Eating (Meat) Ethically

Assessing Human, Animal, and Ecological Wellbeing

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Abstract

When discussing the ethics of what we eat, the key variables to take into account to form a robust position are human wellbeing, animal wellbeing, and ecological sustainability. I take this to be relatively uncontroversial. My contribution to this discussion is to note the manner in which questions relating to human health and ecology are often not discussed with sufficient precision and detail by vegetarian and vegan philosophers. Drawing on contemporary literature, I note the manner in which en masse vegetarianism/veganism is not a viable solution to the problem of how to eat ethically — if we are to take seriously human health and survival in moral discussions; another point I take to be relatively uncontroversial. The core issue is that there are compelling reasons for granting that not all humans can survive or be healthy on vegetarianism/veganism. With this conclusion at hand, I then assess the manner in which two prominent existing moral theories on eating animals are radically altered such that they may grant the eating and farming of animals.

Introduction

It seems to me, there are three fundamental variables which need to be considered to form a full-blooded position on the ethics of what we eat. 1) Human wellbeing 2) Ecological sustainability, and 3) animal wellbeing. This seems relatively uncontroversial. If one imagines a Venn diagram with these three variables, the center of that diagram is where a sufficiently robust view of the ethics of what we eat may be found. For the purposes of this dissertation, I am focusing on the specific issue of eating and farming meat.

The format of this dissertation is as follows: I first access the scientific/empirical question of eating meat as it pertains to human health. Here I argue, accessing the question philosophically, we have good grounds for A) granting that eating meat is healthy for (at least *some*) humans and B) at least *some* humans cannot obtain health in the absence of meat and, or animal-sourced products more generally, which may — in certain cases — also contribute to premature deaths in humans. Another way to construe this latter conclusion is to say that *en masse* vegetarianism/veganism is not viable if the goal is a healthy human population. This conclusion alone is enough to create an important moral dilemma — between the deaths of animals and the healthy lives of humans, which I discuss in chapter 3. This is a vital distinction between my work and that of other philosophers in this area who often take for granted that all humans can be healthy without consuming or farming animals.

Chapter 2 is a discussion of the ecological implications of farming meat. The discussion in this chapter is presented as follows: I first highlight how the existing claims regarding the farming of meat are often exaggerated or over-simplified. Moreover, I show why, using more precise comparative parameters, farming crops is as ecologically dubious as farming meat. However, granting modern conventional plant agriculture is ecologically comparable to modern conventional livestock farming in its hazards, when comparing apples to apples (no pun-intended), is not to say that there are no moral concerns over farming methods. I note how modern conventional farming methods (crop or livestock) do present us with many moral concerns that we should be attempting to rectify. Thus, as my second major contribution in this chapter, I make a positive argument for a specific kind of farming methodology: regenerative agriculture, a way of farming that is conducive to a thriving ecology and insuring animal wellbeing through the manner the animals are husbanded until their — granted, premature — deaths.

Furthermore, crucially, this chapter also shares a congruence with chapter 1 in highlighting the non-viability of en masse veganism — notwithstanding the need for (some) humans to eat animal-sourced products to obtain and maintain good health — for two primary reasons: 1) based on the best available data, it is doubtful that there is enough land to meet caloric and, more importantly, *nutrient* requirements for humans as the land that is currently used for livestock farming is often used so out of necessity rather than choice. 2) En masse crop agriculture leaves open the substantial burden of fertilization, much of which is currently met by manure. In the absence of manure, there are many concerns as to a viable alternative — which I discuss in the chapter and the beginning of chapter 3.

With the empirical background of chapters 1 and 2 in place, I then move on to consider how two existing prominent moral theories are altered in the face of the views I have developed regarding the empirical questions. Namely: utilitarianism and animal rights theory. Here, I argue that construing the empirical questions in the manner I have creates a path for the utilitarian to endorse eating meat/an ethical omnivorist position.

I begin the discussion of animal rights theory by focusing on the predation problem, arguing that this issue poses an intractable problem for animal rights theory, such that attributing rights to animals may not be defensible. If moral rights are not afforded to animals, this then also creates a path of an ethicist defending a rights position to endorse eating meat.

Furthermore, notwithstanding the predation problem, I also center this discussion on the moral dilemmas posed by the discussions of chapters 1 and 2. Namely: 1) some humans cannot survive in the absence of farming and eating meat and 2) some humans cannot be healthy in the absence of farming and eating meat. Therefore, there are moral trade-offs between the health and survival of (some) humans and the premature deaths of certain animals by the hand of a human. Given that killing an animal via slaughtering him/her for food is clearly an infringement of his/her rights under rights theory, I again argue that an animal rights view may lack cogency as it is unclear if an animal rights position can provide a solution to these important moral dilemmas. With this in mind, I then proceed to provide plausible solutions to answering these dilemmas within rights theory. Firstly, using examples of other moral dilemmas and their solutions in rights theory as a precedent and analogy — argue that these dilemmas may be incorporated into an animal rights view by acknowledging that these are special cases and appealing to moral status via metaphysical discussions. My conclusion of the metaphysical dissection of animals and humans, particularly when considering death, is that we may favor the health and survival of a human in the face of premature deaths of animals. Therefore, eating meat may, despite its prima facie incongruence, be plausibly reconciled with

an animal rights position. Secondly, I, drawing on the metaphysical distinctions between humans and animals discussed prior, note that we may still recognize animals as the kinds of beings that are worthy of rights without granting that they are worthy of precisely the same rights as humans: the absolute right to life being a right that may be withheld from animals. Hence, a rights theorist is alleviated of the tension posed by the moral dilemmas.

My core contention with many vegan philosophers' positions regarding the eating and farming of meat is that they have not developed a sufficiently sophisticated view of the empirical literature — often oversimplifying various portions of evidence or taking evidence of dietary boards, or environmental groups, for example, at face value without an in-depth analysis.

This, to me, is unacceptable, as much of the moral considerations and conclusions reached in philosophical discussions on what we eat depend in large part on one's position regarding the empirical data. Therefore, a robust knowledge and familiarity with empirical matters relating to what we eat should be in any moral philosopher's cognitive arsenal, so to speak, lest their view be open to the kinds of critiques I make in this dissertation. Moreover, philosophers are in a unique position to make contributions in critiquing the scientific literature, despite not being professional scientists themselves, as there is a long tradition in the *philosophy* of science regarding the criteria and techniques to establish and access the objectivity of science. Although I do not delve deeply into the philosophical and theoretical background to establishing epistemic assurance in relation to scientific literature, in the interest of time, I have accessed the scientific questions in this dissertation via the techniques for establishing objectivity in science found in the philosophy of science.

Chapter 1: Human Nutrition and Health

The aim of this chapter is to establish two complimentary conclusions. Firstly, I will provide a, hopefully, cogent and persuasive account of why meat is uniquely healthy for humans. Moreover, I will also provide a credible case for why vegetarian or vegan diets may be harmful to *some* people, which obviously muddies the typical moral waters of this topic as a whole, as it is often taken as quasi-self-evident that a diet without meat is nutritionally superior or comparable to a diet which includes meat — Singer (2020) seems to imply this, for example.

To be clear, my argument is not against vegan or vegetarian diets *per se*; it is rather that I do not think it's scientifically credible to claim that veganism or vegetarianism is a solution that is to be implemented *en masse*. It seems clear that many can thrive on vegan or vegetarian diets, which I am perfectly thrilled about. However, I would also say that it is clear that some people are harmed by such a diet, for whatever physiologically complicated reasons. For evolutionary reasons, I am sceptical of a "one size fits all" diet. Therefore, I am something of a dietary pluralist. My moral goal is that each person adheres to a diet that enables him/her to live a healthy life, whether that diet is vegan or otherwise. (Of course, the moral argument would not stop here nor be that simple. As I will explore throughout the paper, how we *get* the foods that enable persons to live a fulfilled life is, of course, morally relevant).

If we concede that some people — children I think most particularly — may need animal-sourced foods to avoid serious harm to themselves, as moral values like self-preservation and others would dictate, then that throws a spanner in the ethical works, so to speak. Hence, the moral trade-offs will become more complicated than if it were simply the case that veganism was the nutritionally superior diet for humans.

An important qualification needs to be made to the following as well. As any honest investigator into the nutritional literature will likely attest, the field is in disarray. There are many nuances, complications and contradictions found in the relevant scientific material, making it so that finding meaningful solutions to nutritional questions is often difficult. This is, perhaps, most evident in the literature on eating meat vs vegetarianism or veganism. In the interest of time, my account below is very much a précis of a much more in-depth discussion that I will not explore here; this would require a book-length treatment. However, I have tried to provide the strongest case for why some people may need to eat meat to avoid serious harm,

while keeping the discussion concise. Again, my argument is simply that it is scientifically credible to grant that *some* people may need to eat meat and cannot, without serious harm, adopt veganism or vegetarianism.

§1. Anthropology and Biology

To begin by going back in time, there is an abundance of evidence that most human groups have been eating meat as the majority — or close to the majority — of their caloric intake. Moreover, this trend is found cross-culturally and across different time scales. Evidence suggests that tribes across all major continents, and in varying biomes and climates, in the past have subsisted on meat — often predominantly — for food (Gadsby & Steele, 2004; Hill et al., 1984; Milton, 1991; O'Dea, 1991; Pontzer, Wood & Raichlen, 2018). Assessing hunter-gatherer tribes to the present day also reveals the same pattern,

> 'Nearly all hunter-gatherer populations today and in the recent past are known to have a mix of both meat and plant foods in their diet; of 265 such populations compiled by Murdock (33), only one was reported to subsist on no fish or game' (Pontzer, Wood & Raichlen, 2018:31).

Furthermore, to go the farthest back in time to the very dawn of *Homo Sapiens* we can also find compelling evidence, based on studying the chemical composition of teeth found in fossils, of the role of meat-eating in past groups: 'Similar to *P. robustus*, the diet of early *Homo* was less variable than that of *A. africanus*, but contrary to the diet of *P. robustus*, it was based more on *meat* [my emphasis] products' (Balter et al., 2012:560).

Based on the above literature, I would submit that we are in a Chesterton's fence scenario. Like Chesterton, my inclination would be to discover the precise reason for the fence, and assume there to be a good reason[i], rather than simply disregard it. In my view, there is indeed a very good reason for the "fence": namely, that humans are adapted to eating meat and in large quantities[ii]. Moreover, to avoid committing the naturalistic fallacy, it appears credible that this

[i] Otherwise why would so many populations adopt such a strategy?

[ii] Of course, I do not deny the adaptations in favour of eating plants either. I do think humans are fundamentally omnivores. However, to disregard the way in which we are adapted to eat meat, I think, would be a mistake. And given these adaptations, we should not be surprised if some people are suffering as a result of abandoning eating meat.

adaptive feature of eating meat is a key factor, again, in *some* peoples' or groups' health: a worthy moral value/goal.

Like many evolutionary explanations, ideas and hypotheses regarding the adaptivity of what we eat have a speculative element. In what follows I rely primarily on the least speculative evidence in an attempt to be as uncontroversial as possible.

Merely looking at our *current* physiology as humans can reveal what foods we are able/adapted to eat. One of the most obvious places to start, with regards to eating, would be the receptacle of food: the mouth. A cursory examination of the human mouth will reveal adaptations that are omnivorous, the most obvious being teeth. Human teeth share similarities with herbivorous and carnivorous animals. We have molar teeth, which makes evolutionary sense given our primate lineage, which are suited to chew plant foods. Interestingly, our molars are also ridged, like those of a dog as opposed to flat like those of other primary herbivores, e.g. sheep. This gives our molars a "middle-ground" structure, which would be suited to an omnivorous diet. As revealed by our smiles, in addition to molars, we have incisor and canine teeth, which are best suited to chewing and ripping into animal flesh. Moreover, our jaws are primarily adapted to vertical chewing as opposed to rotary chewing (Saladino, 2020) which points to the adaptation of meat-eating.

We can also examine our stomach acidity and observe how we differ from our primate ancestors and have adapted to eating meat. A typical healthy human stomach has a pH level of +/– 1.5 (Beasley et al., 2015). This is starkly different from our primate ancestors which have a pH of 4-5, which is approximately 1000x less acidic than ours. The plausible explanation for this evolutionary shift between ourselves (Homo Sapiens) and our ancestors is the dietary shift from eating an exclusively herbivorous diet to omnivorism. This involves a simple inference from what we know of the general pattern across species: those species with greater stomach acidity are omnivores and carnivores. For instance, Beasley et al. (2015:1) note,

> 'Comparisons of stomach acidity across trophic groups in mammal and bird taxa show that scavengers and carnivores have significantly higher stomach acidities compared to herbivores or carnivores feeding on phylogenetically distant prey such as insects or fish.'

We can also enquire into other features of human digestion to see which foods are well suited to our physiology. When looking at the gastrointestinal systems of humans versus chimpanzees, for example, we can find ways in which our physiology has shifted in a different direction than chimps — as humans and chimps are thought to have diverged from a common

ancestor. Chimps have a greater proportion of their digestive tract dedicated to the cecum and the colon — while having a relatively small area designated to the small intestine (Milton, 1999 and Mann, 2000). The colon and cecum are essential for absorbing and fermenting plant materials. Humans have a smaller volume of both of these, which means that we can't readily digest plant materials to the extent animals (like chimps) with these adaptations can. This may explain why humans have developed sophisticated procedures overtime for preparing plant foods to make our digestion of them easier. Of course, however, we can digest specific kinds of plant materials in their raw state, as we do have the digestive tools to ferment and absorb these, just not in the same manner as animals (herbivores) with greater digestive real estate dedicated to this task. Consequently, our available selection of edible plants is much more limited than animals like chimps, who have the necessary hardware to digest a greater variety of toxins.

Humans have instead prioritised the small intestine, which — after our highly acidic stomachs have done their work — absorbs meat very effectively. See Figure 1.1 below (appropriated from Milton, 1999) to examine the divergences of the gastrointestinal systems of various primates. Based on the gut arrangement of humans, it is clear that both animals and plants may be safely and effectively digested. However, our gut does tilt more towards favouring meat. For instance, Mann (2000:75) states, '[the makeup of our gut is] suggestive of reliance on a high-quality diet in which meat is a predominant component.'

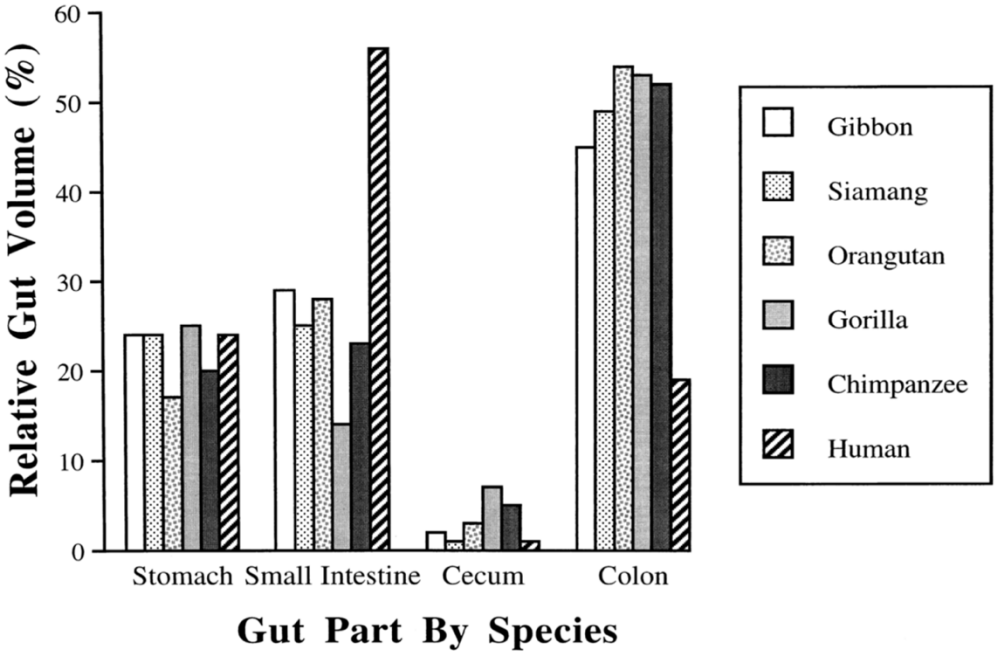

Figure 1*.The relationship between different parts of the gut to their relative gut volume in various primates.*

Source: Milton (1999:490).

There are other adaptations that can plausibly be linked to human hunting of animals, the throwing shoulder and bipedalism primarily, among others. However, these are more speculative and controversial and not essential to the general point I am highlighting. Examining the physiological features needed for eating gives a plausible account of the manner in which we are adapted to eating meat. More than that, we have comparatively (when comparing ourselves to other primates) *less* gut and digestive real-estate, as it were, to digest complex plant foods and in high volumes. This is a vital point that I will return to below when considering the ways in which veganism and vegetarianism are harmful to some.

§2. Summary and The Naturalistic Fallacy

From the above, we can plausibly conclude: Homo Sapiens have eaten meat from the very earliest investigations of our species to the present day (including modern-day hunter-gatherers). And secondly, the reason for this is that we are unique — in comparison to other primates, who are closely related to us evolutionarily — in that we have distinct features of our physiology that are specifically adapted to meat-eating.

The next step is to elucidate the moral significance of this anthropology and evolutionary adaptation. This, of course, will aid in avoiding the appeal to the naturalistic fallacy, whereby one will conclude from the above that because we have adapted to eating meat, that is automatically a moral good. Obviously, this is fallacious as there are many relics of our biological heritage that do not have a positive moral valence. Common examples that are often given are instincts such as aggression, and sexual aggression/extreme lust which could contribute to actions like rape — a clear moral evil. I would not argue that lust or aggression are morally bad *per se*, merely these instincts need to be integrated into a moral vision. For example, lust is an appropriate instinct to cultivate in a marriage setting and aggression is appropriate in situations like self-defence or competition. Likewise with the biological phenomenon of our being adapted to eating meat. Does this serve a worthy moral end and, if so, should we integrate it into our moral lives? If not, we would be within reason to disregard it, just as how we (attempt, in many cases, to) disregard other natural phenomena on a routine basis: diseases, infections et cetera.

After examining the adaptation to eating meat, I shall argue that the adaptation does serve a moral end – namely, the facilitation and sustaining of one's physical and mental health. As already stated, the moral discussion would not end here. The other sentient beings, which have to be killed — animals, as well as broader ecological concerns need to be accounted for in a

full account of the ethics of what we eat. However, as is one of my primary aims, taking into account the fact that meat is healthy for some humans and, moreover, that some people can't be healthy without eating meat, provides a more difficult task of balancing the moral trade-offs between humans, animals and the environment. As many philosophers in this space are writing from a vegetarian and vegan (in the popular, "no animal products", sense) there is a gap in philosophical discussions with regard to the moral implications of vegetarianism and veganism being *harmful* to some people, in a non-trivial manner.

§ 3. Literature on Human Health from Past to Present

To move on, let us consider the case for why it is scientifically cogent to consider meat as health-promoting for humans. Firstly, to move in thematic unity with the above discussion, we can examine what the relevant literature tells us about the health of hunter-gatherer tribes, which I've already established were/are omnivorous — getting, in most cases, the majority of their calories from animal sources.

Before diving into specifics, it is crucial at the outset of this discussion to distinguish between two broad approaches in the scientific literature surrounding nutrition: interventional trials and epidemiological trials[iii]. Interventional trials, as the name suggests are trials whereby an *intervention* is tested on the subjects of the trial, with the usual practices, such as the inclusion of a placebo group, to correct for confounding factors. Epidemiology is where researchers do not test an intervention via direct admission of test subjects but rather through statistical methods, i.e., finding correlations between x and y. For example, in order to help determine whether excessive alcohol consumption results in damage to the kidneys, epidemiologists will perform statistical analyses of how often kidney damage is *associated* with people who drink excessive amounts of alcohol. Both methods are not without their flaws. The flaw in interventional research is that it is very expensive and logistically/pragmatically difficult, and, therefore, the trials are often not operational for long periods of time. Hence, it is often difficult to know the long-term effects of the intervention. The flaw in epidemiology is one that all with a basic knowledge of statistics will note: spurious correlations. And a flaw with both approaches is that there are a near-infinite amount of confounding variables that the researchers

[iii] There are other approaches like mechanistic studies, however, the core controversies in this space are between interventional trials and epidemiological analyses.

can't possibly account for all of them. However interventional trials — specifically randomised controlled trials — are often seen as the 'gold standard' (Hariton & Lacoscio, 2018:1716) of evidence in medicine.

With that in mind, examining the health of past populations — as they are by-and-large physiologically equal to current populations; that is, we have not evolved drastically enough to warrant profoundly different approaches to medicinal and physiological concerns, hence, what benefitted past populations will benefit as in the present — is of great utility as they serve as a quasi-control group with which we can refer to when considering studies performed on contemporary populations. Specifically, as will be evident below, much of the epidemiological literature is concerned with linking meat intake to various chronic and other diseases that plague our modern populations, such as cancer. If it is the case that prior generations — or those living today eating "traditional" foods like the Hadza tribe, for example — do not experience these same diseases, that would indicate a possible spurious finding within the epidemiology.

In the following discussion, I will argue that there is much good anthropological and scientific evidence to suggest that past populations, as well those who still eat "traditionally" today, are and were in good health; based on this literature, it does appear evident that our hunter-gatherer ancestors were indeed healthy and weren't plagued by the diseases that affect our modern populations. Of course, there are other factors that would influence prior generations in their health besides diet: less pollution, greater physical exercise, etcetera. However, if the foods they were eating did have pathogenic properties it almost certainly would have had an effect on such groups and would be reflected in the literature. Since such extreme instances of ill-health don't appear to be evident in these groups, a reasonable inference to make is that the foods they were eating do not have obvious negative health effects and were likely health-promoting.

Allow me to start with an area of discussion which would also be a sensible objection to the claim that our ancestors were more healthy than our modern populations: life expectancy. Of course, there are those (notably Pinker, 2011 and 2018) who have tracked human progress and noted how life expectancy has increased over time. I'm not going to dispute this claim, as it appears evident that this is the case. However, this fact alone isn't sufficient to make the case that we, today, are overall in better health. There are many factors that could have been responsible for lower life expectancy in the past. For instance, as Pinker (2011) has painstakingly pointed out, acts of violence — in general — have been declining over time. One can easily imagine how violence would bring down the mean life expectancy of a group

(particularly of a small group — and our groups were smaller in the past). This would particularly be the case in group conflicts where many would be killed as a result. Clearly, this has nothing to do with the metabolic health of the populations in question. Other such hazards are responsible for much of the skewing of life expectancy in the past. The world in the past was clearly more hostile, dangerous and less accommodating for humans. We could list other ways this would manifest in harms that caused death that would lead to life expectancy being low: limited access to clean water, women dying in childbirth, children dying in infancy, no reliable way to treat serious infections, dying whilst hunting, being preyed upon by non-human predators et cetera.

Moving beyond life expectancy, comparing hunter-gatherer populations to our modern populations reveals some striking differences. To begin with a similarity, Gurven and Kaplan (2007) note that many hunter-gatherers are susceptible to harms such as viral infections (a fact that remains to this day, although, of course, modern medicine is helping in mitigating the harms of viruses and infections via antibiotics and vaccines) and that these do result in deaths in these populations. However, as alluded to above, hunter-gatherers are starkly different from our modern populations in that they do not suffer from the *chronic* diseases that we experience contemporarily, which seem to be a modern phenomenon. Gurven and Kaplan (2007:342) point out,

> 'Degenerative deaths are relatively few, confined largely to problems early in infancy and late-age cerebrovascular problems, as well as attributions of "old age" in absence of obvious symptoms or pathology. Heart attacks and strokes appear rare and do not account for these old-age deaths [...]. [F]ew risk factors for cardiovascular disease exist among active members of small-scale societies [...]. Obesity is rare, hypertension is low, cholesterol and triglyceride levels are low and maximal oxygen uptake is high. [...] To our knowledge there have been no focused studies or mention of Alzheimer's, Parkinson's or other forms of dementia.'

This trend of more traditional societies having bypassed many of our most devastating modern diseases is present in much of the literature. Cordain et al. (2002) found that hunter-gatherer tribes were largely free of any cardiovascular-related diseases, while most got 65% of their calories from animal foods. Pontzer, Wood & Raichlen (2018), looking at a hunter-gatherer tribe that still operates today — the Hadza — found the same pattern. They state (pp. 24),

> 'Longevity among small-scale populations approaches that of industrialised populations, and metabolic and cardiovascular diseases are rare. Obesity prevalence is very low (<5%), and mean body fat percentage is modest (women: 24-28%, men: 9-18%).'.

The Hadza get most of their calories from animal food sources, and — as stated prior — modern-day hunter-gatherer tribes aren't precisely comparable to those that would have lived hundreds and thousands of years ago. (And based on the literature already assessed in this paper, it is likely that the Hadza would have eaten *more* meat in previous generations).

Another specific traditional people group that is worth discussing is the Inuit. What makes the Inuit people unique is that their tribes were carnivorous (prior to modernity and industrialization), feasting on fish and land mammals — including large amounts of organ meats (Gadsby, 2004 and Sharma, 2010). This presents a particular puzzle to the modern nutrition paradigm in which meat is thought of to be a harm (particularly if eaten in, what particular authoritative bodies define as, excess). These populations have been eating almost exclusively meat for thousands of years and are healthy and void of diseases by and large, particularly in comparison to current populations of industrialised societies. Sharma (2010:6) draws attention to this fact when she states,

> '[Despite the current narrative of linking meat to causing disease] the current body of evidence on the Inuit and other Aboriginal Arctic groups indicates that these populations are well-adapted to the animal product-rich traditional diet, which has allowed them to thrive in a very harsh environment for thousands of years.'

An obvious objection, or, at least, a possible cause for scepticism would be the following: Perhaps there is merit in the hypothesis that the Inuit are extreme outliers and that their particular evolutionary trajectory was one that enables them to be unique in thriving on a meat-only diet and, therefore, it is unlikely that the trends found in the Inuit can be extrapolated to any meaningful degree to other populations or the human species as a whole. This hypothesis does have intuitive appeal, however, it is undermined by examples such as Dr Vilhjalmur Stefansson and his companion Dr Karsten Andersen (as outlined in McClellan & Du Bois, 1930). Dr Stefansson was an explorer and ethnologist and spent 11 years living with the Inuit, 9 of which he ate according to their meat-only diet. Stefansson and his companions noticed that they were in good health and vitality when following the Inuit way of eating. This led

Stefansson to want to further investigate this oddity; hence, the McClellen and Du Bois (1930) study.

During this study, Stefansson and Anderson[iv] volunteered to revert to their Inuit inculturation and eat nothing but meat for a year and be monitored for any health-related effects — be they positive or negative. After a year under study, the researchers could find no serious drawbacks to the diet and noted that both men seemed in good mental and physical rigour. This included metrics such as physical abnormalities (none were found), blood pressure (which remained normal), vitamin deficiencies (none were found) and kidney function (no obvious signs of lapsed kidney function were evident). The subjects did experience some bowel issues — constipation and diarrhoea — however, they would not persist or were severe and the researchers did not think it merited concern and occurred in comparable frequency to be confounded with such phenomena in the general public. They conclude their investigation with the following sentence, '[...] the clinical observations and laboratory studies have no evidence that *any* [emphasis added] ill effects had occurred from the prolonged use of the exclusive meat diet' (McClellen and Du Bois, 1930:667).

This study has of course garnered criticism, particularly for its age as of this moment. However, there are reasons to still consider such an investigation scientifically credible and valuable, as this paper does have some merits that even modern interventional trials do not share. Firstly, having subjects available for examination for a year, and under such meticulous monitoring, is rare and thus very valuable for scientific purposes — as the longer the trial the more solid the understanding of long-term outcomes of whatever particular intervention the researchers are studying. Ideally, all clinical trials would be conducted for such lengthy periods. Obviously, as noted already, this is often not pragmatically viable, hence why most clinical trials observe subjects for shorter periods. Furthermore, the researchers were very thorough and rigorous in their monitoring of the subjects/data-collecting. For instance, both Stefansson and Anderson spent the first few months of the study monitored in the metabolism ward of Bellevue Hospital, New York. Anderson was in the ward from 6 January until April 22, 1928, and Stefansson from 13 February to April 20, 1928. After this, both men lived in their homes. However, they were still monitored rigorously by the researchers and regular tests were performed (blood work, urine samples etc.). Of course, 1930 is a long time ago and it is disappointing that more studies of this nature have not been done[v]. however, the merits of the

[iv] There was a third participant. However, this subject only adhered to the diet for ten days.

[v] However, thankfully, researchers at Harvard University are making headway into bolstering or falsifying these findings by conducting their own research on those following — mostly — meat-only diets. At the time of writing,

study are still evident and worthy of consideration. Particularly in light of the modern literature that suggests that modern hunter-gatherers — who, granted, aren't on a meat-only diet, but do get the majority of their calories from meat — are indeed in good health. (To reemphasize, I am not making the case for a particular diet – i.e., the meat-only diet, merely a diet that contains meat, and in such a way that is evolutionarily consistent). Moreover, for epistemic reasons, it is useful to have all meat dietary studies to compare to the all *plant* products dietary studies. As it stands, there is an asymmetry, with there being ample vegan/vegetarian studies, yet almost no only meat studies. Another more subtle way that the McClellan and Du Bois study is useful is that food has become increasingly politicised as moral concerns (and financial interests) — thus, increasing probabilities of conflicts of interest — creep in on a "pure" scientific analysis of what foods are evolutionarily compatible and health-promoting for humans.

There are other indicators of the health of traditional groups that we can assess. We can look to a domain that preoccupied the ancient Greeks: beauty, or as Shanahan (2016) terms it, dynamic symmetry. Shanahan (2016) highlights that there is an intimate connection between beauty (which is often related to symmetry) and health. For example, in 2012, the number two reason people would visit their primary-care physician was due to '[a]rthropathies [joint pain] and related disorders' (CDC, 2012:20). Although there can be several causes for such a pathology to manifest, a common cause of such discomfort is skeletal asymmetry (Al-Eisa et al., 2006). Moreover, emerging fields that are increasing in demand, such as chiropractors, point to the growing need to correct these asymmetries. As Shanahan (2016) points out, our attraction to beauty/symmetry is deeply ingrained, as form indicates function. That is, 'beautiful' people are, in an evolutionary sense, more optimised for a thriving survival, whereas those with asymmetries will often need assistance and not be able to function as well as their more symmetrical counterparts in certain areas. To take an obvious evolutionary example, those with constant joint pain would be negatively associated with the propagation of genes as they would not be as effective in hunting, defence or in being nomadic. Obviously, today we have methods to mitigate such asymmetries. For example, children with less than optimal skull structure will need modern correctives such as spectacles, braces for their teeth etcetera. Where I am going with this line of investigation is that the anthropological record

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they have only published a survey (Lennerz et al., 2021) with a randomised control trial currently being pursued. The initial survey showed promising results, which would be congruent with McClellan and Du Bois. The researchers conclude (pp. 1), 'Contrary to common expectations, adults consuming a carnivore diet experienced few adverse effects and instead reported health benefits and high satisfaction.'

shows that our hunter-gatherer ancestors/traditional groups had markers of dynamic symmetry.

We can look to the work of Weston Price (2006, [original publication in 1939]), for example. Again, I am aware that I am relying on literature that is notably old at this point. However, the findings of Price and his companions were extensive and done in a meticulous manner which holds up to contemporary scholarly standards. There isn't a precise modern equivalent, hence his seminal work *Nutrition and Physical Degeneration* has had a new edition published as recently as 2016. Price was first and foremost a dentist and was frustrated by the Western trends of dental decay and abnormalities, over and above a general trend of declining health in the West. Through his research, he realised that certain nutritional deficiencies would lead to abnormalities in the face. This led him to study other populations and see if they were plagued by the same ailments he was observing in the West, which he concluded were dietarily related. Being a dentist, his original plan was to access the teeth of different groups and those groups with the fewest cavities, and whose teeth were the most straight, would be deemed the healthiest — as he hypothesised, correctly, that one's teeth would be a marker of one's overall health. What he found — as outlined in *Nutrition and Physical Degeneration* — was that groups of people, from around the world, living in "traditional" settings and eating "traditional" foods (which I have already noted were predominantly meat-focused foods) enjoyed perfect dental health: no cavities and their teeth were straight; dynamic symmetry was present. Over and above this, these groups were in good physical health generally and were symmetrical and beautiful in physiological stature, with no musculoskeletal abnormalities — to the point where Price (2006:31) reports feeling taken aback by the beauty of such people.

A reasonable inference to draw from Price's work is that Western industrialised food has led to many of the ill-health effects in Western populations, as non-Western, traditional, hunter-gatherer style populations don't have these markers of pathology — at least nowhere near the extent that the West does, even in Price's time. Many of these pathologies that Price noticed have undoubtedly worsened over time and spread outside the West, as many graphs in resources like *Our World in Data* can show. Looking at the empirical record of the first Neolithic populations, we can observe that the decline in health appears to have started with this shift — from hunter-gatherer societies to concentrated larger-scale societies during the Neolithic revolution. Steckel & Wallis (2007:1) note that,

> 'Urban living came at a substantial cost. Accumulating evidence from skeletons [...] shows that Neolithic cities and towns were unhealthy. Their residents were smaller in stature than hunter-

> gatherers and their bones had relatively more lesions indicating dental decay [a la Price], infections and other signs of physiological stress.'

This trend is found cross-culturally and has been cited in the relevant literature for years. Another analysis can be found in Cohen et al. (1984) in *Paleopathology at the Origins of Agriculture*, where the authors found this trend in nineteen out of the twenty-one cultures they studied that underwent an agricultural transformation. I am not trying to make the case against agriculture per se. It has clearly yielded great benefits and transformed our societies for the better in many ways (Diamond, 1999 and Pinker, 2018). However, moving away from our ancestral way of eating appears to have had a severely negative consequence as well: declines in health. Moreover, this health decline appears to be getting worse as we continue to rely on increasingly alien — from an evolutionary perspective — foods (again, one can refer to resources like *Our World in Data* to see the trends in health globally).

Moving beyond anthropology, there are many interventional trials and epidemiological[vi] analyses that indicate the health-promoting properties of meat. To begin, as a prelude, we can examine the caloric and nutrient compositions of meat vs plants in conjunction with the micro and macro-nutrients uncontroversially accepted to be healthy for humans. For the sake of brevity, I will simply examine two common staples of omnivores and vegetarians, respectively: kidney beans and sirloin steak. Although just two examples, if the reader is so charitable as to accept my literature review is well-grounded, this is representative of a broader trend: animal products tend to be more nutrient-dense with the nutrients that are needed for humans to be healthy.

	Beef (100g)	**Beans (100g)**
Protein		
Total	≈30g	≈9g
Cystine	0.4g	0.1g
Hidistine	1.3g	0.3g
Isoleucine	1.6g	05g

[vi] I'll discuss the issues found in epidemiology below where I consider the common scientific arguments against meat being healthy.

Leucine	3.0g	0.8g
Lysine	3.4g	0.7g
Methionine	0.9g	0.1g
Phenylalanine	1.4g	0.6g
Threonine	1.6g	0.4g
Tryptophan	0.4g	0.1g
Tyrosine	1.3g	0.2g
Valine	1.7g	0.6g
Vitamins		
Vitamin A	15.9 IU	0.0 IU
Vitamin B1	0.1mg	0.2mg
Vitamin B2	0.3mg	0.1mg
Vitamin B3	9.0mg	0.7mg
Vitamin B5	0.5mg	0.2mg
Vitamin B6	0.9mg	0.1mg
Vitamin B12	2.3µg	0.0µg
Folate	5.7µg	147.4µg
Vitamin C	0.0mg	1.4mg
Vitamin D	1.1 IU	1.1 IU
Vitamin E	0.3mg	0.0mg
Vitamin K	2.2µg	2.5µg
Minerals		
Calcium	18.1mg	39.7mg
Copper	0.1mg	0.2mg
Iron	3.3mg	2.5mg
Magnesium	17.0mg	47.6mg
Manganese	0.0mg	0.5mg
Phosphorus	306.2mg	156.5mg

Potassium	435.4mg	459.3mg
Selenium	30.8µg	1.2µg
Sodium	76.0mg	1.1mg
Zinc	5.1mg	1.1mg

***Figure 2**. Comparison of nutrient density between beef (cooked sirloin steak) and beans (cooked kidney beans).*

Source: Data from U.S. Department of Agriculture, https://fdc.nal.usda.gov/index.html

Looking at these data, it is evident that beef, overall, is more nutrient-dense than beans — granting that the beans do outperform the beef in a few nutrients. Moreover, although I will not provide the same breakdowns of other food types — again, for the sake of brevity, beans are one of the most nutrient-dense plant foods. Many other common plant-based staples are less nutrient-dense than beans. Therefore, a clear benefit of eating meat is the easy access to nutrients in substantial quantities, while limiting calories.

This is important for a couple of reasons. To use protein as an example: the U.S. Dietary guidelines have a daily recommended allowance (RDA) of 0.8[vii] grams of protein for every kilogram of body weight. To illustrate using myself, I weigh 65kgs. This means that I should be eating 52g of protein a day. Using the above table, eating 100g of sirloin is already 58% of my RDA of protein. To simplify, I could eat ≈200g of sirloin (488 calories) and fulfil my RDA of protein. In order to get the same amount of protein from the kidney beans in a day, I would need to eat ≈600g (762 calories) of kidney beans. Already, here, we can see a potential problem emerging: One has to consume more calories from plant foods (if one is aiming to subsist on purely plant foods) to reach the RDAs of the various nutrients needed that mainstream medical authorities would consider necessary to maintain good health[viii]. This obviously runs the risk

[vii] There is a continual debate, which I won't get into, about the optimal amount of protein (or any other nutrient for that matter) needed as a human. Therefore, RDA's should not be taken as gospel, as it were, as the amount of protein one should be eating may be more than the RDA. The RDA is simply a "ballpark" estimate. For the purposes of the current discussion, it is not too consequential. RDAs also should be understood in their proper context as many nuances are often left out of RDAs, like activity level and age.

[viii] The same general point can be made without reference to RDAs as well. RDAs can be contentious and I was merely using them as illustrative. In general, meat can provide more nutrients per calorie than plant foods. Below I highlight a controversy in nutrition: high or low carbohydrate intake, citing evidence which suggests that high carbohydrate intake is harmful for some people. This is an example of a case where the RDAs may not be accurate.

of consuming more calories than is optimal for one's height and exercise regime leading to excess weight gain over time, which will lead to the harms associated with being overweight. In order for vegans and vegetarians to get adequate amounts of protein[ix], they have two options available to them:

1. Eat in the manner described above, whereby more calories of plant material are eaten to equal the nutrient density of meat
2. Supplement the amount "lacking" from plants in their natural form with extract concentrates like pea protein powder, for example

There are reasons to doubt both of these approaches (again, for *some* people; there are those who appear to adopt these strategies and be in good health). To address (1). The first problem to notice draws us back to considering biology. As I noted already, above, plants do not have the evolutionary predation defence mechanisms that animals have, like running away or fighting back somatically. Therefore, they have evolved other deterrents of predation. These mechanisms are chemical, whereby plants produce defence chemicals to ward off predators. This is documented, in detail that I won't get into here, in Dr Gundry's[x] (2017) *The Plant Paradox: The Hidden Dangers in "Healthy" Foods That Cause Disease and Weight Gain*, to cite one example, or modern scientific papers such as Mithöfer & Miffei (2017). The core point is that these defence chemicals (also often referred to as anti-nutrients[xi]) can have pathogenic effects on humans and contribute to all manner of diseases. The following quotation by Ames et al. (1990:7777) is helpful to put the intake of these toxins in perspective,

> 'We estimate that Americans eat about 1.5g of natural pesticides per person per day, which is about 10 000 times more than they eat from synthetic pesticide residues […]. [T]here is a very large literature on natural toxins in plants and their role in plant defenses. The human intake of these toxins varies markedly with diet and would be higher in vegetarians. Our estimate of 1.5g of natural pesticides per person per day is based on the content of toxins the major plant foods'

[ix] Or other nutrients that may be deficient in plant foods.

[x] It is, perhaps, important to note that Dr Gundry is an advocate of eating plants, despite the prima facie antagonism towards them in his book's title

[xi] "Antinutrient" as these toxins can block the absorption of the nutrients found in the food. This is critical in light of the above discussion as even supposing a particular meat and a particular plant product had the same nutrient profile, the meat would still be more beneficial as its nutrients would be absorbed more easily, whereas the plant's nutrients would be, to a certain extent, hindered by toxins. This isn't to say that plant defence chemicals and anti-nutrients are interchangeable. Many people cannot tolerate lactose, for example. Hence, the absorption of nutrients from dairy products is also hindered in certain people.

The authors go on to note that these plant pesticides/toxins are very prevalent in many of the everyday plant foods consumed by humans, noting at least 42 different compounds can be found in common plant foods, like cabbage. They also note the manner in which such compounds have been documented in the relevant literature to be harmful to humans via DNA damage: clastogenesis, for example.

To refer to the earlier discussion, it is clear from looking at physiology across species that humans do not have the same capacity to ferment and digest plant materials as many other animals. We do still have the capacity to safely eat (some) plants, just not to the same degree as other primates, like chimps. Therefore, it is not surprising that when our guts are subjected to plants with complex chemical makeups that a reaction of inflammation and the like is the result for some people although these effects are not uniform and will affect different people to varying intensities. However, the claim that plants do contain these harmful chemicals is not conjecture and is documented extensively in the scientific literature.

This leads directly into the issues with (2). As Akande & Agu (2010) note, many anti-nutrients can still be found in plant proteins, which would hinder the absorption of the protein by the user. Moreover, not all proteins (and nutrients more broadly) are created equal. There are substantive differences in many cases in the nutrients found in animals vs plant foods, even though they are the same broad type.

To get a little technical, protein is made of amino acids (AAs). There are 20 AAs that our bodies utilise and within these 20 there are the 9 essential AAs. They are termed so as our body must gain these from an external source (food), whereas the other AAs can be formed via other nutrients within our bodies. Many of these 9 essential AAs are substantially lacking in plant sources, notably leucine. Therefore, even substituting protein wholesale in plant forms may still leave one with deficiencies as the biochemical make-up of plant and animal proteins have notable differences when broken down to the level of AAs. Using these nuances, dieticians have developed what is known as The Protein Digestibility-Corrected Amino Acid Score (PDCAAS). Currently, this is the preferred method of measuring how proteins best suit human nutritional needs. The highest PDCAAS possible is 1.00. Hoffman & Falvo (2004) note that the foods with a PDCAAS of 1.00 are: casein, egg, silk, soy protein and whey protein (with beef not lagging too far behind at 0.92). Obviously, the majority of these are animal-sourced foods (many being suitable to some varieties of vegetarians, like milk and eggs). Soy is the only vegan option available for a high PDCAAS protein. However, a notable problem with using the PDCAAS scale is that it does not take into account the antinutrient properties of various foods (this would include lactose for example, which many people do not tolerate in

dairy products). Taking into account the nature of antinutrients changes the digestibility and quality of the protein, despite the chemical composition of essential AAs. This is particularly the case with soy and there is research linking soy with digestive problems (WebMD, n.d. and Wróblewska et al., 2018), reproductive issues (Křížová et al., 2019; Yuan et al., 2021 and Cederroth et al., 2010), allergic reactions (Gu et al., 2001) and impaired cognition (Bell et al., 1985) as a result of toxins within soy.

Another problem is the carbohydrate component of animal versus plant foods. Because plants are primarily carbohydrates, when one adopts a vegan or vegetarian diet, then, in most cases, one is then getting the majority of one's calories from carbohydrates. This often exceeds the RDA of 50-55%, for what that's worth. Of course, there is controversy regarding the optimal level of carbohydrates for humans. However, referring to the biological literature, it seems to me that there is good reason to suspect that carbohydrates, eaten in large quantities, may be harmful to *some* people as we do not have the biological adaptations for doing so. Remember, we have favoured the small intestine which is primarily used in digesting proteins and fats. Furthermore, there are interventional trials that demonstrate the benefits of limiting carbohydrates. For example, Hyde et al. (2019) found that restricting one's carbohydrate intake improved metabolic syndrome independent of weight loss. Chen et al. (2020) compared the effects of low vs high carbohydrate diets on patients with type 2 diabetes. The changes their investigation highlighted were that the patients on the low-carb diet improved control of blood sugar and weight loss with greater reduction of hip and waist circumference and blood pressure. This particular study is unique in that it was conducted over 18 months, an unusually long time for an interventional trial. Although not impossible, going "low-carb" on a plant-based diet is difficult and limiting; it also assumes that the person will not have intolerances to high amounts of fibre — also a key feature of plant foods — or the antinutrient components in the low-carb vegan and vegetarian foods. Therefore, if one is both intolerant to high carbohydrates and the vegan or vegetarian plant alternatives, this leaves one with the alternative option: eating animal products to maintain their health.

In addition to the above, there are many more studies indicating the health effects of eating meat and animal products. These include, but are not limited to, improving ageing and telomere length (Cambell et al., 1999 and Kasielski et al., 2015), bone density and joint health (Langsetmo et al., 2016 and Iguacel et al., 2019), cardiovascular health (Forsythe et al., 2008 and Thorning et al., 2015), cognitive functioning (Krikorian et al, 2021 and Neumann et al., 2007) and mental health (Dobersek et al., 2021).

Again, none of this is to say one cannot find compelling scientific literature to argue a case for veganism or vegetarianism. I agree that there is compelling evidence for the efficacy of vegetarianism, although I do think the case for animal-product-free veganism is less compelling. However, although this may not be the case, two things can be true at once: perhaps both vegetarianism and omnivorism are beneficial for certain people. I am not disputing that vegetarianism and veganism may be beneficial and healthy, merely we have compelling evidence to indicate that veganism and vegetarianism may also be harmful to some people, to an extent where they can't reasonably adopt these dietary strategies and remain in good health.

To conclude my negative argument, I want to examine the specific issue of nutrition and children, specifically as it pertains to vegetarian and vegan diets. This is an area that is understudied and thus not properly understood (Cofnas, 2019). However, as I will argue below, we have compelling reasons to doubt the efficacy of veganism or vegetarianism for children. This is also important as being raised on meat is a major confounder in vegetarian and vegan scientific literature. A person who has only converted to veganism or vegetarianism in adulthood is not representative of the full effects of veganism or vegetarianism as during many vital stages of development they have been eating meat and animal products. A truly representative vegan or vegetarian test subject would be someone whose mother was vegetarian or vegan while pregnant and breastfeeding and then who went on to eat plant-based from childhood till adulthood.

The evidence we do have, thus far, indicates that being pregnant while vegetarian or vegan and then breastfeeding following the same diet is harmful to the child, notably in vitamin B12 deficiencies, which can cause neurological and haematological (blood) disorders (Roed et al., 2009; Mariani et al., 2009; Bravo et al., 2019). Vitamin B12 is particularly problematic for plant-based eating as it cannot be well-sourced in *any* plant foods. There are analogues found in plants like algae and seaweed, but these are not comparable to the B12 found in animal products and are described as 'pseudovitamin[s]' by Wantanabe et al. (1999:4736). Problems related to B12 deficiency are by no means limited to vegan children. There is literature on B12 deficiency in adult vegans and vegetarians (Gilsing et al., 2010; Herrmann et al., 2017) as well as the problems associated with B12 deficiency like mental illness and cognitive impairment (Lachner et al., 2012). The *only* interventional controlled trial that has been performed comparing vegetarianism (not, veganism) and omnivorism in children is found in Hulett et al. (2014). Here the researchers investigated the effects of adding meat, milk or additional calories of the food they were already consuming, to a group of predominantly vegetarian Kenyan school children for two years and compared the effects to a control group of children who

received no additional food. The meat group saw the biggest improvements in physical stature and cognitive functioning.

§4. Responding to an Objection: Meat and Cancer

Lastly, before concluding, I will briefly highlight a common scientific critique of eating meat, namely that eating meat causes severe diseases like cancer or diabetes. To go through all of the examples would be too lengthy for the current investigation. To exemplify the manner in which these claims are often misleading, I will assess the singular claim that meat causes cancer.

In 2015 the World Health Organisation (WHO [Bouvard et al., 2015]) through the International Agency for Research on Cancer (IARC) published a report which posits that meat (processed and not) is carcinogenic (cancer eliciting) in humans — processed meats being group 1, the most severe group, carcinogenic and non-processed meats being in the below group: 2A. This was concluded after examining 800 studies linking meat to cancer. A more thorough report of their methods and findings was published in 2018 (IARC, 2018). Two of their findings include: for every 100 grams of red meat per day there is a 17% increase of colon cancer and for every 50 grams of processed red meat a risk increase of 18% would follow.

Prima facie this seems quite damning. However, once we probe more into this report the holes become evident. This report focused on epidemiological studies, animal experiments and mechanistic studies — studies that might show a biological connection between cancer elicitation and meat — to draw their conclusions. The working group decided to *ignore* the animal experiments due to their being unable to show a clear direction either way in the feeding of red and processed meats and tumour development. This is an important note. We can already see that the issue of meat causing disease is not as clear-cut as some may believe. Moreover, although there is biological continuity across species, animals and humans also have many different physiological features and, therefore, animal experiments should always be taken with a grain of salt, as it were, as Ede (2015) notes in her critique of this report by the IARC. Therefore, it is unclear what human equivalent experiments would show. However, if we were to extrapolate from the animal experiments, the consensus would be that it is unclear whether there is a causal link between eating meat and the development of cancer.

Because of this, the working group relied only on epidemiological findings, with some supporting mechanistic studies. However, as Klurfeld (2018:5) notes, ‘mechanistic studies are not strong evidence of causality: they simply show that some component in meat *could* [my emphasis] affect noncancer endpoints in studies with animals or cell cultures, and plausibly

increase the risk of cancer.' Moreover, what is left out of this report is as important as what is included and given precedence, as the researchers omitted to include two studies from one of their own members that showed that when rats were fed bacon their precancerous indicators were actually *suppressed* (Klurfeld, 2018). This points to the ambiguity surrounding the rhetoric of meat consumption and cancer.

Given these complexities, the WHO, IARC working group focused on the epidemiological literature to draw conclusions. Curiously, out of the 800 studies touted to have been assessed, the group deemed only 32 as informative and worthy of inclusion in the final analysis. Fourteen of these focused on red meat and cancer. Seven out of these 14 showed a link between cancer prevalence and meat-eaters. Another way of saying this would be that half showed a link between red meat and cancer and half did not: hardly conclusive evidence. With processed meat, 12 out of 18 studies examined showed a link between cancer and meat. Although this is a better ratio than that of the red meat studies, this still prompts the question — which is extremely difficult to sort out via epidemiology: is it the meat *per se* that "causes" the cancer or some *ingredient* in the processed meat? Or perhaps the way the meat is prepared: was it cooked in ultra-processed oils etc.? There are multiple confounding variables that could lead to cancer. Furthermore, a major weakness of this analysis was that the vast majority of studies reviewed were assessing Western populations exclusively. If we do a broader literature review, studies looking at Asian populations, for example, we find no relationship between meat intake and cancer, and currently, there is no literature on Asian populations linking meat to cancer (Hur et al., 2018). If there was some mechanism in humans that triggers the onset of cancer via eating meat, surely this would show across populations and not just in the Western ones. Again, pointing to a possible exogenous factor that could be causing the cancer that isn't the meat, in and of itself. Moreover, the correlations found in these epidemiological findings are not particularly compelling, often very low and many of them could be deemed statistically insignificant. Of the 14 studies looking at the association between red meat and cancer, the study with the highest correlation is found in Singh & Fraser (1998). However, there are many issues with this study that make it problematic to include in such an analysis.

Firstly, this study is examining a religious group (Seventh Day Adventists) who are vegetarian and have a strong aversion to eating meat from a religious and cultural perspective. Therefore, we already have a major confounding variable: healthy user bias. In a culture in which eating meat is frowned upon, those who engage in eating meat are also those who are more likely to partake in other rebellious activities, like smoking, drinking excessive amounts of alcohol, taking recreational drugs etcetera. Healthy user bias is an important point to keep

in mind as it is likely skewing many of the findings regarding meat and ill-health. For example, given the cultural attitudes toward vegetables (and even veganism and vegetarianism being superior diets, from a health perspective) being the prime health foods and eating excess meat being a harm, it is not surprising that those who are vegetarian might also engage in other healthy behaviours like exercise, mediation, yoga et cetera. I.e., the cultural narrative of equating vegetables and no meat with superior health attracts those who are doing other activities (outside of diet) to improve their health.

Another aspect of the Singh & Fraser (1998) study, which the authors themselves note, is that the strongest correlation between red meat and cancer occurred in individuals who were obese and had higher insulin resistance. These two factors are known to be strong predictors of cancer formation and, therefore, are more likely candidates to be the cause of the cancer than the red meat.

I'm not advocating for the complete abandonment of epidemiology, some evidence (whether it be epidemiology or something else) is better than none after all. I merely wish to look at epidemiology for what it is and we should be more cautious about diagnosing a problem solely based on epidemiological findings, particularly ones with weak correlations. More pertinent for this discussion, is that even looking at the argument against meat from a purely epidemiological lens does not paint a clear picture in the least. As outlined above, the WHO rejected most of the literature on the topic and those they did consider had a significant proportion of studies indicating that meat has not been linked to cancer or that the correlations were too weak to infer any causation. And, as shown by the Seventh Day Adventist study, the literature used has many nuances that complicate an accurate diagnosis or proclaim boldly that eating meat is carcinogenic.

Such problems are so pervasive that they can be extended towards other foodstuffs — and other phenomena more broadly. For instance, Shoenfeld & Ioannidis (2013) sought to expose some of the limitations of epidemiological research and diet by showing that most common food ingredients can be associated with increased cancer risk. They did this by taking 50 widely used ingredients from recipes in available cookbooks and assessed each one for a link to increased risk of cancer, based on available literature. Forty of these ingredients selected had literature assessing their carcinogenic status. Much like the literature I have cited in this section, these authors also found that the data were very sporadic and inconclusive and one could find studies pointing in either direction. And, like the epidemiology of meat, many of these associations are weak or statistically insignificant.

Since the WHO analysis was published, in addition to the critiques of the analysis, there have also been several more studies, including meta-analyses, showing that meat should not be considered carcinogenic. Moreover, there is also literature on eating meat as *protective* against cancer. For example, Nindrea et al. (2018:327) conclude their meta-analysis as follows, '[t]his analysis confirmed the protective effect of omega-3 fatty acids in fish consumption against breast cancer in Asian patients.' Again, pointing to the need to take a broader look at populations and not focus predominantly on Western populations, as the WHO analysis did.

To cite a few more examples of literature that have been published since the WHO report: To continue with Asian populations in mind, and although I have already mentioned this study above as a direct response to the WHO IARC report, Hur et al. (2018) criticise the working group for not sufficiently focusing on the Asian populations. They note,

> 'we conducted an in-depth analysis of prospective, retrospective, case-control and cohort studies, systematic review articles, and IARC monograph reports [...]. Most studies conducted in Asia showed that processed meat consumption is not related to the onset of cancer. Moreover, there have been no reports showing a significant correlation between various factors that directly or indirectly affect colorectal cancer incidence, including processed meat products types, raw meat types, or cooking methods' (Hur et al., 2018:1-2).

Saliba et al. (2019:287) looked into Jewish and Arab populations in Mediterranean environments and found, 'overall red meat consumption was associated weakly with CRC [colorectal cancer] risk, significant only for lamb and pork, but not for beef, irrespective of tumour location. Processed meat was associated with mild CRC risk.' Vernooij et al. (2019:732)'s conclusion paints a similar picture, '[l]ow or very-low-certainty evidence suggests that dietary patterns with less red and processed meat intake may result in very small reductions in adverse [...] cancer outcomes.'

Furthermore, there is also *interventional* research finding little connection between the amount of meat a patient eats and cancer elicitation or mortality. Zeraatkar et al. (2019:721) conducted a systematic review of randomised trials and found, 'diets lower in red meat may have little or no effect on total cancer mortality (HR, 0.95 [CI, 0.89 to 1.01]) and the incidence of cancer, including colorectal cancer (HR, 1.04 [CI, 0.90 to 1.20]) and breast cancer (HR, 0.97 [0.90 to 1.04]).'

My main purpose in this discussion is not to make a definitive claim that meat causes or does not cause cancer. However, I do wish to highlight that those conclusions have been

reached by observational, epidemiological studies. Looking at this literature dispassionately, an agnostic view seems to be appropriate. The data are simply too sparse to be deemed definitive.

This leads me to re-emphasize a core tenet of this paper as a whole: looking at the problem in a multidisciplinary fashion. Epidemiology, particularly in this context, seems to be of limited utility, therefore, we would do well to arm ourselves with knowledge from other fields to draw a meaningful inference to the best explanation. For example, would a food that is a main feature of our evolution be carcinogenic to us? Why would a food that is so nutrient-dense, including evidence of lengthening telomeres for humans also be carcinogenic? The epidemiology should be a premise embedded inside a larger argument, that takes into account these other points of reference, and not the argument itself.

~

To conclude then. I have presented two arguments. My positive argument is that we have compelling reason and evidence to grant that eating meat is healthy for humans. I have accessed this claim in three broad areas of enquiry: evolution, anthropology and scientific studies assessing modern populations. The triangulation[xii] of these provides a cogent, cumulative, composite case in favour of eating meat to maintain and obtain one's health.

My negative argument is that we have sufficient grounds for accepting, scientifically, that vegetarianism and veganism may be harmful for *some* people and, therefore, not a solution that can be implemented en masse. The reasoning for such a claim is twofold: (1) plants are inferior

[xii] Although a full discussion of the philosophy of science would be beyond the current scope of this investigation, it is worth noting the manner in which my approach is congruent with prominent views in the philosophy of science with regards to ensuring objectivity in science. For example, in the philosophy of science we find what are called "epistemic values." These are values that are applied to scientific questions and theories that have — according to their exponents, among whom we find notable philosophers of science like Thomas Kuhn (1973) — a direct bearing on the truth of scientific claims. The methods I have used in this chapter would be in polite company with values like "broad scope" (taking into account multiple sources of evidence), for example.

A contrary approach, espoused by Helen Longino (1990 & 1996) is to not rely on epistemic values but on how science functions in practice. According to Longino, it is the communicative nature of science that provides epistemic assurance. Every scientist's bias, value judgements etc. are checked and balanced against every other scientist's biases and value judgements and what emerges from this crucible can be thought of as objective; as, in the communicative scientific practice, only those theories which can withstand substantial criticism from the broader community will be accepted.

My argument, I hope, has demonstrated how greater scientific communication can assist in gaining epistemic clarity on scientific issues. To use the problem of the carcinogenic effects of meat as illustrative: My major critique was that the issue was investigated myopically. The WHO, in this case, only thought it necessary to use one approach, epidemiology, and only a very small selection of studies to reach their conclusions. Greater communication between scientists, sub-disciplinarily as well as geographically, would have assisted in a more nuanced investigation (taking into account anthropology and evolutionary factors, considering the literature from non-Western populations, the manner in which similar carcinogenic correlations can be found in many mainstream ingredients, the interventional literature indicating the health-promoting effects of meat — including the lengthening of telomeres — etc.).

in their nutrient density when compared to animal-sourced foods and (2) plant foods contain chemical defences to ward off/regulate predation which can in themselves be toxic to certain people and block the absorption of the nutrients — hence the overlap between plant defence chemicals and antinutrients — in plant foods. These two factors result in nutrient deficiencies in vegans and vegetarians which can cause serious harm.

The moral implications of this chapter as a whole being: we can't expect the world's population to eat vegetarian or vegan (in its popular sense) without serious harm to many. Therefore, in order to avoid these serious harms, a concession needs to be made by granting the farming and eating of animal-sourced foods.

Chapter 2: Environmental Issues

Even if one finds the conclusion of the previous chapter convincing, an obvious objection/contention to the advocacy of people eating meat is that the eating of meat, by virtue of the way in which animals are farmed, is a severe environmental harm.

In this chapter, I will examine the common ecological arguments against eating meat. The approach taken is twofold. First, I will examine the objections raised against farming meat as it is *currently* farmed in general, as the literature often cited in objection to farming animals is conducted based on conventional, popular farming methods. Here I argue that we have good, scientific, reasons to doubt the view that meat is as harmful to the environment as critics argue. I believe this conclusion can be reached when a border view is taken on the question as often the findings are presented in a manner that is, in my view, oversimplified. Therefore, even under conventional farming methods, many of the environmental objections to farming meat would not stand — particularly in light of the previous chapter. This, of course, is not to claim that there are, resultantly, no environmental harms associated with conventional livestock farming. However, these can be addressed via better ways of farming livestock as opposed to advocating for the cessation of farming livestock.

Therefore, more than responding to the conventional methods of farming and their objections, I provide a case for an alternative. Namely, regenerative agriculture. These methods of farming are important for two reasons: (1) they an ecologically cleaner way of farming and (2) operating under a regenerative agriculture model ensures greater animal well-being, a point particularly relevant for the following chapter.

§1. Preliminary Remarks

Before moving on to discuss specific issues, I wish to make a broad point. Criticisms against farming animals often focus exclusively on the negative aspects of farming animals without considering or correcting for the many great benefits that animals — specifically ruminants – – play in an ecosystem.

I have already noted in the previous chapter that animal-sourced foods are generally very nutrient-dense, providing many of the essential nutrients for humans in greater amounts per calorie/kg or pound than alternatives. This fact alone is of great significance for the ecological

debates, which I will illuminate in more detail below. In addition, animals also are beneficial in that they take material not edible for humans (grass etc.) and convert it into nutrient-dense food for humans.

Another vital benefit of farming ruminants — when done efficiently — is that it is a cyclical process. To provide an overly simplistic overview: The cow eats the grass; it urinates and defecates which nourishes the soil; it belches methane, which goes into the atmosphere to be converted into H_2O and CO_2; the fertile soil then retrieves the CO_2 and H_2O from the atmosphere via photosynthesis and the cycle starts again. This cyclical system is also in opposition to an approach whereby fossil fuels are used — as the use of fossil fuels is a bottom-up, linear method whereby new greenhouse gases (GHGs) are introduced into the atmosphere, from ancient sources that have not been circulating for generations, even millennia[xiii].

From the above example, I have also implicitly referenced another major benefit of ruminants: ruminants nourish soil. I introduced the cyclical nature of ruminants before the nourishment of soil, as the nourishment of the soil is more greatly appreciated in the context of the cyclical system. If we try to nourish the soil without ruminants, we then have to rely on fossil fuels via synthetic fertilisers[xiv] et cetera. Which, again, is adding new GHGs, from dormant sources, into the atmosphere, as well as the other ecological worries that harvesting chemical and mineral materials involve.

With these preliminary remarks in place, we can now examine the core arguments against farming animals from an ecological perspective.

§2. Greenhouse Gases

An obviously salient moral ecological discussion in contemporary debates is the climate change phenomenon. A key component in this debate is the amount of GHGs in the atmosphere. The core claim being: we are emitting more GHGs than can be sequestered. Farming of animals, specifically cows, is often touted as a substantial driver of this problem and, therefore, to help mitigate what could be a climate crisis, we should stop — or severely limit — the farming of animals.

[xiii] An important point to notice about the carbon cycle of modern day livestock is that it is merely a continuation of an existing carbon cycle that has been "operating" for as long as ruminant animals have been in existence. There are potential criticisms to modern day ruminants, of course. For example, perhaps the population of ruminants today vastly exceeds that of previous generations when the climate was "ideal", therefore, throwing off the balance of the cycle. I will respond to these issues below.

[xiv] I will draw out the discussion of an agricultural system without livestock in greater detail in the following chapter.

The core item of literature that is responsible for this view was published in 2006 by the Food and Agriculture Organisation (FAO) of the United Nations titled *Livestock's Long Shadow* (FOA, 2006). This study concluded that livestock accounted for 18% of all greenhouse gas emissions, making livestock a greater environmental threat than the transport sector. However, a damning criticism of this study was made by University of California scientist Frank Mitloehner who highlighted that the study was not comparing apples to apples, thereby making a profound methodological error. What the researchers did was an attempt to complete a full life cycle analysis of livestock: i.e., taking into account feed, transport of the animals, transporting of the meat after slaughter et cetera. However, in regards to the transport sector, they did not replicate this attempt of a full life cycle analysis and instead only calculated *direct* GHGs from the burning gasoline of the various transport vessels. Ultimately the authors had to head this criticism and the subsequent analysis of *direct* GHGs that can be attributed to livestock is calculated at 5% globally and 3% in the USA (FAO, 2013 and White & Hall, 2017). This, of course, being much lower than the original 18% and corrects the common claim that livestock are a greater ecological threat than transportation[xv].

Of course, the holistic practice of farming should be taken into account and not just direct emissions from cows and other animals' belches. The FAO's (2013) revised analysis, in comparison to the 2006 analysis, has livestock contributing to 14.5% of total GHG emissions world-wide. I will not deny that this number is likely too high to be sustainable. However, there are some counter-points that need to be made with this estimate. Firstly, in reference to the above, this estimate is simply gross amounts of GHGs and does not take into account the cyclical nature of livestock farming. If the analysis included the amount of carbon sequestered by the various landscapes as a result of soil rejuvenation via the livestock, a net number could then be calculated — which would be lower than the gross number. Moreover, it is important to keep the numbers in context. As the FAO themselves note, the manner in which the farming is done is relevant; poorer countries with less resources are often not as efficient as wealthier countries in their farming methods. Given that I do think we need to continue to farm meat to avoid serious harm to humans, farming in increasingly ecologically clean ways is a problem that needs to be solved via innovation rather than advocacy of the cessation of farming

[xv] However, to the best of my knowledge, there has not been a full "life cycle" analysis of transportation done in the manner in which such an analysis was done on livestock in the FAO's 2006 analysis. As an aside, this leads one to wonder why livestock, specifically, had this analysis done and why one was not done on something like transport, which almost certainly would have a far greater ecological footprint and certainly relies on fossil fuels to a greater extent than livestock? Nevertheless, what is clear is that direct emissions from the ruminants themselves are substantially lower than the direct emissions from the burning of petrol and diesel from various modes of transport.

livestock. Hence the solution to the moral problem of livestock farming negatively impacting the environment may have political and economic solutions, at least as corollaries.

We can take the United States of America (USA), for example; a helpful case study as the USA has done much to mitigate the GHG emissions from livestock, in comparison to their overall gross GHG emissions and because there is plentiful data on this issue as it pertains to the USA (which isn't the case for many other countries). According to the Environmental Protection Agency (2016), the agricultural sector accounts for 8.6% of the USA's GHG emissions, with livestock contributing *less* than plant crops: livestock farming was calculated at 3.9% of total emissions and crops at 4.7% of total emissions. (Again, with regards to livestock, these are gross GHG emissions and do not take into account the amount of carbon being sequestered as part of the carbon cycle involving ruminants mentioned above).

Now, there is still a question as to whether or not the amount of GHGs being emitted to the atmosphere via livestock is still unacceptable. For instance, because the USA is one of leaders in GHG emissions, the fact that 4% of their emissions is due to livestock may still be cause for alarm. However, this worry can be quelled if we could establish that the ruminant population of the USA has remained constant over the past several hundred years to when the climate had the "right" amount of carbon in the atmosphere. (We aren't aiming for the atmosphere to have *no* carbon cycling through it after all, therefore, some GHG emissions are obviously going to be acceptable and indeed *needed*).

According to the MIT Climate Portal (Moseman, 2021), the prevailing estimates for "ideal" levels of carbon in the atmosphere can be found in the preindustrial era (1750-1850). We have data which concludes that the ruminant populations in preindustrial USA were comparable to the estimates we have of modern ruminants while importantly noting that the emissions of the past ruminants were approximately 86% of the emissions of current ruminants (Hristov, 2012). Of course, the 14% greater emissions from ruminant livestock in the present era should be something that is corrected for and could be corrected for via more efficient farming methods, which I will examine below. However, what this demonstrates is that ruminant animals are not the primary drivers of climate change and during our "ideal" climate periods ruminants were emitting nearly as much GHGs into the atmosphere as today. Again, to refer to the cyclical nature of livestock, it stands to reason that the *dormant* GHGs that are emitted via fossil fuel usage — which grew exponentially from the industrial period onwards — are the primary concern in the climate change problem rather than the GHGs that have been cycling through the atmosphere for millennia (including when the climate was "ideal").

To return to the discussion in the previous chapter, even if one does not accept the EPA's estimates and is convinced that meat emits more GHGs than farming plants, when nutritional value of the food is controlled for this point diminishes. As I already mentioned above, in general, animal-sourced foods are more nutrient dense than plant-sourced foods. One can get more of the essential nutrients needed for human health via eating a kilogram from animal-sourced foods than from plant-sourced foods, in general. Of course, this isn't binary — a composite approach is likely optimal: mixing plant and animal foods[xvi]. However, to omit the inclusion of animal foods is to create a need for more volumes of plant foods to get the equivalent nutrient value of a dish that includes meat.

This also obviously means that, to compensate for the lack of (certain, important) nutrient quantities found in many plant-sourced foods, higher volumes of plant foods need to be farmed. There has been literature done on this point with the findings indeed showing that although nutrient dense foods are often greater GHG emitters, this is offset when we consider the manner in which the foods that do not emit much GHGs are lacking in high nutrient quantity. For instance Drewnowski et al. (2015) found that meat and dairy produce *less* emissions than grains and sweets when nutrient destiny is taken into account. They conclude (pp. 184),

> 'Considerations of the environmental impact of foods need to be linked to concerns about nutrient density and health. The point at which the higher carbon footprint of some nutrient-dense foods is offset by their higher nutritional value is a priority for additional research.'

Tessari, Lante & Mosca (2016) conducted a study accessing the essential AA composition of various foods in conjunction with RDAs. The researchers found that there is little difference in the environmental impact of farming animals or plants, if one wants to produce food that contains the RDAs of essential AA's[xvii]. There are also researchers like White and Hall (2017) who are not convinced that the USA, as an example, can meet nutrient requirements on an animal-free diet. They further note that the emissions would only decrease 2.6% if livestock were removed from farming.

Another, related, point to consider is the GHG emissions that result from the health-care system itself. According to Eckelman & Sherman (2016), to use the United States as an

[xvi] Which is what many do and have done: meats being the predominant source of proteins and minerals and many other vitamins being sourced from fruits and vegetables et cetera.

[xvii] Moreover, in congruence with a point made in chapter 1, this study does not take into account the role of antinutrients found in plant-sourced proteins. Although speculative, it is plausible that plant protein products may be a greater ecological drain if antinutrient factors were controlled for.

example again, the healthcare system is responsible for 10% of the USA's GHG emissions. Moreover, this number is likely to grow in the coming years as trends in health decline, not just in the USA or the West, but globally[xviii].

It is here that the nutritional question becomes salient once more. I am under no illusions that adequate nutrition would eliminate the need for a robust health care system. However, nutrition undoubtedly plays a role in many of the common ailments that are affecting modern societies: vitamin deficiencies, obesity, diabetes, cardiovascular diseases and mental illness – – to give a non-exhaustive list. Simply limiting the need for common pharmaceuticals would be a great ecological victory. Focusing on farming nutrient-dense food is precisely the method with which to accomplish a reduction in GHG emissions relating to healthcare — and other ecological harms of the healthcare system; chemical waste et cetera. Moreover, by shifting the conversation to nutrient-dense foods, vegans and meat-eaters may be united in advocating for the reduction of foods uncontroversially accepted by both parties to not be particularly nutritious or essential for human consumption, thereby reducing GHGs[xix].

The final point I will raise with regards to eating meat and its relationship to climate change is the new farming technique known as regenerative agriculture. This also draws us back into a discussion about soil and livestock's effect on it.

To take a step back and think of the border question of climate change. The overarching problem, uncontroversially, is too much carbon in the atmosphere which is leading to weather events that are harmful to life on the planet. Of course, a laudable goal is to reduce GHG emissions where we can. However, due to the length of time that GHGs stay in the atmosphere and the sheer amount, it would also be highly beneficial if an elegant "green" solution were to be discovered to sequester carbon from the atmosphere. Silicon Valley types will likely seek to do this via some human-made technology. However, whatever the solution proposed, such an innovation would almost certainly be dependent on fossil fuels to a large extent[xx]. Whether or not these fossil fuels in the future can be replaced by something like nuclear etc. is a separate question. I don't think it would be controversial, today, to say that such measures would be heavily fossil fuel dependent. Another way to accomplish the same end would be to make use

[xviii] One can refer to *Our World In Data* to examine trends.

[xix] Of course there is also a political and social question of the populace actually eating the nutrient-dense food vs the "junk" food. However, limiting the farming of "junk food" would be a good start to move us in the direction of being more healthy as well as ecologically more efficient, as "junk food" is of little benefit — uncontroversially, therefore, the GHGs emitted because of it are emissions we certainly don't need to live with.

[xx] It is for this reason that I am also sceptical of lab-grown meat. In principle, it sounds like a plausible solution. However, in practice, the amounts of fossil fuels needed may make it so the results aren't a net positive, ecologically.

of organic materials, to the greatest extent possible, to capture and store carbon. New methods for doing precisely this are taking place in contemporary farming practices. Namely, regenerative farming.

Firstly, we need to understand the storage device, as it were, which will capture the carbon. The device is the soil. For instance, Ontl & Schulte (2012), writing for *Nature*, note that the earth holds approximately 3,170 gigatons (GT) of carbon and that 80% of this is found in soil (≈2,700 GT). To put this in perspective, soil holds 4 times the carbon of trees and even 3 times the amount of carbon in the atmosphere. The common ecological activist impulse to plant more trees is respectable, however, ensuring that our soil is healthy — making it such that it will effectively and efficiently sequester carbon from the atmosphere — would be a more efficient method for reducing the effects of excess carbon in the atmosphere, thus curbing climate change.

As anyone who has ever tried to grow plants will attest, healthy soil is essential for growing and cultivating plants. Resultingly, we have two clear benefits of healthy soil: efficient mechanism of carbon storage and an essential component of yielding plants (which we and animals eat). Now, according to Teague et al. (2016) most agricultural soil has lost somewhere between 30-70% of their soil organic carbon. Which has also had the consequence of decreases in food production: as, as already noted, healthy soil is essential for the growth of food (directly by us and animals eating plants or indirectly by us eating the animals which eat plants). This growing trend in soil degradation is what is responsible for leading many farmers to reconsider the manner in which they farm; seeking to adopt farming strategies that will rejuvenate the soil. Hence, *regenerative* farming. The "regenerative" term being a specific reference to the soil. At the simplest level the term encompasses those practices which are conducive to soil health. This is in contrast with continuous grazing/feedlot systems, for example, which — while still benefiting the soil via manure, to greater or lesser degrees based on the individual farmers and their management techniques — is not efficient at/designed as a mechanism specifically for rejuvenating soil.

The conventional pattern of farming livestock, particularly cattle, is to raise them on grass and then move ("finish") them in a feedlot system where they are fed corn until slaughter. When they are grazing on the field they are largely left to their own devices, as it were, and continually graze on the whole field. This leads to overgrazing which in turn leads to soil degradation and erosion, if not corrected. The key feature of regenerative agriculture — as it pertains to livestock — is the multi-paddock, rotational grazing approach. I've represented this diagrammatically below.

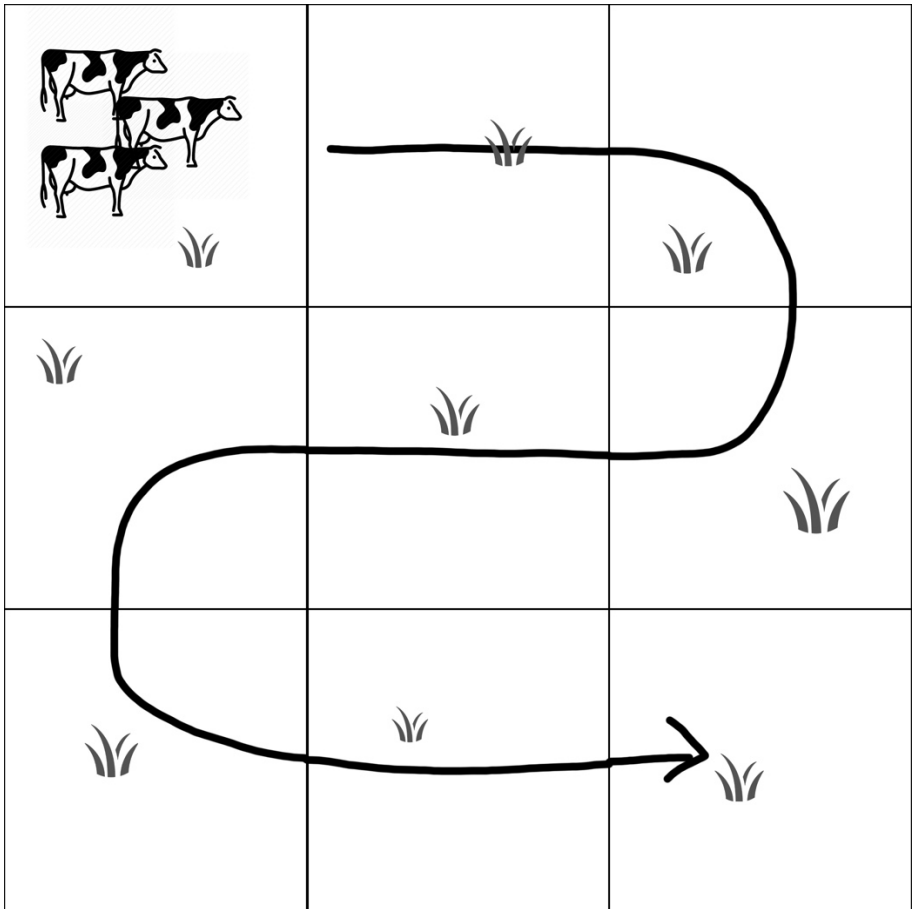

***Figure 3**. Multi-paddock rotational grazing*

As is shown by the graphic, regenerative agriculturalists farm livestock by constantly rotating the portion of the field that the livestock graze on, cycling back to the first paddock when they reach the last paddock. By dividing up the fields, overgrazing — and the adjacent harm caused by overgrazing — is avoided. Moreover, the livestock being moved onto a different paddock after depleting the grass of paddock *x* gives paddock *x* ample time, as the livestock will cycle through 8 paddocks (to use my illustration as reference) before returning to paddock *x*, to *regenerate* its soil — via the excrement of the livestock as nutrients for the soil — and thus regrow fertile plant matter for the livestock to feast on again when they cycle back to *x*. This also provides high quality manure for the farmers to use in crops. This process of soil regeneration also, as highlighted above, sequesters the methane that the livestock belch via rainfall, H_2O — the healthy soil can more readily absorb rainfall, as erosion from overgrazing is mitigated — and photosynthesis, CO_2.

Farming livestock in this manner is exceptionally ecologically beneficial. In addition to not making use of fossil foils to fertilise the soil, the carbon released as a consequences of the

livestock is offset by the amount of carbon sequestered by the soil, with some evidence that the regenerative techniques produce a net *negative* carbon impact — i.e., the regenerative farm sequesters more carbon than it emits. Therefore, this is a fruitful strategy to sequester the excess carbon in the atmosphere, notwithstanding the other benefits.

For example, Stanley et al. (2018:249) found '[e]missions from the [rotational] grazing system were offset *completely* [emphasis added] by soil C sequestration.' Although not specifically focusing on GHG emissions, Ferguson et al. (2013), studying rotational grazing farms in Mexico, found that such farms had significantly healthier soil than conventional farms — the inference that can be drawn being: greater sequestration and storage of carbon. Moreover, the researchers note that the regenerative style farms used less pesticides and herbicides, which are themselves ecologically dubious, than their conventional cousins. The regenerative farms also did not have as many instances of livestock illness, including deaths – – which is relevant for animal well-being as well as the contribution of health care (including animal health care) to overall GHGs, as already mentioned above. A recent 2020 study done by Rowntree et al. conducted a life cycle analysis of the beef at a regenerative farm, White Oak Pastures — in the USA., who farm 100% grass fed beef. Their results found that the net total emissions were equivalent to -3.5kg of CO_2 per kg of fresh beef. To get a fuller understanding of these findings, in graphic form, see the chart below.

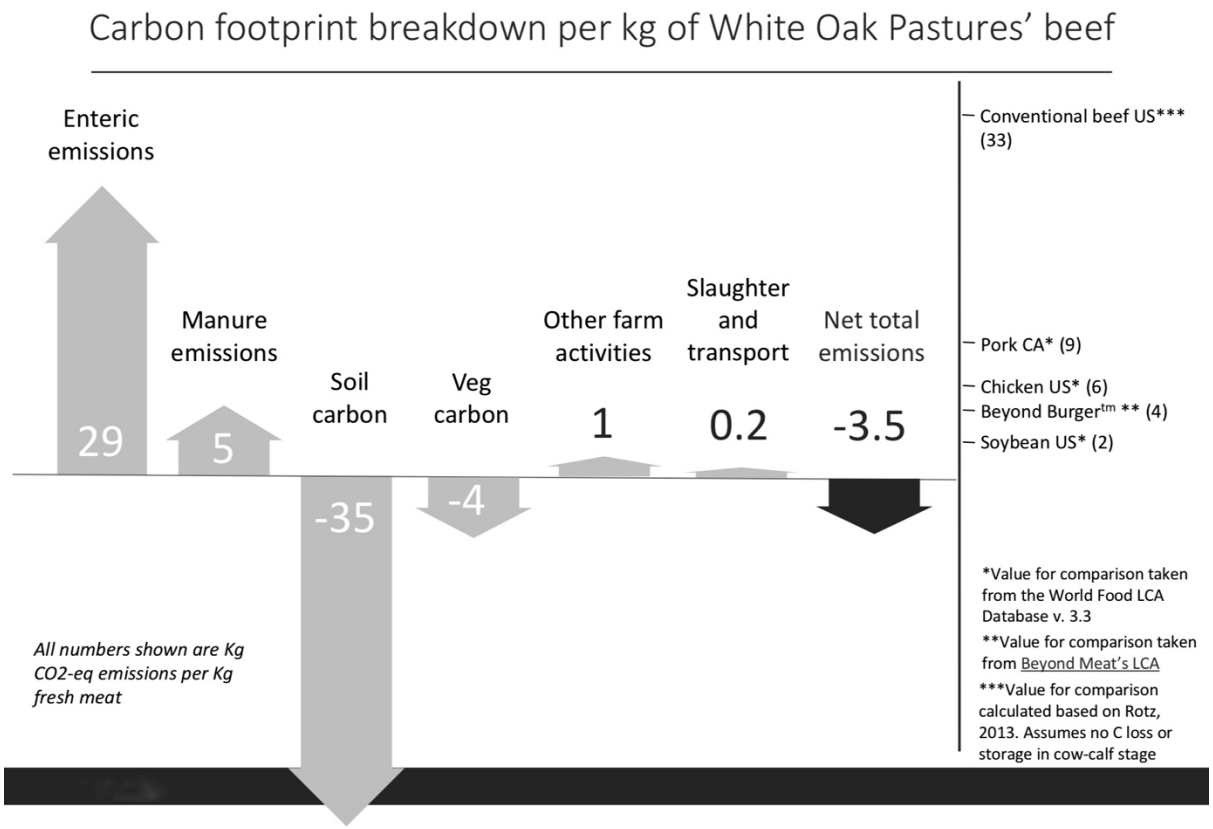

Figure 4. *Carbon footprint per kg of White Oak Pastures' beef*

Source: Thorbecke & Dettling (2019)

Significantly, White Oak Pastures can produce meat at a carbon deficit. This is also "greener" than vegan and vegetarian alternatives like soybeans and Beyond Burger. Furthermore, a meta-analysis of South American farms who practise regenerative grazing techniques found that such farming techniques could have a positive impact on offsetting *urban* emissions as well (Viglizzo et al., 2019).

Regenerative agriculture is not without its detractors however. For example, there was a 2020 *Guardian* article (Carrington, 2020 — citing Pieper, Michalke & Gaugler, 2020) criticising regenerative agriculture, arguing that the environmental toll is as bad, sometimes worse, than conventional methods. Vegan philosophers like Peter Singer (2022:6) have also echoed this concern. Defending the occasional eating of free range eggs, he writes, 'hens, unlike grass-fed cattle, who also have reasonably good lives, don't emit large quantities of greenhouse gases.' If one has followed my argument up until this point and is familiar with the critique posed, the critique is easily dispensed with.

The study in question is again merely taking emissions as the key indicator of environmental harm. This is appropriate with button-up, linear enterprises: i.e., those involving fossil fuel use

as the primary building materials for *x* goal. However, as I have already outlined, livestock farming, particularly regenerative livestock farming, is *not* a linear system — it is a cyclical system. As previous studies I have cited themselves admit, regenerative agriculture can emit more methane than conventional methods or plant-farming, but this is offset by the sequestration of that carbon by the soil. There is also a tendency with critiques of animal agriculture, as I have alluded to already, to get carbon emission tunnel vision, as it were. This critical study too commits the sin of not taking into account other relevant factors like nutritional quality of food and healthy soil into its calculus of environmental harm. Finally, as I have already noted, we have good reason to think that the ruminant population has stayed largely consistent pre and post the atmospheric CO_2 rise. Crucially, unlike conventional farming, regenerative agriculture mimics the manner in which ruminants would function in the wild, i.e., constant roaming from one portion (paddock) of land to the next. Therefore, it is unreasonable to suppose that livestock are a main driver of the current climate change: we don't have more belching livestock now than we did pre the spike in atmospheric CO_2.

Another common critique of regenerative agriculture is that it is not scalable. The first response to this would be to bring back the degradation of soil issues. The United Nations estimates that at the current rate the vital topsoil will degrade completely in 60 years (Arsenault, 2014). With these figures in mind, the concern transforms from "can we scale regenerative agriculture?" to "we must scale regenerative agriculture." Our current methods of farming, both plants and livestock, are unsustainable for the soil.

The second point to note is that a large component of this problem is political and economic (Conser, 2021). For instance, as anyone remotely familiar with market economics will know, a new/niche product or service is more costly than an established one. This is one of the problems with regenerative agriculture. Regenerative farms do not have the established infrastructure — from farm to storage, transportation, stocking supermarkets etc. — that conventional farms do. Until this is corrected, the farming will remain financially costly — which dissuades customers as well as investors. However, problems of this kind seem to be solvable, in theory (obviously) as well as in practice. For example, this is an area where governments may make some positive impacts by subsidising farms who adopt regenerative practices; in the same way governments often subsidise green energy projects. Likewise, philanthropic entrepreneurs and investors can reasonably be imagined to invest in regenerative farms either out of a moral concern for the climate or a naked self-interest, as protecting the environment is good publicity. Similarly, we know — although, granted, it is still a minority movement — there is a growing consciousness around climate and the need to protect the

environment, hence, there is a growing proportion of consumers who would be willing to spend more money (assuming products of regenerative farms remain more expensive than alternatives) on products and services that are ecologically friendly (Business Wire, 2021).

The other, more devastating, critique is that regenerative farms complete usurpation of conventional agriculture cannot provide enough food to feed the population. The issue is less about productivity of regenerative farms than land required to carry out farming activities. Although not a lot of research has been done on this point, there are some studies such as Ferguson et al. (2013) which found that regenerative farms can produce equivalent wields to conventional farms. However, the issue, as Rowntree et al. (2020) note, is that regenerative farms require 2.5x more land than conventional farms. Although I will address the issue of livestock taking up too much land below, there are some immediate responses to be made which could alleviate some of the tension. I have not seen any detailed analyses which model the viability of full-scale regenerative agriculture — for or against, should be importantly added. However, below, I provide some options which may plausibly be part of the solution.

Firstly, because many animals, particularly ruminants, on regenerative farms are 100% grass-fed, this means that whatever farmland was designated to the growing of foodstuffs for the grazing animals (corn, wheat etc.) can be converted into land for roaming and grazing. Another point to consider is that because livestock under a regenerative system are efficient at rejuvenating soil, more land than is currently suitable as farmland can become available as farmland overtime. A more competent environmental scientist statistician than me would need to access the following, however, there may also be a legitimate case to be made for dismantling some solar and wind farms — which are also very land-intensive, rely heavily on fossil fuels for their production and produce ecologically hazardous waste — and converting them into regenerative farms to sequester carbon and produce nutrient-dense food.

Undoubtedly, the scaling of regenerative agriculture will be a composite approach of many creative solutions. Above I have attempted to provide a plausible brief outline of what some of those parts of the composite might be. Moreover, whether or not full-scale regenerative agriculture is possible, a proportion of regenerative agriculture farms being in operation is a better outcome than none, for reasons already discussed.

While livestock do indeed emit notable amounts of methane, there are many nuances to be taken into account. I hope to have provided an account of such nuances in this section. The direct emissions from ruminants are not causing climate change as the population of ruminants has been constant from the "ideal" climate period, before the spike in atmospheric CO_2, until now. Moreover, the emissions from farming need to be checked and blanched by the nutritional

quality of the food produced, if we agree that healthy humans are a priority. (At minimum, from an environmental perspective, unhealthy humans are an ecological harm due to the harmful effects of the healthcare industry — another point which is often omitted in such discussions).

Furthermore, as the FAO themselves note, the manner in which livestock are farmed is crucial. The USA seems to be a good example of a country that is moving in an increasingly ecologically sustainable direction with regards to farming livestock. New techniques like regenerative agriculture provide a clear route to eating ecologically *beneficial* meat.

§3. Land Usage

As alluded to above, another common critique of farming livestock is that livestock use too much land. To be more specific, the critique is that livestock are inefficient with land and we could make better use of the land via farming plants instead. Of course — and another reason why a multivariate approach is necessary when discussing issues relating to animal ethics — this claim is often made in tandem with the claim of livestock being a severe environmental harm in other regards, like livestock being responsible for high methane emissions. The claims will often take something of the following form, "one acre of land can produce more kilograms/calories of tomatoes/potatoes/carrots etc. than beef/goat/lamb et cetera." I do not dispute this claim. However, it misses some vital consideration.

The first is, again, this is not an apples to apples comparison. Namely, nutrient quality is not taken into account. Rising rates of obesity, not just in prosperous countries, but also poorer countries (Ritchie & Roser, 2017) as well as the startling finding that obesity is a greater global burden than being underweight (NCD Risk Factor Collaboration, 2016) show that the growing problem is not lack of calories, but lack of *nutrients*. Merely focusing on the amount of food that could be produced per acre of land is implicitly prioritising calories over nutrients. At the time of writing, Tessari, Lante & Mosca's (2016) paper is the only analysis that I can find that corrected for nutrient density in relation to land use. Like GHGs, the researchers found that additional land used by livestock is offset by greater nutrient density; with soybeans being an exception — although, as noted in chapter one, there are some question marks regarding the efficacy of soy. The trade-off is: Livestock which can produce more nutrients per kg than plants vs plants which can produce more calories per acre than livestock.

Another related point is the manner in which a cow, for example, can produce a plethora of human goods, over and above simple muscle meat. To give a few examples: Although

culturally taboo for many, in the West at least, eating the organs of the livestock is a great source of many important nutrients for humans and are also used for other purposes like medical materials, tennis rackets, and instrument strings. Cattle bones are used for charcoal, fertiliser, and glass. The skin has many uses which we are familiar with, clothing et cetera. The hooves and horns are used for adhesives, conditioners, laminates, pet food, plant food, fly wood, shampoo, and wallpaper. The fat of a cow has multiple uses, including antifreeze, biodiesel, candles, cement, chalk, cosmetics, crayons, creams and lotions, deodorant, detergents, fabric softener, fertiliser, insulation, matches, medicines, oils & lubricants, paint, perfume, rubber, shaving cream, textiles and waterproofing agents. These broad utilities are also often not taken into account when discussing the efficiency, or lack thereof, of livestock.

Another point to make is simply how do we want to use our land? I don't think many would object to the use of land for purposes which would be deemed morally praiseworthy. Enterprises like solar or wind farms are often not objected to despite having severe ecological drawbacks, including excessive land use. The rationale is simply that the benefit yielded is greater than the cost. In the case of solar and wind: reducing our reliance on fossil fuels for energy. I fully accept the many harms that result to animals, humans, and the environment as a result of factory farming — although I do think that the benefits of farming livestock, in general, are often notably absent in these kinds of discussions. However, when we look to regenerative-style farms, it seems to me, there are clear benefits that justify the land use: providing foods that are nutrient dense for humans, rejuvenating the soil — without which we would have a food and environmental catastrophe, sequestering carbon from the atmosphere, increasing biodiversity etc. and without relying on excessive use of fossil fuels, which even solar and wind technology have to do in the manufacturing process.

Furthermore, a crucial error made in this critique is that it is made in the abstract and without reference to actual land. Another way of articulating this point is that the critique assumes that all land is roughly equal in its agricultural capabilities. On its face, after a brief moment of reflection, I think most would agree that this surely isn't the case. The lands used for farming are not all created equal. For the purposes of this discussion, the key point being: most land used for farming *isn't* suitable for the growing of crops. Therefore, livestock and crops aren't competing for land that could otherwise be used for crops, as much of this land wouldn't be suitable for crop production in any case. According to the FAO (2003), only ≈⅓/36% of the world's agricultural land is suitable for growing crops. Another nuance is that not all crop suitable land is created equal. Some land is only suitable for specific kinds of crops. Moreover, there is a question as to the suitability of land, even assuming it could, theoretically, grow the

desired type of crop. For example, Eswaran, Lal & Reich (2001) estimate that only 3% of viable agricultural land is prime land; meaning: taking into account important factors such as rainfall, or the need for irrigation.

Here, again, the nutritional discussion is relevant as it is almost certain, in light of the above, that there is not enough agricultural land which is suitable for the production of soy or beans – – two nutrient dense plant foods — to meet basic nutritional requirements. To link this discussion with the above discussion on how to compensate for regenerative agriculture needing more land: often the crops suitable for production on *x* plot of land aren't particularly nutritious. For example, in the Democratic Republic of Congo, 50% of their crop-suitable land is only suitable for growing cassava (FAO, 2003). While cassava provides some important nutrients in good quantities, like vitamin C, it is still less nutrient dense than animals like beef, particularly if one includes the eating of organ meats. Therefore, it would be fruitful for some of this land to be utilised for the rearing of livestock as opposed to farming of cassava to accomplish a greater balance of nutrients and calories.

The FAO (2019) estimates 60% of the world's agricultural land is grazing land. The primary reasons that these lands are unsuitable for crops are: they are too steep, rocky and arid to cultivate crops. Yet, they can support livestock, which provide the many benefits that I have listed previously in this chapter and the previous chapter. Furthermore, using regenerative methods to farm the livestock would alleviate the many harms associated with animal agriculture, while maintaining the clear benefits, thus rendering it the ethically superior option.

§4. Water Usage

The last environmental issue I will cover is the water usage of crops vs livestock. Delynko (2019) provides a good account of the typical case that is made against livestock — cattle, particularly — when she states, 'Do you know what food has the largest global water footprint? Beef. It takes approximately 1,847 gallons of water to produce 1 pound of beef — that's enough water to fill 39 bathtubs all the way to the top.'

I find no reason to dispute this claim. However, it is dramatically over simplified. Prima facie, such a claim seems alarming, but once we make some vital qualifications the worries are tempered. When discussing the water usage of *x*, we need to distinguish between three subsets of water: green water, blue water, and grey water. Green water is precipitation: water dew found on the surface of plants or soil or is absorbed in the soil. Blue water is fresh ground and surface water and can be found in lakes, streams etcetera. Grey water

> 'is defined as the volume of freshwater that is required to assimilate the load of pollutants based on natural background concentrations and existing ambient water quality standards. It is calculated as the volume of water that is required to dilute pollutants to such an extent that the quality of the water remains above agreed water quality standards' (Hoekstra et al., 2011).

With these distinctions in place, we are better equipped to access the water footprint of livestock. When people come across statistics like the ones I mentioned above, the assumption is often that the water in question is blue water. If this was the case, I too would be concerned about the water use of livestock. This is not the case, however. When we assess the water use of livestock, within these parameters, we find that the vast majority of the water used is *green* water.

For example, Mekonnen & Hoekstra's (2010) analysis found that 92% of livestock water usage is made up of green water. The remaining water usage is split roughly equally between blue and grey water. Moreover, because many regenerative animals are kept on grass as feed their whole lives, regenerative agriculture livestock's water usage is tilted more towards green water at 97% of their water usage.

This provides us with a radically different view of water usage of livestock, as the overwhelming majority of the water needed for rearing livestock is green water; i.e., water that would be on the land whether or not the cows were there to consume it or not and not taken from another source in a zero-sum manner. The blue water usage is the amount environmentalists should be concerned about, not green water. Taking into account these nuances Rotz et al. (2019) conducted a life-cycle analysis of cattle in the USA to assess the amounts of *blue* water needed to farm and produce beef. They found that it took, on average, 2095L for every kg of beef. To convert this into the imperial system — to contrast this number with the number cited at the beginning of this section — the result is 251.6gal per pound of beef. Notably lower than 1,847gal. I can find no comparable analysis of the blue water impact of regenerative cattle, however, we can be confident that the amount would be greatly reduced as regeneratively raised cattle can be 100% grass-fed, thereby eliminating the blue water usage as a result of feedlots. Furthermore, as already noted, soil on regenerative farms is healthier than conventional farms and, therefore, will better enable the presence of green water.

Furthermore, to put these numbers in context, cattle use less blue water than rice, avocados, walnuts and sugar. Which all use ≈410gal per pound. Moreover, 30% of groundwater designated for crops is used for rice with 12% for wheat (Berndtson, 2017); yet these foods are

rarely tarnished for their environmental impact, despite also being far lower in nutrient density than livestock.

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In conclusion, I hope to have shown that many of the environmental claims against livestock are not as severe as they may prima facie seem. Once some nuanced considerations are in place, the claims are tempered, if not diminished. However, there are still severe harms to the way farming is carried out in its conventional guise, one of the most pressing among these being soil degradation (which is a problem in crop farming as well).

Given these concerns, I have made a positive case for a move to regenerative approaches to farming. This way of farming is not merely neutral along many of the environmental concern axes, but can contribute to environmental improvements via sequestering and storying carbon from the atmosphere, rejuvenating the soil, limiting the farmers needs for fossil fuels, reducing blue water usage, increasing biodiversity and providing the most nutrient dense foods for humans.

Chapter 3: Birth, Life and Death of Animals

I begin this chapter by continuing the discussion of the previous chapter by examining what we could expect by removing livestock from agriculture. I argue that doing so would result in serious harms to the broader environment, which, of course, also has downstream consequences for broad ranges of sentient life. I construct this discussion under the notion of piety as many of the harms are expected and probabilistic given the human propensity to overestimate our intelligence and wisdom. A pious attitude, in the manner defined below, would be successful in mitigating these tendencies.

I then move on to consider the birth, lives and deaths of animals themselves and how this is to be integrated into a moral vision, given the context of the previous two chapters. Given that the lives lead by animals on regenerative farms, according to the evidence, appear to be good, the last remaining issues that are in need of consideration are the birth and death of animals.

On birth, I argue that a phased extinction anti-natalist position can be reconciled with eating and farming eat as not doing so will make the lives of those already in existence more miserable than they would have otherwise been.

On the matter of death of animals, I begin by assessing the naïve argument against moral vegetarianism. Noting the insufficiencies of this argument, I outline the alternative vegetarian moral thesis which avoids the absurd implications of moral vegetarianism under the naïve argument. However, importantly, I argue that the resulting qualified moral vegetarian thesis is compatible with ethical omnivorism as I have provided two very weighty reasons to eat meat in chapters 1 and 2 of this dissertation.

From here, I argue that the utilitarian is within moral bounds to accept the eating and farming of meat and animal products as the preference satisfaction by doing so is great and the common utilitarian objections against eating meat are avoided given the specific context of farming I am defending.

Lastly, I consider the moral rights view, whereby rights are attributed to animals. I focus here on the predation problem, arguing that the problem is intractable under a rights view by leading to notable conflicts with our moral intuitions and considered moral judgements.

Moreover, the problem of predation notwithstanding, I also note the manner in which it is plausible to incorporate eating meat into an animal rights position, by granting that doing so fits into the category of special cases that allow the infringements of another beings rights — which is congruent with examples from prominent rights theorists. Lastly, I conclude this discussion by outlining the feasible solutions to avoiding the problems which plague a rights view, arguing that there are alternatives which provide many of the same applied ethics as an animal rights view which also avoid the pitfalls.

§1. Playing God

To begin, allow me to quote an extract from Peter Singer (2015:378-379),

> 'It must be admitted that the existence of carnivorous animals does pose one problem for the ethics of Animal Liberation, and that is whether we should do anything about it. Assuming that human beings could eliminate carnivorous species from the earth, and that the total amount of suffering among animals in the world would thereby be reduced, should we do it?
> The short and simple answer is that once we give up our claim to "dominion" over the other species we should stop interfering with them at all. We should leave them alone as much as we possibly can. Having given up the role of tyrant, we should not try to play God either.'

He goes on,

> 'When we consider a scheme like the elimination of carnivorous species, we are considering an entirely different matter [than those cases where we would be morally justified in interfering, like a beached whale etc.]. Judging by our past record, any attempt to change ecological systems on a large scale is going to do far more harm than good.'

Here we find a convergence in the thinking of Singer and Roger Scruton (2000) in his *Animal Rights and Wrongs*, despite the two philosophers being at odds on the whole: Singer approaches the topic of animal ethics from a utilitarian perspective, while Scruton finds good reason from metaphysics/the philosophy of mind to be convinced that a Kantian/rights-based approach is appropriate. Despite this, the convergence is to be found on a moral virtue Scruton proposes that is particularly pertinent to the question of morality with regards to non-human animals: piety.

Although piety is primarily a word found in religious contexts, Scruton insists that it is a term helpful to discussions of morality more broadly. He defines it as follows (pp. 183-184), 'The disposition to acknowledge the sacredness and untouchability of things, places, people, and custom, not because they are divine, but rather because you have no right to encroach upon them, and because they are intrinsically worthy of respect.'

Someone with the disposition of Singer may still recoil at the use of words like 'sacredness', but we can dispense with that facet of the definition and still retain its core value. Singer's fundamental point is that we should take a restrained approach to mass-scale ecological interventions as we, as humans, are inherently limited in both wisdom and resources, thereby making the possibility of severe unintended consequences a very real concern. Moreover, as Singer notes, this is a worry that can be vindicated empirically, as humans have a history of causing more harm than good via attempted changes and strategies of this kind. With this in mind, I do not think it is inappropriate to conclude that Singer, by virtue of our history and limitations, is advocating a pious attitude towards ecological systems and the animals within them. Although clearly not thought so by Singer — given the context as a whole of *Animal Liberation*, the book from where the above extract was taken — this pious attitude undermines the case *against* eating and farming meat. That is, one cannot adopt a pious attitude towards ecological systems and advocate for the cessation of livestock farming.

This draws us back into a discussion of soil health and the role of ruminants, particularly, in ecological systems. On land where ruminants have evolved, the ruminants play a vital role in the health of that land via soil health, which is a part of the natural carbon cycle described earlier, among other things which are essential for a thriving ecosystem, like biodiversity etcetera. I am comfortable with Singer's advocacy of 'leaving the animals be', as it were. However, when we consider the manner in which, through industrialisation etc., we have moved so far beyond the "natural" state of things, the pious attitude would be to retain or, indeed, restore a natural system as much as possible — again, in accordance with a moral vision so as not to fall into the naturalistic fallacy. Remember, from the previous chapter, the ruminant population has stayed roughly constant from the "ideal" climate period to now during the atmospheric spike in CO_2 resulting in the era of climate change — at least in the USA, where the best data are found on such matters. In order to reduce the 'dominion' — to use Singer's term — of humans over animals, we would need to gradually reduce our livestock farming to the point of complete cessation. This is precisely a counter-pious view. If we did not farm livestock, particularly ruminants, and instead converted all our farmland into crop agriculture (assuming that this was indeed possible, which I have argued isn't likely, given the evidence

in the previous chapter), this would radically reduce the ruminant population — presumably not to zero, as, I think, Singer et al. would be in favour of nature reserves etc.— which is unprecedented and, thus, almost impossible to know what the unintended consequences would be; although, to Singer's point, we could infer serious harm via reference to our history.

A related issue is that the removal of all livestock from agriculture leaves open the burden of how to fertilise the soil of crops — what is left — in their absence. There are several options open to us with regards to fertiliser to maintain soil health: compost, animal manure, human excrement, and artificial fertiliser. Obviously, depending on the specific biome, a different kind of fertiliser is optimal. For example, in the Amazon, where there are no ruminants and the landscape is dense with foliage, the primary fertiliser is compost. However, for grasslands, like the ones humans have settled on, the primary mechanism for fertilisation is animal manure. Now, if we turn our attention to farms, and are an advocate of eliminating animal agriculture, that leaves us with the three options of compost, human excrement, or artificial fertilisers. Compost fertiliser from other organic plant matter, is not viable to be implemented at scale. As Wageningen University (n.d.) notes,

> 'The main reason that [compost fertilisation] cannot be done everywhere is that an intensive, highly productive agricultural system (high output) also has a high need (high input). This applies to nutrients and to organic matter. The accumulation of organic matter is relatively low in intensive crops, which leave little crop residue and require intensive tillage, such as potatoes, onions, and flower bulbs.'

Moreover, often compost production makes use of animal manure and is therefore part of a cycle which uses manure: 'composting manure is not the answer for nutrient recycling because much of the nitrogen is lost during the composing process' (McGuire, 2017). Mangan et al. (2013) make a similar point by saying, 'In most cases, finished compost is classified as a soil conditioner rather than a fertiliser due to the relatively low levels of nitrogen, potassium, and phosphorus.' Furthermore, I can find no literature on the viability of compost as a viable replacement of manure on farm lands.

Human excrement sounds plausible in theory. Although, this is also an unprecedented venture, even though it has been used sparingly in the past (but never at scale). Practically, we have to also worry about the unintended consequences of human excrement implemented en masse as there are substantive differences between animal manure and human excrement. Furthermore, there is the political and economic question of the acquisition, storage, and

transport of the volume of human excrement that would be necessary. These concerns make human excrement an unlikely replacement for animal manure.

The only remaining option then is the use of artificial fertilisers. However, piety would surely revolt against one advocating for this option. The crucial problem is that there is no way to avoid reliance on fossil fuels to manufacture artificial fertilisers. A major concern is the GHG emissions as a result of utilising and harvesting fossil fuels. Again, fossil fuels and their emissions are qualitatively different to emissions from biogenic sources. As I argued earlier, I do not think we have good reason to suspect that livestock, despite being high GHG emitters, are the driving force behind climate change. The more plausible explanation is the introduction of ancient, dormant, GHGs (fossil fuels) into the atmosphere. I see no way of avoiding extensive uses of fossil fuels in farming and food production if one, like Singer, wishes to abolish, or substantially reduce, animal agriculture. Again, in reference to piety, we also just don't know the wide-reaching consequences of relying solely on chemical fertilisers for all of our agriculture. However, there is some worrying data available in the present. Environmentally, too much artificial fertiliser can be toxic for the water in the soil and harm its microbiome, as well as creating toxic water runoff which is detrimental to whatever bodies of water, and the wildlife contained therein, the runoff arrives at (Buckler, 2017). Moreover, as already stated, artificial fertilisers emit GHGs (from *fossil fuels*), contributing to climate change. With regards to food, crops nourished with chemical fertilisers often lose nutrients (Mackintosh, 2008). There is also literature linking chemical fertilisers to various diseases such as, gastric cancer (Devitt, 1999), testicular cancer (Kristensen et al., 1996), and methemoglobinemia (Knobeloch et al., 2000).

With these caveats in mind, it appears to me, we would certainly be "playing God" if we removed animal agriculture from our agricultural practices. And it is not unreasonable to suspect we might do more harm than good, to ourselves and the ecological systems around us. The ecological reality is that for ruminants to provide the benefit they do to the environment, they have to be subject to population control, to avoid overgrazing, etcetera. In the absence of humans, these would be wolves and the like. Here, a vegetarian who also values dispositional piety, the way Scruton formulates piety, might respond that we should stop farming livestock and rather establish protected areas and in comparable scale as during the "ideal" climate period described earlier, and repopulate them with the necessary predators — which, unlike ruminants, have decreased in population over the past two centuries — to keep the population of the roaming animals under control. This will satisfy avoiding 'dominion' over animals as well as retaining the benefits of ruminants in the broader ecology. There are four problems with this

approach. This approach would be condemning humans to (1) relying on chemical fertilisers – – with the harms related, which I discussed above and (2) vegetarianism or veganism, which, as I argued, cannot be implemented en masse without serious harms via compromised human health. (3) Moreover, it is not clear to me where the land used for nature reserves would be sourced from. Put another way, assuming we want to keep the ruminant population stable in the hypothetical "post-livestock-farming" world — which is a strategy I have made the case for, farmland and land for nature reserves for ruminants would now be competing in a zero-sum manner. Given that the caloric *and* nutrient needs of the human population would stay constant, it is not clear if we would be able to cede much agricultural land to conversion for the nature reserves needed to keep the ruminant population stable. Moreover, this becomes more problematic given that most of the land that is currently used for livestock farming isn't suitable for the growing of crops for humans. Hence, it is likely that such a strategy may not be able to meet the caloric and nutrient requirements of a healthy human population.

Lastly, (4) a credible case can be made for this route being worse for the ruminants — and over animals — themselves. Death in "the wild" is often a gruesome and prolonged affair, leading to more suffering for the animals being preyed upon or dying of old age or disability. Farming in a regenerative manner seems to be the clearly morally superior option. We can retain the pious attitude by mimicking natural processes of a thriving ecosystem — with humans being the 'predators' which keep the population in control of the grazing animals — including the various other benefits of regenerative agriculture, like the sequestering of carbon; the animals themselves are not subjected to the prolonged deaths of the natural world; and it assures humans have nutrient dense foods — not to mention the other residual goods that can be obtained by livestock of the kinds I listed above.

Furthermore, the wellbeing of the animals themselves is satisfied in a regenerative system, clearly more so than conventional systems. I have already mentioned in chapter 2 that livestock on regenerative farms face fewer instances of disease, antibiotic use or premature death. More than that, as mentioned already, livestock on a regenerative farm — like the aforementioned White Oak Pastures — are husbanded in a manner that mimics the way in which such animals would live in "nature." Many of the instances of animal abuse that vegetarians and vegan philosophers point to when criticising farming of livestock are the result of the rejection of a pious attitude — not to mention simple greed or apathy. For example, Scruton (2000) notes, in an appendix, the breakout of mad cow disease in the UK was precisely an example of a rejection of piety. If farmers had a sense of profound respect for natural processes in the absence of human intervention, the thought of feeding cows the remains of their own and other species

would have likely been avoided and, to Singer's point on playing God, the great harm that resulted — to humans and the animals — would have been avoided as well.

The same general thought can be expanded to other instances as well: keeping animals in battery farms[xxi] and severely confined spaces, for example. When animals are raised in a manner that mimics their natural habits, all available evidence seems to suggest they thrive. The major notable differences are that (1) the animals do not face the constant stress of attempted killing by predators and (2) animals are not killed by other animal predators, but by humans. Both of these facts arguably provide a more favourable existence to the animals on farms. Of course, the slaughterhouses will vary in the manner in which they handle their livestock. However, the USDA and other related authorities are constantly adding guidelines for the slaughtering of animals, in order to provide a swift and painless — to the greatest extent possible — death for the animals. Moreover, the farmers themselves have reason to want to reduce the pain of death as much as possible. Firstly, many farmers do indeed care for the animals they husband (Evans, 2019). Secondly, the meat from animals that are killed in a moment of physiological stress is tougher than from an animal that is relaxed. Therefore, even a callous farmer, who does not value the lives of animals over and beyond a mere profit on their part, still has an incentive to reduce animal suffering that can result in slaughter.

§2. Summary and Review

Here it would be useful to pause and summarize the previous discussion(s). The first two chapters of this dissertation have been an attempt to make progress on two vital empirical matters regarding the ethics of what we eat. Namely: (1) is meat healthy and essential for (some) humans and (2) how does livestock impact the broader ecology, positively or negatively? With regards to (1) I have defended the view of dietary pluralism, while making the case that there are good scientific reasons — using techniques in the philosophy of science — to accept that eating meat is healthy for some humans and that *en masse* veganism will likely cause serious harm to some humans.

[xxi] I could find common ground with vegetarians and vegans in advocating for a reduction in chicken eating — assuming that regenerative chickens, pasture raised chickens, could not be produced at equivalent scale to the hyper efficient battery farms. Chicken is less nutrient dense than ruminant animals. One cow can provide ~230kg of edible highly nutrient dense beef. Moreover, battery farmed chickens are fed grains, which obviously needs to also be farmed. On a regenerative farm, all of the land used to grow grains and wheat to feed livestock can be converted into pasture land, thereby freeing up a substantial amount of land for pasture raising chicken.

On (2), in addition to responding to the common environmental arguments against livestock farming, I argued that *regenerative* livestock farming confers a very weighty benefit to all living organisms. Namely, the ability to produce healthy, fertile soil without heavy reliance on fossil fuels and in a manner that can be carbon *negative*, according to some literature. Given the — at least, potential — severity of rapid climate change, this fact is clearly morally significant. As I argued, it is more plausible to attribute the rapid climate change to increasing use of fossil fuels and their GHGs rather than livestock's GHGs — given that the ruminant populations have not changed dramatically pre and post the spike in atmospheric CO_2. I also made a negative argument against moral vegetarianism's wish to eliminate animal agriculture on ecological grounds. As, if the livestock are removed from agriculture, so is their manure. Thus, agriculture which exclusively farms crops will need to heavily rely on fossil fuels to fertilise their crops. I have outlined the manifold harms (and expected harms) of this approach at the beginning of the present chapter.

Now, given the evidence of the past two chapters, it seems clear to me — taking these two areas of concern in isolation — that the moral choice is to eat meat as doing so enables humans to be healthy and produce food that is ecologically "green", in a manner not practically available to agriculture which would only farm crops. Although healthy humans are often only tangentially beneficial for other living organisms, the climate and broader ecology is obviously directly relevant to the wellbeing of other sentient organisms themselves.

Accepting these claims, however, does not provide a full account of the ethics of what we eat as the wellbeing of the animals that are eventually slaughtered for food needs to be brought into the discussion, in light of the above, and considered. I would join most moral philosophers in attributing moral status to animals, granting that their interests are relevant in moral discussions (DeGrazia, 2008).

The most, rightly, contested issue of the wellbeing of animals in farms is the often appalling conditions in which they are kept, which hamper their natural instincts and often can lead to serious harms — factory farms, battery cages etcetera. This is a core issue in the writings of Singer, for example. I am by no means an exponent of such practices and too wish to see them abolished. However, this issue is not a critique of farming animals as such, merely these kinds of farming practices. If one could farm animals in such a way that does not harm them in the process, this particular issue falls away. Singer (2020) himself notes that he will occasionally eat free range chicken eggs, due to the good lives that such animals lead. As I have highlighted, regenerative farms can satisfy the criterion of giving animals a good life, as they are farmed in such a manner that mimics the way they would live save for human intervention, satisfying

their natural instincts — the only criteria we have to judge the wellbeing of animals. Moreover, the stress that is the result of constant predation — present in natural environments — is eliminated in a farm environment, obviously.

Therefore, it seems to me that there are two remaining challenges to my position and farming meat: anti-natalism and the killing of the farm animals. If both these challenges can be met, then, it seems to me, we are within moral bounds to eat meat and farm animals for slaughter.

§3. The Anti-Natalist Challenge

The anti-natalist will hold that bringing new sentient beings into existence is always a serious harm. Thus, the anti-natalist is committed to reducing the population of sentient beings to zero (Benatar, 2006). Prima facie, then, the notion of continuing to farm animals is morally problematic as this obviously involves bringing new sentient beings into existence regularly. However, as Benatar (2006) notes, the wellbeing of existing sentient beings is still morally relevant even when granting that ultimate extinction of sentient life as the long-term vision of anti-natalism. For instance, he states (pp. 184),

> 'Bringing people into existence always inflicts serious harm on those people. However, in some situations failing to bring people into existence can make the lives of existent people worse than they would otherwise have been. […] Thus, the creation of new generations could only possibly be acceptable, on my view, if it were aimed at phasing out people.'

This version of anti-natalism, advocating a 'phased extinction' (pp. 182) — which is applicable to all sentient life, not just human life (despite the above quotation focusing on human life) — is compatible with my prior arguments, I'd submit. My arguments in the past two chapters have been against *en masse* veganism, where I made two negative arguments, outlining the serious harms that would result if en masse veganism were adopted: (1) serious harm to humans who cannot tolerate a vegan diet and (2) the many ecological harms that would ensue if livestock were removed from agriculture, not the least of which is a contribution to climate change via fossil fuel GHGs from chemical fertilisers and the damaging of soil.

If we did move to a phased extinction model by eating and farming only plants, in my view, serious harm would ensue in the process — such that the lives of existing sentient beings would be much worse than they would otherwise have been. Assuming, for the sake of argument, that all humans could reasonably be thought to be healthy en masse on veganism, this would still

not remove the need to bring new sentient animals into existence, particularly ruminants, as they play a vital role in the broader ecology. For example, if we rewilded existing livestock farms, we would still need to maintain the population of ruminants in order to reap the ecological benefits — of the kinds I have already mentioned previously — which necessarily involves continuous birth and death. In this sense, the anti-natalist challenge is one that afflicts the ethical omnivore (who wishes to farm and slaughter livestock) *and* the ethical vegan (who wishes to rewild the livestock animals). The solution to this dilemma, it seems to me, is to phase out the animal population in conjunction with the human population; as we are in a symbiotic relationship in more ways than one. The concession being, the bringing into existence of new sentient beings, while the payoff is living beings not experiencing the serious harms that would have resulted otherwise, and the resulting phased extinction to completion: the ultimate aim of anti-natalism.

§4. Death and Killing

Reconciling eating and farming meat with anti-natalist concerns and having already noted the manner in which animals on regenerative farms lead healthy and reasonably happy lives, the last remaining dimension of animal wellbeing in need of dissection is the matter of death.
The first question to ask is whether killing animals is morally justified. Benatar (2001) helps us to gain clarity on this issue. In this paper, Prof Benatar distinguishes between two versions of the vegetarian moral thesis (VT and, the qualified, VT^1). The first, proposed by Peter Alward (2000), whom Benatar is critiquing, is formulated as follows:

> VT: 'Eating the meat of an animal with properties X, Y, Z,… that was killed for the purpose of being eaten is morally wrong' (pp. 105)

As Benatar notes, this formulation leads one to adopting extreme positions towards animals, which are surely untenable; such as, the obligation by humans to eliminate carnivores. However, Benatar rejects this formulation as a caricature of the general moral vegetarian's position on killing animals. He, thus, reformulates the vegetarian thesis accordingly:

> VT^1: 'Eating the meat of an animal with properties, X, Y, Z, ... that was killed for the purpose of being eaten is morally wrong if done for anything less than very weighty reasons' (pp. 106)

With this qualified moral thesis, the extreme consequences or implications of moral vegetarianism are tempered while retaining the core injunction of moral vegetarianism: the abstention of eating meat. Thus, if we accept VT[1], populations of humans — like the Inuit — and carnivorous animals may continue to eat animals as their doing so is justified by a very weighty reason: their very survival and health.

Of course, then, the question becomes, "what constitutes a very weighty reason?" This is clearly an area of dispute. However, in my view, in the above I outlined two very weighty reasons why humans may be permitted to eat and farm meat (1) some people can't be expected to adopt a vegan diet without serious harm befalling them, including, in some cases, death and (2) farming without ruminant animals will lead to serious harms to humans, animals and the broader ecology via environmental damages.

Many vegetarian and vegan philosophers object to (1), including Benatar (2001:110) who says in a footnote, 'as far as I can tell, it is uncontroversial that humans can survive and thrive without meat.' Peter Singer in various passages in his work on the ethics of what we eat makes a similar point. Now, I would agree with Benatar and others that humans can *survive*, in a generic sense, without meat — although this would depend on the circumstances one finds oneself in[xxii]. However, I would strongly disagree with him and others insofar as it being 'uncontroversial' that humans, en masse, can *thrive* without meat. Of course, "thrive" is ill-defined. But, to be charitable to Benatar, I will assume he means "be healthy" — which is less ambiguous terminology.

On my literature review of nutritional science, the field is plagued with controversy in virtually every area of enquiry — particularly on the question of whether humans can be healthy without animal products in their diet. It is for this reason that a philosophical approach, using techniques in the philosophy of science, is needed to parse out the various literature and their controversies: hence my analysis was founded on conclusions that can be drawn from the convergence of disparate data from disparate fields. In the case of my analysis, I drew on the various fields of anthropology, biology, interventional trials, and epidemiology. Assessing the question of "what foods are healthy for humans?" in this way, as I argued, paints a favourable

[xxii] For example, as I have stated in chapter 2, I am not convinced that we have the land necessary to farm exclusively crops. As I showed, much of the land we currently use for agriculture is simply not suited to growing crops. Therefore, for example, low-income populations and groups, which can't farm nutrient-dense plant foods or import such foods, must farm animals for food to survive.
Moreover, given the evidence in chapter 1, there may still be humans who have intolerances to certain plant foods — even when they are abundantly available, such that they cannot eat them, without serious risks to their person, which may contribute in a significant manner to early death or misery in life via lack of nutrients etc., for example.

picture of eating meat with regards to the health of humans. Moreover, I have also highlighted the manner in which veganism is — and can be thought to be — seriously harmful to some, although, as I have stated already, two things can be true at once. It is not a threat to the case I have been building to concede that people can survive and be healthy on veganism; merely that it is not reasonable, based on current data — and philosophical ways to interpret those data — to infer that veganism en masse is a viable solution.

In light of this, it seems to me, that some humans are in the same camp, as it were, as the lion, who can be permitted to eat animals on VT^1. Therefore, some humans may also be permitted to eat animals on VT^1. Benatar has already conceded this in the case of the Inuit, prior to regular access to plant foods.

The other weighty reason (2) is the case for livestock in agriculture. The obvious critique of this line of reasoning is to rewild the livestock farms, which would absolve humans of the moral blame of iterated killings of animals, while retaining the benefits ruminants and other animals bring to the ecology. I have already discussed the various reasons why this isn't a viable solution, and, therefore, will not repeat my critiques here. Suffice it to say that roaming animals confer a very weighty benefit to land and ecosystems and to remove them or replace them (as would be the case if we exclusively farmed crops) would be a mistake that would result in many great harms. Moreover, in either case — rewilding or farming — one would still need to acknowledge that iterated death of the animals is necessary to confer the benefits.

Therefore, it seems to me, farming and eating meat can be morally justified in accordance with VT^1. This, perhaps surprisingly, displays a remarkable marriage between ethical omnivores and ethical vegetarians.

Here too it is incumbent on me to discuss the metaphysical aspects and differences of death between animals and humans. This will aid in distinguishing and making sense of the two moral dilemma's posed by the empirical material of this dissertation. Those being the of death of an animal vs the death of a human and the of death of an animal vs the health of a human.

When discussing a philosophical moral problem where death is involved (like eating meat) one of the central — implicit questions — is what makes death bad. Only once this is understood, it seems to me, that the moral problem can be discussed with sufficient precision. Here I think the work of Prof Kagan (2012), in his book *Death*, is useful.

For Kagan, death is bad comparatively, as opposed to intrinsically or instrumentally. The key insight being life can confer many goods on a being that non-existence after death cannot. Hence, death deprives a being of many goods that they would/could have otherwise

experienced. Kagan, accordingly, appropriately calls this the 'deprivation account' (pp 529). One of the crucial weaknesses of Kagan's work is that he does not consider death in animals (or marginal humans, it would seem). Therefore, one must extrapolate from his existing work on paradigm humans to animals.

To begin, again, for Kagan, the primary 'badness' (pp. 527) of death is the loss of opportunity to pursue and obtain the goods available to a being in life. Here the mental life and capacity of X or Y being is relevant. Kagan notes — again, because he is primarily assessing death in paradigm humans — that death comes too early for most people, i.e., on one's deathbed there are often experiences, goals etc. which have not been satisfied, which cannot be satisfied. This happens to many people because of choosing career trajectories, for example. If one wants to be an academic, for example, one must specialize, which means sacrificing other interests and passions for the sake of one's chosen area(s) of expertise, which is also an extensive time commitment — which may occupy one for their entire life. Now, if one had more time, one could pursue more of their interests until one is/was satisfied in their pursuit. For example, a philosopher may have also had a weighty interest in music but could not dedicate enough time in one lifetime to pursue both interests in a manner that would satisfy the potential of the individual and, therefore, he/she chose to pursue philosophy. These are obviously just two alternatives. In reality, humans, even marginal humans, in many cases, because of our unique mind, have a near infinite array of potential goods which we may experience in life, not the least of which are the "higher" goods of truth, goodness, and beauty. In this sense, a human can never "experience all life has to offer", to use a common platitude. These facts are a primary reason to provide human existence with a very weighty moral status, greater than that of non-human animals.

This contrasts with an animal, whose mind is limited and, that being the case, therefore, is not privy to goods and experience of said goods in the same vein as humans. Animals are largely confined to their instincts and, once these instincts are satisfied, we can be reasonably sure that the animal has experienced the greatest goods available to them. For Kagan, once such a fulfilled life is met[xxiii], death is appropriate[xxiv]. In other words, there is a limiting effect on the goods that animals experience that isn't the case with humans.

[xxiii] Although Kagan does not specify exactly when this point is reached in humans, he argues that a general human life is too short, yet immortality would also be unwelcome.

[xxiv] One aspect of death that is often omitted in philosophical discussions, particularly those involving animal death, is when death is *not* a harm. To claim that death is always a harm is to simultaneously claim that immortality would always be a moral good. Kagan addresses the problem of immortality and argues that immortality, to the extent we can imagine immortality in this life, would be unwelcome. Hence, there is a tipping-point, as it were,

With all these considerations in place, one is better equipped to answer the moral dilemmas. In summary, to help untangle the moral issues posed by such a question, I considered the badness, to use Kagan's term, of death for an animal. Here I argued that premature death may still be harm to an animal, but that it is at least plausible that it is not a harm and, indeed, is not as harmful as it might be for other creatures — like self-conscious, rational creatures with the mind and mental life of humans — as the animals killed on regenerative farms have the opportunity to satisfy their natural instincts: the only measure of an animal's well-being available to us for assessment. To refer, again, to Kagan's deprivation account, once a being has experienced the greatest goods available to them, death may be appropriate and, indeed, welcomed. (To argue against this point would be to argue that immortality in this life would be desirable). Of course, we cannot be certain that we have given our farm animals the greatest goods available to them — as they cannot communicate such information to us, given their, comparatively, limited minds — however, we can at least reach an approximation which, at the very least, will diminish, even if only slightly, the harm of death for the animal. Consequently, we have good reason to favour the life of a human over that of an animal.

Furthermore, these issues framed in this way, as a composite, seems to me, to provide a plausible case for the favouring of human health over the full-length life of animals — again, under the qualified circumstances which I defend. Again, we can give the farm animals the greatest goods available to them — the satisfaction of their natural instincts — in a regenerative system. Moreover, the great harms, of the kinds I discussed in chapter 1 that result in (some) humans will also be avoided as well as the ecological benefits from a regenerative agricultural system. This is compatible with one who gives animals a very weighty moral status by wanting to protect their interests from violation by third-parties. The interest in staying alive, as shown by Kagan, is to experience and obtain the goods that are available to a being in life. Granted, a being, even having experienced the greatest goods available to them may still want to keep experiencing them; such would/could be the case in animals. Therefore, prematurely killing them may still be a serious harm. However, this needs to be weighed against the suffering of humans who need to eat animals to obtain and maintain their health. Therefore, what we are

whereby death becomes a moral good. For Kagan, this point "is" reached when the sentient being has experienced all the goods they may in life or is satisfied with the goods that they have experienced in life. It seems to me, animals can reach this point *within* their lifetime, given their limited minds. That is, animals experience the "greatest goods" available to them by the fulfilment of their natural instincts. (Which, again, may be effectively accomplished on regenerative farms). Clearly, death may still be a harm, as the animal may "wish" to prolong the goods in their life or experience them several times. However, I hope it is clear that it is at least plausible that the death of an animal is in fact not a harm, and not a harm — in any case — comparable to the death of a paradigm human.

comparing is the comparative badness of early death in animals vs the intrinsic badness of suffering in humans as result of ill-health.

The question then is: on which side should our moral judgement fall in dilemmas of comparative vs intrinsic badness? It seems to me our moral intuitions and considered moral judgments would dictate that we prevent the intrinsic bad rather than the comparative bad. A variant of an example Prof Kagan gives helps us to gain clarity. Suppose we have two persons, X and Y and they are both presented with two envelopes. Person X can either pick envelope A or B. Envelope A contains R50, while B contains R100. Person Y can either pick envelope C or D. Envelope C contains R50, while opening D will cause Y to suffer pain in some way. Now, for the sake of example, grant that X will open envelope A — R50 as opposed to R100, hence, X will experience a comparative bad — and Y will open D and experience pain and suffering, an intrinsic bad. Given that there is an asymmetry in the two cases (and the two kinds of badness) — person X is experiencing a good (R50) and a bad (the lack of a greater good: R100) while person Y is only experiencing an intrinsic bad in the form of pain — our moral judgement should find preventing Y from opening envelope D the greater moral concern, and, consequently, in a moral dilemma chose to prevent the outcome for Y as opposed to X.

In keeping with the discussion above on the vegetarian moral thesis, we may term this the badness moral thesis (BT).

> BT: In moral dilemmas we ought to favour preventing an outcome which will cause an intrinsic bad as opposed to a comparative bad

Of course, this does open one up to the charge of justifying the deaths via killing of humans as well to prevent an intrinsic bad like pain. Indeed, we can think of many scenarios whereby we could kill a human to prevent the suffering of another human or animal. This seems morally problematic. Killing an animal to prevent human suffering too seems morally problematic for some, admittedly. To avoid the en masse proscription of killing any sentient being when we can be reasonably sure it would prevent the suffering of another sentient being we may qualify the favouring of preventing intrinsic badness vs comparative badness by setting a very high threshold. Thus,

> BT^1: In moral dilemmas we ought to favour preventing an outcome which will cause an intrinsic bad as opposed to a comparative bad iff there is no plausible alternative to preventing the relevant intrinsic bad

Such a qualification avoids the morally problematic implication of the in-principle proscription of mass killings when doing so would prevent intrinsic bads, while also leaving open the possibility that it might be morally acceptable in some highly unique situations to kill another being to avoid intrinsic bads like pain and suffering.

Moreover, this qualification specifically allows for the killing of animals when health is involved, as — as I have argued in chapter 1 — it is scientifically plausible to grant that meat confers health benefits on (some) people which cannot be gained via a vegan or vegetarian diet, hence, the *only way*[xxv] to avoid the suffering that may result from ill-health is to eat animals and animal products. Again, as I argued in chapter 1, this is simply a remnant of our biological heritage, which we had little control over; our being adapted to obtain and maintain health from eating animals, that is. This is starkly different to many other such cases we could imagine where killing someone (animal or human) would prevent an intrinsic bad, like pain or suffering. Imagine someone in poverty who could easily be brought out of poverty by killing someone more wealthy than themselves. This would not satisfy BT^1 as killing person X, Y, or Z is clearly far from the *only way* or most plausible way, for that matter, for the person in poverty to alleviate their poverty.

Although I will discuss the animal rights position in greater detail below, fitting this view into a rights framework is another matter, granted. However, as is shown in Regan's — the foremost proponent of animal rights — own examples, such as the gun-wielding child, a rights position may make concessions, in unique circumstances, whereby a right may be infringed upon. In discussing eating animals, I argue that one is in a genuine moral dilemma, where we — moral agents and patients — have evolved and are adapted to eating meat, such that some humans cannot obtain health or survival in the absence of animal-sourced foods. However, this involves killing another moral rights holder: an animal. Hence, the dilemma.

There is no plausible[xxvi] solution whereby both the survival and health of humans can be met, and farm animals may have full-length lives. In the preceding paragraphs, I have provided

[xxv] Another way to avoid the suffering that may result by not eating animals for the person is to commit suicide. However, this then draws us back into a discussion of the stake an animal vs a human has in staying alive. As I argued earlier, humans — in general — have a greater stake in a full life than a non-rational, non-self-conscious being, like the animals we have on this planet.

[xxvi] I concede the in-principal possibility that this dilemma may, in the future, be resolved via technological advances such as lab-grown meat. However, I do not think it is controversial to say that such a solution is not plausible contemporarily and will not be feasible in the near future. Therefore, we are still in a position of having

reasons for favouring the health of humans as opposed to the full-length lives of animals. I do think this can be reconciled with an animal rights view by conceding, in the same way as Regan's example of the gun-wielding child, that there are unique moral cases whereby it is appropriate to violate the rights of another moral being, even if they are innocent — like a child (or an animal). However, to the extent that one would argue that an animal rights view cannot be reconciled with the above view, this appears to me to, again, show the morally problematic applied ethics of an animal rights view and, hence, cast doubt on the cogency of granting animals moral rights.

§5. Utilitarianism

As is likely clear to the reader by this point, these two weighty reasons *in the context outlined above* provide enough grounds for accepting the eating and farming of animals under utilitarianism. Cleary, the humans involved are in state of preference satisfaction within the context described above. Moreover, the ecological benefits of regenerative farming provide great benefits in-terms of sustainable agriculture (i.e., an agricultural practice which does not contributing to climate change via GHGs and in some cases being a powerful force to offset other GHG emissions), soil health and biodiversity. To Singer's above point, the harm we could expect by radical changes in ecology — which would be the case under exclusively crop-agriculture — are likely to be great.

As Singer (2020) himself notes, the wellbeing of farm animals, based on the way they are farmed, *can* be enough for him, as a utilitarian, to accept the eating of some animal products; chicken eggs in his case. In that same passage he cites the contribution of livestock to climate change as a primary reason to reject the eating of other livestock, like cattle. However, given the case I made in chapter 2, this concern is diminished. As I have said above, given that the lives animals lead on regenerative farms are good, the environmental critiques can be rebutted and a vision of eating meat can be integrated into a phased extinction model of anti-natalism – – the last remaining issue is the killing of the animals.

Here, I think the utilitarian is within reason to grant that the killing of animals for food is morally acceptable. Again, they confer very weighty benefits to both humans and the broader environment, which is relevant for all life. I do not deny that death is a harm to any sentient being in ordinary circumstances, however, a death at the hands of a slaughter house or abattoir

to make philosophical sense of the moral trade-offs between insuring human health and survival and the harmfulness of a premature death to a farm animal.

— which are attempting to minimize the distress and pain of the animal — seems at least comparable in severity, if not more delicate, than a death such animals would have in nature. Another vital consideration for the utilitarian is the number of animals killed (albeit unintentionally) during crop farming. It is uncontroversial that many animals and sentient beings are killed in the production of plant crops[xxvii] (Fischer & Lamey, 2018). This happens in a number of ways. Firstly, mice, moles, and other such animals are killed when the soil is tilled. During the growing of crops, many animals will be killed via the ingestion of pesticides used to protect the crops. Toxic water runoff — also from pesticides and artificial fertilisers – – kills aquatic life in the streams, lakes etc. that it affects as well as animals that may use said water source for hydration. During harvesting, small animals like rabbits are killed by tractors and the like. Moreover, even organic farmers will kill animals, intentionally, like rabbits, foxes etc. to protect their crops. Likewise animals are killed to protect foods in storage facilities.

As Fischer & Lamey (2018) note, while we have many good statistics on the death toll of animals killed for food, we don't have comparably robust numbers of the animals killed as collateral as a result of plant farming; even though it is a well-documented phenomenon. The researchers then attempt to access the limited data we do have and attempt to derive an annual death toll of animals as a result of plant agriculture in the USA. Their 'first pass' (pp. 411) reveals,

> 'a dramatic number: over 7.3 billion animals killed each year. That's remarkably more than the number of cattle or pigs slaughtered each year in the US (roughly 40 and 120 million, respectively) and not too far from the number of broiler chickens killed there also (roughly 9 billion)' (pp. 414).

Now, it is important to note that the authors themselves are sceptical as to the accuracy of this estimate and argue that there are many important reasons to doubt the number is truly this high. They note two primarily counts of contention. The first is the appropriateness of generalising the data that they use to arrive at the 7.3 billion estimate. This is due to nuances in region, farming practices and species found in said areas. The other problem is the calculation errors found in the primary data. For example, accessing the data in Davis (2003), a primary piece of literature in this area, there is an error in the way Davis reads the statistics. When considering the collateral deaths of sugarcane farms Davis calculates the deaths as if the growth cycle of

[xxvii] Assuming that plants themselves are not sentient, a claim some philosophers do not accept. See Smith (2016).

sugarcane is annual, when it fact it is bi-annual. Therefore, Davis' morality rate for animals on sugarcane farms can be reduced by half.

However, even though Fischer & Lamey are sceptical, they do not provide an alternative estimate, taking into account their criticisms of their own existing estimate. However, accepting the limitations of the data used in the 7.3 billion estimate, the authors themselves note that there are limitations such that many deaths are also *not* accounted for. Prima facie, the estimate of 7.3 billion animals dying every year in the USA alone as a result of plant agriculture does seem excessive, given the statistics we have on the deaths of animals in livestock farming, however, the number is still likely very high and worthy of the concern of moral philosophers. Even if the 7.3 billion estimate is reduced by half, 3.6 billion animals are killed every year in the production of crops. If we substantially reduced, or eliminated altogether, the farming of chickens — which I am partial to — this number would exceed the number of animals killed every year in slaughterhouses *worldwide*: ~3.4 billion[xxviii]. The manner in which animals are killed as collateral should be considered as well. Dying as a result of poisoning or being dismembered by a harvester surely inflicts more suffering than death via an abattoir. Therefore, even if Davis' (2003:387) estimates can be substantially reduced (even by half), his conclusion may still be justified, 'the least harm principle may require that humans consume a diet containing large herbivores, not a vegan diet.'

These considerations, including the case I have outlined above regarding the metaphysical differences in death between self-conscious rational beings (like humans) and non-rational non-self-conscious beings (like animals), coupled with the fact of a good life lead by the animal, along with the broader benefits of the life and death of that animal is enough, in my mind, to shift the utilitarian calculus in favour of killing animals for food.

§6. Rights Theory

There are, of course, also those who would hold a view that animals have rights and that these rights would preclude our killing and eating them. Here I will return to the problem of predation. This problem, in my mind, is intractable under a rights view and, therefore, leaves attributing rights to animals with proscriptions that are, at least, severely at odds with our moral intuitions and considered moral judgements and, at most, absurd and result in inconsistencies in the exponents own position.

[xxviii] Again, for clarity, this number is excluding the death toll of chickens.

Professor Regan (2004), for example, does not share this concern and his convinced that predation of animals by other animals is compatible within a framework of attributing rights to animals. On my reading of Regan, his response to this objection is inadequate as his view leads to scenarios that are both inconsistent with his own views and severely at odds with our moral intuitions and considered moral judgements. His response to the predation problem is formulated as follows (2004: 285),

> 'Wolves in particular and moral patients generally cannot *themselves* meaningfully be said to have duties to anyone, nor, therefore, the particular duty to respect the rights possessed by other animals. In claiming that we have a prima facie duty to assist those animals *whose rights are violated*, therefore, we are not claiming that we have a duty to assist the sheep against the attack of the wolf, since the wolf neither can nor does violate anyone's' rights.'

Now, the first thing to note about Regan's response is that it leads to many outcomes which are morally problematic. For conceptual clarity it is necessary to understand Regan's 'moral agent' and 'moral patient' distinction. He (2004:151) defines a moral agents as,

> 'Individuals who have a variety of sophisticated abilities, including in particular the ability to bring impartial moral principles to bear on the determination of what, all considered, morally ought to be done and, having made this determination, to freely choose or fail to choose to act as morality, as they conceive it, requires.'

Moral patients, by contrast (2004:152), 'lack the prerequisites that would enable them to control their own behaviour in ways that would make them morally accountable for what they do.' Given these definitions, humans — generally — are moral agents while animals and marginal humans (the severely senile and children) are moral patients. This distinction is important as, for Regan, a moral patient cannot violate one's rights and, therefore, there is no prima facie duty, as a matter of justice, to intervene when a moral patient kills, for example, another moral patient — as is exemplified in Regan's response regarding predators.

Both the predator and prey are moral patients and, therefore, we as moral agents do not have a *prima facie* duty to intervene and prevent the predator from killing the prey animal as no act of injustice, in Regan's view — which entails the violation of rights — has occurred. It is in this way that Regan accommodates predatory animals into his rights-based account. However,

his account is not adequately robust to guard against some problematic moral scenarios. For instance, because a moral patient cannot violate rights, we have no prima facie duty to intervene, as a matter of justice, any time a moral patient threatens another sentient being, whether they are a moral patient or moral agent. For instance, we need not intervene if an animal kills another animal, marginal human or general human. Likewise, we don't have a duty to assist moral patients in general perilous situations, for example, a drowning child.

As Ebert & Machan (2012) note, however, Regan does add in his second addition of *The Case For Animal Rights*, that his view can accommodate a general prima facie duty of *beneficence*. Therefore, we may not have a duty to intervene in cases like a drowning child as a matter of justice but rather as a matter of beneficence. However, as Ebert & Machan (2012) note, Regan's addition of a duty of beneficence is not robustly grounded and does not clearly outline the scenarios where we are permitted to intervene, as a matter of beneficence, and where we should remain passive. Therefore, revealing a weakness in his account, which Regan (2004) himself notes. This is important as it is unclear, on Regan's view, when we should interfere in cases of predation, acting under the duty of beneficence. If the justification for intervening in cases like those involving the small child is that doing so has very little cost for us, yet a very weighty benefit for the moral patient, this still leaves one wondering why the same reasoning can't be applied in cases like animal-on-animal predation. For example, it is often very low cost for us to intervene to save a prey animal's life; we merely can fire a gun or make a loud noise from a distance to dissuade the predator. Until Regan clearly delineates such cases, showing why we may intervene in X scenarios, yet not in Y scenarios, even though the two seem to be prima facie comparable, his account remains weak. Moreover, as it stands, there is an inconsistency.

For instance and greater clarity of the problem, Regan (2004:xxvii), asserts that we would have an obligation to warn a hiker about a falling boulder, even though the boulder cannot, like a moral patient (predator) violate one's rights. More than this, he also asserts that we have a moral duty to intervene and save a child who is being stalked by the lion and yet — curiously — he also asserts that we do not have a duty to intervene if the lion is stalking a wildebeest. Regan does not outline where our duty towards the child stems from or why it is not applied in the case of the wildebeest. By Regan's own standards the two beings (the child and the wildebeest) are equivalent in their inherent moral value, on *Regan's* definition of inherent moral value. Yet Regan advocates for a different response to the two beings and the threat of predation in the two scenarios where the only significant difference — again, on Regan's view — is that the two beings are from a different species.

Regan tries to avoid this quandary by appealing to the inherent competencies of a species. He states (2004:xxxvii), 'our ruling obligation with regard to wild animals is to *let them be*, an obligation grounded in a recognition of their general competence to get on with the business of living, a competence that we find among members of both predator and prey species.' Because the child, left to its own devices, cannot reasonably be expected to survive, this puts the child[xxix] in a special category and deserving of our assistance. And, therefore, the child and the wildebeest are importantly different after all. This defence, however, still does not absolve Regan of the difficulties facing his position.

We merely need to refer again to cases like the falling boulder to highlight the inadequacies of Regan's response. For Regan to advocate that we ought to intervene in cases like this, he is advocating that we ought to respond to threats facing moral agents and patients, regardless of their "general competence for living". As Regan has not stated otherwise, we can assume the hiker in question is an ordinary human, a moral agent. Like animals, this ordinary human will have a general competence for living, yet we are obliged to intervene, according to Regan. Here someone may reply that the hiker is in a generally alien, by modern standards, environment and, therefore, is entitled to special considerations and assistance due to this unique circumstance. The wildebeest etc. are found in their natural environments when they are killed by predators. Therefore, again, the two are importantly different.

This is an unsatisfactory objection. Firstly, it is not obvious that we should accept that the hiker is in an alien environment. He/she may be an expert hiker or someone who spends the majority of their time doing such activities, thereby making the rocks and mountains etc. his/her "natural" environment (think of the popular Bear Grylls, for example); restoring the equivalence between him/her and the wildebeest. It seems unlikely that Regan would argue that we should not assist the hiker in the face of a free-falling boulder simply because hiking is in their domain of special competence. This counter-example highlights the manner in which Regan advocates for the assistance of moral beings by threats that cannot violate their rights even when they have a general competence for living, while, on the other hand, so to speak, he also insists that we should not offer our assistance in instances of animal-on-animal predation. This is a clear inconsistency on his part.

We could even make the examples more equivalent by simply replacing the falling boulder with a predatory animal in the case of the hiker. Again, the hiker would satisfy Regan's criterion of general competence for living, like the wildebeest. Therefore, the two scenarios are:

[xxix] Obviously, this would depend on the age and skills of the child.

1. A wildebeest — in possession of the "general capacity for living" faculty — is preyed upon by a lion (who cannot violate rights by virtue of being a moral patient)
2. An ordinary human — in possession of the "general capacity for living" faculty — is preyed upon by a lion (who cannot violate rights by virtue of being a moral patient)

Regan claims that we ought to assist in cases of (2) and not in cases of (1). I can find no plausible reason, using Regan's own reasoning for this difference in response. It seems to me that we either generally have a prima facie duty to intervene in both cases or we have a prima facie duty to not intervene in both cases. This latter approach resulting in a severely morally counter-intuitive prescription. In any case, the inconsistency in Regan's view is clear.

One possible way for Regan to account for the differential response would perhaps be to claim that one's general competence for living is dependent on members of their own kind's assistance: i.e., humans, in general, need the assistance of other humans in order to generally be competent at living. In the same way, wildebeest, in general, need the assistance of other wildebeest (not humans) in order to have a general competence for living. Therefore, we do have a different kind of duty to the hiker as his/her general competence of living is only manifest through the general assistance of other humans. However, given Regan's firm denouncement of speciesism, it is unlikely that this approach is one that would be acceptable under the broader conditions of his account of rights, as it explicitly advocates for different responses to ethical scenarios on the basis of one's species membership.

There are further problems with Regan's account even if we accept that we are morally obliged to assist in (2) and not in (1). To understand the following we need to be reminded that on Regan's view, the duties of justice are to be given precedence over the duties of beneficence. This hierarchy of duty is important as it again leads to morally problematic and counter-intuitive results. Here, again, I will refer to the case of the hiker being stalked by a prey animal (for the sake of example, it may be a tiger). Now, Regan would have us warn the hiker about the tiger and assist in dissuading the tiger from killing the hiker as this falls under the duty of beneficence. However, we could easily imagine a scenario whereby the tiger is particularly hungry and/or ravenous and the — non-violent/combative —attempts to dissuade him/her from killing and eating the hiker are unsuccessful. Crucially, for Regan, the tiger has moral rights, like the right to life etc., therefore, to kill the tiger would be to violate his/her rights, making it a matter of justice — we have a duty to respect moral rights, which trumps the duties of beneficence. Therefore, we would be acting immorally if we, as moral agents, killed or

seriously harmed the tiger to avoid the hiker being killed by the tiger. One may reply that this example is not morally counterintuitive as the tiger is in his/her natural habitat and by us, as humans, encroaching on his/her domain, we have implicitly taken on the risks, knowing we do not have a duty to kill the tiger even if it attempts to kill a member of the hiking party. To avoid this, the example could obviously be changed. Firstly, it is clear that the natural habitat of a human and many prey animals overlap. Moreover, we could imagine a predator forsaking their natural habitat, even if only occasionally, for the precise purpose of hunting a human for food. In all such scenarios, it would be unjust to kill the predator in Regan's view, even granting a general duty of beneficence.

Ordinarily in rights theory, the rights of another may be violated in cases where this other is threating the rights of another moral being. For example, if I am about to kill another human, it is permissible for a third party to seriously harm me or even kill me as my own rights are forfeited by my (attempted) actions of violating the rights of others. However, this cannot be so under Regan's account as the tiger cannot, by virtue of his or her status as a moral patient, violate the rights of another. Therefore, they cannot forfeit their own rights in the manner described above resulting in the permissibility of a third party violating the tiger's rights.

Furthermore, if person X does attempt to kill the tiger to prevent the tiger killing the hiker, other moral agents would have a duty to seriously harm or kill person X as person X is violating a moral being's rights. Again, this is an action which is the cardinal sin, so to speak, of Regan's position; justice takes precedence over all other duties.

This highlights another inconsistency in Regan's (2004) writing. He describes a case analogous to the one I have mentioned above (broadly termed "innocent threat" cases), whereby a child has acquired a loaded gun in a crowded area and is, therefore, a legitimate threat all moral beings present. In Regan's example the child indeed begins firing the gun at other moral beings present. Regan claims that we are justified in intervening in cases of this kind, which would extend to the hiker and tiger case I outlined above. However, this seems to be at odds with Regan's own view and the precedence he gives to justice, as well as his rejection of utilitarianism. Regan (2004:292), to justify harming the child — and, by extension, the tiger — appeals to 'our considered beliefs in a broad range of cases.' This is a weak defence as our considered belief/moral judgements/moral intuitions in these cases are at *odds* with Regan's view of justice. It seems to me, for Regan to accommodate these considered beliefs, he would need to revise his theory rather than to post hoc appeal to considered beliefs in order to accommodate special cases.

Although I think Regan is inconsistent in his conceptualisation of the innocent threats problem, leading one to doubt the cogency of his view, I do agree with him that a kind of qualification would need to be made in such cases if one wanted to adopt a rights view, and attribute rights to animals. It is in this way that Regan's view collapses into one which relies on a version of VT^1. Regan explicitly argues that we may seriously harm and kill, thereby violating the rights of, an innocent threat when our own bodily integrity or the bodily integrity of several other moral beings is at stake. Whether or not this is inconsistent with Regan's own view is somewhat beside the point in the line of investigation I am pursuing. Given that this is Regan's view, I see no reason why this same reasoning cannot justify our infringing on the rights of animals in cases where our health and/or survival is at stake (therefore, similar to VT^1 in the sense that our health and survival are two weighty reasons). If one accepts the conclusions of the previous two chapters of this dissertation, then it is evident that our bodily integrity and the bodily integrity of other sentient beings (not the least of which are carnivorous and omnivorous animals in the wild) are compromised if we don't kill innocent beings: the animals we eat.

To illustrate this more fully we can think of how Regan might respond to the Inuit, for example; such cases are notably absent in Regan's work. Using considered beliefs, as Regan does, as a basis, I do not think it would be controversial to say that most would agree that it is morally permissible for the Inuit to kill and eat animals. Their bodily integrity and very survival would be severely compromised if they did not kill and eat animals. This is comparable, in a sense, to Regan's gun-wielding child. We are permitted to kill the child as the lives and bodily integrity of other sentient beings are threatened. In the case of carnivorous and omnivorous animals, their bodily integrity and the bodily integrity of their pride etc., is compromised if they don't kill innocent moral beings. Granted, passive animals that are killed for food are *not* a threat like the child. The commonality is in an innocent moral being, who has rights, having to be killed to avoid serious harm to other moral beings. Animals that are eaten for food not being a threat like the gun-wielding child, may be enough to dissuade an animal rights exponent from embracing the eating of animals as another special case whereby rights of an innocent being are violated. However, it does at least create a path whereby eating animals may be justified — as one may violate the rights of another beings within an animals rights framework, at least Regan's iteration.

Such cases are prevalent in other rights theorists' work. For example, Scruton (2000) gives an example of a lorry driver whose lorry has had a break failure and the driver must choose between killing a single person or several. Scruton argues that the driver, in such a circumstance is morally required to choose the outcome which causes less harm, as the driver is in a situation

that was created outside of his/her control. He says, (pp. 143) 'the brake failure is not an action of [the lorry driver], but a misfortune that afflicts him. His principle duty in such a case, is to minimise the suffering that results from it.' I would argue that the human predicament with regard to our food choices, and health and survival, bears a resemblance to this example in that some of us do require animal foods to be healthy and survive and this set of circumstances isn't a choice of our own, but an imposition on us from nature.

Although Regan is a firm opponent of utilitarianism, his reasoning in the gun-wielding child case is utilitarian, or at least quasi-utilitarian — favouring the interests/rights of the many even against the moral rights of an innocent being. If we apply the same reasoning — given the empirical groundwork I have laid in chapters 1 and 2 — to the case of eating and farming meat, it seems plausible that eating meat may also justified.

The core problem then is to establish whether (some) modern humans really are at risk of compromised health or survival by not eating meat. In the preceding chapters I have argued that we can make a cogent *a posteriori* case that there are common situations and circumstances in which humans are faced with the reality of compromised health and survival by not eating animals.

Another approach to avoid the problems posed by the moral dilemmas already outlined as well as the predation problem (at least in part) while maintaining that animals are the kinds of beings worthy of moral rights is to argue that animals do not possess the same rights as humans. One such right may be the right to life. One can make such a case by referring back to metaphysical differences between humans and animals, specifically in the philosophy of mind.

At the risk of repeating ground I have covered above, humans are the kinds of beings who care deeply about life as, due to our self-consciousness (a feature absent in animals), we are able to contemplate and be aware our existence on the continuum of time. We also are aware of the inevitability of death and what this entails, which only serves to highlight the value and stake a human has in life. This gives a human life[xxx] a different moral standing than a non-self-conscious being. Given that animals do not share in self-consciousness, it is not obvious that the animal's life is important to him/herself, beyond the present sensations that said animal is experiencing — such as pain, pleasure and so forth. To refer back to the deprivation account,

[xxx] Of course, this isn't to say that *only* human life is privy to this moral status and consideration. The moral importance is based on characteristics of the being in question, *not* species membership. We can easily imagine an alien species having the same general capacities of mind that humans do and would, therefore, be entitled to the same moral considerations.

we recognise the great loss at the death of a fellow human as we are aware of the great deeds and so forth that the deceased may have accomplished if they had not died and the importance his/her own life meant to him/her.

Thus, such a profound difference in the meaning and implications of death between the two classes of beings may lead us to denying that an animal has an absolute right to life, whereas a human does. Again, this is not to say that animals should not have rights, such as the right against injury or torture etc. merely that the interest in avoiding death does not meet the threshold of conferring a right due to the natural characteristics of animals.

This does not mean the indiscriminate killing of animals — so long as their other right are not infringed upon — is permissible. One may still grant that although the *absolute* right to life is absent in animals, their lives are still morally important in ordinary circumstances. Thus, we can employ VT^1 as a guide for our moral dealings with an animal when considering his/her death.

As I have already alluded to above, denying an absolute right to life to animals alleviates some the burden of the predation problem[xxxi] for the animal rights exponent as there is no prima facie reason why an animal may not be warranted in killing another animal. Indeed, using VT^1 as a guide, the predatory animal is acting on a very weighty reason when he/she is killing another animal, in most cases. Furthermore, we, then, are also permitted to kill and eat animals so long as we are doing so for a very weighty reason. My discussion of VT^1 above has already highlighted the kinds of reasons we may give. Thus, we are permitted to kill and eat animals while maintaining an animal rights position.

Lastly, to avoid the problems of attributing rights to animals and what that entails, one may, as an alternative, adopt a theory whereby we don't attribute rights to animals at all. This is the case in Scruton (2000) who attributes rights on the basis of the metaphysical account of personhood, the core criteria of which are self-consciousness and reason, which excludes animals. Ebert & Machan (2012), noting the inconsistencies in Regan's position, posit a virtue ethics position with regards to our treatment of animals as an alternative to attributing rights to animals. Given that these accounts grant that eating meat is permissible, I will not dedicate time to explicating them. My core focus in this chapter is to highlight the manner in which the existing prominent moral theories that prohibit eating meat do, contrary to the relevant

[xxxi] There is, however, the problem of the kinds of suffering — a violation of rights — inflicted on the victims of predators.

exponent's arguments, may permit the eating of meat by human beings or are radically altered in the face of the positions I have developed in the prior two chapters.

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In conclusion, then, I have argued that playing God, which would be the case if one wanted to eradicate animal agriculture or predation, would — in all probability — lead to serious harm and is, thus, an untenable moral position.

I then moved on to discuss animal wellbeing as such. Having already noted that the lives of animals on regenerative farms are good — therefore, we need not concern ourselves with questions of animal suffering in life — I first began by considering the anti-natalist challenge against farming. Here I argued that farming animals may be justified by the anti-natalist as those beings already in existences' lives would be considerably more miserable if we did not farm animals. Moreover, I highlighted the manner in which farming may be incorporated into a phased extinction model: the ultimate aim of anti-natalism. Thus, there is no in-principle tension between farming and anti-natalism.

Moving on to discussing death, I considered the vegetarian moral thesis in its qualified form and argued that the omnivore can provide very weighty reasons for killing and eating meat. Discussing the evil of death, I drew on the deprivation account, noting that there are substantial differences in humans and animals, such that the moral status of a humans is greater than that of an animal. I also argued that we may favour the health of a human over the full length life of an animal by appealing to the distinction between comparative and intrinsic bads.

With this background in place, I reassessed the question of eating meat under a utilitarian moral framework and argued that the arguments presented in this dissertation as a whole are sufficient to shift the utilitarian calculus in favour of eating meat.

Turning to considering an animal rights position, I first outline why the predation problem is a serious affliction on the position, such that attributing rights to animals may lack cogency. Notwithstanding the predation problem, I consider some plausible solutions to the problem as well as the moral dilemmas articulated at the outset of this dissertation, noting that eating meat may be plausibly incorporated into an animal rights view if amendments are made. I conclude by noting that another solution to the problems facing an animal rights position is to abandon the notion of animal rights altogether, which would, obviously, remove the prima facie prohibition against eating meat.

Conclusion

The problem how to eat ethically, it seems to me, is one of the most salient moral issues that imposes itself on any being with self-consciousness and a digestive system. In this dissertation, I hope to have provided a philosophically and empirically robust discussion on the specific problem of eating meat.

Chapters 1 and 2 are primary aimed at raising the empirical epistemic bar, so to speak, in philosophical discussions around eating and were spawned by my frustrations with the lack of extensive empirical discussion by philosophers when developing moral theories and arguments about how humans should eat.

In chapter 1, I argued that the empirical evidence converges on the following conclusions: humans up until the present day have evolved to eat meat, thrive on meat, and can be seriously harmed by its absence in the diet. This is in sharp contrast to many vegan philosophers who write under the presumption that en masse veganism is tenable.

Chapter 2 explored the ecological impacts of farming. Here I argued that many of the claims against farming meat are unwarranted and can be rebutted under cross-examination. Notwithstanding this, I conceded that the conventional methods of farming — crop or livestock — pose serious moral hazards and, thus, I make a positive argument for regenerative farming, which ensures ecological and animal wellbeing (with the exception of brining animals into being and killing them prematurely).

Chapter 3 was dedicated to moral philosophy proper, where I considered the problems of playing God, the predation problem, bringing an animal into existence, and killing an animal prematurely. With these considerations in place, as well as the empirical groundwork laid in chapters 1 and 2, I then accessed the manner in which two prominent moral theories — which have been argued to be in favour of the prohibition of eating meat — may, in contrast, permit the eating of meat. The two theories in question being: utilitarianism and animal rights theory. Hence, one of my primary aims — showing how the empirical questions relating to the ethics of what we eat play a vital role, and can, indeed, change the moral proscriptions of a theory – – is reached.

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