clough endeavours to explore our relationship with non-human animals as neighbours, covenant partners and the poor. This section will briefly outline Clough’s understanding of each, their connection to the notion of ‘flourishment’ and finally illustrate how they can inform a theological ethic in relation to the moral issues raised by keeping animals in zoos and on protected lands such as nature reserves. Drawing on this, I will then proceed to apply Clough’s theological ethic to the case of de-extinction. Clough develops categories for thinking about non-human animals that provide an encouraging foundation for his ethical theory. Having argued for shared importance of incarnation, reconciliation and redemption to humans and non-human animals, Clough ponders how we are to define our relationship with other creatures in a way which can help promote the flourishing of creatures.

Clough draws on a range of biblical sources which point to non-human animals as covenant partners. The Noahide covenant binds not only humans but “every living creature that is with you” (Genesis 9:10) to God’s promise. Clough points to other such indicators of the nature of the covenant in Hosea 2 and Job 5.[245] What is particularly striking about this is the “active participation of non-human

[244] N. Messer quoted in D. Clough, *On Animals, Volume 2: Theological Ethics*, London: T&T Clark (2019), pg. xviii.
[245] Ibid, p. 26.

animals".[246] For Clough, Moltmann is correct in claiming that violence against any 'cosignatory' of the covenant is a violation against God.[247] Thus non-human animals are provided with significant moral relevance. The use of the term partners is particularly striking. A 'partnership' implies a reciprocal relationship where those involved both contribute to the fulfilment of an intentioned and shared goal. The inclusion of extinct creatures as covenant partners is an issue to which I shall return in my application of Clough's work. Suffice it to say that in terms of creatures existent since the time of the Covenant, it seems that Clough has more work to do in order to further flesh out the nature of this Covenant partnership.

Consideration of non-human animals as neighbours also presents profound moral implications. In particular it "requires us to recognise that care for the neighbour may go beyond the species boundaries as well." Southgate and Lesser, in support of Clough's references to biblical instances of compassion towards non-human animals, have noted that the combination of Christ's views towards animals, coupled with God's love and attention towards them, "rules out anthropocentrism."[248] Moreover, the neighbourly relationship should not be considered as one way. Non-human animals are not elderly residents, unable to be self-sufficient, for whom we care. Rather, Clough points to a small selection of the myriad of instances where non-human animals have shown neighbourly tendencies towards human beings. From dolphins rescuing sailors in Ancient

[246] Ibid.
[247] Ibid, p. 27.
[248] E.G. Lesser & C. Southgate (2021), 'On Animals: An extended review of David Clough's two-volume work.' In Studies in Christian Ethics 34 (1):88-98.

Greece to a dog in Argentina that raised a human baby as its own, the relationship can certainly be seen as reciprocal.[249]

A real strength of this argument is the fact that it can be applied to all non-human animals. In terms of human relationships, our neighbour can certainly be considered someone with whom favours or support may be reciprocated, this can easily be identified in relationships between humans and companion animals. Cat and dog owners will often regale listeners with accounts of their companions showing emotional support during trying times, no doubt motivated by the attachment fostered by their own care and concern for the creature. Even regarding those creatures where such reciprocal arrangements cannot be manifested, it still seems appropriate to view them as neighbours. I recently salvaged a struggling ladybird from my garden pond. There is no way in which that creature could have returned the favour and yet such neighbourly action was warranted. In a way this parallels the care and concern we may show fellow humans who, through illness or injury may require our assistance, which we provide with no thought of reward. However, are we to view dangerous predators? Great White sharks have been known to sporadically attack humans. Are we to still consider them our neighbours, despite the perceived threat they pose to us?

In short, the answer is yes, at one level this is simply because I would not see their violent behaviour as a moral question and secondly, to ground this further in Christian teaching, Jesus taught that one should love even those who persecute you (Matt. 5:44-48). Such love can be manifested in a respect for those creatures

[249] D. Clough, *On Animals, Volume II: Theological Ethics*, London: T&T Clark (2019), p. 28.

that may pose a risk to our own lives and by rejecting reactionary calls for culls on predators that hunt humans. Much of my theological groundwork has centred on the interdependence of creatures. Clough's category of non-humans as neighbours fits well with this model as well as with Deane-Drummond's 'multi-species' approach to which I will turn below. The biosphere is essentially a neighbourhood. A community consists of neighbours, and neighbours, as defined by Clough, "not only demand human neighbourly care, but also provide care to others they recognise as in need of help."[250]

The third category identified by Clough is that of animals as the poor. Drawing on biblical support (Exodus 23:11, Hosea 4:1, Joel 1:18), Clough argues that animals can be identified either alongside the poor or as deprived in their own right. Coupled with this is his reference to the Oxford English Dictionary's definition of the poor as those "lacking the means to procure the comforts or necessities of life,"[251] However, such a blanket categorisation needs further consideration by Clough. Are we to include animals that are thriving as part of the poor? Moreover, it is important to bear in mind that the prosperity of one species can often demand the deprivation of another. Furthermore, the question of whether extinct creatures can be said to number amongst the deprived will be taken up shortly. Can such beings be said to really be poor if they no longer exist? Indeed, their time of suffering has long past. Or do those creatures driven extinct by human effort still require a voice, when technologies that could restore them are brought to the table?

[250] Ibid, p. 29.
[251] Ibid, p. 30.

The remainder of Clough's second volume contains a series of a case studies ranging from the farming of animals to their use in sport. He endeavours to apply his categorisation of animals as covenant partners, neighbours and the poor to each case in order to argue for a compassionate approach to our relationship with non-human animals based on enabling them to flourish as beings that are of flesh, afflicted by human sin, and so worthy of moral concern. While he does not explicitly mention the place of de-extinct creatures in any of these contexts, his study of the place of zoos, safari parks and nature reserves bear particular relevance to this project.

On the whole, Clough tends to towards a favourable position on the place of zoos and reserves. Fundamentally, without zoos and reserves the money required for conservation projects would have to be sourced from somewhere else.[252] He notes that the money raised does not simply go towards the upkeep of the zoo itself, but is often used to aid breeding and re-introduction programmes in the wild,[253] assisting 'the poor' directly. Second, Clough argues that, sadly, zoos also act as a place of refuge for some species, particularly the African elephant, who either face poaching or cannot even be said to be truly wild due to the fact that the land they live on, despite its enormity, is managed and protected.[254] Zoos and reserves offer creatures a place of safety; the lamentable aspect is not necessarily the confinement of the animal, but the fact that such settings have to exist in the first place. Again, parallels between such non-human animals and the destitute are obvious. Reform of these conditions, not their abolition, is the surest

[252] D. Clough, *On Animals Volume II: Theological Ethics*, London: Bloomsbury Press (2019), pg. 229.
[253] Ibid.
[254] Ibid, p. 230.

course.[255] For Clough, "zoos are acceptable as places of hospitality for wild animals who would otherwise be homeless"[256] and so enables us to act as compassionate neighbours to those in need. This brief summary of Clough's view outlines how animals, as the poor, require the hospitality of zoos and nature reserves. Furthermore, as shown above, these have sadly become places of necessity, in some cases preserving the last of a kind for a growing list of creatures labelled 'extinct in the wild'. Such examples include the Kihansi spray toad[257] and the Atlas (Barbary) lion.[258] Even the last of the Tasmanian tigers lived out the rest of its days in Hobart Zoo, where it died on 7th September 1936.[259] In summation Clough writes that "we cannot profess faith in this God while living in ways that deny our fellow animal creatures of God the resources they need to exist."[260] Indeed, how can we claim to uphold our side of the covenant when our fellow partners and neighbours wallow in suffering and poverty? We can therefore pose the question for my application of Clough's theological ethics: if human beings have the resources to restore to flourishing individuals of the particular type of life that has been lost with the extinction of a species, is it an option to be preferred over (or even carried out alongside) the conservation of living neighbours, covenant partners and the poor?

[255] Ibid, p. 231.
[256] Ibid, p. 234.
[257] National Geographic Photo Ark – Kihansi Spray Toad, available at: https://www.nationalgeographic.org/projects/photo-ark/animal/nectophrynoides-asperginis/ [Accessed 03/01/2021]
[258] 'Barbary Lion', Belfast Zoological Gardens, available at: http://www.belfastzoo.co.uk/animals/barbary-lion.aspx [Accessed 03/01/2021]
[259] J. Crump, "Last known video of Tasmanian Tiger from 1935 released" in *The Independent* Published 19/05/2020, available at: https://www.independent.co.uk/news/world/australasia/tasmanian-tiger-video-extinct-thylacine-last-known-archive-a9522806.html [Accessed 03/01/2021]
[260] D. Clough, *On Animals Volume II: Theological Ethics,* London: Bloomsbury Press (2019), pg. 235.

Having explored Clough's theological ethics, I will now seek to apply his approach to the use of de-extinction technology by considering four key questions: Are de-extinct creatures 'covenant partners?' Do we count de-extinct creatures as our neighbours? Should de-extinct creatures be counted amongst the poor? And finally, throughout the application of these categories, I will consider the extent to which they promote flourishment.

For the sake of clarification, by a 'de-extinct' creature, I mean to refer to species which are possible *candidates* for de-extinction, in that sense, I am considering whether, as extinct beings, they can be included in Clough's categories. By extension, I am also considering the species were it possible for such creatures to be restored and thus the status they may have were they to roam the world once again. However, it is also worth considering what value inheres in a species. In this regard the thoughts of Thomas Aquinas are most helpful:

Furthermore, in each individual that which belongs to the species is superior to the individuating principle, which lies outside the essence of the species. Therefore, the universe is ennobled more by the multiplication of species than by the multiplication of individuals of one species. But it is in separate substances, above all, that the perfection of the universe con-sists. Therefore, it is more consonant with the perfection of the universe that they constitute a plurality, each diverse in species from the other, rather than a numerical multiplicity within one and the same species.[261]

[261] St. Thomas Aquinas, *Summa Contra Gentiles II*, Ch 93, no. 5.

This argument suggests that the extinction of what may be considered an abstraction, a 'species', is indeed a harm not just for the individuals which make up a species, but also to the wider creation as a whole. Aquinas points out that to have the maximum range and diversity of creatures is a good for creation and so extinction is therefore a degradation of this good and so a harm.

Clough suggests that the biblical source for the Noahide covenant makes it clear that non-human animals existent alongside human beings are not only subject to, but participants in, the agreement. I have already noted that this provides such creatures with significant moral worth. Furthermore, this would seem to indicate that non-human creatures, driven extinct since the covenant, were (or even 'are') cosignatories. This would suggest that the Tasmanian tiger, for example, should be considered a 'covenant partner', for it would almost certainly have counted as one of "every living creature that was with you—the birds, the livestock and all the wild animals, all those that came out of the ark with you—every living creature on earth." As such, the anthropogenic extinction of the thylacine is nothing short of the murder of a covenant partner. Such covenant partners have their own moral worth, independent of the values ascribed to them by humans. Therefore, the restoration of such beings could function as a means to ensure the fulfilment of the covenant. This is not to use non-human animals as a means to an end, rather to ensure all partners are given the opportunity to flourish as "fellow creatures that can glorify God"[262] – a key stipulation of Clough's ethics. The difficulty arises when one considers the status of creatures that we would presume existed prior to the covenant, such as dinosaurs. Biblically, there is support for the claim that God shows interest in all creatures that have ever lived.

[262]D. Clough, *On Animals Volume II: Theological Ethics,* London: Bloomsbury Press (2019), pg. 23.

Psalm 104 demonstrates God's love for a plethora of creatures, whilst Job 38-41 illustrates God's care and concern for all animals, from the timid doe to the ferocious Leviathan. Although the possibility of their de-extinction at present is remote, tremendous advances in biotechnology might yet find a way. It may be difficult to argue that the dinosaurs are partners due to the fact that they preceded the 'signatories' of the covenant by 66 million years. However, what could be said of any dinosaur species restored by human effort? By extension of the human signature, restored dinosaurs would have to considered amongst the living creatures of the "generations to come" referenced in Genesis 9:12. Moreover, once restored, they would count amongst the contemporary partners to humans. We would have an obligation to ensure their flourishing and so this would seem to undermine any projects which intended to restore such creatures only for experimentation and research. Their use for entertainment would also be condemned by Clough's ethics as this would be deemed unnecessary as "humans can amuse themselves in ways other than by making use of other animals."[263] And yet, dreams of a 'Jurassic Park' would not necessarily be dashed. In line with Clough's view of the place of zoos and nature reserves, such an endeavour could provide the safe and secure environment in which such covenant partners could flourish.

Clough's ethics essentially argue that neighbourly relations can transcend the species boundary. This clearly means that any creature restored should be treated as a neighbour and be recipient of the kindness and compassion duly warranted. The label of 'neighbour', however, becomes more difficult to apply to extinct creatures themselves. For some creatures, particularly those more

[263] Ibid, pg. 161.

recently annihilated, the ‘gap in the neighbourhood’ still exists. To return to the example of the thylacine, when one considers that the creature was wiped out less than a century ago, it seems reasonable to assume that its habitat and environment remain somewhat intact. Were we to release a thylacine into the Tasmanian wilderness today, then its place in the food chain along with its prey and the habitat needed for it to survive and flourish, still exist. With this as the case, the call to restore the neighbourhood becomes even stronger. However, the extent to which we can refer to the long extinct dinosaurs as our ‘neighbours’, and thus the demand for their de-extinction, is more tenuous, especially as they never been contemporaries of our species. And yet, when we consider the answer given by Christ in Luke 10, to the question “who is my neighbour?” his response is that the neighbour is the one who had mercy and showed care and compassion. In that spirit, it would seem that the label of ‘neighbour’ does not necessarily refer to the one in need, but that one who offers help, the one who is ‘neighbourly’. To that end, human beings could conceivably become the neighbour of dinosaurs, in that by restoring them to the earth we may offer them the chance to flourish once again.

Bereft of life and thus the opportunity to flourish on earth, extinct creatures could, in one respect, be said to be amongst the poor. And yet, one could also consider that their demise has set them free from the turmoil that led to their annihilation. Indeed, if non-human animals are able to participate in the salvation offered by God, then it is conceivable that they are, or will be, redeemed and so are no longer in need of an earthly arena for flourishment and growth. However, in the case of restored creatures, the considerations would need to shift substantially as their former ‘arena of flourishing’ may have long since passed. In many cases,

the de-extinct creature may find itself homeless due to the destruction of its habitat. The Global Forest Watch notes such a scenario for the Formosan Clouded Leopard.[264] If it were restored today, then it would find its arboreal home replaced by an agricultural landscape. At a loss in an alien environment, it would also be fair to say that restored creatures may well need our assistance in order to survive, let alone flourish in an environment that may be markedly different from the one its ancestors inhabited. This poverty of homelessness and unreadiness for life in a biosphere far removed from the one its species originally inhabited would almost certainly create a new class of poor in the non-human animal world. Indeed, rather than alleviating suffering, de-extinction could engineer a new kind of poverty.

This raises further questions such as whether the de-extinct poor should take precedence over the human and the non-human animal poor that already exist? Would not the millions of pounds of investment required be better spent on combating the poverty already prevalent in our world? These are question that I will address later in the project as I formulate my own theological ethics of de-extinction. For now, it seems that to some extent, extinct and restored species could be said to qualify as the poor. For the former, their demise, especially those who suffered at the hands of human beings, certainly warrant some consideration as the needy with the possible advent of de-extinction technology. Regarding the latter, restored species as homeless and alien beings would almost certainly be regarded as the poor in light of Clough's thinking. They would undoubtedly require our help to encourage their flourishing. However, the fact that de-extinction could

[264] S. Ruiz, 'Four Species That Went Extinct This Century Because of Forest Loss'. Published on 31/01/2020. Available at: https://www.globalforestwatch.org/blog/data-and-research/four-species-that-went-extinct-this-century-because-of-forest-loss/ [Accessed 04/08/2021].

be accused of creating a new class of poor in the form of restored creatures, leads me to believe that Clough's ethics would reject such technologies on the basis that it engineers further destitution, which is an unnecessary burden to place upon a world already rife with human and non-human animal poverty.

4.1.3 Summary

Clough's theological ethics provides us with a pragmatic approach to dealing with the issues raised by de-extinction technology. By considering extinct and de-extinct creatures under the categories of covenant partners, neighbours and the poor, I have been able to establish some parameters grounded in contemporary Protestant moral thought. I have argued that de-extinct creatures could be considered covenant partners as the fruits of human ingenuity and as one of the future generations of non-human animal kind mentioned in the Noahide covenant. Second, de-extinct creatures should be considered our 'neighbours'. This is rooted in the cross-species relations highlighted by Clough. Furthermore, such beings warrant the neighbourly status as they are creatures in need. Likewise, our role as neighbours to all life on earth suggests that we have an obligation to assist those in need. De-extinction technology provides us with the tools necessary for us to show kindness and compassion towards lost species, especially those whose extermination was at our own hand. Finally, in the strictest definition of the 'poor' as provided by Clough, de-extinct creatures would warrant such a label. However, the consequences of de-extinction on the already existent poor, coupled with the fact that the technology could be seen as originating a new form of poverty, pose significant problems. In this regard, the fact that we could describe de-extinct creatures as the poor is an indicator that they should not be

restored. An important lesson can be drawn from the application of Clough's theological ethics: whilst it may be correct to categorise extinct and de-extinct creatures as 'covenant partners', 'neighbours' and 'the poor', the consequences of pursuing the technology are significant. Such titles confer respect on these lost species, and teach us that we should deeply lament their loss as close members of our biosphere. By looking upon them as the poor we can be moved to help conserve threatened species in our world today.

4.1.4 A Contemporary Catholic Approach: Deane-Drummond

At the cutting edge of contemporary Catholic thought on attitudes towards environmental matters, Celia Deane-Drummond's *Theological Ethics through a Multispecies Lens* presents an intriguing toolkit with which to explore de-extinction technologies. Currently Director of the Laudato Si' Research Institute, Deane-Drummond's background in both systematic theology and plant physiology provides her with the expertise to guide us through the labyrinth of contemporary research in the evolutionary sciences and their implications for traditional theological approaches to the environment. This section will evaluate Deane-Drummond's development of a multispecies lens through her argument for the evolution of three virtues in particular: justice, love and wisdom. These three virtues are identified as the key roads to be taken in order to offer an answer to the question, 'where does morality come from?'[265] For Deane-Drummond, the answer is to be found in the co-evolution of these virtues, as will be outlined

[265] C. Deane-Drummond, *Theological Ethics through a Multispecies Lens: The Evolution of Wisdom, Volume One*, Oxford: Oxford University Press (2019), p. 71.

shortly. From here, Deane-Drummond seeks to establish what ethics should look like in a multispecies context. Her key contention is that by widening the moral sphere to include other animals, we should therefore extend the application of the virtues, to better situate the human life in the broader multispecies framework developed by her work.[266] After assessing Deane-Drummond's application of multispecies theological ethics, I will then seek to apply her approach to the issues raised by de-extinction, focusing on how the virtues may inform decision making in this arena.

Before proceeding it would be worth sharing Deane-Drummond's definition and rationale for the term 'multispecies.' Deane-Drummond prefers the use of 'multispecies' over other terms such as 'interspecies', as she feels this best reminds us of "the embedded complexity of our relationship with other beings" and "myriads of symbiotic relationships."[267] Heavily influenced by her extensive previous work on Wisdom, Deane-Drummond defines the practical concern of the multispecies approach as an effort "to look at the complexity of relationships between things and take that into account in the discernment process."[268]

Deane-Drummond sets the scene for a theological ethics grounded in contemporary biological thought. Her intention is to moves away from the classic understanding of Standard Evolutionary Theory and instead draw upon the idea of reciprocity inherent in theories such as Niche Construction and Extended Evolutionary Synthesis.[269] This, in turn, will allow Deane-Drummond to establish

[266] Ibid, pp. 250-251
[267] Ibid, p. 1.
[268] Ibid, p. 5.
[269] Ibid, p. 21.

a naturalistic virtue ethics. This section will briefly examine the key arguments for the evolution of three virtues in particular: justice, love and wisdom.

4.1.5 Justice

The origin of justice is a critical foundation for Deane-Drummond's theological ethics, as it not only helps to explain where such thinking comes from, but also to construe what justice should look like with and towards other species.[270] Much as we have already seen in the work of Clough, Deane-Drummond sees no reason to accept an ontological boundary between species, and thus deems it appropriate to identify behaviour akin to justice in non-human animals.[271] To make the case, a variety of examples are used from across the animal kingdom that seem to illustrate justice in action amongst other species. She notes an aversion to inequity in species as diverse as chimpanzees and beetles.[272] As such, co-operation with fairer members of the group would increase over the long term.[273] For Deane-Drummond, our concept of 'fairness' may well be rooted in the baser instinct of inequity aversion, as a "*behavioural* prerequisite". Justice is distinguished as a more matured form of fairness. Infants certainly have a sense of fairness, but this is centred on themselves. Justice requires a maturity that considers others.[274] So far, we have seen how justice may have evolved from simpler notions of fairness and Deane-Drummond does well to draw on a wealth of scientific case studies to build her argument. But how are we to connect the two?

[270] Ibid, p. 45.
[271] Ibid, p. 46.
[272] Ibid, p. 52.
[273] Ibid.
[274] Ibid, p. 57.

The idea of 'Wild Justice' is explored with particular reference to the fascinating work of Baynes-Rock. His ethnographic studies of the relationships between hyenas, in the wild, and human societies have profound implications for Deane-Drummond's work. Her precis[275] of his work provides examples of not only a reported sense of revenge for the killing of hyenas in the community of Harar, but also the breakdown of the species boundary between Baynes-Rock and one hyena in particular. This occurred to such a degree as to allow him not only engage in play with the wild animal, but even to be deliberately welcomed into the hyenas' den. The breakdown of traditional species boundaries raises important questions about how our inclusion of others in our world threatens to change it.[276] The use of ethnographic studies adds particular weight to Deane-Drummond's case here. By using such a 'wild' example, the argument is able to circumvent the pitfalls of laboratory conditions, which may have predisposed subjects to behave in ways counter to their natural inclinations.

Ever in danger of straying from theology, Deane-Drummond briefly reflects on whether or not Christian theology understands justice as being confined to humans alone. She notes that the wisdom literature does not shy away from assigning moral status to animals and recognizing some degree of morality.[277] It is noted that the close proximity between humans and domesticated animals would certainly have influenced this. The poetic and didactic nature of wisdom literature such as Proverbs and Job needs to be borne in mind. However, as Katherine Dell points out, the persistent use of simile and metaphor between the

[275] Ibid, pp. 60-65.
[276] Ibid, p. 70.
[277] Ibid, p. 66.

human and animal world highlight their interchangeability.[278] This may lend credence to Deane-Drummond's argument as it indicates that we can learn from other animals as to inform our own sense of fairness and justice. Dell notes that Deane-Drummond has previously commented on the wise creatures of Proverbs 30, stating that "by paying close attention to the quiet witness of such creatures… human beings learn of the possibility of a different form of society."[279] However, the study of the evolution of justice cannot be undertaken in isolation and so Deane-Drummond turns to Love and Wisdom, to further underpin the theological elements of her ethics

4.1.6 Love

If Deane-Drummond is correct in arguing that compassion and love have indeed evolved, then the compulsion to show such empathy and care for other creatures may provide an impetus for approving de-extinction technologies. That said, such compassion would need to be counselled by wisdom, to which I will turn shortly.

Compelling evidence for the evolution of love and compassion can be found in the work of Penny Spikins, which Deane-Drummond utilizes to help build her case. One such example is that of remains of a *homo ergaster*, an archaic species of human dating back to the early Pleistocene. The remains of individual KNM-ER 1808 displayed symptoms of hypervitaminosis A, an affliction with an array of symptoms ranging from blurred vision to a loss of muscular coordination. The progress of such a disease would have been slow and so to have survived long enough to manifest such complex symptoms as shown by the skeleton,

[278] K. Dell, 'The Significance of the Wisdom Tradition in the Ecological Debate' in *Ecological Hermeneutics: Biblical, Historical and Theological Perspectives* eds. D. G. Horrell, C. Hunt, C. Southgate and F. Stavrakopoulou, pp. 56-69, London: T & T Clark International (2010), p. 61.
[279] Ibid, p. 62.

implies that long term care from others would have been necessary.[280] As intriguing as this example (and the like) may be, the conclusions drawn are extremely tenuous, a point acknowledged by Deane-Drummond.[281] While such individuals may have warranted care, such devotion may have been shown by parents, children or siblings. Thus, it may simply be illustrative of familial compassion, which I daresay is different from the broader compassion for one's fellow human, for which Deane-Drummond is looking. Such paternal or fraternal care can be seen in many species, the extent to which Spikins's example differs from the baser instinct to care for one's young is not convincingly made clear. Less speculative evidence is required if Deane-Drummond's argument for the evolution of compassion is to hold water.

Despite the shaky archaeological evidence on which it stands, Deane-Drummond shows support for Spikins' proposed understanding of the evolution of compassion. Essentially, Spikins argues that initial fleeting incidents of compassion would be evident in the first stage of the development of compassion. In the second, more sustained investment in other members of the same species would emerge. At the third stage, such investments would become more intentional, longer-term and more prevalent. Finally, such compassion is extended towards more remote others.[282] If this theory is correct, then it lends a considerable amount of weight to Deane-Drummond's argument for a multispecies approach to theological ethics. Not only would it explain how human beings have developed the capacity for such a complex emotion, it would also

[280] C. Deane-Drummond, *Theological Ethics through a Multispecies Lens: The Evolution of Wisdom, Volume One*, Oxford: Oxford University Press (2019), pp. 84 – 85.
[281] Ibid, p. 84.
[282] Ibid, p. 86.

point to other animals sharing in this ability (to a degree), as their capacity could be identified with one of the four stages outlined above.

The intensity of the compassion we can feel towards other animals, as well as the certitude of our own convictions that such love is shown to us in return is a powerful argument from Deane-Drummond. The profound nature of these relationships perhaps shows more clearly than the archaeological evidence above, that compassion, empathy and love are virtues that manifest on so much more than a limited level. Moreover, grief has been identified in species as varied as elephants, cats and even across species boundaries and is tenderly explored in Barbara King's *How Animals Grieve.*[283] In fact, such evidence may well point to the evolution of love, as something displayed by species on a continuum. If this is the case, then these reciprocated relations are compelling reasons for viewing theological ethics through a multispecies lens. Little theological consideration is given by Deane-Drummond here, largely as she sees love and compassion as needing the influence of practical wisdom, the virtue most deeply rooted in her theology, to flourish.

4.1.7 Wisdom

Having traced the possible evolution of both justice and love, Deane-Drummond considers that such virtues could only have evolved as a result of the prior emergence of wisdom. Such wisdom is understood as the ability to make complex decisions in social situations; deciding between competing goods in accordance with the community's norms of the meaning of justice.[284] In a theological sense,

[283] B.J. King, *How Animals Grieve,* Chicago: Chicago University Press (2014).
[284] C. Deane-Drummond, *Theological Ethics through a Multispecies Lens: The Evolution of Wisdom, Volume One*, Oxford: Oxford University Press (2019), p. 95.

'practical wisdom' is akin to prudence,[285] a key feature of the theological vocation of humans that I established earlier in this project. Deane-Drummond is reluctant to identify this to the same degree in other animals, but ties the progressive evolution of wisdom to the fuller emergence of love and justice, which in humans, is tempered by a more fully formed practical wisdom. However, it could be argued that predators certainly show some deliberation when hunting. In a fascinating essay, Helen Steward draws on studies of Portia jumping spiders in Australia:

Wilcox and Jackson describe an occasion on which, having tried and failed to tempt a second spider out of the centre of its web by means of various strategies, Portia *disappears from view for about an hour and finally reappears on a rock projection, high above the web of the target prey spider. She then lets herself down from the rock projection, and swings in on a thread to eat her prey. What seems remarkable about this account of* Portia's *behaviour is the potential it suggests for forward planning … for the maintenance of intention over a significant amount of time.*[286]

Steward's argument lends weight to the idea of animal agency. The deliberation and foresight are reflective of prudence, albeit much further along the continuum from human capabilities in this area. Examples, like that of the portia spider, coupled with the array of instances of collective deliberation referenced by Deane-Drummond certainly show that other species are capable of some form of

[285] Ibid, p. 97.
[286] H. Steward, 'Do Animals Have Free Will?' *The Philosophers' Magazine*. 68 (2015), pp. 43-48. Available at https://www.philosophersmag.com/essays/38-do-animals-have-free-will [Accessed 11/08/2021]

deliberation and wisdom, though, as Deane-Drummond admits, this is not necessarily "*precisely the same* as that found in human societies."[287]

Armed with such evidence, Deane-Drummond makes extensive use of the writing of Hans Jonas to paint a picture of the possible course of wisdom's evolution. The ability to imagine alternatives is a key step along the path to emergence of wisdom. And yet, imagination, in the human sense, has very limited immediate utility. Initially, for the 'pictoral man' (Jonas's term), imagination was nothing more than an indulgence. This is superbly illustrated by the 'Lion Man' carving discovered in Germany in 1939. The statue, carved from mammoth tusk, would likely have taken up to 400 hours to complete and served no practical use in the hunter-gather society of our ancestors.[288] For Deane-Drummond, if image making is a key component of human memory and foresight, then it follows that it must be a key ingredient for wisdom as well. From here, she endeavours to link her evolutionary understanding with the theology of Aquinas. In the Thomist tradition, wisdom and love, expressed as charity, are inextricably bound as "Love drives at future orientated prudential acts".[289] In other words, if the human *telos* is striving towards God, then prudence is the essential deliberative act of seeking that end. Tied to foresight as a key prerequisite for prudence, memory also has a significant role to play. In particular, recollection, which relies on the use of images and words, in a type of enquiry, was essential to preserving the "memory of God". For Aquinas, this was a major distinction between the capacities for prudence between humans and animals.[290] The retention of memories would

[287] C. Deane-Drummond, *Theological Ethics through a Multispecies Lens: The Evolution of Wisdom, Volume One,* Oxford: Oxford University Press (2019), p. 101.
[288] N. MacGregor, *Living with the Gods*, London: Penguin Books (2019) pp. 3-13.
[289] C. Deane-Drummond*, Theological Ethics through a Multispecies Lens: The Evolution of Wisdom, Volume One,* Oxford: Oxford University Press (2019), p. 113.
[290] Ibid, p. 116.

therefore be a crucial precursor to foresight, as humans learned to draw on past experiences, deliberate on them, and act in a way which echoed a sense of divine providence.[291]

The difficulty with Deane-Drummond's understanding of the evidence of wisdom is that it seems to link God rather tenuously into the process. Daniel Dennett has long argued for a similar development of imagination as the precursor of choice. Dennett shows how the need to avoid harms, when mixed with imagination, would have allowed human beings to foresee potential outcomes and so take steps to avoid danger.[292] My concern with Deane-Drummond's argument is that, despite her meticulous research and fascinating collection of intriguing and insightful case studies, her connections between the examples given and the theological argument that she develops are sometimes fragile. Links made to the work of Aquinas and the role of God are, perhaps, not as interwoven as they need to be in order to produce a more convincing case for an evolution of virtues guided by a divine hand.

4.1.8 What do Theological Ethics look like through a Multi-species Lens?

In practice, Deane-Drummond's theological ethics does not provide a normative ethic by with which to assess moral quandaries. Rather, her work has sought to build a theological naturalism, embedded in the scientific evidence for the evolution of the Virtues. By fostering the virtues of love, justice and wisdom we are able to discern the correct courses of action in our relations with members of the multispecies community.

[291] Ibid, p. 118.
[292] D. Dennett, *Freedom Evolves*, London: Penguin Books (2003)

A key move has been to widen the moral sphere to be inclusive of non-human animals. Having rejecting 'Rights' based approaches as simply extending the domain of humans, Deane-Drummond proposes a multispecies approach which focuses on the deep roots of the core virtues. The evolution of wisdom, for example, is inclusive, in that it stresses a relational approach that exemplifies reason and rationality. It is "holistic, inclusive and open to the transcendent".[293] Moreover, wisdom encourages a deeper appreciation for the special importance of other animals. This is so much more significant when one considers our shared evolutionary journey as it points to why animals are important.[294]

Deane-Drummond is wise to not fully commit to the templates hinted at by the examples of wild justice referenced in her work. Their resonance may indicate the primacy of justice, love and wisdom, but these need to be tempered by the human capacity for forethought, foresight and our ability to deliberate. Her avoidance of Hume's 'Is/Ought Gap' here illustrates the precariousness of her ethics; just because actions may appear just or compassionate in the wild does not mean that they ought to act as a definitive moral guide. For example, it could be assumed that as human beings possess canine teeth which are 'designed' to tear flesh, then we *ought* to eat other animals. However, a growing minority would find this logic not only morally repugnant, but also absurd. As such, it is difficult for Deane-Drummond to offer a clear picture of how her theological ethics works in practice.

[293] C. Deane-Drummond*, Theological Ethics through a Multispecies Lens: The Evolution of Wisdom, Volume One,* Oxford: Oxford University Press (2019), p. 249.
[294] Ibid, p. 250.

Two very brief instances of what theological ethics might look like through a multispecies lens are offered by Deane-Drummond. The first considers agricultural practices and vegetarianism. A multispecies approach to concentrated rearing and feeding of farm animals would highlight the 'shared space' between humans and domestic animals and oppose any cruelty therein, motivated by compassion for our multispecies neighbours. A desire for justice would also call out any practices that exploit workers or places them in working conditions which are detrimental to their health and wellbeing.[295] The exploitation of Eastern European workers in the UK, where labourers are expected to work 15-hour days, for less than the minimum wage as well as being forced to live in unsanitary and crowded accommodation,[296] illustrates the point. It is important to note that Deane-Drummond highlights consideration for other human beings within the multispecies community, a point to which I shall return in my application of her ethics to de-extinction. With regards to vegetarianism, Deane-Drummond is rather more reticent. She agrees that "the multiple effects of overconsumption on habitats, on climate change and on those living in poverty need to be taken into account." However, her omission of animal suffering in the multispecies community as a result of the consumption of meat is conspicuous. For Deane-Drummond, excessive consumption does prompt an obligation to "drastically cut their meat consumption and to avoid any practices that are indifferent to animal cruelty."[297] I consider that this assessment does not do justice to the scope and interconnectedness promoted by a multispecies approach. To be sure, non-human animals within the community will predate on one another, and any

[295] Ibid, p. 252.
[296] P. Case, 'Shocking extent of modern slavery in agriculture revealed', Farmer's Weekly (2018), available at: https://www.fwi.co.uk/news/shocking-extent-of-modern-slavery-in-agriculture-revealed [Accessed 19/08/2021]
[297] C. Deane-Drummond, *Theological Ethics through a Multispecies Lens: The Evolution of Wisdom, Volume One,* Oxford: Oxford University Press (2019), p. 253.

prohibition of such behaviour would be misguided. However, for humans fortunate enough to not be afflicted by starvation and depravation and who are to be guided by the virtues of justice, love and wisdom, I find it hard to fathom how meat-eating can be justified in a multispecies community. Compassion would not tolerate male chicks being ground up in macerators, moments after birth. Justice is not be served when around 100 million sharks and rays are killed as a result of fishing and bycatch each year.[298] And certainly, wisdom would counsel, in the face of climate change, the exploitation of workers, and considering that human beings can live healthily as herbivores, that meat-eating is far from a sagacious option. My discussion here raises a key fault-line in Deane-Drummond's theological ethics: we both arrived at different conclusions despite taking the same ethical approach.

The second issue concerns the debate on conservation ethics. Two approaches are identified as 'Preservationist' (those who aim to protect the biosphere from any interference) and 'Conservationists' (who argue for an increased management of the wild).[299] The use of de-extinction technology would certainly seem to fall under the latter. Deane-Drummond offers no real solution to the tensions existent in the debate. Instead, she notes that a multispecies approach would endeavour to take into account the implications for the whole community and not encourage the pitting of one side of the debate against the other.[300] The solution must be one that benefits the whole system, taking into account both

[298] 'Overfishing and bycatch of European sharks and rays put ocean health in jeopardy', WWF website (Published 08/04/2021), available at: https://www.wwf.eu/?2613441/Overfishing-and-bycatch-of-European-sharks-and-rays-put-ocean-health-in-jeopardy [Accessed 20/08/2021].
[299] C. Deane-Drummond, *Theological Ethics through a Multispecies Lens: The Evolution of Wisdom, Volume One*, Oxford: Oxford University Press (2019), p. 254.
[300] Ibid, p. 255.

human and animal concerns.[301] Clearly Deane-Drummond is advocating prudent discernment on both sides of the debate, beyond that no substantial guidance is provided for dealing with the case study she presents, that of the one-horned rhino, whose existence threatened that of the local indigenous population. Holmes Rolston III controversially advocated the preservation of the species, declaring that "if we always put humans first, there will be no rhinos at all."[302] Disappointingly, the multispecies approach leaves us with no clear plan of action, simply more discourse. Whether or not Deane-Drummond's theological ethics can inform the issues raised by de-extinction technology will be the focus of the final section of this dialogue with her work.

4.1.9 De-extinction Technology through a Multi-species Lens

As this project has already set out, the use of de-extinction technology would have wide ranging implications to both human and other animal species. As such, the application of a multispecies derived ethic has clear strengths, in that in encourages us to consider not only the restored species, but also other creatures of the biosphere as well as the human impact. This section will consider how the virtues of Love, Justice and Wisdom can inform the debate.

Any attempt to restore lost creatures must be motivated by love and compassion if it is to complement life in a multispecies world. At face value, the desire to provide long lost species with a 'second chance' at existence seems laudable. The video footage of the last Tasmanian tiger, cited earlier in this project, moves

[301] Ibid.
[302] H. Rolston III, 'Feeding People Versus Saving Nature' in *Environmental Ethics,* eds. A Light and H. Rolston III, pp. 451-462, Oxford: Blackwell Publishing (2003), p. 459.

all but the coldest hearts. Hunted to extinction by humans, its restoration would certainly be an example of charitable love made possible by the advent of de-extinction technology. The restoration of creatures wiped out by cataclysmic events could also constitute a loving act. Destroyed through no fault of their own, developments in bioengineering could enable their species to not only exist once again, but flourish. However, the use of such technologies will come at a cost. Deane-Drummond, as we have seen, would oppose any actions that may be deemed as cruel towards innocent beings (though, as I have pointed out, there seems to be an inconsistency here with regards to meat-eating). The research and experimentation required to facilitate de-extinction will surely involve collateral damage. One such case in point is that of the cloned offspring of Celia the Pyrenees Ibex. The kid removed from the uterus of its surrogate nanny lived for only a few minutes. These moments however, evoked a horror reminiscent of Victor Frankenstein's ill-fated experiment. The post-mortem found that the respiratory distress that had claimed the life of the creature was caused by the presence of a third lung.[303] The research of another scientist, Arkhat Abzhanov, raises similar issues. His Harvard laboratory is lined with chicken eggs. He intends to manipulate chickens to a point where they resemble their ancient ancestors – the dinosaurs. His work is fraught with uncertainty and is perhaps speculative at best. Rather than modifying genes, Abzhanov intends to insert a chemical into the foetuses which shuts down aspects of its development. As such he has been able to produce foetuses whose skulls resemble crocodiles more than those of chickens.[304] His endeavours rely on the exploitation of creatures, with no guarantee of success. Can this really be considered an act of love?

[303] T. Kornfeldt, *The Re-Origin of Species,* London: Scribe Press (2018), p. 76.
[304] Ibid, p. 181.

Perhaps it would be more accurate to see this as an act of self-love on the part of humanity, awed by our progress, unlamenting of the cost to other members of the multispecies community. It would also seem difficult to justify such suffering in the pursuit of a technology which intends to reverse what has been in many instances, the natural process of extinction. Arguably, even anthropogenic extinction could be said to be 'natural'. Humans are a part of the natural world, in some instances our 'over-predation' has eradicated species. However, de-extinction technology, if motivated by love, could be understood to remedy the mistakes of our ancestors and to show compassion to their victims. Nevertheless, the scope of such compassion would be limited to the restored species as well as acting as a masseur to the human conscience, thus not really demonstrating compassion to the wider multispecies community as intended by Deane-Drummond's theological ethics.

Connected to the compassion shown to creatures driven extinct by humans is the sense of justice that is offered by de-extinction. It does seem fair and admirable to restore to existence those creatures annihilated by our actions in the past. From mammoths to the thick-tailed chubb, a plethora of creatures could demand justice. Such justice, may however be superficial. A truly multispecies approach cannot tend simply to the needs of the wronged species. True justice would prompt us to consider several key questions: First, which species is most deserving of restoration? Selection based on the charisma of creatures is unlikely to be considered a just metric. Perhaps, those species which could offer something to the multispecies community should be prioritised, but this again would be difficult to quantify. Second, is justice really being served to existent creatures in the multispecies community? Phenomenal amounts of time, money

and effort would need to be expended on a process that may not even succeed. All the while, species around the world desperately require the attention and resources of conservation efforts. Moreover, the re-introduction of extinct species could have a detrimental effect on wildlife (I will be examining this further, later in the project). Finally, is justice really being served for the poor in the human community? Similar to the demands for conservation, it would seem problematic to proceed with de-extinction technology when millions of humans face starvation and deprivation, evils that could certainly be dramatically alleviated, if not eradicated, by the vast sums of money that would elsewise by spent on pursuing unnecessary technologies. That said, as alluded to earlier, Holmes Rolston III has argued that it is just to put nature before humans if certain conditions are met. If human beings continue to reproduce at current rates despite the risks of increased poverty; if they continue to show a preference for other worthwhile things (such as university education) over poverty; and if the just redistribution of wealth is refused, then it would seem acceptable to put nature first.[305] Holmes Rolston's view may seem harsh, even unjust to some, but when one takes in account the broader multispecies community, the interests of other species are no longer secondary.

In a way, the role of Wisdom in dealing with moral issues in a multispecies community has been illustrated above with the virtues of love and justice. Neither, in isolation, can determine the correct course of action. Instead, as I have attempted to show above, both are informed by Wisdom in the process of considering how to show love to fellow creatures and how best to serve justice.

[305] H. Rolston III, 'Feeding People Versus Saving Nature' in *Environmental Ethics*, eds. A Light and H. Rolston III, pp. 451-462, Oxford: Blackwell Publishing (2003), pp. 460-62.

Wisdom in a multispecies community demands prudence and deliberation, this is particularly heartening for my project as this was very much the cornerstone for my earlier discussion of the human vocation. To my mind, Wisdom informs the de-extinction debate in two ways. In the first instance it is essential that, presented with the enormous power offered by de-extinction technologies, dialogue and discussion is promoted. The second is that Wisdom and the prudent deliberation that results, enables us to say 'no'. If justice is not served, nor love made manifest, then Practical Wisdom can help in the justification of decisions that may not prove popular with the human members of the multispecies community, whilst defending the interests of the oppressed and voiceless therein. De-extinction technologies have the potential to provide us with a tremendous amount of responsibility, truly a matter of life and death. Wisdom counsels prudence, which in turn demands deliberation. This cannot be done in isolation and the multispecies ethic calls for a multi-faceted discourse providing voice not just for scientists and researchers, but governments, the poor and even non-human animals themselves. The voice of the latter is to be heard by listening to those who petition on their behalf and also by paying closer attention to nature. This would seem the obvious conclusion if we are to follow Deane-Drummond's tentative expansion of 'personhood' to include non-human members of the multispecies community. As noted in her work, "if personhood is about a way of being in the world that comes to birth through our relationships, then personhood and community are intricately bound up with each other."[306] The 'voice' of de-extinct creatures, as new members of the community, would also have to be heard. This would largely concern questions about the place of such creatures.

[306] C. Deane-Drummond, *Theological Ethics through a Multispecies Lens: The Evolution of Wisdom, Volume One,* Oxford: Oxford University Press (2019), p. 236.

Should they be reintroduced to the wild? Are they best kept in zoos or on reserves? The role of Wisdom is critical to deliberating on these questions. For all this, Deane-Drummond's ethic and virtue of Wisdom cannot provide us with the clear answer that we are looking for, but it can certainly help to decipher the way ahead and ensure that all interested parties are considered as equal members of the multispecies community.

4.1.10 Summary

In summary, it would seem that the considerations for the welfare of wider multispecies community make the justification of the use of de-extinction technologies rather difficult. The potential suffering inflicted on creatures needed for research, as well as the likelihood of malformation and pain inflicted on specimens, would raise concerns for a project that could be considered vainglorious, and not in the interests of the wider multispecies community. Such projects would not be in the spirit of compassion and love which should guide our moral decision making in a multispecies community. Second, the virtue of justice also demands consideration of the implications for the wider multispecies community. Deane-Drummond's use of evidence for fairness and aversions to inequity amongst other creatures should encourage us to consider whether justice is best served by restoring lost creatures. Although, on the one hand the return of creatures driven extinct by the hand of human beings may seem just, it is important to consider the wider ramifications. The financial cost, coupled with the decades of ongoing research necessary raise significant moral problems concerning the allocation of such resources. A truly just multispecies approach would need to seriously consider the needs of humans and other animals who face deprivation and, in the case of the latter especially, extinction. Informing both

of these approaches, the virtue of wisdom demands careful, considered deliberation. The fact that the two preceding virtues raise such crucial challenges to de-extinction suggest that it would be ill-advised to proceed with such technologies without considering the far-reaching consequences upon the multispecies community. In light of the tremendous challenges facing our planet: the poverty afflicting millions of people around the world; the loss of habitats critical to a myriad of species; and the imminent threat of extinction to members of our community globally. It is tempting to conclude that the advancement of de-extinction technologies should at least be put on hold until the flames that threaten to engulf our multispecies neighbourhood have been extinguished.

4.1.11 A Contemporary Reformed Approach: Gustafson

By orientating Christian theology and morality around God in a bid to distance itself from more anthropocentric perspectives of the past, theocentric ethics endeavours to locate humans in their proper place. It further intends to develop a clearer understanding of humans' vocation and the manner in which they should relate to the rest of the cosmos. The answer to this puzzle and indeed the core of theocentric ethics is that "we are to relate ourselves and all things in a manner appropriate to their relations to God."[307] One of, if not the most important contributor to the development of theocentrism was the American theological ethicist James Gustafson (1925 – 2021). Over his long career, during which he held posts at Yale Divinity School and the University of Chicago, Gustafson set out a body of work which identified the theological grounding for theocentrism as well as its implications for applied ethics, particularly in areas related to the

[307] J. Gustafson, *Ethics from a Theocentric Perspective, Volume 1: Theology & Ethics*, Chicago: The University Press of Chicago (1981), p. 327.

intersection of science and religion. James Gustafson's exquisitely written book, *A Sense of the Divine*, sets out to argue for a 'theocentric' perspective when dealing with the plethora of issues plaguing environmental ethics. Opening his work with a variety of ways in which humans interact with nature – from the sensuous squelching of mud between one's toes, to the awe and wonder sparked by a sublime landscape – Gustafson surmises that "we meet God through nature".[308] By reflecting on such encounters with nature we can begin to comprehend God as the one who brings all life into being, sustains it and, perhaps uncomfortably for many of the theologians I have hereto discussed, the one who threatens and limits all life as well. His theology is more fully set out in his two-volume work on Theology and Ethics, upon much of what follows is based.

This final section of my dialogue with Christian ethicists traces the development of Gustafson's theocentric ethics. I will examine how Gustafson develops traditional strands of the Reformed Tradition in order to bolster the tradition in the face of contemporary issues and illustrate the key markers of the theocentric moral life. His application of how theocentric ethics ought to respond to issues, particularly those posed by scientific and technological advancements, will then be analysed. Finally, drawing on the lessons learnt from Gustafson's application, I will assess how his theocentric lens could inform some of the problems posed by de-extinction technology.

[308] J. Gustafson, *A Sense of the Divine: The Natural Environment from a Theocentric Perspective*, Cleveland: The Pilgrim Press (1994), p. 14.

4.1.12 The Theocentric Approach

Gustafson argues that in culture, religion, theology and ethics, "man […] has become the measure of all things; all things have been put in the service of man." Indeed, man has also become the "measurer of all things."[309] Whether through the perceived attention of the deity, or the moral concern for man above all others, Gustafson believes that anthropocentrism has diverted humans from their true vocation and clouded their ethics with a penchant for self-preservation and fulfillment, at the expense of whatever may be damaged or will suffer as a result.

In order to provide his outlook with theological gravitas, Gustafson draws on the Reformed tradition, identifying his work as a "Reformed theology of sorts."[310] In particular he draws on three key elements of the tradition: a sense of a powerful other; the centrality of piety, understood as reverence and awe; and an understanding of human life that requires it to be ordered in relation to what can be discerned about the purposes of God.[311] These tenets are tempered by the problems he sees within the tradition, problems which he seeks to solve through the development of a theocentric worldview. For instance, Calvin's predestination is criticized for being driven by a concern for human beings and their election alone.[312] Barth's declaration that "God is for man" is reconceptualized in that the opportunities for flourishing are dependent on forces beyond our control. [313] Moreover, Gustafson is able to relate their concerns to the place of man as illustrated by modern science. No longer is man the measurer of all things. We

[309] J. Gustafson, *Ethics from a Theocentric Perspective, Volume 1: Theology & Ethics*, Chicago: The University Press of Chicago (1981), p. 82.
[310] Ibid, p. 157.
[311] Ibid, p. 164.
[312] Ibid, p. 178.
[313] Ibid, p. 182.

have come from the stars, we are insignificant in the grand scope of the universe. Far from echoing Jonathan Edwards' infamous metaphor of "The God that holds you over the pit of hell, much as one holds a spider or some loathsome insect over the fire, abhors you, and is dreadfully provoked",[314] Gustafson reimages the Reformed tradition as a reminder to us of our proper place, inspired by wonder, awe and reverence for God, towards whom our relationships and projects should be orientated.

The God of theocentrism is evident through the affectivity (the ability to experience the effects of something) evoked in human beings through nature, history, culture and the self.[315] This affectivity is best understood as fostering a sense of piety in human beings as they respond to God. Moreover, through culture, history, society and nature "we feel powers sustaining and bearing down upon us".[316] This is Gustafson's interpretation of the classic Reformed doctrine of predestination. He understands these powers as the God who sustains us, orders relationships, provides the conditions of possibilities for human behaviour, and also a sense of direction to the creation.[317] Evidence from the sciences points to this worldview. Order and ordering can be perceived from the movement of the planets to the structure of DNA molecules. Moved by such observances, Gustafson contends that the presence of order and ordering evokes awe and a "natural piety, toward nature."[318] This does not mean that our destinies are fixed, rather, he suggests that the emergence of culture and imagination (as a result of the conditions for possibilities sustained by God) have enabled us to do

[314] J. Edwards, *The Works of President Edwards*, Vol. 6 New York: Burt Franklin, (1968), p. 458.
[315] J. Gustafson, *Ethics from a Theocentric Perspective, Volume 1: Theology & Ethics*, Chicago: The University Press of Chicago (1984), p. 199.
[316] Ibid, p. 229.
[317] Ibid, p. 264.
[318] Ibid, p. 262.

something about these forces bearing down upon us.[319] To further emphasise the diminutive status of human beings in the grand scheme of the cosmos, Gustafson makes a bold move to firmly establish the theocentric model. For him, humans cannot be "*telos* of the whole"[320], because, if there were divine foreknowledge of human life, then there would be no good reason for allowing their existence to come about as a result of such an "inefficient and lengthy process."[321] Such a view has been contradicted by Southgate in favour of "the only way" argument, which implies that the merciless process of evolution has been the necessary tool to propagate the world with the rich diversity of life and beauty therein.[322] Even if this were the case, I am sure that Gustafson would contend that such an understanding would still "undermine a self/species driven interest".[323] To my mind, "the only way" argument can still evoke a sense of piety in humans as they reflect on their existence and lament the losses necessary not just for their own existence, but for all other beings existent today. All life-forms on earth that are present, not just *homo sapiens,* owe their existence to the tumultuous path of evolution. Far from promoting an anthropocentric worldview, this reminds us of our creaturely nature, that we are just one amongst the millions of species that have made it to the present age and continue to struggle together against the forces bearing down upon us.

The purposes of 'Ultimate Power', he argues, can be good without necessarily being good for human beings. The divine governance of nature facilitates natural

[319] Ibid, p. 261.
[320] Ibid, p. 267.
[321] Ibid.
[322] C. Southgate, *The Groaning of Creation: God, Evolution & The Problem of Evil*, Louisville, KY: WJK Press (2008) pp. 47- 48.
[323] J. Gustafson, *Ethics from a Theocentric Perspective, Volume 1: Theology & Ethics*, Chicago: The University Press of Chicago (1981), p. 199.

disasters and disease, they are not good for anything or anyone, and are a part of a system which is not necessarily beneficial for human beings. They are in fact limiting, indicating "the relative powerlessness of human beings".[324] Here, a departure from traditional Christianity becomes more evident. Gustafson's God does not seem to ring true with orthodox beliefs in a personal God. This is further reinforced by his brief development of a theocentric Christology. Much of the value of Christ is seen to lie in his teachings, ministry and life which "incarnates theocentric piety and fidelity".[325] This echoes the more 'historical' views of the Incarnation as identified by Gregersen, in which theologians bracket out the metaphysical aspects of Jesus in order to reconstruct the message of God that Jesus was teaching.[326] Such a view is not without precedent; the works of Kierkegaard, Bultmann and Hick have all shown a move towards a Christology where the nature of Christ has become secondary to the message he taught. As hinted at above, the key issue with Gustafson's theology is the degree to which it departs from the Christian faith. Many would scoff at theocentrism as a deistic theology. And yet, Gustafson's ability to place human beings in a context befitting their natural or even cosmic state, without recourse to some of the more metaphysical elements of Christian doctrine, would certainly be palatable to many in the context of twenty-first century world-views.

The consequence of such a theology is a shift to a view of humans as sharing great similarity with other animals. For Gustafson there exists both a radical dependence of human life on the natural world as well as a radical

[324] Ibid, p. 272.
[325] Ibid, p. 276.
[326] N. Gregersen (ed.), *Incarnation: On the Scope and Depth of Christology,* Minneapolis: Fortress Press (2015) p. 14.

interdependence with other creatures.[327] The combination of these behoove a recognition of the limitations upon us human beings, and this is the cornerstone of his ethics. Furthermore, and in contrast to the writings of other thinkers assessed in this project, such as Clough, Gustafson rejects the idea that there is any part of human history where we are free of fault. There is no pre-Edenic paradise of peace and serenity. In fact, the very capacity for fault is engrained into human nature.[328] Critics such as Martin Reilly have argued that Gustafson's view of humanity is overly tragic and, had he focused as much on their triumphs, he would have to concede that there is something which sets them apart from the rest of the created order.[329] This, however, is to miss the point of theocentrism. It is not about humanity, rather we are to orientate ourselves to God in a way which involves piety, or even, to borrow a phrase from Kierkegaård, an act of 'abasement'[330] on our part. Many of the writers cited in this project have stressed the importance of recognizing the interdependence and interconnectedness of all creatures. Gustafson's theocentrism is very much embedded in this line of thought. Humanity has in no way been cast aside. Rather we are called to act with a recognition of humility, that creation is not necessarily for us and instead we are called to act in ways befitting to our station. We know that life existed long before the first *homo sapiens* emerged and will likely persist in some shape or form long after our demise. Theocentrism therefore calls for a self-examination of our true place in the universe.

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[327] J. Gustafson, *Ethics from a Theocentric Perspective, Volume 1: Theology & Ethics*, Chicago: The University Press of Chicago (1981), p. 282.
[328] Ibid, p. 294.
[329] M. Reilly, A Critical Evaluation of James M. Gustafson's Theocentrism. *Irish Theological Quarterly*. 1991;57(1):1-13. Available at https://journals.sagepub.com/doi/abs/10.1177/002114009105700101?journalCode=itqa [Accessed 08/09/2021]
[330] S. Kierkegaård, *Training in Christianity*, New York: Vintage Books (2004)

In order to develop a theological ethic grounded in this idea, Gustafson suggests the metaphor of the "contraction of the soul",[331] in which human beings have turned their focus from God and the proper relations God wishes to order. The remedy to this ailment entails some form of enlargement, an enlargement offered by a theocentric worldview. Through the embodiment of a theocentric perspective, humans are able to broaden and enlarge their vision, which aids the correction of the flaws in our rational endeavours; an enlargement of the "orders of the heart", which entails a concerted effort to turn against the sins of idolatry and desire; and a new determination to act in accordance with the corrections made.[332] Such a move could be interpreted to suggest that Gustafson is advocating an antinomian approach, reminiscent of the *pnuematikoi,* or spirit-led people of 1 Corinthians 2:13-15. Rather he insists that moral rules do still have their place, but they must be general and adaptable. This is grounded in two key reasons which further elucidate theocentric ethics: first, that human beings are not infallible and such their rules and laws may prove misguided. Second, the divine ordering is not immutable. There are constant alterations to the forces bearing down upon us in nature, society and culture which require us to be adaptable in how we choose to respond.[333]

This brief sketch of Gustafson's theology has intended to illustrate his understanding of God in relation to the humanity and the world as well as humanity's place in relation to God and the world. Armed with the principles that

[331] J. Gustafson, *Ethics from a Theocentric Perspective, Volume 1: Theology & Ethics*, Chicago: The University Press of Chicago (1984), p. 294.
[332] Ibid, p. 308.
[333] Ibid, p. 316

have emerged, I will now briefly explore how Gustafson perceives the moral life in a theocentric world.

4.1.13 The Moral Life in a Theocentric World

The crux of the moral life from a theocentric perspective is that humankind is not the centre of all things. Our task is to serve God, whose inclusive purposes can be identified in patterns of interdependence and development.[334] By reflecting on these relations, and informed by personal experience and the sciences, we are able to identify the "ways of nature" which in turn indicate the "ways of God".[335] In a way, this parallels the work of Deane-Drummond, discussed earlier in the project, which also developed a theological naturalism where the virtues manifest in nature can help to guide our relationships in a multispecies community. It could be argued that such inferences are misguided. Just as we may observe patterns of behaviour in nature that can direct our own behaviour, so can we identify behaviours which seriously call into question such inferences. For example, the consumption of meat and cannibalism are evident in other species. It does not necessarily follow that we ought to promote such behaviours in human society. How does Gustafson avoid such criticisms? In theocentric ethics the 'Is/Ought gap' (referred to above) is filled in by a process of discernment which emphasizes self-denial and restraint as manifestations of the Reformed virtue of piety.[336]

Gustafson stops short of spelling out a coda for his theocentric ethics. To do so would require the kind of knowledge of God that he believes to be beyond human

[334] J. Gustafson, *Ethics from a Theocentric Perspective, Volume 2: Ethics & Theology*, Chicago: The University Press of Chicago (1984), p. 282.
[335] Ibid, p. 8.
[336] Ibid, p. 21

comprehension.[337] It would also deny the theocentric belief that God is still ordering things, a consequence of which is that we cannot deduce moral absolutes.[338] Instead, the application of theocentric ethics is a process whereby we discern what we are being enabled and required to do as part of the interdependence of all living things and of "how we should relate ourselves and other things appropriately to their relations to God.[339] Yet again, the Christian element of theocentric ethics could be considered elusive. Unlike, the work of Clough, there is very little use of biblical support for Gustafson's ethics, rather his development of theocentrism as an evolution of the Reformed tradition is considered sufficient enough.[340]

The prioritizing of science and human experience is further reinforced in Gustafson's book, *Inter-Sections: Science, Theology & Ethics*. The moral life, especially where theology and science intersect, needs to be considered in light of a key question: "What do theologians make of […] scientific knowledge in their interpretations of how God created and is ordering life in the world?"[341] His answer to this lies in his development of theocentric ethics as *a* form of theological naturalism. If creation and God's ordering of the natural world are to be a basis for theocentric ethics, as outlined above, then it is imperative that such a world view is not dependent on myth, but emerges from the intersection of science and theology, particularly when science informs us about the way in which the world was created and ordered.[342] To that end, and as part of the theological interpretation of scientific endeavours, any notion of 'playing God' in the moral

[337] Ibid, p. 146.
[338] Ibid, p. 293.
[339] Ibid, p. 149.
[340] Ibid, p. 143.
[341] J. Gustafson, *Intersections: Science, Theology & Ethics*, Cleveland: The Pilgrim Press (1996) p. 97.
[342] Ibid, p. 109.

sphere is at least misguided and at worst a very real menace. Gustafson is at pains to stress that human beings are finite, they can never have complete foreknowledge of the consequences of tampering with the natural world and wielding scientific technologies. He notes that "Boundaries exist to limit even the best-informed efforts to calculate the probabilities of outcomes of various proposals for intervention."[343] Once again, as has been noted throughout this project, prudence, deliberation and restraint are called for in the face of human ingenuity and progress. In essence, the piety espoused in his theology of the human vocation should be at the forefront of intersections between science and theology.

4.1.14 Gustafson's Applied Theocentric Ethics

As noted above, Gustafson's key interest has been in the intersection between science and religion. This section will briefly exemplify his application of theocentric ethics to the allocation of biomedical research funding, in which de-extinction technology could easily be included. Despite not being strictly normative, Gustafson's theocentric ethics can be seen to be guided by several key principles: foster the conditions for possibility; recognise the finitude of human beings and the fact that we can, and will err; accept that human intervention in the natural world can extend beyond our intentions; admit that nature can be an enemy as well as a friend and finally that physical life is not of ultimate value, it is God who is the ultimate end.[344]

[343] Ibid, p. 88.
[344] J. Gustafson, *Ethics from a Theocentric Perspective, Volume 2: Ethics & Theology*, Chicago: The University Press of Chicago (1984), p. 273.

Initially, Gustafson highlights “the need for more careful forethought about the social and individual ends”.[345] Although we may be attempting to solve one problem, it is not unlikely that by doing so we will create further unwanted effects as a consequence. Gustafson cites the example of biomedical research which has enabled human beings to live, on average, several decades longer than was possible only a few centuries ago. Whilst this may, at face value, seem like a positive development, the pressures on society (as illustrated by the current Social Care crisis in Britain) and the individual (longevity has in turn propagated new diseases and does not always guarantee a prolonging of the joys and riches of life) do not necessarily mean that the outcome is beneficial for all. Moreover, the unnecessary prolonging of life drains the resources that could “serve equally defensible objectives”.[346]

Gustafson acknowledges that theocentric ethics does not provide any moral absolutes. However, as a guiding principle, we should consider whether our actions and the allocation of resources are working towards the goal of relating ourselves appropriately to our relation to God. This calls upon us to make difficult choices, ones removed from the emotional entanglements so often evoked in medical ethics. By recognizing the finitude of human beings, we are called to forego our own personal ambitions for longevity and accept the fate of those for whom we love and care. Gustafson solemnly reminds us that “God will not be defied; disease and death come each and to all”.[347] Theocentric ethics therefore, call us to examine whether our desired outcomes are simply the whims of ambition, for such ambitions are ultimately fated to fall short of our grand designs.

[345] Ibid.
[346] Ibid.
[347] Ibid, p. 277.

Moreover, Gustafson asks whether the pursuit of scientific knowledge with regards to health has become something of an idol, one "whose worship skews other valid ends".[348] Interdependence means that we should take into account the impact on other beings and to enlarge the scope of that which we understand to be "the whole".[349] It would therefore seem that any attempt to 'play God' and prevent or delay the natural processes is a serious mistake. This may be quite an extreme claim, as human are forever changing environments, and dosing themselves with medication in order to prevent infection. I would disagree that the creation of COVID-19 vaccines were an attempt to 'play God'. However, when one reads about efforts to extend the human life expectancy into the hundreds, one cannot help but be both awed and alarmed at the prospect. Over-population and the emergence of new age-related diseases are but two of the major issues raised by such projects. As such, Gustafson's advice needs considered application. We do need to consider whether our actions are attempts to 'play God'. In cases where this may be the case, further careful and prudential consideration becomes essential. Our perceived 'control' over such forces will only last for so long. It displays and arrogance on the part of humans who have lost sight of their role as 'participants' in an interdependent creation. In fact, for Gustafson, technology has made claims that God decides the moment of our termination obsolete.[350] In the face of rapid technological advances, Gustafson's theocentric ethics reminds us to consider our proper place in creation and to be wary of a misplaced sense of self-importance, invincibility and mastery over natural processes.

[348] Ibid, p. 276.
[349] Ibid.
[350] Ibid, p. 277.

It is evident from this brief example that Gustafson's theocentric ethics is intended to be sobering. Interventions with the deepest and most far-reaching consequences (as far as we are able to discern) "require grave reflection and the strongest possible justification".[351] Furthermore, Gustafson implores that those interventions which may have irreversible consequences ought not to be done except for the most powerful of reasons.[352] With this ominous plea in mind, I will now turn to an application of theocentric ethics to the issue of de-extinction technology.

4.1.15 Theocentric Ethics and De-extinction

Gustafson clearly holds the pursuit of scientific knowledge and advancement in high regard. The issue of de-extinction, similar to those of abortion and the distribution of health resources, clearly falls into the category of 'inter-section' between science and theology. This section will outline the application of the key theocentric principles to de-extinction, and complete my brief survey of contemporary theological ethics and their application to de-extinction technology.

There is little doubt that de-extinction technologies foster the conditions for possibility; the potential for life to flourish and orientate itself in the way it was directed by God. They allow the potential for restoring ecosystems with the reintroduction of lost species such as the crucial role woolly mammoths could play in preserving the permafrost in Sergey Zimov's 'Pleistocene Park'. Moreover, with continued funding and support, we may yet only be scratching the surface in

[351] Ibid, p. 280.
[352] Ibid.

terms of the variety of species that could be restored to our planet. As this project illustrates, there are several ventures currently being utilized from genetic 'back-breeding' to the creation of artificial uteri. The creativity and conditions for all sorts of beneficial possibilities are certainly encouraged by the pursuit of this resurrection science. These possibilities are not limited to the species in question. Restoring the balance to such ecosystems can help to turn the tide against the loss of diversity and declining health of the biosphere. If Zimov is correct, for example, then the reintroduction of lost megafauna could help to reduce carbon emissions caused by the breakdown of microbes thawed out by the consequences of global warming.[353] His project offers a practical, if rather eccentric, tool in the global fight against climate change. A fight in which many creatures have a vested interest.

Despite the excitement, awe and range of possibilities offered by de-extinction, theocentric ethics would counsel serious deliberation in such a venture. The influence of Reformed theology in Gustafson's work frequently reminds us of human finitude and our capability, and tendency, to err. De-extinction technology has the potential to be a twenty-first century Pandora's box. We have begun to develop the capabilities to restore lost creatures, and, with the emergence of several projects across the world, it is clear that our curiosity is leading us to lift the lid on possibilities that may have far-reaching and irreversible consequences. Human foresight is limited, although we may be able to hypothesise immediate consequences of re-introducing species to the wild, the long-term effects could be catastrophic. I have already made much reference to the possibilities of

[353] S. Zimov, 'The Wild Field Manifesto'. Published 25/11/2014. Available at: https://reviverestore.org/projects/woolly-mammoth/sergey-zimovs-manifesto/ [Accessed 19/09/2021].

restoring the thylacine to the island of Tasmania, and supporters argue that 'gap' left by its demise still exists and therefore their reintroduction could be a relatively seamless process. However, recent reintroductions of a species threatened by extinction, the Tasmanian devil, have had dire consequences for local wildlife. Penguin populations on Maria Island have been decimated by their re-introduction. Despite the best of intentions (to create an insurance population of devils to safeguard against the cancerous disease which is running rife through populations on Tasmania itself), the unintended and unforeseen consequences may well have eliminated the population of Little penguins on the island.[354] Theocentric ethics would encourage us to see such examples as cautionary tales. The implication being that proceeding with similar endeavours should only be done if the utmost surety can be provided against such tragic consequences. It is hard to see how such guarantees can be given by de-extinction technology and therefore appear even more difficult to justify their continuation.

Death and extinction are, for Gustafson, forces that bear down upon us. They are inescapable. To attempt to end or reverse this process is a fool's errand. Furthermore, one of the central tenets of theocentric ethics is that physical life is not of ultimate value, rather it is God who is to be seen as the ultimate end.[355] A stark warning is therefore posed to those who argue for a crusade to save, restore or enhance nature: an imagined world of interdependence *and* equilibrium is exactly that - a fantasy. We must recognise that conflict and lack of equilibrium are relative to the human conception of 'good'. Therefore, before acting

[354] D. Lu, 'Tasmanian devils wipe out thousands of penguins on tiny Australian island' in *The Guardian Newspaper*. Published 21/06/2021. Available at: https://www.theguardian.com/environment/2021/jun/21/tasmanian-devils-wipe-out-thousands-of-penguins-maria-island-australia [Accessed 19/09/2021].

[355] J. Gustafson, *Ethics from a Theocentric Perspective, Volume 2: Ethics & Theology*, Chicago: The University Press of Chicago (1984), p. 273.

Gustafson implores us to ask two critical questions of de-extinction technology: "Good for whom?" and "Good for what?"[356] In terms of the former, de-extinction may, at face value, be deemed 'good' for the species being restored. However, much of that will depend on the life offered to any restored species, which in turn connects to the latter question. Moreover, can a species be said to 'benefit' if it is extinct and then restored? The effects of de-extinction will only impact the individual in the first instance. But if the individual is unable to flourish, because the effects of the process that gave rise to it, or because of the harms of an existence in captivity, then the value of its life may be questionable. A life in laboratories for further research or as the star attraction in amusement parks seems to promote little good for the restored creature. Re-introduction may offer species the opportunity to thrive, but there is little to guarantee such flourishing. In fact, Lisa Sideris may well be correct in her analysis that de-extinction technology is really only 'good' for human beings, who revel in awe at their own achievements.[357] Such an anthropocentric 'good' cannot be considered to confirm to the ethos of Gustafson's theocentric model. Theocentric ethics, time and again, calls on us to accept not only our own condition, but that of the creation. The forces that bear down upon us cannot be overcome. The focus has become physical life, not God. Not only human finitude, but the mortality of all life, even of the cosmos itself, quietly ushers us towards an acceptance of the fact that extinction cannot be avoided nor undone indefinitely. As such, in the fulness of time de-extinction seems good for no-one nor for any worthwhile purpose. It

[356] J. Gustafson. *A Sense of the Divine: The Natural Environment from a Theocentric Perspective,* The Pilgrim Press, Cleveland, OH (1994), pg.49.

[357] L. Sideris, "De-extinction technologies as theological anthropology: The uses and misuses of Wonder." Institute of Scholarship in the Liberal Arts, College of Arts and Letters, John J. Reilly Center, College of Science, Department of Philosophy, Department of Theology, and Environmental Change Initiative. 15/05/2019, Lecture – 1030 Jenkins Nanovic Halls, University of Notre Dame, Notre Dame, IN. Public Lecture.

lulls us into a false sense of security about the finitude of our planet and endangers us to the pitfalls of hubristic ventures.

4.1.16 Summary

It would appear evident in the discussion above that theocentric ethics would find it very difficult to justify the pursuit of de-extinction theology. Despite the recognition of the importance of scientific development and the marvellous opportunities it may offer, it also remains equally important to ensure that that we "relate ourselves and all things in a manner appropriate to their relations to God."[358] Such a recognition demands that we set limitations upon our endeavours, particularly where the outcome may not be certain or where there may be the possibility of engineering greater, irreversible harms in the longer term. This is not to stifle the progress of science, but to foster a greater consideration of the purpose of its technologies. Piety, as a key marker of the Reformed tradition, should be manifested not only towards God but also towards the technologies and innovations which we have developed. In the case of de-extinction technology, we move beyond the treatment of disease and even the prolonging of human life. Instead we are tampering with the very force that has born down upon all creatures on earth, not simply death, but extinction itself. Extinction has been an integral natural process for the course of evolution. Indeed, without the five mass-extinctions recorded in the history of the world, human beings (as well as all other contemporary life) would simply not have come into existence. Theocentric ethics cautions us not to meddle with the ordering of the universe determined by God himself. We are not gods, we do not possess

[358] J. Gustafson, *Ethics from a Theocentric Perspective, Volume 1: Theology & Ethics*, Chicago: The University Press of Chicago (1981), p. 327.

the gift of foresight nor the ability to ensure that nature remains tame once provoked. Moreover, as with the allocation of medical resources for prolonging human life, there are many other perhaps more justifiable causes for which the resources could be put to use, not least the pressing issues posed by climate change. The Swedish activist Greta Thunberg has used the image of a burning house[359] to illustrate the perils of climate change. In my view, theocentric ethics when applied to de-extinction, points out the futility of one who tries to repair the burnt-up table, chairs and other furniture whilst the fire continues to rage all around.

[359] G. Thunberg, Speech to Davos Agenda. Published 25/01/2021. Available at: https://www.weforum.org/agenda/2021/01/greta-thunberg-message-to-the-davos-agenda/ [Accessed 19/09/2021]

CHAPTER V

The Mammoth in the Room: The Extinction of De-extinction?

5.1 Introduction

The first two chapters of this project sought to survey contemporary thinking on the key issues facing environmental ethics. In the first instance, I considered arguments in relation to ecofeminism, co-creatorship and the virtues to assist in my quest for a theological understanding of the human vocation. The second was concerned with an evaluation of current theological ethics in relation to the environment, based upon the spectrum of perspectives, composed of the writings of Clough, Deane-Drummond and Gustafson. The aim of this chapter is to reflect further upon the tentative conclusions heretofore conceived and to offer my own contributions to the debate, with a particular focus on the possible justification for de-extinction in both theological and moral senses.

I will begin by exploring the consequences distilled from my inquiry into modern considerations of the human vocation. Initially, I will reject the accusation, levelled by Lisa Sideris, that de-extinction ethics is nothing short of a hubristic, vainglorious effort by humankind at 'playing God'. Bearing in mind her call for love-driven, limited intervention in the natural world, I will argue that de-extinction technologies, utilised in this spirit, can complement a human vocation aligned with the key principles of stewardship. Having developed a brief coda for the human vocation centred on the virtues, I will further Schaefer's argument by suggesting a virtue driven approach to the challenges posed by extinction. Finally, I will suggest an additional virtue, that of stewardship itself, as a mean,

between the vices of excess ('dominion) and deficiency (non-intervention – 'letting be'),[360] whilst all the while sustaining the argument that, as Aristotle noted, the mean itself can be manifested as an extreme.

The second half of this chapter will focus on developing a theological ethic. I will outline a spectrum of ethics, based upon the works studied, and align myself with the theocentric ethics of James Gustafson. The remainder of this synthesis will illustrate how such a theocentric model could work in practice, aligned with the virtues identified as part of the human vocation. I with illustrate this with reference to some of the scientific projects currently underway in the field of de-extinction and how any ethic might work in practice.

5.2 The Human Vocation

A frequent criticism levelled against de-extinction technologies is that they are humanity's effort at 'playing-God'. Minteer has described the science as "Promethean rather than pragmatic".[361] Linzey has warned that any classification of animals as "products of human ingenuity" is misleading. Further, he declares "spiritually infantile"[362] any understanding of animals that sees them as nothing more than resources, tools or commodities. For Linzey, "hubris in this regard is not just sinful, it is arguably one of the best definitions of sin."[363] Before

[360] There is, admittedly, an ambiguity attached to recognising inaction as a deficiency, given that extinction is a natural process. However, the conclusion noted above (p. 95) that an extinction is a loss of value in the creation creates a *prima facie* case for seeking to prevent extinctions, even when they appear to be largely or completely 'natural'. Southgate makes the further case that in the redemption phase of the Christian narrative, humans might have a theological mandate to reduce the rate of biological extinction (*The Groaning of Creation*, pp. 124-32).
[361] B. Minteer, *The Fall of the Wild: Extinction, De-Extinction, and the Ethics of Conservation*, New York: Columbia University Press (2019), p. 10.
[362] A. Linzey*, After Noah: Animals and the Liberation of Theology*, London: Mowbray (1997), p. 125.
[363] Ibid, p. 126.

proceeding, it is worth clarifying the concept of 'playing-God'. Neil Messer has developed a lengthy but clear definition:

A form of action on the world which embodies a forgetfulness of our finitude, an assumption that, given enough time, effort and investment, we can achieve virtually anything we wish to, and a tendency to think that every human problem is susceptible to a technological fix.[364]

For Messer, there is an important distinction to be made between actions in which humans seek to be like God and actions which in which we strive to conform to God's image. Actions that fall under the former echo the blasphemous undertakings of biblical tales such as the doomed Tower of Babel (Gen 11) or the proud, despotic Neo-Babylonian monarch, Nebuchadnezzar (Daniel 2-4). Action of the latter nature "respects human finitude and honours our divine mandate to make something of the world".[365] Messer admits that the created co-creatorship model would appear to fall into the category of actions that seek to conform to God's image. He is, however, "uneasy about the language".[366] Whilst it could easily be interpreted as a quasi-hubristic title, Messer, it seems, overlooks the key adjective '*created'*. This element is key to avoiding any deifying characteristics. Humans are not of equal status to God. In fact, the term highlights the contingent nature of human beings, a point originally developed by Hefner, to show that we exist as created beings within an ecosystem. Therein we are bound to intimate relationships with other creatures.[367] It is therefore clear to see that

[364] N. Messer, *Selfish Genes and Christian Ethics: Theological and Ethical Reflections on Evolutionary Biology*, London: SCM Press (2007), p. 231.
[365] Ibid, p. 232.
[366] Ibid.
[367] P. Hefner, *The Human Factor: Evolution, Culture and Religion,* Minneapolis: Fortress Press (1993), p. 36.

the intention of co-creatorship as the theological grounding for the human condition is not one of 'playing-God'. It does not forget our place and finitude. Nor does it presuppose a quick-fix or that human beings are even capable of such actions. Rather, it provides us with a calling to do what we can as beings with the capability to do so.

Sideris has uncharitably labelled de-extinction technologies as "hubristic" and as "challenging rather than accepting our limitations."[368] Sideris has taken particular interest in de-extinction technologies and in a recent article set out her key objections. In essence, she opposes de-extinction on the grounds that it cheapens ideas of loss and atonement, offering a "cheap fix".[369] It has become more concerned with awe and wonder at our own achievements rather than a deliberative consideration of the consequences and implications of our actions. The idolising of 'endlings' such as 'Lonesome George', the last of the Pinta Island tortoises, reduces species to specimens and "matter to be revived in a laboratory". This is no more evident than in the case of 'Lonesome George', as only three years after his death, speculation began to grow that strategic breeding of closely related species could resurrect George's kind in the near future.[370] For Sideris, the results are either "proxies, not copies" or a "bizarre genetic mishmash."[371] Ultimately, humans are not gods, and therefore, any acts of

[368] L. Sideris, "De-extinction technologies as theological anthropology: The uses and misuses of Wonder." Institute of Scholarship in the Liberal Arts, College of Arts and Letters, John J. Reilly Center, College of Science, Department of Philosophy, Department of Theology, and Environmental Change Initiative. 15/05/2019, Lecture – 1030 Jenkins Nanovic Halls, University of Notre Dame, Notre Dame, IN. Public Lecture.

[369] L. Sideris, 'What, If Anything, Is De-Extinction?' Published on 23/12/2020. Available at: https://www.counterpointknowledge.org/what-if-anything-is-de-extinction/

[370] B. Hathaway, 'Resurrecting Lonesome George: Relatives of extinct species of tortoise studied in the Galapagos'. Published 14/12/2015. Available at: https://news.yale.edu/2015/12/14/resurrecting-lonesome-george-relatives-extinct-species-tortoise-studied-galapagos [Accessed 02/03/2022]

[371] L. Sideris, 'What, If Anything, Is De-Extinction?' Published on 23/12/2020. Available at: https://www.counterpointknowledge.org/what-if-anything-is-de-extinction/

atonement will only be meaningful if they embrace humility. De-extinction, for Sideris, does not embrace this, rather it inspires a "grasping for increased bio-power."[372] True reflection on loss ought to engage us in religious imagination that recognises and, more crucially, admits our limitations, argues Sideris.[373] Of course, it is important to recognise our limitations as fallible human beings, and yet, Sideris's pessimistic view of technological biological scientific progress for its own sake would, I daresay, have halted human endeavour decades ago. The theological vocation proposed here takes seriously the need for temperance, deliberation and wisdom. Perhaps Sideris and other opponents of de-extinction need to be prepared for the fact that such reflections may yet illustrate a theological vocation that, under the correct circumstances, will support de-extinction. Such assent would not be an apotheosis of humanity, but rather another way of fulfilling our tasks as God's deputies and partners - the created co-creators.

5.2.1 The Human Vocation & De-extinction

Having critically assessed the writings of key theologians from a range of perspectives on the human vocation and its concern for the environment, I will now seek to sketch out the key aspects of the human vocation, as I see it, through the theological lens. At the end of Chapter 1, I outlined the key proposals for that vocation as applied to the question of de-extinction:

[372] Ibid.
[373] Ibid.

(i) Humans take counsel on the implications of de-extinction, weighing up the potential dangers to the *preservation* of existing life as well as to the species undergoing de-extinction.

(ii) They consider fairly the needs of both individuals and whole species throughout the process. This would involve paying attention to the purpose of de-extinction.

(iii) Such activity should be done with moderation and for the sake of the non-human species in question. The use of de-extinction should therefore be to reverse or prevent the utter decimation of a species. The use of de-extinction for capitalistic gain or animal experimentation should be *protested*.

(iv) Courage would be needed to defend the rights of de-extinct creatures and to fulfil the responsibilities we have towards the rest of creation as stewards of the biosphere.

Having taken inspiration from Schaefer's re-modelling of classical virtues in light of current environmental concerns, I wish to take this further and illustrate how these virtues can be put into practice as a cornerstone of the human vocation. The relevant virtues for considering our relationship with the natural world appear to be: wisdom, deliberation, temperance, charity and courage. These traits have been evident throughout the project and can be seen, in various guises, through the works of many of the thinkers covered, to varying degrees. From Deane-Drummond's study of the evolution of wisdom to the ecofeminist call to courageously protest environmental injustice and Primavesi's vision of charitable 'gift-exchange'. The survey undertaken indicates that a theological consideration of the human condition could be well-guided by some form of virtue theory.

However, virtue theory has not been without its critics and perhaps the most pertinent to my project is that, even though sound virtues can be identified, the virtues themselves do not provide us with a prescriptive set of norms on which to base our actions. It may all seem well enough to claim that the human vocation is one that should manifest charity, courage and temperance, but what would such a life, well-lived, look like? To answer this question, I will draw on the work of Rosalind Hursthouse, whose update of virtue ethics may be great use in determining how the human vocation ought to be lived.

Hursthouse outlines a skeletal form of virtue ethics as such:

P1 – An action is right iff it is what a virtuous agent would do in the circumstances.

P1a – A virtuous person is one who acts virtuously, that is, one who has and exercises the virtues.

P2 – A virtue is a character trait a human being needs to flourish or live well (eudaimonia).[374]

The second premise is essential to supporting the case for virtues as the basis for the human vocation as any such approach will need to ensure human flourishing. However, to more neatly fit her argument to our cause, I propose a

[374] R. Hursthouse, (1991), "Virtue Theory and Abortion", Philosophy & Public Affairs 20(3):223-246. Available at: https://www.meddent.uwa.edu.au/__data/assets/pdf_file/0003/3034452/04.2-Hursthouse-1991-Virtue-Theory-and-Abortion-P_PA.pdf.pdf [Accessed 22/12/2021]

slight modification, which will ensure that its application can coincide with the theocentric perspective with which I will soon more obviously identify:

*P2' – A virtue is a character trait that enables the **creation** to flourish or live well.*

This slight reformulation will avoid the trappings of anthropocentrism, which has already been rejected, and align with the theocentric concern for creation's good, well-being and capacity to flourish.

From here, Hursthouse argues that virtue ethics does provide a prescriptive account of what one ought/ought not to do in various circumstances. She claims, rightly in my view, that "every virtue generates a positive instruction…and every vice a prohibition."[375] For instance, the virtuous person should strive to act justly and be charitable and refrain from the vices of cruelty and self-centredness. We are, therefore, instructed to 'be charitable' and 'not to be selfish'. Therefore, when we return to the virtues highlighted by Schaefer, in terms of our relationship to the creation we ought to 'be courageous and protest injustice'; 'be charitable and care for those creatures that need our help'; 'be wise in our use of technology by deliberating and taking counsel before acting' and 'be restrained (temperate) in our interventions'. In turn, the corresponding vices provide us with clear limitations: 'do not stand by as injustice unfolds'; 'do not ignore the plight of creatures in need'; 'do not act in haste' and 'do not exploit resources or other animals.'

[375] Ibid.

It may seem the human vocation with regards to de-extinction, through the propagation of virtues, now has a clear directive. What greater act of charity could there be than the restoration of life to species extinguished by natural or anthropogenic extinction? Such a second chance, tempered by well-considered deliberation, which contemplates the impact on both the human and non-human poor, would certainly contribute to the flourishing of all concerned. To 'say yes' to de-extinction, under the right circumstances, is one thing, but it is also important to bear in mind that, in light of the tribulations facing our planet, the courage to 'say no' may also be an appropriate response. As outlined above, the pursuit of scientific knowledge requires humility, in the face of tremendous technological power, a rejection of ideas can be as bold as providing them with assent. This is not, however, to quash the prospect of de-extinction as part of the human vocation. As Aristotle himself noted, it can be the case that the mean itself can be manifested as an extreme[376] - furious righteous anger at injustice, for example could be deemed appropriate when directed towards the right person, to the right extent, at the right time for the right reason and in the right way.[377] This may seem perverse, but furious righteous anger can indeed be the manifestation of the middle way between the deficiency of wilful ignorance and the excess of mis-directed rage. There are times when simply 'standing with' the oppressed, or 'condemning in the strongest terms' no longer cut ice. Likewise, blind rage is unlikely to yield the desired result. The mean, in these cases demands utter indignation to convey one's fears, the gravity of the situation or to ensure an inert government or power acts appropriately. As I write, a fierce, unjustified war has broken out in Ukraine. To turn a blind eye is as much a vice as to send NATO

[376] Aristotle, *The Nicomachean Ethics*, Cambridge: Cambridge University Press (2000), pp. 29-30.
[377] Ibid, p. 35.

troops into a direct confrontation with Russian forces. And yet, many of us feel that the appropriate, middle-way response to is to express our righteous anger and frustration at Russian actions through protest, charitable donations and boycotts. It is this intense channelling of the 'virtue' of righteous anger that enables the mean, in some cases, to be manifested as an extreme. As such, it is to the proposal of new virtue relative to the field of de-extinction to which I will now turn.

5.2.2 The Virtue of Stewardship and the Extreme of Created Co-creatorship

The final task of this section is to take this understanding of virtues a little further to solidify the support that can be offered to de-extinction, as part of the human vocation. The bulk of this project has examined numerous understandings of stewardship. Despite the varying levels of agreement on its precise definition, it seems reasonable to distil from the work of the writers explored heretofore that the theological vocation, when concerned with de-extinction, must have not simply stewardship, but a 'strong', interventionist stewardship at its heart (see 3.1.4). My next move will be to explore how, despite its controversies, stewardship should be categorised as a virtue which we should strive to cultivate. In the first instance, stewardship can be identified as the mean between two vices. The vice of deficiency would be environmental inaction, leaving nature to take its course regardless of the damage and extinctions that could be prevented as a result of some moderate interference. This kind of inaction allows the suffering of extinction to persist in a way which echoes the 'Ontic (Pre-moral) evil' of Catholic theology. As extinction causes death, destruction and the loss of a way of being, such events must certainly be categorised as a harm, and, as such,

one which should be railed against wherever we are prudently able to do so. The excess would be manifested as meddling, even despotic dominion, where we 'play-God', wielding technology with no counsel, temperance or wisdom.

To further embed stewardship as a Christian virtue, it would be prudent to provide biblical support for its position. Much has been written of the infamous passage (Gen. 1:26, 28) in which God commands humans to rule over the creation. In the spirit of endeavouring to propagate the virtue of stewardship, this demands to be read in the sense of a care-giving assistant. "Ruling over" cannot be understood as ravaging the earth of its commodities and using other animals to our own ends, for this would be the vice of excess. Likewise, a ruler who turns a blind eye to suffering and injustice would be guilty of abdicating responsibility and so succumb to cowardice and ineptitude as a leader. The character of a steward "must be above reproach. He must not be arrogant or quick-tempered or a drunkard or violent or greedy for gain" (Titus 1:7). Such a biblical description further illustrates how stewardship, as a virtue, could aid the flourishing of human beings; it encourages temperance and moderation over greed and gluttony. Furthermore, stewards are to be "trustworthy" (1 Cor 4: 1-2), not boastful, vainglorious or hubristic, nor, on the other hand, likely to understate the gravity of the situation.

Reference was made, earlier in this project, to Bill McKibben's dismissal of stewardship on the grounds that it does not provide us with a framework for how to behave in different circumstances. He has also labelled stewardship as nothing more than "shallow ecology".[378] It is my contention, developing my idea of

[378] W. McKibben, "The End of Nature: The Rise of Greenhouse Gases and our Warming Earth", The New Yorker. Published 11/09/1989. Available at: https://www.newyorker.com/magazine/1989/09/11/the-end-of-nature [Accessed 30/12/2021].

stewardship as a virtue in conjunction with Hursthouse's understanding of virtue theory, that McKibben could not be further from the truth. A theological vocation for humans, built upon the virtues which desire for the flourishment of human beings *and* the creation, does provide us with directives – we are to *do stewardship*. The fact that stewardship can be understood in a variety of ways, though generally can be categorised as 'strong' and 'weak' (as per Southgate's distinction) is a strength, not a weakness. Such an understanding can allow for us to respond to the issues in environmental ethics in dynamic and ever-adapting ways. Not only are we to 'do stewardship', we are prohibited from acts of dominion and likewise condemned for inaction. Stewardship, as a virtue, enables us to look at particular circumstances and consider whether the action is 'for' the flourishing of creation. In many circumstances, this could be straightforward. For example, re-cycling, taking public transport to work, reducing one's use of single-use plastics are all minor ways in which we can propagate the virtue of stewardship and contribute to the flourishment of both humans and the rest of creation. However, in the case of de-extinction, stewardship demands of us a greater consideration of the stakes.

We have already considered how the use of de-extinction technology could be aligned with Hefner and Southgate's understanding of the human vocation as one of 'created co-creators'. If sanctioned by stewardship, then this would certainly call for 'strong stewardship' in perhaps its most extreme form. This need not necessarily lead us astray into the realms of dominion, for, as Aristotle noted, the mean itself can be an extreme. We have already seen how righteous anger can be justified in Aristotle's thought. The same, I would argue, can be applied to the virtue of stewardship in the case of de-extinction technology. Anthropogenic

extinctions are a stain on human history; de-extinction offers us a way of atoning for such sins. As *created* co-creators, we are reminded, contrary to Sideris's criticisms, of our fragility and need for humility before the technologies that we intend to utilise. Human ingenuity is not a sin, rather the sin is its misuse. As such, the virtue of stewardship calls on us to be counselled by the virtues of temperance, courage, charity and wisdom. As such, the 'stewardly' virtue in action could support the use of de-extinction technologies:

- If our 'strong stewardship', in this case is conducted moderately, for the sake of those creatures lost to time and not as a 'free-pass' to further anthropogenic extinctions.

- If courage can be mustered to 'say no' when abuses are identified.

- if the technologies are used charitably, to restore the extinct and not for human gain, be that monetary or otherwise.

- if such a decision is reached after much consideration, deliberation and foresight as can be reasonably expected.

Such conditions are the patterns of behaviour to be expected from someone striving to fulfil the expectations of the virtue of stewardship, in the context of de-extinction technology. As such, it would seem that a theological justification for de-extinction can be provided. This section has concisely determined that the hubristic fears of some thinkers are unwarranted with regards to these efforts to restore lost creatures. Moreover, it has shown that the human vocation is one

centred on the flourishing of human beings and the rest of creation. Aligned with this directive and guided by the traditional virtues, as well as my own suggestion for a 'stewardly' virtue, the human vocation can justify de-extinction as an act of co-creatorship, one moderated by the recognition that we are ourselves, created.

5.3 Theological Ethics

5.3.1 Introduction

The work on theological ethics undertaken heretofore can be plotted along a spectrum of thought. In the first instance, and situated at one extreme, we have David Clough's ethics which are very much embedded in a 'high' Christology. He argues for the prevalence of Original Sin and an atoning process of the Incarnation and Crucifixion which offers all creatures a stake in salvation due to Christ's incarnation in 'flesh', understood as the substance common to all beings of the created order. Clough's work relies heavily on a quite literal interpretation of biblical teaching. Towards a more central and 'middle-ground' position, we have the work of Celia Deane-Drummond. Strongly influenced by contemporary thinking in evolutionary biology, Deane-Drummond is able to trace the development of theological virtues such as Wisdom and Justice whilst, attempting to bridge such ideas traditional Catholic theology, particularly that of Aquinas. Deane-Drummond constitutes a middle-ground position as, despite the fact that her writing is far more grounded in cutting-edge scientific theory, it is tempered by an adherence to more orthodox theological thought. Occupying the opposing extreme to Clough, Gustafson's theocentric ethics offers a far more radical and, to my mind, convincing theological ethics for Christianity in the 21st Century, one

that is well-equipped to deal with the issues posed by de-extinction technologies. The theocentric approach demands a re-evaluation of doctrines such as the Incarnation which, I will argue, in their traditional form are untenable in modern society. This is a clear rejection of Clough's ethics, which relies so heavily upon the validity of a Christ event manifested in the Incarnation, and goes further than Deane-Drummond by not succumbing to the temptation to form the kind of 'awkward epicycles', (as John Hick refers to them) where allowance is made for traditional views of God to fit in with current scientific theories. Rather, by seeing Christ as a pivotal moral teacher, and by orientating ourselves away from our selfish, anthropocentric outlook to one guided by God, we are able to establish a coherent, rational approach to ethics which, as I will shortly argue, is more than compatible with the Christian faith.

5.3.2 In Defence of Theocentric Ethics as a Christian Ethic

It would be ill-judged, to simply adopt a theocentric approach to ethics without acknowledging and rebutting the key objections it faces from its critics. Michael E. Allsop, in his critique of Gustafson's theocentric ethic, points out that scripture, a key source of authority in the Christian tradition, is not given a central role.[379] Moreover, as the unique marker of the Christian faith is the incarnation of God in the form of Christ, Richard McCormack has taken Gustafson to task by querying the conspicuous absence of Christ from his theocentric model. Gustafson's focus

[379] M.E. Allsopp, (2000) 'On James Gustafson's theocentric ethics', Irish Theological Quarterly, 65(1), pp. 43–56. Available at: https://search-ebscohost-com.uoelibrary.idm.oclc.org/login.aspx?direct=true&db=reh&AN=CPLI0000366738&site=eds-live&scope=site [Accessed: 26 January 2022].

on the example of piety displayed by Jesus, rather than doctrinal claims such as the Incarnation, which are matters of faith, prompts McCormack to speculate that Gustafson not only omits but even rejects any notion of a high Christology.[380] Admittedly, it is a fair challenge to level at Gustafson, that his theocentric ethic would not be recognised by many as a Christian ethic, *per se*. Indeed, his unwillingness to explicitly connect the theocentric God with the Christian God may even be enough to condemn his theology as 'un-Christian' or even heretical. However, these challenges are precisely the type of entrenched orthodoxy that may be thought by some to stifle the evolution of the Christian faith and its ethics in contemporary society. This has been most eloquently expressed in the writings of Richard Holloway, who in his recent work, *Stories We Tell Ourselves*, argues that "religion is full of true fictions",[381] with layers of meaning which have to be worked through. As such, there are several ways in which we can read the Jesus story. Creeds about the nature of God or Christ are nothing more than statements of belief. The danger, he argues, is when statements of belief are proclaimed as statement of fact.[382] I am, therefore calling not for a dismissal of doctrines and principles that have been carefully considered for millennia, rather that further work is done to excavate the layers of meaning that may be more pertinent to us today in the face of the unique trials and tribulations we face. It is my contention that theocentric ethics offers a dynamic and reinvigorating approach to moral problems.

[380] R. A. McCormick, (1985) 'Gustafson's God: who, what, where, (etc)', Journal of Religious Ethics, 13(1), pp. 53–70. Available at: https://search-ebscohost-com.uoelibrary.idm.oclc.org/login.aspx?direct=true&db=reh&AN=ATLA0000945611&site=eds-live&scope=site [Accessed: 26 January 2022].
[381] R. Holloway, *Stories We Tell Ourselves: Making Meaning in a Meaningless Universe*, Edinburgh: Canongate Books (2020), p. xvii.
[382] Ibid, p. 45.

5.3.3 Further Reflections on Theocentric Ethics Applied to De-extinction.

We have already seen above (4.1.15), how theocentric ethics may be put into practice and also considered its application in the arena of de-extinction technology. Conclusively, that section determined that *presently* theocentric ethics would find it very difficult to justify the use of the bio-engineering to restore lost species. In the early part of the 21st Century, de-extinction would appear unjustifiable in light of the current environmental challenges. How can the resurrection of lost species be considered 'good for' the third of sharks threatened with extinction?[383] Or, closer to home, what 'good' are such projects for British hedgehogs, whose population continues to spiral into oblivion?[384] These are but two of the myriads of species that are vanishing at an alarming rate from our world. To respond with an argument based on the idea that de-extinction methods could save currently disappearing creatures in the future is to abdicate our present responsibility for species preservation in favour of a safety-net which may not be securely fastened. No de-extinction endeavours have thus far succeeded in the overall objective of restoring a healthy, functioning or, more importantly, flourishing being. To calm our consciences by relying on future technologies is to commit the error of believing in a kind of human/scientific infallibilism. Not only is that foolish by the standards of Gustafson's theocentric ethics, but, as Wallace-Wells warns, a misguided placing of faith in the 'The Church of Technology'.[385] Similarly, the exorbitant sums of money, coupled with the time and energy

[383] K. McVeigh, 'Third of shark and ray species face extinction, warns study'. Published 06/09/2021. Available at: https://www.theguardian.com/environment/2021/sep/06/third-of-shark-and-ray-species-face-extinction-warns-study [Accessed 30/01/2022]

[384] 'British hedgehog now officially classified as vulnerable to extinction'. Published 30/07/2020. Available at: https://www.britishhedgehogs.org.uk/british-hedgehog-now-officially-classified-as-vulnerable-to-extinction/ [Accessed 30/01/2022].

[385] D. Wallace-Wells, *The Uninhabitable Earth: A Story of the Future*, London: Penguin Books (2019). See pp. 171 – 184.

demanded, make the pursuit of de-extinction almost insulting to the hundreds of millions of human beings who find themselves in poverty. In recent months, there has been much backlash for those billionaires who have launched commercial space-flights, largely due to the stupendous amounts of money channelled into such adventures. Deepak Xavier, of Oxfam International stated that, “We’ve now reached stratospheric inequality. Billionaires burning into space, away from a world of pandemic, climate change and starvation... This is human folly, not human achievement." In light of this, it is very hard to see how, from a theocentric perspective, the pursuit of de-extinction technology would receive a warmer welcome in the immediate future.

Does this spell the end of current projects? In the short term at least, theocentric ethics would wish to deter such ventures. However, that does not mean to say that the endeavours need be abandoned completely. The aims of some of the research is to recreate creatures which could assist in our efforts to combat climate change. As space in this project is limited, I wish to consider just one such example here, in the form of a thought experiment. Sergey Zimov’s so-called ‘Pleistocene Park’ harbours the ambition of using woolly mammoths to help preserve the melting permafrost of Siberia. He points to the fact that historically in biospheres, mammals such as mammoths by their “fertilising, harvesting and trampling managed their pastures.” Ideally, by using mammoths to break down trees and shrubs, this could help to slow climate change, as grassland might reflect far more light than tundra.[386] Zimov intends to return mammoths to the wastelands of Siberia for precisely this purpose. Concerningly for the theocentric

[386] S. Zimov, ‘The Wild Field Manifesto’. Published 25/11/2014. Available at: https://reviverestore.org/projects/woolly-mammoth/sergey-zimovs-manifesto/ [Accessed 19/09/2021].

approach he openly admits that he is doing this for the good of human beings, not for any other species and not for the good of creation as a whole.[387] As such, I would like to such an alternative, purely as an exercise in philosophical speculation:

Many films in recent years have displayed astounding developments in the animatronic technologies, no better, perhaps, than the *Jurassic Park* series. Visionary directors have both imagined and realised the creation of robotic creatures that not only look realistic, but act so too. From the terrifying tyrannosaurs-rex bearing down upon its hapless victim to the (artistically enhanced) Dilophosaurus spraying venom at the villain of the piece, both are able to convincingly interact with actors and fulfil the function for which they were designed. Turning our attention to the case above, in essence, all that is really required at 'The Pleistocene Park' is something which can trample tundra and break down trees. Let us imagine then, for a moment, the creation of animatronic 'mammoths' that could fulfil this function. Pre-programmed to patrol territories of the Steppe, could not enormous, hulking robotic mammoths serve the same role? Church and Zimov are aware that hundreds of woolly mammoths would need to be restored, simultaneously, for any impact to be made. The robotic mammoths could be manufactured with existing technologies, at a fraction of the financial and ethical costs. Moreover, from a theocentric perspective, this could be far more palatable. Reduced expenses could free up money for conservation projects. Further, anxieties connected with the question of what we would/could do with an extinct creature, as well their welfare, would fade away. Robotic

[387] R. Anderson, 'Welcome to Pleistocene Park'. Published April 2017. Available at: https://www.theatlantic.com/magazine/archive/2017/04/pleistocene-park/517779/ [Accessed 30/01/2022].

mammoths would not lead us towards hubristic tendencies, for we are seeking not to create life, but simply to tend to it in a responsible manner. This, in turn would help to move us closer to that theocentric notion of salvation through the transformation of ourselves from the image to likeness of God, orientating us towards his will for creation as a whole. Of even greater importance is that such alternative strategies recognise our finitude, our limitations in the face of the forces that bear down upon us - a recognition that is very much at the heart of Gustafson's theocentric ethics.

What then, of extinct creatures? Are we simply to confine them to biological history? Theocentric ethics demands us to accept that death and destruction comes to all things, not just creatures long gone, but also our own species and even, in the fullness of time, the creation itself. A prevailing lesson of this project that extinct creatures do still 'live-on'. Extinct creatures inspire awe and wonder, from the terrible, awesome power of the Giganotosaurus to the graceful sloth of the Stellar's Sea Cow. Meanwhile they can and should rouse lamentation. To think that never again will the wonderous Moa stalk the forests of New Zealand, or to watch the last thylacine purposelessly pacing its cage, should fill us with a great sense of loss and, in many cases regret at the actions of our ancestors. They live on as reminders of our finitude, and the finitude of all creatures. Furthermore, they act as portents - especially those culled by anthropogenic means – and warn us of the terrible and final nature of the loss of species. Extinct creatures should move us to orientate us towards the will of God, the one who, even in a theocentric model of the universe, sustains.

CHAPTER VI

Conclusion

This thesis set out to explore a branch of scientific technology and advancement that has received little serious theological engagement to this point. And yet it has been more than evident that theological thought, both ancient and modern, have been able to inform considerations of the human vocation and its subsequent ethical code in relation to cutting edge bio-engineering. At the outset, I expected that the theological vocation of humans would, as a matter of course, lead to an ethic to which both would be in harmonious agreement. However, as we have seen, nothing could be further from the truth.

Whilst in terms of the human theological vocation it has been shown that it is more than possible to permit de-extinction technology, the conclusion of this project is that morally, such a path is dubious. A theological vocation grounded in the view of humans as 'created co-creators' wills human ingenuity to reflect the image of God in a way which allows us to continue to push the boundaries of scientific and technological research. Tempered by the virtues, we are to become co-operators and guardians of the world and life therein. Actions undertaken as a result of our efforts to propagate prudence, deliberation and moderation can avoid the hubristic fallacy of 'playing-God' and enable humans to flourish as interconnected beings who recognise their power, its limitations and the responsibility that are bound up in the human vocation. From the perspective of the theological vocation of humans, de-extinction technology offers humans the chance to not only atone for past errors but also offer the opportunity for

reparation. Moreover, in the cases where extinction has occurred as a result of natural processes, the human vocation calls us to aid the oppressed (especially those annihilated by catastrophic extinction events) by reviving and restoring the created order. In turn we are then able to manifest the theocentric maxim of "relating ourselves and all things in a manner appropriate to their relations to God."[388]

The second half of the project focused on the consideration of whether the pursuit of de-extinction technology could be considered morally permissible. Having made the argument for ascribing to a theocentric model, which demands a reorienting of ourselves towards the will of God and away from anthropocentric concerns, the overwhelming conclusion points to a curbing of human ambition in the field of de-extinction *for the time being*. To be sure, the act of restoring lost creatures in itself is not morally repugnant. Rather, in the present context of global climate challenge, its related challenges in addition to the suffering caused by poverty across the world, means that it is nigh on impossible to justify its advancement in the immediate future. This does not entail an indefinite ban on such resurrection technologies. In fact, such projects could themselves be restored at a later date, especially in the event of an avoidance of disastrous climate change and a reestablishment of the kinds of biodiversity and habitats which could enable such creatures to thrive. Projects which seek to restore creatures in a bid to aid with the fight against climate change are also rejected on the grounds that more practical, far cheaper and less vainglorious avenues have yet to be fully explored and implemented. When considering de-extinction in

[388] J. Gustafson, *Ethics from a Theocentric Perspective, Volume 1: Theology & Ethics*, Chicago: The University Press of Chicago (1981), p. 327.

relation to Gustafson's key questions of 'Good for what?' and 'Good for whom?' it is apparent that the former is currently answered with 'human ambition and ego'. Moreover, the latter is certainly not in responded to with the interests of creatures that face imminent extinction, such as the orangutan, black rhino and hawksbill turtle. Indeed, any arguments that claim to offer these creatures an insurance against their own demise, through the prospect of de-extinction, are delusional and risk lulling ourselves into a false sense of security where we permit further extinctions in the hope that we may one day find a way to restore lost creatures. It is important to bear in mind that no de-extinction project has come close to succeeding in its true quest for re-genesis. If truth be told, clones and proxies are commiseration prizes. They are not what we imagine resurrected beings to be and at best generate a new sub-species rather than restore a lost creature to its place in the natural world. Furthermore, nor does de-extinction offer any good to those ravaged by hunger and poverty around the world. At the time of writing at least two million people have fled Ukraine in an effort to escape the needless war and bloodshed sweeping their nation. In light of the desperation, suffering and loss we are witnessing, to my mind it would be nothing short of an insult to such refugees to plunge millions of dollars into a vainglorious and uncertain technological project whilst we witness innocent lives being torn apart. We cannot morally allow the restoration of lost species when we cannot even restore peace, justice and security to humans and other animals tormented by the various challenges plaguing the world at present. I have endeavoured to avoid references to *Jurassic Park* throughout this project, but at this closing stage I feel a reflection on one of the key points raised by the mathematician, Ian Malcolm, is worth highlighting. In a heated exchange with the park's founder, John Hammond, Malcolm points out that "Your scientists were so preoccupied with

whether or not they could, they didn't stop to think if they should.” This project has effectively answered Malcolm’s challenge, and whilst both theoretically and theologically it can be concluded that we ‘could’, morally the answer is that we ‘should not’.

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