8 What can ecotheological and agroecological accounts contribute to biopolitical perspectives on farming?

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8.1 Introduction

We propose that ecotheological accounts have the potential to provide guidance to governmental policies relating to biosecurity. Governmental policies continue to transform our ecological and political landscapes in the broadest possible ways; including the future of our autonomy, collective health, and economic security. We consider how ecotheological principles have the potential to guide emerging farming movements such as agroecology and regenerative agriculture in ways that would promote the resilience and autonomy of farmers to move toward environmentally sustainable practices. In Section 8.2, we survey biopolitical accounts of theology and religion on the one side, and immunology on the other. We begin by examining the broadly negative stances taken by biopolitical philosophers toward theology and religion, focusing on Foucault. We then turn to Derrida's expansion of immune logic as a way of understanding the September 11 terrorist attacks in Section 8.2.2. We argue that these accounts fail to recognize the potential positive contribution of theology to environmental and ecological policies.

We then compare two case studies in Section 8.2.3. First, we outline the case study of the village of Amanbaev in Kyrgyzstan, which after the fall of the Soviet Union was able to develop new farming practices. We contrast this with Chan's and Enticott (2023)'s ethnographic research with farmers in Hong Kong following governmental policies such as the introduction of buyback schemes for livestock licenses and the introduction of new Codes of Practice to impose stricter control on farming practices. One motivating factor for these changes was the increased threat of disease outbreaks associated with rearing livestock. However, Hong Kong has become increasingly dependent on importing livestock, which has increased the number of disease outbreaks. This case represents a trend for governments to reduce the levels of local support offered to farmers and rely more heavily on imported meat and livestock, which generally fails to counteract the dangers associated with antimicrobial resistance (AMR) for the health of human and nonhuman animals. In fact, relying on greater levels of imported meat and livestock increases these dangers on a global scale by centralizing the

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breeding and exportation of livestock to fewer countries, which creates additional difficulties to ensure the effective regulation and enforcement of responsible antibiotic stewardship. We offer a comparison between these cases to demonstrate the significance of government interventions in relation to farming. The case of Amanbaev demonstrates how farming can contribute to the flourishing of a community with reduced government intervention, while our analysis of farming in Hong Kong considers how top-down government interventions imposing stricter regulations may not be effective ways to aid farming communities to improve farm biosecurity and reduce the use of antimicrobials.

In Section 8.3, we consider how theology can offer support to sustainable approaches in ecology and agriculture. We offer a comparative analysis between ecotheological principles and elements of agroecology developed by the United Nations. We identify various areas where these principles offer mutual support to one another and consider how ecotheological principles might offer additional support for farmers to build resilience and develop sustainable farming practices. These practices focus on reducing external inputs and interventions on farms such as antibiotics, fungicides, and pesticides by encouraging practices that promote soil health such as crop rotation and not tilling soil. Agroecology helps us to understand the practical benefits of adopting principles that are broadly consistent with the principles of ecotheology. Ecotheology corroborates many of the principles of agroecology and provides a broader framework from which to consider the existential questions about human identity and purpose. In turn, agroecology provides evidence that adopting these principles has measurable environmental benefits at various levels.

8.2 A brief account of biopolitical perspectives on theology and immunology

In this section, we consider how previous examinations of the roles of religion and immunology from philosophers who are associated with biopolitics. Religion has been a target of critical focus (Foucault 1981). Foucault presents religion as a biopolitical tool with numerous deep-rooted mechanisms for exercising power over individuals. We support the general importance of examining religion as a biopolitical source of agency, but suggest that previous interpretations have placed too much emphasis on religion as restrictive and limiting power.

The concept of immunity has also become a central concept in biopolitical philosophy. Various philosophers have utilized the concept of immunity as a form of logic from which we can develop novel perspectives to analyze economic and societal issues (Borradori 2003; Brown 2019; Esposito 2011). We agree that immunity should be considered in the context of various societal and economic factors, but we have some reservations about explaining these factors primarily through the language and logic of immunity.

8.2.1 Biopolitical accounts of theology and religion

Previous accounts of religion originating from biopolitical philosophers have tended to focus on the significance of religion at the individual level. Foucault is a paradigm example of this, most notably in his series of books on the *History of Sexuality* and his Tanner Lecture "Toward a Criticism of 'Political Reason'". We focus on Foucault's Tanner Lecture, which offers a historical and etymological examination of some language used within the Judeo-Christian religion.

Foucault begins by examining the differences between the relationship to the gods in Ancient Greece, and the Judeo-Christian relationship to God. He argues that individuals in Ancient Greece placed a higher demand on rational persuasion when deciding whether to obey other individuals. If the Greek citizen does decide to follow the will of another individual, "then that person had rationally persuaded him to do so. And it had to be for a strictly determined aim: to be cured, to acquire a skill, to make the best choice" (Foucault 1981, 237). He contrasts this to the Judeo-Christian relationship with God where the Christian submits wholeheartedly to God; "it is personal submission to him. His will is done, not because it is consistent with the law, and not just as far as it is consistent with it, but, principally, because it is his *will*" (Foucault 1981, 237).

Foucault compares the way that each position can be elaborated using analogies to land governance and pastoralism. The Greek gods were regarded as owners of the land. They only intervened in the lives of Greek citizens to resolve conflicts and then left them to carry on with their lives. Greek leaders looked out for the well-being of all their citizens, but a great leader had a duty to prioritize their own self-interest above the interest of others. The Judeo-Christian God is described as a shepherd who "wields power over a flock rather than over a land" (Foucault, 1981, 228). The Judeo-Christian God gives the land to the flock, and needs to be ever-present in order to stop the flock from scattering. The shepherd cares for the flock as a whole, but also provides constant individual kindness to each member. In short, this idea of God is one which views God as keeping watch of the flock as a whole and individually, and guiding them toward better pastures: "Everything the shepherd does is geared to the good of his flock. That's his constant concern. When they sleep, he keeps watch" (Foucault 1981, 230).

This analysis of the pastoral language used in religion offers an important springboard for the issues discussed in this chapter. Foucault's analysis of the importance of pastoral language for Judeo-Christian religion helps highlight the deep connection between agriculture and theology. For Foucault, the connection is predominantly critical of Christianity because of the connotations arising from the image of God as the shepherd overlooking his flock. At the core of this image is the idea that following Judeo-Christian religion requires giving up one's autonomy. Foucault seemed to prefer the instrumental approach associated with the portrayal of gods and leadership

in Ancient Greece. In contrast, for the Judeo-Christian religion, "[o]bedience is a virtue. This means that it is not, as for the Greeks, a provisional means to an end, but rather an end in itself. It is a permanent state; the sheep must permanently submit to their pastors" (Foucault 1981, 237).

8.2.2 Biopolitics and immunology

Antimicrobial resistance (AMR) is increasingly recognized as one of the largest current global health challenges. Issues surrounding the regulation and stewardship of antibiotic use are contributing factors for many bacteria becoming increasingly drug-resistant. The challenges presented by AMR are simultaneously biological and political, and in this sense, they fall well within the scope of biopolitical critique. Surprisingly, previous biopolitical accounts have not sufficiently explored the magnitude of the threat of AMR. Some biopolitical accounts have incorporated the language and logic of immunology as central features of their theories. Derrida draws from immunological language to examine the terrorist attacks in America on September 11 2001. He argues that these attacks should not be seen in terms of immune responses to a pathogen from outside of the United States of America. Instead, these attacks should be considered as an autoimmune response, which arose from within the political and cultural structure of the Western world. According to Derrida, "[t]hose called 'terrorists' are not […] 'others', absolute others whom we, as 'Westerners', can no longer understand" (Derrida 2003, 115). Derrida emphasizes the various senses in which the Western world is the source of the modern conception of terrorism. In many cases, it trained these terrorists, but at a more fundamental level it "invented the word, the techniques, and the 'politics' of 'terrorism'" (Derrida 2003). Derrida's application of immunological language to the September 11 terrorist attacks draws from is broader conception of immune logic. Derrida's account has been described as an illogical logic as it refers to examples where the body's own defences are turned against itself (Naas 2006, 18).

Whilst we encourage these projects as they draw together biological and political factors in their accounts of immunity, we are also concerned that the account offered by Derrida is too abstract to be relevant for the current challenges posed by AMR. Derrida demonstrates how the logic and language associated with immunology can help elucidate societal events and relations; however, his account is limited when considering the political and social issues arising from the increased AMR at the national and international levels.

Recent developments within the philosophy of immunology have raised concerns about the misleading nature of the language historically used in immunology, specifically the "immune self." Pradeu's discontinuity theory suggests the immune system regulates biochemical interactions between huge numbers of bacteria and microorganisms that live in and on our bodies. Our increased understanding of immunological mechanisms has revealed that "the notion of a permanent core of the organism's identity becomes

unnecessary" (Pradeu 2012, 249). Immunological mechanisms respond to irregularities in molecular patterns regardless of their origin. The immune system responds to these irregularities "be they endogenous (as in the case of tumor cells, which are genetically self cells but which do trigger immune responses) or exogenous (as in the case of pathogenic bacteria, parasites, viruses, etc.)" (Pradeu 2013, 89).

Derrida draws from immunological language to develop a logic that provides an alternative perspective on biosocietal factors and events. His extension of immunological concepts beyond biology exemplifies the current concerns held by some philosophers of immunology. There is a long history of describing organisms by appealing to their similarity with human societal institutions. In Britain, in the early 1850s, Herbert Spencer described the body as "a commonwealth of monads" (Reynolds 2017, 111). The German pathologist Rudolf Virchow described the organism as a "cell state" (*Zellenstaat*) in 1859 (Birch 2017, 165–166). Derrida's account is also repurposing terms from their original immunological contexts and deploying them as means of societal critique. The problem is that philosphers of immunology have questioned both the helpfulness and relevance of the notion of self-nonself for immunology (Pradeu 2020; Tauber 2017, 1994).[1] In Section 8.3, our examination builds on a related idea to the dissolution of the self-nonself in immunology, namely, a decentred account of health. We consider how both ecotheology and agroecology share a commitment to health understood at the global level, also reffered to as a "One Health" perspective.

In this section, we have briefly considered how previous biopolitical philosophers have examined language associated with both religion and immunology within their accounts. Foucault's analysis of the pastoral language of religion is particularly pertinent to our account, which draws on examples from farming to consider the positive contributions of ecotheological perspectives for farming policy. The problem with Foucault's analysis is that it limits itself to a discussion of the connotations of pastoral language, specifically how it demands complete submission to God, whereas biopolitical accounts of immunology, such as the one exemplified by Derrida, adapt the language of immunology into a mechanism for social critique. The specific focus on language in each case is limiting in different ways. For the former, the biopolitical implications of theology and religion extend far beyond the terminology of pastoralism. For the latter, the language associated with immunological selfhood is becoming increasingly contentious in contemporary philosophy of immunology. We argue that some biopolitcal accounts have overlooked the positive role of religion in farming communities. Instead, some farming communities have strong tie with religious influence. Silvasti (2003) examines how Christian values such as the teaching of "grace" influence farmers' relationship with nature. Silvasti argues that cultural norms, or what she terms "the cultural script," of being a "good steward" in God's Garden (i.e. farmlands) can drive farmers to be productive. If farmers receive an abundance of yields from their farms, then this can be perceived as a

visible sign of reward from God's grace and farmers perceive themselves as the good stewards of God. In this sense, farmers expected that they should manage their lands and animals responsibly as good stewards. Farming is significant for our interests in the intersection of religion and immunology within previous biopolitical accounts because farming stewardship has significant implications for antimicrobial resistance and broader biosecurity risks.

8.2.3 The relationship between government and farming

We now turn to an examination of the relationship between farming and biopolitics. We will consider two different cases in this section. First, we examine the impact that the dissolution of the Soviet Union had on the villagers of Amanbaev in Kyrgyzstan (Inogamova-Hanbury 2015). Second, we examine government interventions targeted at farming in Hong Kong drawing on Chan's and Enticott's (2023) ethnographic fieldwork. One essential difference between these cases is that the dissolution of the Soviet Union entailed a significant reduction in government interventions, whereas the Hong Kong government introduced incentives for farmers to sell their livestock licences back to the government, and introduced a new Code of Practice for remaining pig farmers (Chan 2015). These examples demonstrate the impact of government interventions on various aspects of farming and their broader communities.

One consequence of the dissolution of the Soviet Union in 1991 was the subsequent de-collectivisation of former Soviet states. In the village of Amanbaev, Kyrgyzstan, each family was allocated a plot of land. They were told that "the state could no longer look after them and they had to look after themselves" (Inogamova-Hanbury 2015, 193). Inogamova-Hanbury explains what followed as providing the opportunity for the community to develop techiques of resilience that consolidated religious, cultural, spiritual, and economical practices. The circumstances required these villagers to take control of their land management and mechanisms for community support.

Many of the village practices became more holistic at both the farm and community levels following political disintegration. During Soviet times, farmers in Amanbaev primarily grew tobacco, grain, and corn. Light aircraft sprayed significant amounts of pesticides on fields regardless of whether people were working in them. The land was state property and state officials dictated agricultural policy. The "excessive use of chemical fertilizers and pesticides" (Inogamova-Hanbury 2015, 201) led to declines in the fertility of the soils. The farmers had no autonomy to select which crops to grow, or chemical interventions applied to their crops and the subsequent impact on soil health.

The Soviet dissolution allowed farmers to explore new creative ways to farm without relying on pesticides and chemical fertilizers. For instance, the villagers started using livestock manure and "sweet-water" for fertilizing and irrigating their soils. Moreover, it provided the opportunity for the villagers in Amanbaev to practice what Inogamova-Hanbury terms "a culture of

reciprocity." The culture of reciprocity manifests in creating a social network of relatives, friends, neighbors, and social allies called a *zhek-zhaat*. The *zhek-zhaat* offers psychological, social, and financial support to one another at times of need (Inogamova-Hanbury 2015, 207).

The mechanisms underlying these supports are robust. For instance, the villagers could borrow from another until the next autumn (the practice is called *küzgügö*) when their crops were harvested and sold. This form of exchange is not only essential for the villagers who are borrowing, but also for those who are lending goods; "Most of the owners of the shops lend money with little or no interest. Shopkeepers do it to keep their business going which would be difficult if their potential clients, local farmers, did not have cash" (Inogamova-Hanbury 2015, 211). It is important to recognize that religion is a significant driver behind *küzgügö*. The villager's shared faith and spirituality provide the support for them to adopt practices that require exceptional levels of "trust," "cooperation," "collective responsibility," and "mutual support and reliance" (Inogamova-Hanbury, 2015, 216).

The example of Amanbaev demonstrates how the interrelationship between religious faith and community can be consolidated through farming. The dissolution of the Soviet Union required villagers to create new practices of collective resilience in order to survive. These practices centralized the well-being and sustainability of the community. The mutual support offered by practices such as *zhek-zhaat* and *küzgügö* meant that villagers no longer had to seek financial support from banks at times of need. Amanbaev is an example of how faith can become a pillar for establishing practices that promote resilience within a community. Moreover, the circumstance of the development of this resilience demonstrates the tension that can arise between establishing these practices and the mindset of modernity. In the absence of state support, farmers in Amanbaev had the opportunity to develop knowledge and practices that promoted the long-term sustainability of their soil health, and grow a greater variety of crops, without the use of chemical fertilizers and pesticides.

In contrast, the growing threat of disease outbreaks (e.g. Avian influenza) and environmental pollution associated with livestock farming led the Hong Kong government to buy back farmers' licenses. The Hong Kong government deemed farming practices to be a significant biosecurity risk that needed to be controlled. Their way of controlling this risk was to incentivize farmers to cease farming by introducing the "Voluntary Surrender Schemes" for Poultry farmers in 2005 and Pig farmers in 2006 and the "Buyout Scheme" for Poultry farmers in 2008. These schemes were very successful, resulting in 162 poultry farmers and 222 pig farmers to surrender their licenses. To put this in perspective, only 29 local poultry farmers and 43 pig farmers remained in 2021,[2] which is a reduction of over 80% for both poultry and livestock farmers in Hong Kong. Government intervention transformed farming communities in Hong Kong and did not offer effective support for remaining farmers to address the biosecurity risk associated with farming.

There are many factors specific to Hong Kong that help us to understand the potential motivations for the Buyout Scheme. The combination of intensive pig production, industrial poultry farming, and the density of the population in Hong Kong culminated in a significant biosecurity risk. Keck describes the circumstances in these environments as "avian reservoirs" providing the ideal opportunity for viruses and infections to spread more effectively. Keck says that we should view these environments as we do the Amazon rainforest, "as a space where human and nonhuman animals are connected by invisible entities called "microbes" that can be captured, classified, and mapped" (Keck 2020, 4). Managing biosecurity risks consists in addressing the microbial connections between human and nonhuman animals to avoid the transmission of harmful microbes and viruses.

The risks significantly increase within intensive farming because antibiotics are often used to maintain livestock health to mitigate the spread of disease. This inadvertently creates the conditions for antibiotic resistance within bacteria, fungi, and parasites, which can then potentially infect human populations with no effective treatments. In theory, reducing livestock effectively reduces AMR risk, as reducing livestock also reduces antibiotic use associated with livestock. However, if the demand for meat remains unchanged, then it will be necessary to import meat from elsewhere.

Hong Kong has become increasingly dependent on Mainland China to supply the demand for meat. Importing meat introduces a biosecurity risk because the ability to set the conditions for meat production from the exporting country is generally beyond the control of the importing country. China is currently taking measures to reduce both nonhuman and human consumption of antibiotics, yet it remains the largest net consumer of antibiotics, accounting for over half the total global consumption of antibiotics (Boeckel et al. 2015; Schoenmakers 2020; Song et al. 2020).

Despite the intentions to reduce biosecurity risk for Hong Kong by introducing surrender and buyout schemes for farming, the subsequent dependence on Mainland China to satisfy the meat demands of Hong Kong has significantly increased biosecurity risk. There have been various disease outbreaks of Avian Influenza from 2011 to 2019 from importing livestock from Mainland China leading to the culling of tens of thousands of poultry, temporary closures of slaughterhouses, resulting in compensation for meat traders in Hong Kong and farmers in China amounting to millions of pounds.

The Hong Kong government also increased the rules and regulations relating to farming practices for the remaining pig farmers in Hong Kong by introducing a new Code of Practices (COP). The COP was incorporated into the remaining livestock-keeping licenses. It laid out 43 prohibited pig farming practices. This code was modeled on the laws governing housing tenancy agreements, wherein tenancy agreements would be terminated if tenants incurred a certain number of infractions. Much like the relation between tenants and their tenancy agreements, farmers could also have livestock-keeping licenses revoked if they incurred too many infractions. Chan explains that pig

farmers have been critical of certain rules such as the demand to eradicate rodents from pig farms, and new rules around management of discharge waste. These rules are not feasible as they impose additional responsibilities on Hong Kong pig farmers without offering any financial or technological assistance to implement these changes (Chan 2015). This created an environment where farmers are continually concerned about government intervention on their farms due to their inability to satisfy the codes of practice outlined by the government. The COP is a protocol for farmers to abide by, and if they do not then farmers will potentially lose their licenses. We argue that confiscating more farming licenses and imposing more regulations are not effective ways to reduce the biosecurity risks associated with animal farming in Hong Kong. Rather, this will increase the risk of disease outbreaks by creating an over-dependence on imported livestock and frozen meat.

There are stark differences between the cases of the village of Amanbaev and Hong Kong farmers. After the collapse of the Soviet Union, the villagers of Amanbaev increased their resilience and autonomy by mutually supporting one another. Whereas in Hong Kong, the combination of buyback schemes, COP, and increase of disease outbreaks from imported livestock have arguably decreased the autonomy and resilience of remaining Hong Kong farmers.

However, there are also some emerging similarities between the two cases. In a similar way to the emerging resilience discussed in the example of Amanbaev, Chan's and Enticott's (2023) ethnographic interviews with remaining farmers in Hong Kong revealed that the well-being of livestock and farmer's responsibilities within the community are crucial motivations for farmers. Chan and Enticott (2023) asked pig farmers to draw and annotate visual representations of their farms. One farmer emphasized that their farm was not a "dead object." Instead, it is an object that is "interconnected with other places." This farmer grew fruit trees on the perimeter of the farm, and the fruit was shared with the local community. We argue that farming has an intrinsic power to bring communities together and increase their resilience. We need to develop our understanding of how social-cultural norms, religious faith and their values of nature influence their behaviors toward their communities and better animal stewardship.

Another consequence arising from the buyback scheme is that many remaining pig farmers have rebranded themselves and increased their competitiveness by breeding black-haired pigs to develop their own 'premium pork market' in Hong Kong. These pigs were imported from Taiwan in 2014 and are a cross-breed from a Spanish Iberian species with Japanese and American black pigs. They have become part of the cultural identity of Hong Kong pig farmers, and have secured a higher economic value, which reflects the higher quality of feed, medical care, and welfare of the livestock.

These cases exemplify how tightening governmental regulations and imposing the COP can potentially reduce the resilience and autonomy of farming communities. Studies have shown that merely adopting stricter

regulations may not be an effective way to transform farmers' animal health behaviors (Enticott and Lee 2015). The dissolution of the Soviet Union provided the opportunity for villagers in Amanbaev to become autonomous and responsible for their farming practices. Whilst the villagers of Amanbaev incorporated farming practices into their faith and community in a way that promoted their resilience, it is important to recognize that this was not the norm. Many communities suffered famine following the disintegration of the Soviet Union, with half of the population of the former Soviet Union below the poverty line, with food accounting for 50% of household expenditure (Nello 1992). The example of farming in Hong Kong illustrates how government interventions reduced the autonomy and resilience of farmers through buy-back schemes and introducing the COP. In the next section (8.3), we argue that there are cases where the autonomy and resilience of farmers are increasing and this is supported by the convergence of principles from religion, ecology, and agriculture.

8.3 Ecotheology, agroecology, and regenerative agriculture

We suggest that principles from ecotheology can offer guidance to help promote the adoption of environmentally positive practices within farming. There is growing interest amongst farmers in the United Kingdom to adopt farming practices that encourage soil health, increase biodiversity, and reduce or completely eradicate the use of artificial chemicals. Many of these practices represent a return to more traditional farming methods that were replaced by conventional farming practices, which are more dependent on technological and chemical interventions. Ecotheological principles corroborate many of the tenets of agroecology and regenerative agriculture. Ecotheology can help to construct frameworks of resilience for farmers, which encourage environmentally friendly practices that also reduce the growing threat of AMR.

Ecotheology originated when theologians became concerned about our increasing scientific awareness of the impact of human activity on the environment. Lynn White was a catalyst to these discussions arguing that modern science and technology expanded our knowledge in ways that stood in tension with Western Christian and post-Christian values. White's critique focused on the belief that humanity has superiority over nature despite developments in physics and biology, which have revealed that Earth is not at the centre of the universe and humanity is the product of natural selection. The Christian conception of the special relationship between humanity and God such as the *Imago Dei* and the rightful dominion of humanity over nature creates potential tensions with our best scientific understanding. According to White, "[m]ore science and more technology are not going to get us out of the present ecologic crises until we find a new religion, or rethink our old one" (White 1967, 1206).

Ecotheology has undergone various manifestations over the past 50 years and is described by Conradie as an increasingly amorphous discourse. According to Conradie, discussions around Christian ecotheology have broadly culminated in a portrayal of ecotheology as offering a two-sided critique and two-sided constructive elements. It serves as an ecological critique of Christianity and Christian critique of ecological destruction on the one side, and as a contribution to Christian authenticity and public interdisciplinary accounts of sustainability on the other (Conradie 2020, 2–3). Ecotheology has become a dynamic perspective that can be transformative to traditional religion by analyzing religious texts in ways that also draws from our best scientific understanding (Troster 2013). Ecotheological approaches can generate novel interpretations of traditional religious texts and propose new ways to better orient humanity to address ecological issues.

We suggest that there are points of convergence between certain ecotheological principles and principles identified by the emerging agricultural movement of agroecology.[3] Agroecology is not proposing a set of new ideas, rather it proposes a return to incorporating traditional farming practices that were used before the availability of various technological developments including industrial farming machinery, antibiotics, fungicides, and pesticides. We offer a comparative analysis between a selection of Ecojustice Principles developed by the Earth Bible Team and the Elements of Agroecology published by the Food and Agriculture Organization (FAO) of the United Nations.

The Earth Bible Team has proposed six Ecojustice Principles to help guide biblical interpretation from the perspective of Earth. These are: (1) the principle of intrinsic worth; (2) the principle of interconnectedness; (3) the principle of voice; (4) the principle of purpose; (5) the principle of mutual custodianship; and (6) the principle of resistance (Chapter 2 in Habel 2000). Although the primary purpose of these principles is in a hermeneutical capacity for interpreting religious texts, we compare these principles with the practical principles outlined in the ten Elements of Agroecology, developed by the FAO of the United Nations (FAO 2018).

The ecojustice principle of interconnectedness highlights how "*Earth is a community of interconnected living beings that are mutually dependent on each other for life and survival*" (Habel 2000, 44). We should view ourselves as members of an Earth-bound community in complex webs of interrelations with many other living systems on the planet. Similarly, the FAO focuses on the principle of "Synergies" to guide farming practices toward maximal utilization of the interconnectedness of multiple aspects of ecosystems. For instance, selective crop rotation can significantly reduce the need for fertilizers, pesticides, and fungicides. Cover crops such as legumes and grasses can provide natural protection for the next crop in a farmer's crop rotation and will become natural fertilizer, which is beneficial for soil health. Integrating livestock grazing into crop rotations provides feed for livestock, but also provides immediate fertilizer for soil through manure.

These principles also support the idea that all life on Earth can be considered as parts a collective planetary health referred to as "One Health." Over the last 20 years, the One Health approach has become a predominant view highlighting the need for a "collaborative and multi-disciplinary approach, cutting across boundaries of animal, human, and environmental health" (Mackenzie and Jeggo 2019). The emphasis on increasing soil health within agroecology breaks the cycle of unnecessary use of external inputs on farms, including antibiotics and fungicides, which contribute to antimicrobial resistance. For example, by introducing livestock grazing into crop rotation, farmers may need to evaluate their use of antibiotics, as antibiotic resistance can infect soils through livestock manure (He et al. 2020). If livestock regularly consume antibiotics, then manure from those livestock potentially increases the likelihood of the spread of antibiotic-resistant bacteria between plants, animals, and humans. By adopting agroecological principles, farmers are encouraged to consider how to manage the by-products of their farming practices and incorporate them back into farming rotations without causing damage, which greatly reduces the biosecurity risk associated with farming.

Adopting agroecological practices also offers defence against other environmental risks. When farmers reduce the amount of tilling and ploughing in their fields, this allows root systems to take hold of the soils and reduce soil compaction. This greatly reduces flood risk as no-till soils can retain significantly more water. Public awareness has tended to focus on urbanization as a leading contributor to flooding. However, farming practices such as tilling significantly compact soils, which greatly reduces water retention. Moreover, by creating conditions that encourage wide-spread root systems to establish themselves, for instance by introducing herbal leys into crop rotation, farmers can increase the amount of carbon-sequestered from the atmosphere into the soil. A recent report by the Royal Society summaried the potential mutual benefits from farming as follows: "good soil structure leading to increased yields, enhanced biodiversity, improved carbon sequestration and improved water storage" (The Royal Society 2020, 5)

The ecotheological principle of mutual custodianship highlights the problem associated with considering humanity as having dominion, or even stewardship, over nature as this perpetuates inherent anthropocentrism. Instead, custodianship conveys the sense in which this is a mutual partnership where we depend on our relationship with nature for our survival. According to the Earth Bible Team:

> Earth and the Earth community have, in spite of the assumed rulership of humanity, been the custodians of human beings. Earth has provided food, shelter, beauty and many other riches to sustain the body and the spirit of humanity. In return humans have assumed these riches as their right rather than the contribution of their partners in the Earth community.
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> Habel (2000, 51)

The FAO identifies the need to work alongside natural systems. Through their principles of efficiency and recycling, they propose we can create more sustainable biological systems, which recycle biomass, nutrients, and water (FAO 2018, 6–7). Establishing more sustainable feedback cycles within farming results in the need for less external inputs on farms, leading to a reduction in environmental impact and associated costs for farmers.

The idea of humanity as custodians highlights not only our responsibilities toward nature but also different levels of responsibility we have at the communal and societal levels. One key emerging issue surrounding social justice is that the majority of the world's global poor lack secure access to the resources needed for farming (FAO 2018, 11). The FAO describes this under the principle of responsible governance. Agroecology presents the opportunity to re-examine issues surrounding social and environmental justice. Exploitative food production often includes the exploitation of food producers. Not only do these exploitative practices perpetuate inequality within food distribution networks; they also create significant waste. The FAO estimates "[t]he energy used to produce food that is lost or wasted is approximately 10 percent of the world's total energy consumption, while the food waste footprint is equivalent to 3.5 Gt CO^2 of greenhouse gas emissions per year" (FAO 2018, 12). They propose that strengthening shorter food circuits and creating opportunities for smaller-scale food producers to sell their produce is likely to increase incomes for food producers and reduce the amount of food waste. Likewise, the Earth Bible Team considers the principle of resistance as addressing the various relationships of oppression and marginalization at various levels throughout humanity. In this sense, both ecotheology and agroecology are united in their approach to take our response to the ecological crisis as an opportunity to combat broader injustices within society.

The aim of our brief comparison of ecotheological and agroecological principles is to highlight the existing similarities between these accounts. We suggest that there are synergistic benefits of combining ecotheological and agroecological approaches. Ecotheology offers corroboration to many of the principles of agroecology and provides them with a broader framework from which to consider the existential questions about our identity and purpose. In turn, agroecology provides evidence that adopting these principles has measurable benefits at various levels. These include increased soil health, reduction to AMR risk, flood prevention, carbon sequestering, reduction of carbon emissions, and in the food production and distribution networks such as reducing oppression and resolving social injustices. We argue that this opens up new areas of research for the positive biopolitical implications from inter-disciplinary collaborations between theology, ecology, and agriculture to develop principles that reduce biosecurity risks and increase resilience and autonomy within farming communities. Previous appeals to religion and immunology within biopolitics overlooked the significance of ecotheology to support agroecology and regenerative agriculture toward developing sustainable farming practices. For instance, future studies could further investigate

how social and cultural norms (or what Silvasti (2003) describes as "cultural scripts"), religious faith and local conventions influence farmers' behaviours. Ecotheology encourages us to consider our existential responsibilities toward the environment. We argue that this provides a foundation for much-needed balance to the primarily political and governmental perspectives on the impacts on farming. Our case studies have demonstrated how government regulation alone may not be the most effective way to encourage communities to flourish, as government policies intended to decrease biosecurity risk can have counterproductive consequences. In contrast, when the Soviet government reduced regulatory intervention in Amanbaev, farmers had the opportunity to integrate their farming practices into their faith and community in ways that increased their resilience.

8.4 Conclusion

In this chapter, we first offered a brief analysis concerning the treatment of religion by biopolitical philosophers. Foucault's examination of Christianity focuses too heavily on the connotations of pastoral language utilized in the Bible. We argue that this fails to appreciate how theology and religion can offer support and guidance to ecological worldviews. In addition, we examined how biopolitical philosophers have developed immunological principles into analytical tools or a new logic to frame societal critiques.

Our examination of two case studies demonstrated the intricate relationship between religion, community, and government. The example of the flourishing of the village of Amanbaev following the dissolution of the Soviet Union portrayed how the interrelationship between religious faith and community can be consolidated through farming. In reducing the state's regulatory control, farmers in Amanbaev shared knowledge and practices that promoted the long-term sustainability of their soil health, and grew a greater variety of crops, without the use of chemical fertilizers and pesticides. We contrasted this with Chan's and Enticott's (2023) ethnographic research in Hong Kong. State interventions such as the livestock license buyback schemes and the introduction of the new COP have resulted in various biosecurity issues for Hong Kong and an overall reduction in resilience within the Hong Kong farming community.

Finally, we undertook a comparative analysis between ecojustice principles proposed by The Earth Bible Team and the Elements of Agroecology produced by the FAO of the United Nations. We identified various similarities between the two accounts to demonstrate how the positions corroborate one another. There is more work needed to further explore how these accounts could support one another, but our brief analysis highlighted how combined they allow us to consider the far-reaching ecological consequences of human activities. Both accounts propose important ways for us to work with nature to develop sustainable ecological systems to rectify biosecurity risks and health injustices at various levels.

Notes

1 There is a related problem concerning the extent to which contemporary immunological accounts can cast aside notions of immunological selfhood which have been essential for the development of immunology as a science (Jones 2018). The language of selfhood was partially indebted to aspects of Kant's philosophy, which provided the pioneers of immunology such as Elie Metchnikoff a conception of biological agency that was lacking in more conventional accounts of biology at his time (Tauber 1991).
2 These figures are taken from Hong Kong government statistics, more information can be found on this webpage: https://www.gov.hk/en/about/abouthk/factsheets/docs/agriculture.pdf [accessed 26/09/2023].
3 Our perspective is influenced by another ongoing related research project. In this project, we are working with scientists and farmers to understand the environmental risk posed by fungicide use in arable farming. In this research, we have been collecting river samples in the Southwest of England for HPLC analysis in order to detect fungicides. We have also been interviewing farmers and attending farming events to develop our understanding of the various factors relating to agricultural stewardship and use of fungicides. In this research, funded by Cabot Institute Innovation Fund at University of Bristol, we work with Dr. Susan Conlon (University of Bristol), Dr. Dhara Malavia (University of Exeter), Dr. Aimee Murray (University of Exeter), and Dr. Nervo Verdezoto Dias (Cardiff University) and colleagues from the farming organization, Innovation for Agriculture.

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