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Valuing and Relating to the More-Than-Human World: Latour, Haraway and the Life Frame of Values

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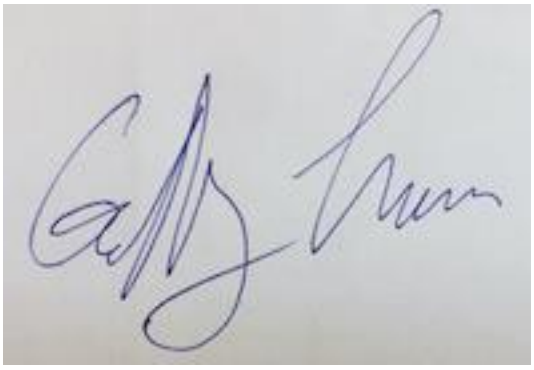
Authors declaration

No portion of the work referred to in this thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.



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This thesis examines making intrinsic values work; integrating intrinsic values of the more-than-human world through the Life Framework of Values using the perspectives of Haraway and Latour. O'Connor and Kenter's Life Framework of Values (LFV) is an innovative and comprehensible means to communicate intrinsic and relational values, which are conceived of as related to living with, from, in and as the more-than-human world. The LFV seeks to operationalize intrinsic values in the context of conservation and sustainability. This thesis brings perspectives from Latour and Haraway to bear on environmental ethics discussions, especially around intrinsic and relational values. The work of Latour and Haraway expands the understanding of the more-than-human world, examines conceptions of nature and wilderness, looks at nature/culture interaction and proposes the inclusion of the Gaia and the Anthropocene as essential conceptual frameworks. Latour and Haraway's work on relationality provides insight into the LFV. Latour's actor-network theory increases the range of entities and objects that participate in networks and gives these actors greater agency. The concept of the Anthropocene means that relations between the human and the more-than-human have become central forces, and provides historical, political and economic background to the current ecological crisis. Acceptance of the Anthropocene and Gaia means that we exist in a limited critical zone. Latour and Haraway argue against universalizing ethical systems. Latour advocates ethical sensitization and Haraway argues for situated knowledge and attention to entanglement and injustice. The combination of these insights might be used to strengthen and improve the LFV.

Keywords: environmental ethics, environmental philosophy, intrinsic values, relational values, Donna Haraway, Bruno Latour, Gaia, Anthropocene, actor-network theory

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Chapter 1 – Introduction

We find ourselves in an unprecedented situation, navigating uncharted waters. The climate is rapidly changing due to increased carbon dioxide and greenhouse gas concentrations in the atmosphere (United Nations 2020). Ocean acidification and sea-level rise will have enormous effects and will place populated areas underwater. We are in the midst of the sixth mass extinction, and habitats all over the world are under threat. Melting glaciers, receding polar ice, and the instability of the Arctic permafrost mean that unparalleled transformations are underway. Climate, weather, and rain patterns are becoming less predictable and so data from the past no longer serve as a reliable guide to the future. Predicted population growth and economic expansion will put increased pressure on the Earth's resources. Destruction of tropical rain forests exacerbates pressures on the climate. The list of environmental problems is, of course, far greater and more complicated than this brief introduction can suggest.

The increasing awareness that we, as human beings, have a profound effect on our environment raises a host of new ethical problems. It is not clear if standard ethical models, including religious morality, deontology and utilitarianism, are adequate to deal with our current and future challenges. Every ethical system must attempt to deal with the difficulties of living together. Lehmann, Lee, and Dunbar (2014) write that historically group-size ranged from 24 for small bands to some 2500 for large tribes. Their research shows that shared religious and cultural beliefs lead to tighter social bonds. The standard problems of living together include murder, theft, sex, property and obligations to others, including deities. But the ecological crisis raises new questions and challenges.

Hardin's (1968) famous tragedy of the commons is a dilemma that groups continuously face. A typical analysis of Hardin's dilemma focuses on access to pastures, but it is interesting to note the subtitle of the article: "The population problem has no technical solution; it requires a fundamental extension in morality." It was at that time that ecologist became aware of both the global nature of environmental issues and the challenges that that presents to standard ethical systems. The journal Environmental Ethics, for example, began publishing in 1979.

White (1967, 1205) sees Western Christianity as the most critical ideological driver of ecological destruction. In referring to the creation story, White writes that "God planned all of this explicitly for man's benefit and rule: no item in the physical creation had any purpose save to serve man's purposes. .... Especially in its Western form, Christianity is the most anthropocentric religion the world has seen." White's view is disputed but remains influential (Whitney 2015). Current trends in American politics support the political validity of his assertion. Evangelicals in the United States, for example, deny climate change and oppose environmental legislation by large majorities (Zaleha and Szasz 2015).

The failures of recent international conventions such as the Madrid COP25 (Vaughn 2019) are dismaying. It is instructive to compare the rapidity and scale of the response to Covid-19 with the slowness and spottiness of our response to environmental threats. We are aware of both problems, but the response has been radically different. We perceive Covid-19 as an immediate threat with deadly consequences. We treat environmental threats more like the smoker who knows the dangers of tobacco and intends to quite 'someday,' but the habits, the addiction, and the near-term rewards are too compelling to stop now.

If we step back from our limited human perspective, we must realize that the threats to other animals and plants are even more drastic. How we see ourselves as members of the Earth's living and non-living communities has massive ramifications. The way we treat a particular group of people, such as an ethnic or religious group, is shaped by how we think about and classify that group. If we consider them of lesser value because they are, for example, female or members of an untouchable class, then we may feel justified in treating them differently than members of a privileged class. Similarly, our treatment of a particular animal species, or habitat, is related to how we value and understand them. The large-scale effects of environmental degradation, however, may not allow us to select particular habitats or animal species.

An ongoing debate within ecological ethics regards the role of intrinsic values. Intrinsic value is the value that something has in its own right without reference to external valuation. Should

intrinsic values play a vital role in ecological ethics, or are they too difficult to verify and support? Are intrinsic values pragmatically useful? These questions are debated among philosophers as well as within the field of conservation and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). Ethical frameworks that incorporate intrinsic values could be crucial.

Relational values are values that grow out of interactions with nature, including a sense of place, and perhaps feelings of well-being. O'Connor and Kenter (2019) argue that relational values can include intrinsic values. One advantage of relational values over intrinsic valuers is that they are easier to investigate and identity. Another advantage is that relational values can occur at multiple levels and do not require the degree of unanimity necessary for establishing intrinsic values. Relational values and intrinsic values stand in contrast to instrumental values, which focus on human benefits and economic worth.

The Life Frame of Values by Seb O'Connor and Jasper Kenter (2019) argues for the importance of intrinsic and relational values in conservation and environmental sustainability. The Life Frame of Values (LFV) provides a means to help people intuitively grasp their place in the more-than-human world. O'Connor and Kenter (2019) speak of living in, from, with and as the world, as well as the various contributions we receive from the world.

The primary research problem for this thesis is the challenge of integrating insights from Bruno Latour and Donna Haraway into the discourse of environmental ethics. A secondary research problem is to investigate how such insights might affect the concepts of value, relationality and the more-than human world in the LFV.

The aims and objectives are to use the thinking of Latour and Haraway to analysis the more-than-human world, relationality, agency, value and ethics with respect to the LFV. The interrelationship of nature, science and culture with respect to the LFV are also important aims. Another aim of this thesis is to investigate the role of intrinsic values and relational values in environmentalism and conservation.

Although Haraway and Latour do not appear in O'Connor and Kenter's (2019) reference list, they provide crucial insights into issues raised by O'Connor and Kenter. Both Latour and Haraway influence thinkers from many disciplines, which indicates that their thinking goes beyond specific intellectual domains. They both contribute to the philosophy of science, as well as writing on the historical and political causes of the environmental crisis. More specifically for this thesis, Haraway and Latour help define the more-than-human world, as well as nature and wilderness. The relationships between nature and culture and between human and nonhuman are also important. Relationality, agency and the nature of objects are further themes. The concepts of the Anthropocene and Gaia are important to the work of Latour and Haraway but not mentioned in O'Connor and Kenter's article. Finally, there are questions concerning economics, ethics and politics. O'Connor and Kenter's pragmatic call to action could be seen as a challenge to Haraway and Latour to define their respective courses of action and to take a position on intrinsic values.

I focus on O'Connor and Kenter because they engage with major conflicts within conservation and environmental sustainability regarding which values should be promoted and given prominence. The choice of which values to emphasize will have important ramifications for the directions taken by practitioners in the fields of conservation, environmental management and policy. The intellectual approach of Latour and Haraway provides an illuminating philosophical and intellectual juxtaposition to O'Connor and Kenter. As far as I can ascertain, there has been no such comparative study. More importantly, the justification for this study is to contrast differing conceptions of environmental ethics, environmental ontology and environmental epistemology and to contrast the work of environmental practitioners with environmental philosophers.

From Latour and Haraway, I seek texts that support, complement, and challenge the ideas contained in the LFV. I also seek to open up and examine the ideas contained in the LFV, with particular attention to understanding what the more-than-human world signifies. The style, approach, thinking, rhetoric and language, particularly of Haraway, are quite different from that of O'Connor and Kenter. That is part of both the challenge and the value of this investigation.

The literature review begins with a discussion of intrinsic and relational values especially within the conservation movement. I consider the questions of animal ethics and introduce the LFV, its purposes and how it defines intrinsic and relational values. The literature review concludes by establishing the significance and relevance of Latour and Haraway for this thesis.

The methodology section contains a list of the most important works for this thesis and discusses the textual, analytical and critical approach I use.

The main discussion begins by defining the more-than-human world. I examine the concept of nature, its validity and its relation to culture as well as the concept of Gaia and its relevance for understanding the more-than-human world. The next chapter is on relationality, Latour's actor-network theory, agency, entanglement and the Anthropocene. The following chapter is on ethics including intrinsic, instrumental, sacred and relational values, as well as animal ethics. I also examine the ethical positions of Latour and Haraway and their relationship to the LFV. The final analysis examines the main findings of the thesis.

Chapter 2 – Literature Review

The first part of the literature review examines intrinsic values and relational values. These are the value types discussed by O'Connor and Kenter (2019) in their article "Making intrinsic values work; integrating intrinsic values of the more-than-human world through the LFV". The title of the article stresses intrinsic values and the verb 'integrating' points to relational values. The role of intrinsic values in the conservation and environmental areas is contested because some conservationists argue that intrinsic values have limited pragmatic value and so they prefer more instrumental kinds of values. The second part of the literature examines the Life Frame of Values (LFV). The third portion argues for the significance of Latour and Haraway for this thesis.

1. Intrinsic Values

What value do we give to the more-than-human? How should we value the more-than-human? One answer is to assert that something has intrinsic value. What, then, are the requirements for intrinsic value? O'Connor and Kenter (2019, 1248) define intrinsic value "as subjective value expressions of objective intrinsic values, which we call articulated intrinsic values." The "natural world is seen as valuable in and of itself, independent of its benefit to humans" (O'Connor and Kenter 2019, 1252). For McShane (2007, 43), intrinsic value is "the value a thing has in its own right." O'Neil *et al.* (2007) state that intrinsic value stands in opposition to instrumental value and so intrinsic value is a synonym for non-instrumental value. For Sandler (2012, 4), intrinsic value "is the value that an entity has in itself, for what it is, or as an end." For Moore (1903, 5), to say that something has intrinsic values means that "it ought to exist for its own sake, is good in itself." The contrasting value type is instrumental. Instrumental value is the value that something has as a means to a desired or valued end. Something with instrumental value is substitutable (O'Connor and Kenter 2019), derives its value from something else and is conditional.

The role of intrinsic value is contested. The Millennium Ecosystem Assessment (2005) adapted the term environmental services in 2005, and the Intergovernmental Science-Policy Platform on

Biodiversity and Ecosystem Services (IPBES) (Díaz. 2018) adapted NCP or nature's contributions to people as a critical concept in 2018. These are major international forums, and their approach to valuing the nonhuman is precedent setting. Kenter (2018), for example, sees both environmental services and nature's contributions to people as limited. He sees them as focused on humans, unidirectional, and concentrated on what he calls living from. He asserts that environmental services and nature's contributions to people do not adequately embrace intrinsic values. Hence, the legitimacy of intrinsic value is challenged, and conflicts with instrumental paradigms arise.

Some critics in the field of conservation argue that intrinsic values are too abstract, not effective, and fail as a motivation for conservation (Batavia and Nelson 2017). But Batavia and Nelson argue strongly in favor of intrinsic values. They counter that conservation is inevitably about how the world ought to be. They note that the first belief of the Society for Conservation Biology (2020) is that "There is intrinsic value in the natural diversity of organisms, the complexity of ecological systems, and the resilience created by evolutionary processes." The assertion that wild things and places have incalculable intrinsic value is thus a fundamental moral proposition. Batavia and Nelson stress that ethical arguments are not popularity contests and should not be dismissed on the basis of efficiency or pragmatism. They use the example of women's rights and argue that pragmatism is not a relevant argument against women's rights even if the campaigns for these rights are not always successful. By this analogy, intrinsic value should not be assessed on purely pragmatic terms, and the arguments against them cannot be based solely on effectiveness.

The search for a robust justification of intrinsic values was a holy grail in the early days of environmental ethics according to McShane (2007). One significant initial formulation is Taylor's ethics of respect for nature (1981). Taylor begins by according moral consideration to all wild living things. Each is to be granted some weight in the deliberation of rational agents. For Taylor (1981, 201), moral consideration is the first principle for regarding an entity as holding inherent worth. Secondly,

> The principle of intrinsic value states that, regardless of what kind of entity it is in other respects if it is a member of the Earth's community of life, the realization of its good is something intrinsically valuable. This means that its good is prima facie worthy of being preserved or promoted as an end in itself and for the sake of the entity whose good it is. Insofar as we regard any organism, species population, or life community as an entity having inherent worth, we believe that it must never be treated as if it were a mere object or thing whose entire value lies in being instrumental to the good of some other entity. The well-being of each is judged to have value in and of itself.

Thus, for Taylor, the combination of moral consideration and intrinsic value provides inherent worth. The range of what has intrinsic value is broad and includes wild organisms, species populations, and natural ecosystems. The LFV also allows broad interpretation of intrinsic value.

Intrinsic value signifies that non- or more-than-human entities are ends in themselves (O'Connor and Kenter 2019). These intrinsic values may not depend on human valuers but may be articulated by people. As noted above, O'Connor and Kenter (2019, 1248) reframe intrinsic value as "subjective value-expressions of objective intrinsic value." "Objective intrinsic value means that evaluative properties can be characterised without reference to the (human) valuer" (O'Connor and Kenter 2019, 1252). They emphasize that intrinsic values must be expressed. If intrinsic values are not put forward and verbalized, they may be dismissed as impractical and are easily lost in the decision-making process. O'Connor and Kenter assert that intrinsic values are more concrete and less abstract when they arise out of specific contexts.

Another kind of claim for intrinsic value in nonhumans is quasi-Aristotelian. The ideal of a flourishing human life could be applied to the nonhuman. Indeed, the word 'flourishing' has a biological element. O'Neil *et al*. (2007, 302) write that,

> Human beings, like other entities, have goods constitutive of their flourishing, and correspondingly other goods instrumental to that flourishing. The flourishing of many other living things ought to be promoted because care for that flourishing, and the meaningful relationships with those other living things of which this care stands as an expression, is constitutive of our own flourishing.

The ‘last man alive’ thought experiment (Routley 1973) offers another argument for intrinsic value. Imagine that the last person alive on earth spends his final hours burning down the entire island where he had lived. In the process, he destroys all the plants and animals on the island. If we find this appalling, it argues for some form of intrinsic value. Donald Sherer (1983) proposes another thought experiment. We would find it highly objectional to blow up a planet with photosynthesis, self-maintenance, and reproduction. But we would find it less objectionable to destroy a lifeless planet. A planet with life seems to hold greater interest and value.

McShane (2007) argues for the importance of intrinsic values and notes that people hold attitudes of love, awe, reverence, and respect toward things in the natural world. We find these emotions and attitudes in the works of Aldo Leopold, Rachel Carson, John Muir, and Barry Lopez. Leopold (1981, 6) writes that “land is a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics.” Leopold believes that our capacity to value other forms of life intrinsically and to show them respect, as well to the Earth that we share with them, is what enables us to transcend moral anthropocentrism.

2. Intrinsic Value for Animals and Organisms

As we come to know particular animals, they seem to have sentience, personalities, and characteristics. For some people, a beloved pet or other nonhuman animals can have as much value as other people. It would then be quite logical to grant that creature intrinsic value. Tom Regan and Peter Singer are perhaps the most prominent advocates of granting moral standing to sentient nonhuman animals. Regan (1979, 189) bases his defense of animal rights on the criterion of inherent value, which is his term for intrinsic value. He argues “that many animals, owing to their being subjects of a life that is more or less valuable for them logically independently of the interests of others … have certain basic moral rights.”

Singer’s (2011) approach is utilitarian, noting that sentient animals experience pleasure and pain and thus have interests. He does not use the term intrinsic value but speaks of equal consideration of interests as the fundamental principle of equality, which he extends to nonhuman animals. Both Singer and Regan have made influential arguments for extending

higher ethical consideration to animals. They note that we have granted moral considerability to humans who lack capabilities such as speech, rational thought, and higher levels of consciousness. This class of humans includes infants and severely disabled people. In some cases, their intellectual capacities are less than the great apes, for example, but they remain in the class of moral considerability, nonetheless. Singer and Regan therefore assert that moral considerability cannot be limited solely on the basis of intellectual capacity. They also show great concern for the brutal conditions of animals raised in factory farms. Regan's (1985, 31) aims are sweeping. They include the total abolition of the use of animals in science, the total dissolution of commercial animal agriculture, and the total elimination of commercial and sport hunting and trapping. He justifies his claims with an appeal to rights. Rights, however, do not figure in Singer's arguments. He makes appeals to sentience and the capacity to suffer.

Rolston (2011) believes that fulfilling both individual and evolutionary interests in living beings embodies intrinsic value. Rolston argues that genes contain normative information, that they are value-laden, and have evolved to promote the good of the organism. The value of an organism is its good and is an end that it pursues in and for itself. For Rolston, an organism's value does not depend on a human valuer. Hence human extinction would not diminish its intrinsic value. "Environmental ethics recognizes intrinsic values in and duties directly to nature. Such duties arise because values are distributed at the level of animals, living organisms, endangered species, and ecosystems as biotic communities, as well as in human life" (Rolston 2011, 4).

3. Intrinsic Values and Deep Ecology

One of the foundational concepts in the environmental field is Deep Ecology, first formulated by Arne Naess (2011). Intrinsic values play a critical role here. Guilherme (2011, 64) summarizes the view. Everything "has a value in itself and this value is not dependent on usefulness to human beings … all entities, whether a cell, an entity, or an ecosystem such as the Amazon Basin or the planet Earth, have equal value" and "everything seeks to self- realize itself, however self-realization is understood, such as enduring for as long as it possibly could and/or as fulfilling its own purpose." Deep Ecology is further defined in terms of biocentric egalitarianism in which all substances have equal intrinsic value. Hence "all living entities, from a slug to a human being

count as the same" (Guilherme 2011, 67). These views may be derived from or at least supported by Spinoza's thesis of conatus, which provides a cornerstone for Deep Ecology. Deep Ecology rejects anthropocentrism and an "unwarranted dominion over the rest of reality, or/and upholds the view that human beings are superior to the rest of reality" (Guilherme 2011, 65). Devall and Sessions (1985, 67) speak of a basic intuition that all organisms and entities are parts of an interrelated whole and are equal in intrinsic value. "The intuition of biocentric equality is that all things in the biosphere have an equal right to live and blossom and to reach their own individual forms of unfolding and self-realization within the larger self-Realization." Here the argument for intrinsic value is rights based.

There are, however, problems with the concept of intrinsic value. The idea that something can have value independent of its relations to other things suggests an atomistic world picture (Morito 2003). Another problem is that "believing in intrinsic value would commit us to a metaphysically elaborate (and therefore dubious) picture of the world" (McShane 2007, 45). In all of these debates, there is a question of who gets to decide. When people argue that something has intrinsic value, they may, also assert that it is objectively valuable. But objective assertions are harder to justify than subjective assertions. So, after much argument, one can, in the end, just bang the table and say, 'dammit, man, it is objectively true.' The bang of a judge's gavel may resolve a court case, but table banging does not. Relational values, however, may provide a more flexible means to assert value. They may also circumvent the intrinsic vs. instrumental debate and break the apparent antagonistic dualism between the two. So, now I turn to relational values.

4. Relational Values

O'Connor and Kenter (2019,1247-48) define relational values as "values with a relational content, that appreciate relationships between people and (elements of nature), including essential components of a good life." They are non-instrumental because they are "non-substitutable and incommensurable with instrumental values, [but] they are still anthropocentric" (O'Connor and Kenter 2019, 1250). For Batavia and Nelson (2017), relational values have experiential similarities to subjective intrinsic value. When we express awe or love for nature, we form a non-instrumental value that is both intrinsic and relational.

The conflict between intrinsic values and instrumental values could be partially circumvented by focusing on relational values (Klain *et al*. 2017). Relational values link people and ecosystems through tangible and intangible relationships. Relational values can include "the principles, virtues, and notions of a good life" (Klain *et al*. 2017, 1). Their study suggests that relational values can promote innovation in the assessment of ecosystem services and conservation initiatives.

Relational values are now included in the conceptual framework of the IPBES (Díaz *et al*. 2015.) These values focus on the complex interactions between people, places, and objects. The concept of nature's contributions to people (NCP) from the IPBES (2018) acknowledges a more sophisticated understanding of how people value nature, of how they use multiple ways of knowing or different epistemologies.

The concepts of living in the world, living with the world, and living from the world are relational. Chan *et al*. (2016) argue that relational values are more inclusive and responsive to the sources of well-being than instrumental or intrinsic values. They are more effective in framing values to make connections between humans and the natural world. Relational values grow out of interactions with and responses towards nonhumans, ecosystems, and landscapes. They are also associated with leading a good life, with Eudaimonic values, and with concepts of justice, care, and virtue. Chan *et al*. (2016) write that relational values include preferences and principles. They include meaning-statured relationships and can be held by individuals as well as groups

Relational values were major topics in workshops organized by the IPBES as well as a UNESCO-sponsored workshop (Chan *et al*. 2018). Chan *et al*. successfully argued for the inclusion of relational values, which build on decades of relevant work in the humanities in fields such as human ecology, sociology, substantive economics, Inuit knowledge, protected areas, landscape research, sustainable agriculture, environmental assessment, environmental education, care and well-being, care and stewardship, Eudaimonia, partnership, and religion. Relational values allow for meaningful inclusion of the social sciences and diverse approaches from the

various environmental sciences. They can inspire rich interactions and are more complex than simple stock-flow metaphors. There is increasing understanding that values play an essential role in enabling stewardship. Relational values are about—not of—nature. They concern what people find meaningful about nature, such as commitments, attachment, and responsibilities. Relational values show that relationships themselves matter. According to Goldstein (Erizanu 2018) “To say that something matters is to assert that attention is due it, the kind of attention that both recognizes and reveals its reality. Something that matters has a nature that demands to be known, and the knowledge may yield other attitudes and behaviour due it. If I say that something doesn’t matter, I’m saying that it’s not worth paying attention to.”

Relational values may also play a significant role in some systems of indigenous knowledge. Gould *et al*. (2019, 1213) study five native Hawaiian values that include human relationships with ecosystems. These are "pono (~ righteousness, balance); hoʻomana (~ creating spirituality); mālama (~ care); kuleana (~ right, responsibility); aloha (~ love, connection)." The concept of relational values offers a language to express a variety of associations between humans and nature. Indigenous and local relational cosmologies can also aid in decision-making processes and provide alternative frameworks. Organizations such as the IPBES have committed themselves to incorporating local and indigenous knowledge, and the authors state that relational values can make a crucial contribution.

5. The Life Frame of Values

The LFV seeks to provide an intuitive means of helping people to see themselves in complex, interconnected networks (O’Connor and Kenter 2019). The LFV has the pragmatic goal of making the abstract concepts of intrinsic value and relational value accessible and explicit. The LFV has four pillars: living in the more-than-human world, living from the more-than-human world, living with the more-than-human world, and living as the more-than-human world. The concepts of living in the world, living with the world, and living from the world come from O’Neil *et al*. (2007, 312).

> Environments and the objects and beings they contain matter to us, and have meaning for us, in diverse ways. We live from them – they are the means to our existence. We live in them – they are our homes and familiar places in which everyday life takes place and draws its meaning, and in which personal and social histories are embodied. We live with them – our lives take place against the backdrop of a natural world that existed before us and will continue to exist beyond the life of the last human, a world that we enter and to which awe and wonder are appropriate responses.

The 'living from' aspect has been at the forefront of environmental valuation heretofore. The LFV responds to the Millennium Ecosystem Assessment (2005), which adopted the term Environmental services (ES) and the IPBES (Díaz *et al*. 2018), which recently approved NCP or nature's contributions to people as a critical concept. Kenter (2018), in particular, views both ES and NCP as limited. He sees them as too focused on values to humans and tending towards instrumental values. NCP fails to emphasize that relationships with nature are bidirectional. This masks contributions from people to nature and fails to show how people and ecosystems are entangled. The concept of environmental services can support the dangerous trend to privatize and commodify nature. Kenter urges a more pluralistic terminology that includes a broad range of value concepts. These would include nature's gifts, reciprocal relationships with nature, and removal of distinctions between the valuer and the object of value. Besides, we should consider contextual and transcendental values. We need to demonstrate why nature matters and to develop effective processes for value formation. The LFV is, nonetheless, compatible with ES and NCP, but it better reflects intrinsic value and relational value.

The LFV goes beyond dualistic conceptions to show how the more-than-human world matters. The LFV is a significant effort to provide a richer view of values than one focused primarily on benefits to humans, and it gives a method to articulate values. These intrinsic values may not depend on human valuers but may, nonetheless, be articulated by people. The authors reframe intrinsic value as "subjective value-expressions of objective intrinsic value" (O'Connor and Kenter 2019, 1248). They call this "articulated intrinsic values" because if intrinsic values are not expressed, they are easily lost in the decision-making process. They assert that intrinsic values are more concrete and less abstract when they arise out of specific contexts. This is important because there is always the danger that intrinsic value will be seen as impractical. If

intrinsic values are not well integrated, their legitimacy will be challenged, and conflicts with instrumental paradigms will arise. “The intrinsic value of nature in the broadest sense involves the importance of non or more-than-human entities as an end in itself, rather than as a human end” (O’Connor and Kenter 2019, 1250).

Figure 1 below provides a way of thinking of how individuals and groups are embedded in what O’Connor and Kenter (2019) call the more-than-human world.

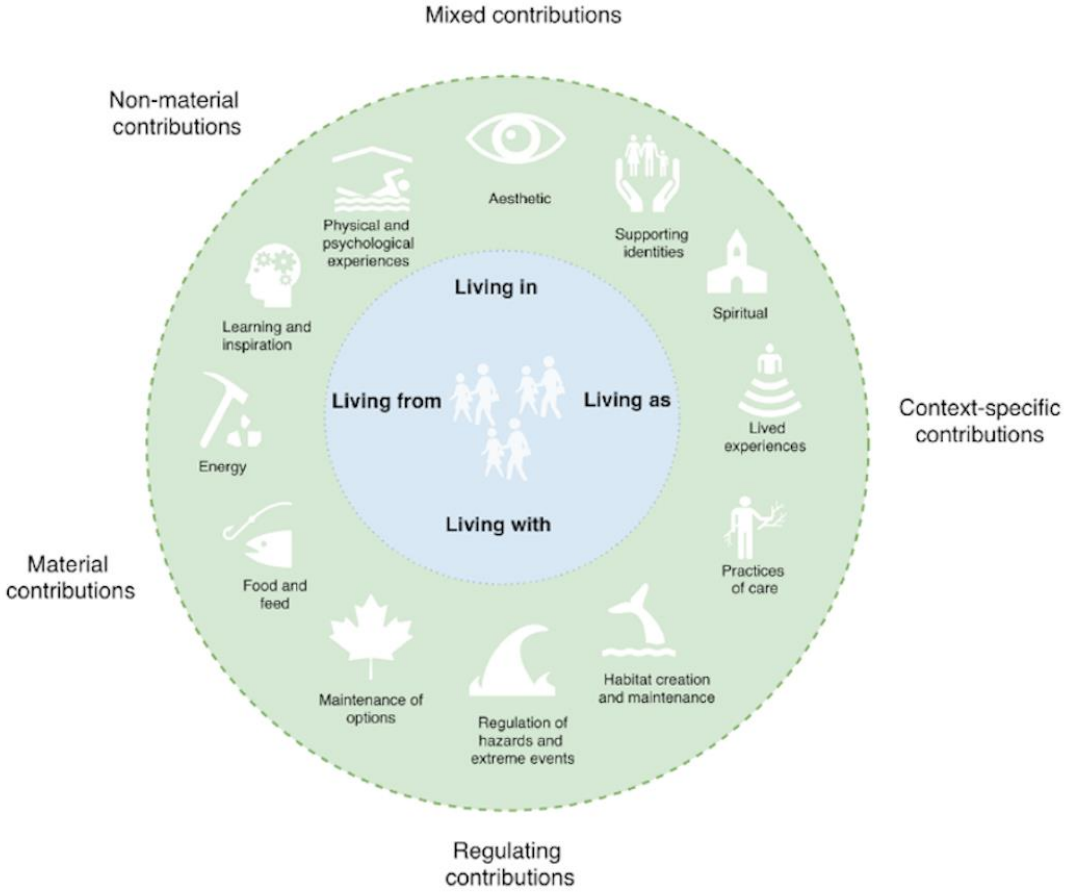

Figure 1 LFV Model (O'Connor and Kenter 2019, 1250)

The ‘more-than-human world,’ is the term they have chosen “to refer to nature inclusive of people and culture, as opposed to the natural environment, nonhuman nature, or simply nature, as separate from people” (O’Connor and Kenter 2019, 1249). The middle portion of the diagram has four kinds of ‘living.’ O’Connor and Kenter (2019, 1251) describe these as follows.

Living from points to how we value the world in a provisioning sense but also how it sustains us more broadly. This ranges from food consumed and energy produced using natural resources to the learning taken from the environment. These values are predominantly instrumental and relational.

Living with expresses that we share this planet with the more-than-human world and is enacted in us preserving and creating space dedicated to nature, from spaces for wildlife in gardens to national parks. This frame also most explicitly links to biodiversity and species conservation as an end-in-itself, rather than as a source of NCP.

Living in can be seen to map on to the non-material contributions of the land and seascapes that help shape (either socially or physically) how cultures, communities, and individuals relate to place, forming and supporting cultural and personal identities. It also maps to material and regulating contributions where they help define the biophysical features contributing to environmental settings. Whereas 'living with' emphasises space for nature, 'living in' is about the importance of nature as place.

The **Living as** frame reflects notions and experiences of the more-than-human world, rather than nonhuman nature. It also reflects diverse spiritual experiences of oneness. This frame primarily embeds relational and intrinsic values. 'Living as' intrinsic values acknowledge that the more-than-human world and the non-humans inhabiting it matter for their own purposes regardless of human affairs, yet we experience or see ourselves as an embedded or inseparable part of this community of life.

Instrumental values are most apparent in living from the more-than-human world, but we also learn from this process, and so relational values also play a role here. Living with a more-than-human world points to relational values, just as living with someone requires the development of relational skills. Intrinsic and instrumental values may arise, as well. Living in points to the more-than-human world, to our dwelling places, our communities, and the countryside around us. Dwelling places provide shelter and safety, which are instrumental to some extent. Still, people often become deeply attached to the place where they live and find both intrinsic and instrumental values there. Living as the more-than-human-world emphasizes intrinsic value, but relational values unquestionably come into play. O'Connor and Kenter studied marine ecosystems and found that stakeholders held multiple values that crossed categories in the LFV.

This is not surprising. Attempts to draw analytically clean demarcation points are often muddied in the hurly-burly of everyday life.

A primary objective of the LFV is to produce a richer understanding of how we live in the more-than-human world. The aims are pragmatic and not philosophical, per se. Figure 1 helps to make the conception of both intrinsic values and relational values more intuitive to users. The objective is not to provide precise definitions or an elaborate ontological superstructure. Rigid definitions might inhibit the LFV's effectiveness. Fluidity and openness encourage more vibrant interpretations of the diagram and hence promote a broader range of responses.

O'Connor and Kenter (2019, 1262) sum up their aims in the conclusion of the article.

> The recognition of diverse values within multiple value frames—living from, with, in and as the world—provides a nuanced approach to understanding these perspectives and relating them to an easy to understand and communicate taxonomy of why the more-than-human world matters. The intuitive simplicity and comprehensiveness of the LFV provides an avenue for enhancing inclusivity and transcending the one-sidedness and anthropocentrism of ES and NCP.

6. Donna Haraway and Bruno Latour

Haraway's work ties together anthropology, science and technology studies, animal studies, and feminist studies. "Haraway is a leading theorist of the relationships between people, other organisms, and machines, her work having incited debate in fields as varied as primatology, philosophy, and developmental biology (Berliner Festspiele 2017). Haraway (2019), is "part of an influential cohort of feminist scholars who trained as scientists before turning to the philosophy of science in order to investigate how beliefs about gender shaped the production of knowledge about nature."

The Cyborg Manifesto from 1985, continues to attract attention 35 years later. She "dwells in that elite strata of cult celebrity wherein a mere mention of her attendance is enough to attract lines out the door and down the block" (Lee 2018). Her "highly progressive scholarship and

unorthodox approach have earned her high regard within the artistic community." Eco-feminist Stacy Alaimo (2008, 301) writes that she lays "bare the interconnecting discourses that link woman and nature in ways that are detrimental to them both." Haraway (Alaimo 2008, 302) "reconceptualizes nature in such a way that it can no longer serve as the ground of essentialism, because it is no longer the repository of unchanging truths or determining substances but is itself an active, transforming, signifying, material force." Crist (2010) writes that Haraway resists simple dualities and navigates the poles between a love of organic nature and cyborgs. Haraway (2016, 207) asks, what "are the effects of bioculturally, biotechnically, biopolitically, historically situated people (not Man) relative to, and combined with, the effects of other species assemblages and other biotic/abiotic forces?" Haraway speaks frequently of situated knowledges and her view of science is influenced by the Vietnam War. "My angle of vision was out of my immersion in literature, especially science fiction, as well as my immersion in biology and my political allegiances on the broad feminist left—anarcho-feminist, Marxist feminism, [and] socialist feminism" (Williams 2009, 136). Haraway has written on instrumental values, but I have not found find secondary literature related instrumental values or intrinsic values.

Latour has over 205,000 citations in Google Scholar. "In certain portions of the academic world, he is a recognized superstar. His actor-network theory has inspired hundreds of works by enthusiastic followers in sociology, anthropology, science studies, and even the fine arts" (Harman 2007, 31). Latour's actor-network theory has important implications for the LFV. He is also an influential philosopher, an anthropologist of science and a lifelong environmentalist. His work gives us powerful ways to understand interactions between the human and nonhuman. Latour (Kofman 2018) is one of the founders of science and technology studies, a new discipline. As such, he regards himself as an ally of science. His work consistently engages with the question of how science is produced. Latour does not accept the scientific claim to a privileged point of view or access to truth, what he calls the 'view from nowhere.' McGonigle (2012, 559) writes that "Latour's essential concern is that the crux of modernity is the blurring of instrumental and ethical reason; and that modern 'fact-making' is symptomatic of this culture of hybridity." Reader (2017, 15) writes "If nature is only of instrumental value then it may not be enough to prevent the excesses of human exploitation that have contributed to the environmental problems we now face. Far better, then, to make those values explicit and then question and

propose alternatives. …By focusing instead on matters of concern Latour opens up a much more creative and constructive path through which to engage ethical issues at the very heart of specific debates." I have not found secondary material related to intrinsic values in Latour's work.

Latour (2007) also notes how the remarkable rate of urbanization has led to increasingly complex interactions between natural and human systems. We see nature penetrating society and society penetrating nature. Latour's understanding of nature and wilderness has important implications for LFV. Latour actively engages with political and environmental questions. Latour writes (2007, 2) that "no matter how important the work that has been done so far, ecological questions are still taken as peculiar to one specific domain of concerns, not as the core of politics. Never are these issues treated with the same sense of urgency and centrality, with the same passions, the same moral energy as the rest of public issues." (Latour 2007, 1). Latour's (2017) work on Gaia and the Anthropocene puts environmental questions into the broadest possible context. These two concepts lead to rethinking the place of humans in the more-than-human world. His voice is re-emerging at this very time of the COVID-19 pandemonium, as he urges us to reconsider our social and economic models (Overstraeten 2020).

To summarize why Haraway and Latour are significant for an investigation of the LFV, I would note that both have wide influence on thinkers from many disciplines which indicates that their thinking goes beyond specific intellectual domains. Both are philosophers of science, examine the historical and political causes of current environmental crisis and emphasize the significance of relationality.

Latour's actor-network theory emphasizes the role of nonhuman actors and gives agency to nonhuman and non-living actors. His work as a 'founding father' of Science and Technology Studies (STS) is highly influential. His advocacy of both Gaia and the Anthropocene are critical as is his questioning of standard conservationist conceptions of nature.

Haraway is significant for her reframing of the nature culture relationship, her writings on animals, and her discussion of the Anthropocene. She brings an American viewpoint, particularly

from the American west, a feminist perspective and an opposition to universalizing and dualisms.

Chapter 3 – Methodology

I use works by Bruno Latour and Haraway to study, analyze, critique and support O'Connor and Kenter's LFV. I rely on primary sources and secondary sources, for which there is a broad selection. Latour's website alone contains 170 articles alone as well as 23 books. Haraway has written less, but nonetheless, she has produced a rich literature. I focus on the writings that most directly connect to environmental and ethical issues that relate to the LFV. Following is a list of books and articles by Latour and Haraway that are of greatest relevance for this thesis. Latour and Haraway draw on the work and terminology of each other, so the pairing of these two thinkers is logical. Naturally, they are not always in agreement, but their intellectual paths cross and intersect.

The most important books and articles by Latour for this thesis

On recalling ANT (1999)
Facing Gaia: Eight lectures on the new climatic regime (2017)
Bruno Latour tracks down Gaia (2018)
Down to Earth (2018a)
Extending the domain of freedom, or why Gaia is so hard to understand (2019)

The work on Gaia is of particular value because of its recency, political relevance and focus on central themes in the thesis. One of the issues in reading Latour is translation and unfortunately, I do not read French. Latour is fluent in English and frequently lectures in that language. Apparently, Latour goes back-and-forth with his translators and sometimes modifies the original French text after it was translated into English. French and English both carry immense intellectual and cultural baggage but because Latour is constantly working in both languages, he is alert to some of the problems and nuances of translation.

The most important books and articles by Haraway for this thesis

How like a leaf: An interview with Donna Haraway (2000)

Encounters with companion species: entangling dogs, baboons, philosophers, and biologists. (2003)
Companion species manifesto: Dogs, people, and significant others (2003)
When species meet (2008)
Anthropologists are talking – about the Anthropocene (2016)
Staying with the trouble: Making kin in the Chthulucene (2016)
A giant bumptious litter: Donna Haraway on truth, technology, and resisting extinction (2019)
How like a leaf provides background biographical and intellectual information, but Staying with the trouble, her most recent book, is a more valuable source for this thesis. This collection of essays shows Haraway in full battle regalia with rhetorical flashes and conjoined, compact, convoluted, compressed, critical text.

Background for O'Connor and Kenter

Environmental Values by O'Neill, Holland, and Light 2007.
O'Connor and Kenter acknowledge this volume as providing both ethical analysis and essential background for the LFV.

A significant challenge is to identify the ethical positions of Haraway and Latour, and to represent them clearly without oversimplification. I rely on a sizable literature from these two authors, but there is less evidence from O'Connor and Kenter. The work of O'Neil *et al* (2007), however, is an important source for O'Connor and Kenter. O'Neil *et al*. include three of the four 'living' aspects of the LFV. O'Connor and Kenter use more-than-human participatory research and post-normal science techniques to conduct their field research, and these methods seem to align with the thinking of Haraway and Latour. As the labels for the research techniques demonstrate, O'Connor and Kenter attempt to circumvent some of the limitations of standard scientific methodology, which Latour and Haraway have criticized. In this thesis, I focus on ontological, epistemological and ethical questions. More specifically, I look at intrinsic values and relational values in the more-than-human world because of the centrality of these themes in the LFV.

Analytical approach

In broad terms, I am conducting a text analysis, the purpose of which is "not the passive reading of the author's world but the entry into a reflexive dialogue between the reader-analyst and the text" (Bauer *et al*. 2014). I wear the hat of an environmental philosopher, but like the field of environmental philosophy itself, this entails much contact with a messy, entangled, political world. Because I view our environmental situation as critical, I believe that environmental philosophy should help us to understand our current situation and provide an intellectual underpinning and framework for action.

I use environmental hermeneutics as one helpful approach to textual analysis. "Environmental hermeneutics examines the role of interpretation in human relations with environments but often combines this fundamental philosophical perspective with more empirical approaches" (Drenthen 2016, 459). Environmental hermeneutics is part of environmental humanities, makes the role of interpretation explicit and shows how conflicting interpretations are bound up with identity An advantage of this approach is that it uses a kind of situated knowledge, an essential theme for Haraway, and refers to the process of living, which has a strong connection to LFV. Environmental hermeneutics also aligns with the phenomenology of Heidegger, who Haraway (2000) describes as the philosopher who has most influenced her. Drenthen (2016, 481) writes that "environmental hermeneuticists have shown that humans understand themselves not just through texts and narratives but also through the meaningful places in which they find themselves." This dovetails nicely with all of the thinkers, each of whom is concerned about place and living, although in diverse ways and at entirely different scales. O'Connor and Kenter (2019, 1248) write of articulated intrinsic values and seek to bring these values into the public sphere. This harmonizes well with another concept from environmental hermeneutics. "Meanings have to be articulated in response to experiences of the world in which the world presents itself as somehow meaningful, although usually at first it is not clear what particular meaning is trying to present itself" (Drenthen 2016, 471). Drenthen (2016) embraces the ideas of O'Neill *et al*. (2008) when he writes that in "recent years, many environmental philosophers have argued for approaches more sensitive to issues of meaning, narrative, and history." There is, however, one crucial distinction between environmental hermeneutics and the goals of O'Connor

and Kenter. Drenthen (2016, 473) writes that "environmental ethics differs greatly from other forms of environmental ethics that tend to seek ethical guidelines for dealing with the environment in abstract notions such as intrinsic value of nature." Here I depart from the approach of environmental hermeneutics. I am interested in 'abstract notions,' in trying to extract them from a broader context, and I join O'Connor and Kenter in wanting to make them work.

Chapter 4 – Defining the more-than-human world

This chapter sets the stage for addressing the central question of how the work of Latour and Haraway challenge and support the LFV. The chapter examines five questions, which have both ontological and conceptual aspects. What is the more-than-human world? What is nature now? Is nature still a valid concept? How do nature and culture relate? What is the significance of Gaia?

O'Connor and Kenter do not define the more-than-human world with precision, which opens many questions. Haraway and particularly Latour, have much to say about what this more-than-human world might be. The question of what constitutes nature is a critical aspect of the environmental discourse. In addition, what constitutes wilderness today and what the relationship between nature and culture are significant aspects of the environmental discourse. Both Latour and Haraway argue for a deeply entangled conception of wilderness, nature and culture. Finally, the concept of Gaia raises fundamental questions about how we are situated in the world, or more precisely, in the critical zone.

1. The more-than-human world

O'Connor and Kenter (2019, 1249). state that the "more-than-human world is our preferred term to refer to nature inclusive of people and culture, as opposed to the natural environment, non-human nature, or simply nature, as separate from people." They do not spell out the rationale for their preference. Nature "or non-humans [are] important others, who co-exist alongside us, acknowledging that we are one species alongside the larger biotic community living on this planet" (O'Connor and Kenter and Kenter 2019, 1249). These definitions provide some understanding of the term but leave scope for interpretation. What are the main components of the more-than-human world? Where are the boundaries between the human and the more-than-human world? O'Connor and Kenter often refer simply to the world, and so it is not always clear how the world differs from the more-than-human world. The more-than-human world sometimes includes human beings. So, perhaps the phrase ought to be the more-than-just-human world. "The Living as frame reflects notions and experiences of the more-than-human world, rather than non-human nature" (O'Connor and Kenter 2019, 1251). This suggests that there is human nature,

but not in the normal sense of the word as in referring to general psychological characteristics, as well as feelings, and behavioral traits. How non-human nature might be defined is unclear. They go on to say that the living as frame "transcends the ontological or at least semantic dualism of nature's contribution (NCP) to people" (O'Connor and Kenter 2019, 1251). NCP suggests a one-way movement of contributions from nature to people. The living as framework is also open "to practices of care, kinship and reciprocal relationships between people and the more-than-human. In particular, this frame opens up to lived experiences of the more-than-human world, where activities such as hunting, fishing and outdoor pursuits are experienced as non-separate from nature, and from an embodied perspective" (O'Connor and Kenter 2019, 1251). Again, it is not easy to sort out precisely what they mean but one key aspect is non-dualistic experience. This could point to an earlier and perhaps more romantic notion of oneness with nature.

O'Connor and Kenter write of preserving and creating space dedicated to nature or of the natural world serving as a stage for tourist activities. They note that hunting, fishing, and other outdoor activities can be experienced as non-separate from nature. Many of O'Connor and Kenter's categories include human activity, and so the more-than-human world blurs the human/nonhuman distinction. They write that nonhumans can be "co-creators of meaning and value in the world" (O'Connor and Kenter, 2019, 1254). So, the more-than-human world could be nature, but of course that begs the question of how nature should be defined, which I take up in the following section. Rural regions that include a mixture of cultivated and less cultivated landscapes are also candidates. Finally, cities could also be included in the more-than-human world.

Figure 1 (page 15) helps to comprehend the human relationship with the more-than-human world but placing human beings in the middle of the diagram is anthropocentric. As noted above, O'Connor and Kenter (2019) argue that ES and NCP are unidirectional, moving from nature to humans. Their approach is largely bidirectional; between humans and nonhumans. Hence there is not explicit interaction between nonhumans. Figure 1 is less helpful in defining what that more-than-human world is. Living in the world means living in some kind of environment, but this environment is not defined. Does an urban environment count as the more-than-human world? O'Connor and Kenter are not clear about this and that would seem to require some explanation

or justification. In figure 1, people are in the middle and contributions are located on the periphery. These inputs include context-specific contributions, regulating contributions, material contributions, and non-material contributions. Of the material contributions, only food, feed and energy are clearly nonhuman. Even within the material contribution category, we find learning and inspiration, which are primarily human attributes. On the other hand, learning is important for animals and perhaps even in some fashion for plants. In the regulating contributions, we find habitat creation and maintenance, which indicate human involvement. The maintenance of options, as well as the regulation of hazards and extreme events, entail human activity. So, in Figure 1, most of the elements have a strong human element. This raises anew the question: what is the more-than-human? What parts of the more-than-human-world do not include humans?

2. Nature

Nature is the term most often found in the literature and in the LFV itself. To some degree, nature *is* the more-than-human world despite problems with the term and much confusion about its meaning, O'Connor and Kenter (2019) use the term nature 19 times in their article, and so it seems we cannot extricate ourselves from this word. Our concepts of nature affect not only how we view nature, but how we relate to it, and how we treat it. Or, in LFV terms, how we live in nature, from nature, with nature, and as nature. Concern for the natural world and nature are often starting points for an environmental attitude. 'Natural' has positive connotations and stands in contrast to 'artificial.' Mother Nature, unspoiled wilderness and natural beauty have positive connotations. Nature represents forces that stand in contrast to the human and to culture. Nature can be spoiled or threatened by human beings.

Spinoza's philosophy was an inspiration for some of the earlier ecologists such as Naess (1977) and so I begin there. For Spinoza (Nadler 2020), "Nature is an indivisible, eternal or self-caused, substantial whole—in fact, it is the only substantial whole. Outside of Nature, there is nothing, and everything that exists is a part of nature and is brought into being by nature with a deterministic necessity. This unified, unique, productive, necessary being just is what is meant by 'God." Thus, God and Nature appear to be equivalent terms, although this is much contested. The "power of Nature is the divine power and virtue, and the divine power is the very essence of

God." (Spinoza 1988, 74). For Spinoza, the notion of a more-than-human world, and hence of a human world, does not follow. The category of nature is not, in fact, a category but seems to be all encompassing. It is unclear what is not nature for Spinoza.

One of the biblical images of nature is the Garden of Eden (Genesis 2:8-9). "And the Lord God planted a garden eastward in Eden; and there he put the man whom he had formed. And out of the ground made the Lord God to grow every tree that is pleasant to the sight, and good for food; the tree of life also in the midst of the garden, and the tree of knowledge of good and evil." In some senses, God is a gardener, and even though he creates the Earth, the perfect environment for humans is not wild nature, but a garden. But Adam and Eve eat from the tree of knowledge of good and evil and are cast out of the garden and must become farmers. They must contest with the brute forces of nature, including drought, floods, catastrophic weather, and insect invasions.

Nature can be a demonic force and a threat to human survival. Nature red in tooth and claw is a force with such brutal manifestations that Darwin lost his faith in God (Marty 2019). For much of history, nature was a dangerous power that humans had to keep at bay with unceasing labor. Disease, famine and disaster are natural forces, which is a more-than-human world from which many people are happy to escape. The industrial revolution, modern public health and medicine have liberated us, at least temporarily, from many of nature's enforced limitations, and we have drastically reduced the death toll caused by disease and infection. But the effects of climate change, the threat of global pandemics and the force of Gaia, which I examine below, suggest that this could be a temporary respite.

There is a long historical connection between nature and femininity. The character of this relationship is one that has captured much attention in feminist studies. Nature is typically feminized in English but also in French, Spanish, Portuguese, and German. Lucretius feminizes and describes nature as restless and active, as continually bringing new forms out of old, often in unique combinations (Rubenstein 2018). Hence nature is generative, creative, and fecund. An older, Greek image of nature as organic, benevolent, nurturing, and female contrasts with a modern conception of nature as mechanistic and inert. Warren (2015), however, notes that in being feminine nature "can be raped, mastered, controlled, conquered, mined; her (not his)

secrets are penetrated, and her womb (men don't have one) is put into the service of the man of science (not woman of science, or simply scientist). Virgin timber is felled, cut down. Fertile (not potent) soil is tilled, and land that lies fallow is useless or barren, like a woman unable to conceive a child."

Haraway offers no benevolent, picture postcard images of nature. Her vision of nature is entangled with culture, effectively inseparable. When she does refer to nature it is in the context of environmental degradation. She speaks of cheap nature, meaning nature primarily as a brute resource, thus "cheapening nature cannot work much longer to sustain extraction and production in and of the contemporary world because most of the reserves of the earth have been drained, burned, depleted, poisoned, exterminated, and otherwise exhausted" (Haraway 1016, 185). Here we see nature as victim of a predatory, predominately male assault. Again, nature is the victim of rape, extraction, mastery and conquerors.

Women may have a richer and more nuanced understanding of nature's potential than men. Shiva (2014) writes of the Chipko movement in India and shows that locals, such as the Chipko women, are experts in using the forest for food, fuel, fodder for cattle, dyes, herbs, medicines, building materials, and household utensils. The Chipko women appear to be living from, with and in the more-than-human world and so their relationship is more vibrant and sophisticated than that of a commercial forester, for example. In Sierra Leone, feminist foresters revealed that local men could name only an average of eight different uses for a local species of trees, but local women could find thirty-two uses for the same species (Warren 2015)..

Latour (2004, 5) speaks of nature as "that blend of Greek politics, French Cartesianism, and American parks" and writes that the concept of nature is mixed in with culture. Our conceptions of nature contain an admixture of "morality, politics, and theology that it has been unable to shed" (Latour 2017, 206). He notes that France has never believed in the notion of a pristine nature that has so confused the 'defense of the environment' in other countries: what we call a 'national park' is a rural ecosystem complete with post offices, well-tended roads, highly subsidized cows and handsome villages" (Latour (2007, 1). This all gives the impression that Latour has never been to Iceland or the Sahara or the Amazon Delta. It is also different from an

American or Canadian who has seen vast expenses of open land, national parks and areas with exceptionally low human population. Latour and Lenton (2019, 5) argue that many notions of nature situate life within some kind of larger frame. These larger frames have names such as "God's providential dispensation, neo- Darwinist natural selection, strictly mechanistic laws of nature, ecological systems, [and the] biosphere." Here it seems that the frame, Darwinian or otherwise, is larger than the picture itself. The frame can determine what we see.

How we live in, from, with, and as nature is influenced by what we do and how we make our living. Hence, an understanding of nature and of what nature signifies grows out of the circumstances of one's life. The farmer has a different view of the natural world than does the hunter-gatherer. Modern consumers, who purchase processed food in a grocery store are many steps further from the source. In fact, the modern consumer can be completely ignorant of the processes of growing food and animals. This knowledge is unnecessary for vast swaths of the population, and hence their relationship to the more-than-human world is not shaped by an understanding of how food grows and animals live. Increasingly, people consume highly processed foods or eat in restaurants. Hence, they are not even aware of the ingredients in the food. Many of the urban poor live today in what are termed food deserts. In such places, fresh food is hard to find and often quite expensive. Each step farther from the food production process creates a weaker link to that process. O'Connor and Kenter situate people in the more-than-human world, but increasingly this is a world with weak ties to a natural environment. The LFV strives to make intrinsic values work by embedding people in a more natural world. But increasingly people are disconnected from this more natural world due to the very circumstances of their lives, such as living in dense urban environments. This certainly raises challenges for the LFV and suggest that our images of nature should include a mixed urban landscape. Haraway (2016) describes a project in Washington DC in which kids from minority neighborhoods, mostly black, learn to see pigeons not as rats on wings but as interesting creatures with individual identities. This helps them to see their urban environment with new eyes.

To repeat, O'Connor and Kenter (2019) use the word nature 19 times in their article and the word appears repeatedly in conservationist work. It is clear that people mean different things

when they use the term and so we must be constantly alert to the use of the word in a particular context and by particular writer.

3. Nature denied

"Nature is gone... You are living on a used planet. If this bothers you, get over it" (Ellis 2009). Ellis argues that areas of the Earth that we saw as the wildest are, in fact, still recovering from human alterations that took place millennia ago. This can be seen in artifacts, earthworks, settlement records and anthropogenic charcoal in Amazonia. According to some current theories, prehistoric hunters are responsible for the eradication of megafauna in North America following the last Ice Age. These keystone species included long-extinct mammals like the mastodon, giant ground sloth and saber-toothed tiger. Hence prehistoric human beings already had significant impact on the environment. Our notions of wilderness and nature may not correspond with what the world looked like prior to the last ice age. In Europe, there is only one patch of primeval forest, the Białowieża forest in north-eastern Poland, which faces potential collapse (Davies 2017).

Latour rejects the notion of living in harmony with nature. "There is no harmony in that contingent cascade of unforeseen events, nor is there any nature" (Latour 2017, 241). "What happened to the landscape, for earlier generations, is now happening to the whole Earth: its gradual artificialization is making the notion of 'nature' as obsolete as that of 'wilderness'" (Latour 2017, 288). Cavazza (2104) argues that Latour is attempting to reassess such concepts as humanity, nature and their relationships because he has developed one of the most sophisticated understandings of its problems and potentials. But Cavazza accuses Latour of throwing away nature with all its transcendences and complications. Perhaps Latour is too French. After all, the French created the most artificial and least natural of all garden styles exemplified by the formal gardens at Versailles. Foucault certainly did not appear to be inspired by nature. "Darier recounts how, while on a trip to the Alps, Foucault's colleague Jacqueline Verdeaux compelled him to appreciate a particular vista. Foucault reacted by walking away and exclaiming: 'My back is turned to it' (Foster 2018, 122).

I think a significant part of Latour's reaction to 'nature' is the inevitable associations the word has. It returns us to a landscape and a concept that are no longer valid because of the enormous transformations we are now witnessing, "Formerly, it was possible to say that humans were on earth or in nature, that they found themselves in 'the modern period' and that they were 'humans' more or less 'responsible' for their actions. One could distinguish between 'physical' geography and 'human' geography as if it were a matter of two layers, one superimposed upon the other." (Latour 2018, 70). Latour proposes the term Terrestrial with a T to describe where we are now. New terminology is needed because we have entered a new era. Old words trap us in old ways of thinking. Novel words and new concepts have a better chance of helping us to see new realities.

Some argue that we no longer have real wild or real wilderness because of the enormous effect of humanity. But this ignores degrees of wildness or wilderness. Indeed, the meaning of wild, as a place not affected by humans, is non-standard. It is a modern idea that wildness signifies areas that are entirely unaffected by humans (Anderson 2007). The concept of preserving wilderness areas is new and begins perhaps with John Muir and Yosemite National Park. The park only took on its official status in 1906. Even the so-called wilderness of Yosemite had long histories of human habitation. The Ahwahneechee people lived there for thousands of years before Europeans arrived, and their habitation affected the region's ecosystem (National Park Service 2020).

Latour and Haraway are not advocates for wilderness and wild nature in any traditional understanding of the terms. A search through Haraway's writing turns up two instances of the term wilderness. In one passage, she speaks of how her feral cats are embedded in our present human culture. She ends by noting that they still have the status of wild animals and asks, "Is this what Muir meant? In wilderness is our hope" (Haraway 2006, 278). In another passage, she states that the Anthropocene "saps our capacity for imagining and caring for other worlds… (including those called wilderness, for all the contaminated history of that term in racist settler colonialism)" (2016, 104). The history of national parks in the US is too wrapped up with the dislocations and dispositions of indigenous peoples for Haraway. Gomez (2012, 190) argues that Haraway opposes the kinds of environmentalism and conservation ecology that seek to "protect

‘natural’ entities from all possible contamination resulting from interaction … with humans, their artifacts, or other units or organisms outside their ‘natural’ environment.” Gomez also asserts that Haraway rejects pristine, nature-centered ecology, as well as asymmetric relationships between human animals and nonhuman animals.

I think of a recent ‘wilderness’ experience I had hiking in the Rila and Pirin mountains in Bulgaria. To have my wilderness experience, I first went online. I worked with a company in Scotland to organize the trip and one in Bulgaria that provides transportations to the hiking spots. I used a ski lift to reach a hiking starting point. My company provided me with maps, and I had access to GPS to guide me. I stayed in a hotel and slept in a comfortable bed. My clothing and equipment were made by companies with manufacturing and production facilities scattered across the globe. All the fabrics and materials for my wilderness experience are artificial and the products of technological development. To have a close encounter with nature, I seem to require artificiality. This is not to say that I wasn’t in a wild landscape, but the wildness of this experience was limited and circumscribed. I did experience wonder and awe, and I’m glad that these places exist. But perhaps my despair is premature. Czech shoe expert Hlavacek examined the shoes that were found on a Stone Age man frozen in a glacier some 10,000 years ago (Bilger 2005). Ötzi, so he’s called, wore shoes that outperform today’s best according to Hlavacek.

My wilderness experience is quite different from that of the Chipko women or traditional sheepherders in Hungary who spend endless hours with their flocks and come to know the local botany with an expertise that often surpasses trained botanists (Molnár *et al.* 2020). Nonetheless, I would argue that each of us has significant experiences of the nature. This experience is different from being in an urban environment. But then again, modern herders use mobile phones.

The borderline or boundaries between human and nonhuman continue to change as more land is moved into agriculture use or is used for human settlement. There are, however, countertrends in Europe. Agricultural lands are being abandoned, and some kind of rewilding or renaturing will take place. In the next 20 years, over 10% (more than 20 million ha) of agricultural land in the EU faces an elevated risk of abandonment due to “biophysical land suitability, farm structure and

agricultural viability, population and regional specifics" (Perpiña Castillo *et al*. 2018, 1). This will open up a new kind of more-than-human world. It will mean that the trend towards urbanization will continue and that fewer people will have day-to-day contact with more natural environments. On the other hand, less land will be inhabited in Europe and so the more-than-human world is anything but static.

4. Nature and Culture or Natureculture

In this continuing investigation of what the more-than-human world means, I turn from the distinction between human and nonhuman to the distinction between nature and culture. Looking again at figure 1 (page 15), it is clear that human culture is in the more-than-human world mix. Does this blur a critical distinction, or are there fundamental problems with the distinction itself?

Nature and culture form a classical distinction in western ontology. In this ontological binary, the nonhuman realm is Newtonian, mechanical, and functions according to physical laws (Heaney 2015). Culture, on the other hand, is composed of contingent human relations. Latour (1993) calls this split the Modern Constitution, and it is the context in which science operates. The separation of culture from nature comes in part from the scientific revolution (Merchant 1980). Here nature is the part of the world not determined by human agency. It is the subject of natural science. It is a world of laws and forces that are not the products of human activities. Hence, nature is not social and stands in opposition to human culture. In the Enlightenment ideal, the purpose of science is "to control and domesticate natural forces, for the benefit of humankind" (Pollini 2013, 26). The modern ontology divides the realm of human culture from the realm of nature. They are not continuous because humans are separate from nature and belong to a different order (Warren 2015). Such notions create not only conceptual differences, but also create different attitudes, perceptions, and emotions. Haraway (1991, 24) writes, "certain dualisms have been persistent in Western traditions; they have all been systemic due to the logics and practices of domination of women, people of colour, nature, workers, animals — in short, domination of all constituted as others."

Haraway (2016) speaks not of nature and culture, but instead of natureculture as an entangled entity, a term that encapsulates her anti-dualistic thinking. Haraway (2008, 136) writes that if "science studies scholars have learned anything in the last decades, it is that the categorical dualism between society and science, culture and nature, is a setup to block a grasp of what is going on in technoculture, including what is to be done in order that companion animals flourish." Crist (2010, 645) describes natureculture as "today's immense and indeterminate nature–culture–social–technical complex melting pot." But if we take the "melting pot as a starting point we risk reifying potent forms of ideology" (Crist 2010, 645). What if natureculture is the hegemonic ontology? How are we to "to de-reify its repressions, perversities, forms of violence, estrangements, and so forth – all those undesirable manifestations of natureculture that are too entrenched to be visible?" (Crist 2010, 646).

Haraway describes herself as allergic to abstractions (Haraway and Goodeve, 2000). We need broad categories and abstractions to order our mental universe, but abstractions can interfere with close description and comprehension. They can also cause us to make rigid distinctions, such as the notion of race based on skin color, when cultural and genetic facts are more nuanced. Haraway (1991, 173) lists what she calls 'troubling dualisms.' These include "self/other, mind/body, culture/nature, male/female, civilized/primitive, reality/appearance, whole/part, agent/resource, maker/ made, active/passive, right/wrong, truth/illusion, total/partial, God/man." One advantage of the LFV is that it is not a dualistic framework and does not inherently contain a nature/culture split.

For Latour, the expression 'relation to the world' presupposes two domains: nature and culture. But these domains are simultaneously distinct and impossible to separate. He admonishes us not to define nature separately, because then we must define culture at the same time. Latour (2017, 44) proposes to "link the two typographically by referring to Nature/Culture." Like Haraway Latour (2017, 37) sees one concept divided into two parts. He compares these to Siamese twins, who both hug and hit each other, yet belong to the same body.

Latour (2017, 35) writes that most definitions of the human "stress the extent to which it is distinguished from nature." Thus, "every time we attempt to 'bring humans closer to nature,' we

are prevented from doing so by the objection that a human is above all, or is also, a cultural being who has to escape from, or in any case be distinguished from nature." This creates an interesting dilemma. How can you come closer to nature when it is the distinction from nature that purportedly defines you? For Latour (2017, 23), the "distinction between humans and nonhumans and the difference between culture and nature have to be treated the same way…To believe that these terms describe anything at all about the real world amounts to taking an abstraction for a description."

Latour attacks "the twofold taxonomy of a mechanistic, clockwork nature on one side and the arbitrary customs and value projections of human society on the other" (Harman 2014, 7). Harman asserts that contemporary philosophy remains caught up in this false dichotomy. Latour thinks "of the relation between two nonhuman entities in the same terms as the relation between humans and nonhumans, or humans and humans" (Harman 2014). Latour moves beyond the nature/culture dualism and the concept that the nonhuman world is bound by fixed rules, which science will discover. Instead, there is a collection of humans and nonhumans whose properties are not set. Latour (1994) rejects the modern dichotomy between subject and object, which then leads to the nature/culture dichotomy, the mind/body dichotomy, and the human/technology dichotomy. But Waelbers and Dorstewitz (2014) argue that Latour in attempting to close a presumed dichotomy between nature and culture, effectively reduces one to the other.

5. Gaia

Gaia is the more-than-human world writ large. The concept has powerful explanatory potential but is misunderstood and controversial. Gaia escapes simple explanations or comparisons and its origins in Greek mythology hint at its problematic nature. In Hesiod's version, Gaia induces her son Cronus to take revenge upon Uranus, her husband. She hides Cronus in ambush and gives him a jagged sickle with which he castrates his father. "And Heaven came, bringing on night and longing for love…he [Cronus] lay about Earth [Gaia) spreading himself full upon her. (Evelyn-White 1914, 151-152)

Gaia is no Mother Earth, no Mother nature, no Ur-Mother raped by humanity. Gaia is chthonic, hence from the underworld, and "an ongoing tentacular threat to the astralized ones of the Olympiad, not their ground and foundation, with their ensuing generations of gods all arrayed in proper genealogies" (Haraway, 2016, 349). For Latour (2017, 186) "Gaia, Ge, Earth, is not a goddess properly speaking, but a force from the time before the gods." She is "prolific, dangerous, savvy" and "emerges in great outpourings of blood, steam, and terror, in the company of Chaos and Eros." She is an outlaw, an anti-system, with altars buried deep in caverns. These altars lie under the temples erected to more civilized, less terrifying gods. She is cunning and never commits horrible crimes herself but inspires others to violence and revenge. Unlike the Olympian gods, she is "a figure of violence, genesis, and trickery, a figure that is always antecedent and contradictory" (Latour 2017, 190).

The modern concept of Gaia describes the part of the Earth in which we live, the critical zone. Lovelock and Margulis are the architects, discoverers, and inventors of Gaia. Lovelock comes from atmospheric science and Margulis from bacteriology. Margulis reframed the evolutionary role of micro-organisms, particularly bacteria, and Lovelock reframed our understanding of both the origins and the functioning of Earth's atmosphere. Margulis (1995) calls Gaia a "tough bitch" who is sensitive to our actions, and capable of reacting quickly, perhaps excessively. Latour (2017) writes that Margulis and Lovelock are attacking our understanding of what an organism is, of scale, parts, and wholes. Gaia represents an epic Kuhnian paradigm shift.

Gaia is the thin layer, only a few kilometers thick, which contains and supports prickly pear cactus, parrot tulips, Ruby-throated hummingbirds, Arabian gazelles, spirochetes, humans, mistletoe, orca, and plankton. This is the critical zone in which we move and have our being. Latour (2017) writes that Galileo gave us a view of the earth from outer space, a universal view. Gaia brings us back down to earth, to the zone of our existence. Gaia is a membrane, a delicate envelope in which the most essential transactions occur (Latour 2017).

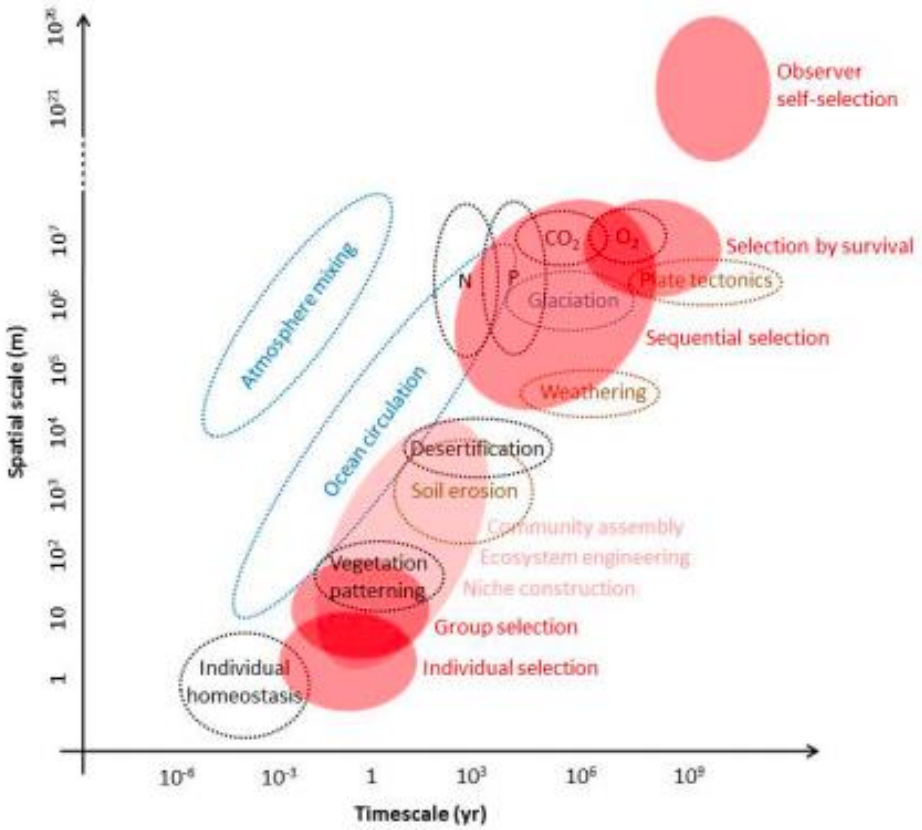

Figure 2 (Latour and Lenton 2019, 15) Space and timescales of Earth and Gaia processes. Some key Earth system processes are shown in blue (ocean-atmosphere) and brown (ocean-lithosphere). Examples of feedback mechanisms and regulated variables are shown in black.

Figure 2 shows some of the forces and systems which compose Gaia. The multiple events, forces, processes, tendencies, and reactions taking place at highly varied temporal, spatial scales include:

Survival by selection
Sequential selection
Group selection
Individual selection
Glaciation
Weathering
Desertification
Soil erosion
Ocean acidification
Climatic patterns
Vegetation patterning
Community assembly
Ecosystem engineering
Mixed construction
Atmospheric mixing
O2, CO2, P, N

Ocean circulation
Individual homeostasis
Plate tectonics
Greenhouse gas production
Pollution
Energy production
Volcanoes
The proverbial flap of a butterfly wing

These events, forces, processes, tendencies, and reactions explode any simple notion of a more-than-human world. They interact and influence each other, but there does seem to be a master control or some controlling system.

Margulis insisted that Gaia is not an organism. Haraway (2016, 229) describes her as "Naga, Gaia, Tangaroa, Medusa, Spider Woman." "Gaia is not reducible to the sum of its parts but achieves finite systemic coherence in the face of perturbations within parameters that are themselves responsive to dynamic systemic processes. (Haraway 2016, 92). She does not concern herself with our desires and needs, nor those of other living entities. Gaia is maker and destroyer, not a resource to be exploited or a ward to be protected or a nursing mother. Haraway does not want us to think of her as a person but as "complex systemic phenomena that compose a living planet" (Haraway 2016, 110). Even more radically, the idea of Gaia calls our existence into question because we have "provoked its brutal mutation that threatens both human and nonhuman livable presents and futures" (Haraway 2016, 113).

We should be wary of personifying Gaia because "far from being self-stabilizing, the Earth's climate system is an ornery beast which overreacts even to small nudges" (Latour 2017, 167). Gaia is a way of describing an enormous array of processes that both interact and pursue their paths. Latour (2017) sympathizes with Lovelock's struggles to describe such complex phenomena. It is necessary to follow myriad connections and pathways without being holistic. How do you define a system that is anti-systematic and, as Latour (2017, 72) asserts, "there is only one Gaia but Gaia is not One." Gaia throws into doubt the wholeness and integrity of older philosophies of nature (Latour and Lenton 2019). Gaia could be a complete shift in understanding how to approach phenomena that we once perceived as nature.

The Earth and the more-than-human world have become political agents, as we see with Gaia and in the next chapter with the Anthropocene. Gaia buries the illusion of a passive Earth with an endless supply of materials. As Latour (2018, 70) asks, “How are we to act if the territory itself begins to participate in history, to fight back, in short, to concern itself with us – how do we occupy a land if it is this land itself that is occupying us?” The Enlightenment idea that humanity and nature are separate entities is no longer tenable.

Chapter 5 – Relationality

> If ecology drives us crazy, it's because what we call ecology is in effect an alteration of the alteration in our relations with the world. In this respect ecology is both a new form of madness and a new way of struggling against the forms of madness that preceded it. (Latour 2017, 29)

This chapter has five subsections. It begins by investigating relationality which concerns how things link together, influence each other, cause events to happen, and create social bonds. Next is Latour's actor-network theory (ANT), which brings living and nonliving objects into dynamic relationships. The third section on actors and actants looks at the components that make up ANT. The fourth section is concerned with agency and the fifth section on the Anthropocene examines the relationship between human and planetary activity.

1. The concept of relationality

The concept of relationality is widely used, particularly in the social sciences and in feminist thinking, but it is difficult to find a suitable definition. Dictionary definitions are essentially tautological and define relationality as a state of being relational. Whipps and Lake (2017) state that feminists are "committed to an epistemology that is based in experience and relationality." They speak of knowers who are situated in their social environments. "Universalized ideals bankrupt ordinary experience and rob from philosophic thought the creativity of thinking with and through complex networks of experience and interaction."

Figure 1 (page 15) reminds us that relationships and interactions are central to the LFV concept. We see people receiving different contributions, living in diverse ways, relating to and being influenced by many elements in the surrounding circle. Thus, Figure 1 emphasizes the centrality of relationships. Haraway (2019) declares: "It's relationality all the way down." It is not a case of static objects that also have relations. It's more about the relations themselves. How does one object relate to another? What are the dynamics of their relationships? Can we follow the trail of relationality? "For Latour, entities are only their relations" (Wille 2014, 111). Latour's central interest is to follow these entities and their relationships.

The images of the body in figure 1 (page 15) apparently represent people. In a standard western interpretation, the body can be understood as a bearer of the self. In such a Weltanschauung, the self is the 'true' person inside the body. It is the self that has a relationship with the world. The real relationships, the actual, conscious relationships are between this self and others, or between subjects and objects. This self is the person, the independent individual, a person with free will. In standard subject-object dualism, the subject is almost inevitably human, often masculine, and the object is nonhuman and effectively passive. The subject apparently has free will, and the object apparently does not. The object contains nothing but instrumental value, which is granted by the subject.

The very notion of the self is problematic (Kuhn 2016). It implies some type of Cartesian dualism and immaterialism. Finding a neurological embodiment of this self has proven to be problematic. There does not seem to be a neural center to consciousness, and likewise, there is not, at least as it is known today, a neural correlate to the self. A Google search, for example, revealed no academic articles on a neural correlate of the self. Dennett (1991) takes the classical problem of the homunculus, which is a kind of stand-in for the self, and sarcastically rechristens it the "Cartesian theatre." His criticism is supported by neuroscience, which does not find a central processing unit or what Dennett, again sarcastically, calls the CIA of the brain. The problem of the self is not new and goes back at least to Buddha. Hume (1739, Section VI) famously writes, "For my part, when I enter most intimately into what I call myself, I always stumble on some particular perception or other, of heat or cold, light or shade, love or hatred, pain or pleasure. I never can catch myself at any time without a perception, and never can observe anything but the perception." A recent version of this is, "however one looks for it, this self is nowhere to be found. It cannot be seen amid the particulars of experience, and it cannot be seen when experience itself is viewed as a totality" (Harris 2014, 92).

My experience in meditation calls into question the classic nation of the self. Just as for Hume, I find that this self recedes from view and is not locatable. However, a sense of self is a perception that I cannot shake. It seems to be an underlying aspect of my self-narrative and my autobiography and appears to be a central part of human experience. The LFV implicitly

contains the idea of a self by including concepts such as identity, spirituality, experience, inspiration, and aesthetics. Thus, it is this self that is having these experiences and inspirations. O'Connor and Kenter (2019) conducted research with the UK Marine Ecosystems Research Programme on the West Coast of Scotland and the South West of England. Among other things, they sought out "articulated intrinsic values, to form shared social values around different marine policy options" (O'Connor and Kenter 2019, 1255). Here we find people relating to marine environments that include landscapes, geographical features, weather, and birds. I assume that each person thought of herself as having a self. It was this self that experiences the marine environment. But if there is not actually a self, if Buddhist thought, or Hume or neuroscience cannot establish this self, then who or what is doing the relating? Does relationality require a subject or a self?

"The expression' relation to the world' itself demonstrates the extent to which we are … alienated" Latour (2017, 23). Latour's attack on subject/object dualism is perhaps the key aspect of his thinking (Wille 2014, 109). "Dualism is the weak point towards which Latour sent wave after wave of attacks." Latour's metaphysics, unlike Descartes', derives not from méditations métaphysiques, but from the experience of everyday life. It is not a question of subjects and objects but rather of actors relating to and with each other. Drawing lessons from simian society, Latour (1996) notes that complex social structures can exist without humans. Thus, it is possible to study social interactions in primates without recourse to a notion of the self. Latour's actor-network theory concerns relationships and relationality but does not require a self.

2. Actor-Network Theory

Actor-network theory is a dynamic and highly influential methodology for describing relationality or relational ontology (Harman 2007). Latour's actor-network theory (ANT) describes the interactions between actants or actors, which can be both human and nonhuman. It accords power to nonhuman actors and thus adds new levels of relationality to the LFV concept. The actor-network theory expands the potential ontology of the more-than-human world and does not require people or subjects.

When Latour first used the term network, the World Wide Web was in its infancy, and so network had a different meaning from today. “At the time, the word network, like Deleuze’s and Guattari’s term rhizome, clearly meant a series of transformations-translations, transductions – which could not be captured by any of the traditional terms of social theory” (Latour 1999, 16). Social science is caught between the pull of the micro-level and the tug of the macro level. Macro-interactions are formed by forces such as society, values, culture, and social context. But these forces can seem too abstract and so one returns to the flesh and blood. Then the micro-level turns out to be just as abstract. “ANT is simply a way of paying attention to these two dissatisfactions, not … to overcome them or to solve the problem, but to follow them elsewhere and to try to explore the very conditions that make these two opposite disappointments possible” (Latour 1999, 17). Latour (1988) asserts that we can better explain both ‘science’ and ‘society’ by analyzing the relations among forces.

Law (1999, 3) regards ANT as a relentless attack on standard categories and concepts. “Truth and falsehood. Large and small. Agency and structure. Human and nonhuman. Before and after. Knowledge and power. Context and content. Materiality and sociality. Activity and passivity…all of these divides have been rubbished in work undertaken in the name of actor-network theory.” Latour does not assess actors according to a priori dualisms and hierarchies. He describes ANT as a “very crude method to learn from the actors without imposing on them an a priori definition of their world-building capacities” (Latour 1999, 20). Instead, ANT looks at how actors mobilize other actors and form networks with influence. Latour uses the tools, methodologies, and thought patterns of an anthropologist to study scientists in action, in labs, institutes, government departments, boardrooms, and funding agencies (Cressman 2009). ANT “challenges deep-rooted ideas concerning the operation of science and technology. Among other things, it questions the notion that scientific facts or technological artifacts may be purely scientific and technical since the process of their creation is always messy, full of ‘impure’ elements and contingencies” (Vicsek *et al*. 2016). Latour seeks to follow the actions of his actors within this complex web of networks. As an anthropologist, he is as interested in what they do as in what they say about their work. Kofman (2018) writes that Latour’s colleagues “were taken aback by a series of black-and-white photographic slides depicting scientists on the job, as though they were chimpanzees. [Surely] scientists were the only ones who could speak with

authority on behalf of science; there was something blasphemous about subjecting the discipline, supposedly the apex of modern society, to the kind of cold scrutiny that anthropologists traditionally reserved for 'premodern' peoples."

Adopting an ANT perspective means describing the forces that human, bacterial, ideological, political and technological actors, to name some of the possibilities, exert on each other in socio-technological networks (Latour 2005). Actants can also include ideas, objects, processes, and materials. Society is composed of more than people; microbes also intervene and act.

> We are in the presence not just of an Eskimo and an anthropologist, a father and his child, a midwife and her client, a prostitute and her client, a pilgrim and his God... In all these relations, these one-on-one confrontations, these duels, these contracts, other agents are present, acting, exchanging their contracts, imposing their aims, and redefining the social bond. Cholera is no respecter of Mecca … it enters the intestine of the hadji (Latour 1988, 35).

Nonhuman elements are equally important within the network (Cressman 2009). The identity of both human and nonhuman actors is defined through their interaction. "An actor-network is simultaneously an actor whose activity is networking heterogeneous elements and a network that is able to redefine and transform what it is made of" (Callon 1987, 93). There is thus, a kind of ontological flattening or leveling. ANT is not so much concerned with mapping interactions between individuals as in mapping their roles and mobilizing others (Law and Callon 1988). ANT transforms a flat social terrain into a circulation (Latour 1999).

ANT argues that these heterogeneous networks can describe people, technologies, organizations, nature, and politics (Cressman 2009). "For Latour, the isolated Kantian human is no more and no less an actor than are windmills, sunflowers, propane tanks, and Thailand" (Harman 2009, 14). ANT is empirical in its approach, and so rejects formless, mysterious entities such as Adam Smith's Invisible Hand (Waelbers and Dorstewitz 2014). Nature, in its vastness and indefiniteness, can become a formless, mysterious entity, and so it is better to avoid it as an explanation. Better to explain instead "by the concrete drama of translations between specific actors" (Harman 2009, 46).

A range of ramifications grows out of ANT. No simple duality can adequately describe a network. Dualities are themselves problematic and often create false dichotomies. Many aspects of the more-than-human world do not involve humans, and relationality includes nonhuman actors. Humans do not have a privileged position within ANT and ANT's flattened ontology dissolves hierarchies. Science and scientific processes cannot be adequately explained in scientific terms but should be empirically evaluated.

"ANT has the advantage of taking seriously the hybrid nature of our world" (Coeckelbergh 2009, 69). We "still think too much in terms of properties rather than social relations; we generally do not perceive and acknowledge the co-operative links between humans and non-humans" (Coeckelbergh 2009, 83). Thus, Coeckelbergh urges us to take more account of dependency and cooperation with nonhumans and to include nonhumans in our conceptual frameworks.

3. Actants and Actors

The dynamic element within ANT are the actors or actants. These are the persons or objects that are in degrees of relationality with one another. Latour does not seem to make a rigorous distinction between the terms 'actor' and 'actant.' There seems to be little limit to what can be called an actant or actor. "An actant is a source of action that can be either human or nonhuman; it is that which has efficacy, can do things, has sufficient coherence to make a difference, produce effects, [and] alter the course of events" (Bennett 2010, 11). Latour dissolves the boundaries between science, politics, nature, technology, and culture. Actors or actants can be artificial, human, animal or even fictional. Sherlock Holmes, for example, causes film crews and actors to transverse the world and spend millions of pounds making movies and television shows. We could potentially calculate the carbon footprint of the famous fictional detective. The only thing required to be an actant is to have some kind of effect on other actants. The essential question is impact, with no other distinctions or qualifications. Actors are defined by their relations, by how they transform, modify, perturb, or create new actors (Harman 2014). There "is no difference between hard kernels of objective reality and wispy fumes of arbitrary social force.

Everything that exists must be regarded as an actant. Metaphysically speaking, all entities are on the same footing" (Harman 2007, 33). Everything is revealed in duels and negotiations among the actors. Before actors acquire a style or a genre, they must be "brewed, mashed, and concocted in the same pot. Even the most respectable entities—characters in novels, scientific concepts, technical artifacts, natural features—are all born out of the same witches' cauldron" (Latour 2014, 13).

Objects, entities, things become lively, active, reactive, and interactive. "Things in themselves lack nothing" (Latour 1988, 193) and no longer require an Adam to name them (Genesis 2:19). Things can be hyenas, hay weed, lava, Covid-19, or black holes. Things do not require human thought or consciousness to give them agency, and Latour mocks human pretension in this regard. If objects are reduced to nothingness, "they beg you to be conscious of them and ask you to colonize them. Their life hangs by nothing more than a thread, the thread of your attention... Without you 'the world,' as you put it, would be reduced to nothing. You are the Zorros, the Tarzans, the Kants" (Latour 1988, 193). We know that humans affect nature, but it is harder to acknowledge that the nonhuman affects human culture. But we must accept the "blasphemous idea that nonhumans—Trash, bacteria, Stem cells, food, metal, technologies, weather—are Actants more than objects" (Bennett 2010, 275). "The world is constructed at each moment out of many actants, and they can … be made of cement or geometric solids [or] human conspiracies" (Harman 2009, 44).

Viruses fit in seamlessly with Latour's understanding of actors, agents and ANT. There is no self, no subject, only an object, but an object that can have powerful, even if unintended, agency. In fact, to speak of intention, demonstrates our conceptual quandaries. Covid-19 seems to have moved from bats to animals such as chicken then to humans in the wet markets of Wuhan (Newey and Gulland 2020). Relationality, agency and actants operate on a global scale. Covid-19 is not social but spreads by social forces, such as droplets from coughs or sneezes. The actants here include proximity, the human respiratory system, and the physics of mucus expulsion. Humans spread the disease, but so do door handles, tissues, and toilet seats. Subways, trains, and airplanes also play their roles. Degrees of political control, the calculations of politicians, public health structures, the news media, internet memes, television reports, the flow of blood in the wet

markets, viral mutation, meat cleavers, sex, and football games can count as actants. The weather, municipal water supplies, and poverty are also players. According to Forbes (Tucker 2020), the microscopic Covid-19 is causing 75 companies to file for bankruptcy. Taking 'c' for coronavirus as a cue, the list of companies includes the Italian restaurant chain Carluccio's, Centric Brands, an apparel manufacturer, CMX Cinemas, trucking conglomerate Comcar Industries, fast casual restaurant chain Cosi, and restaurant franchisor CraftWorks. Actants ranging in size from viruses to national economies interact, combine and mutate in thousands of directions. Relationality from the microscopic to the macroscopic levels drives everything from unemployment to masks floating in the Mediterranean Sea.

Latour's actors continue to enlarge our picture of the more-than-human world. The number and kind of actors grows, perhaps even exponentially. The network, with its infinite interactions and surprising emergent properties, has an unpredictable life of its own. ANT enlarges our understanding of what matters and what we must consider. ANT is a relational ontology in that it foregrounds relations and connections. It is also an epistemological approach in giving agency to nonhuman actors.

4. Agency

ANT, as we have seen, provides dynamic roles for non-human actors. The LFV, as portrayed in Figure 1 (page 15), assigns agency to the humans at the center but ANT expands the possibility for agency and influence. Agency is an essential concept in political theory, and the concepts of political theory often bleed, unconsciously in many cases, into scientific frameworks. Latour is at pains to connect the scientific and the political, often in ways that discomfort both sides. Gabrielson (2016) sees agency as a central concept that characterizes the ideas of the Western citizen who is a reasoning, independent, and autonomous agent. In standard political theory, 'nonagents,' such as children, animals, the nonhuman, the cognitively disabled, and future generations, require guardianship and representation. Someone must speak for them. Without language, they lose agency. But Gabrielson views this as an impoverished concept of agency. This concept considers that action only occurs in passive environments. It exaggerates the power and efficacy of the individual and undervalues the power and effectiveness of the environment.

Gabrielson goes on to describe this Lockean self as a wanting thing. This agent is acquisitive, socially disconnected, and individualistic. I would argue that this kind of agent would, then, be effectively blind to intrinsic and relational values. It would be akin to homo economicus, who persistently pursues rational self-interests and makes decisions on an instrumental basis. Both the LFV and ANT reveal an active environment, an environment that is anything but passive but is instead highly relational and may not even include human agents. This kind of agency, thus, differs from both standard political theory and classical economic theory.

An agent can be the Streptococci bacteria that cause milk to spoil (Latour 1988). Clearly, the bacteria do not intend to commit an action, but commit the action they do. We cannot avoid using verbs that suggest agency and intentionality. We say that the computer doesn't want to turn off or that the virus kills people. The discovery that certain microbes cause milk to spoil seems to be a triumph of science. A scientist, namely Louis Pasteur, discovers the cause of an effect: Streptococci bacteria. But, Latour (1988) demonstrates how these microscopic actants became embedded and entangled in a transformation of public health. "Hygienists, biologists, surgeons, sanitary engineers, veterinary surgeons … medical doctors, and military doctors, as well as tuberculosis, cholera, diphtheria, tetanus, yellow fever, rabies, and the plague, all move according to different paths" (Latour 1988, 20). Newtonian, billiard-ball causality disappears and reemerges in a tangled profusion. I would cite the example of the AIDS virus, which take us from primates in Africa, to gay baths in San Francisco, to Republican politics, to DNA, to airline stewards, to truck routes in Africa, to pharmaceutical companies, to drug cocktails, and to tissue culture.

Haraway (2016) writes about the synthetic estrogen DES (diethylstilbestrol). The first-generation users of DES have increased mortality rates from breast cancer. Their daughters, the second-generation offspring, develop dangerous vaginal and breast cancers. They also have other problems such as abnormal pregnancy outcomes and infertility. Haraway (2016, 200) writes of the "relentless rise of hormonal growth promoters of the next molecular generations that are integral to the ecosystem-destroying, human and animal labor-transforming, multispecies soul-mutilating, epidemic-friendly, corn monocrop-promoting, cross-species heartbreaking, feedlot cattle industries." In one kind of reductionist narrative, HIV and DES are the causal instigators,

but such a story ignores their entanglements and their networked effects. DES and HIV are further representatives of the more-than-human world. The discoveries of DES and HIV are scientific milestones, but they cannot be adequately understood except in the context of a complex network that includes many nonhuman agents.

ANT gives agency to its actors or actants, and the nonhuman actants are no longer mere objects, passively receiving the actions of human subjects. They have taken on agency and exert force within complex networks. Gabrielson (2016, 404) writes that "the nonhuman natural world is not a passive resource or object, but a key participant or 'actant,' as Latour defines it, in a 'dance of agency' that includes the human, nonhuman nature, and artifacts." On the view of materialists, agency is "not as an attribute of the subject, but [is] widely distributed, temporally emergent, and collectively expressed" (Gabrielson 2016, 405). Here we see a further expansion of the more-than-human world. We see a range of nonhuman elements with agency and the ability to penetrate the human domain. The borders between the human world and the nonhuman world become even more porous as the possibility for nonhuman agency increases.

If objects have vitality and agency, it is easier to assign them intrinsic and relational value. Disch (2016, 630) calls this extension of agency "object-oriented democracy." She takes this metaphor further by writing of the "capacities of things to facilitate, inform, and organize citizenship and engagement" (Disch 2016, 626). Newtonian mechanics and mechanical Neo-Darwinist evolution created a world of determinism that denies agency to materiality (Rubenstein 2018). But ANT restores agency and undermines determinism. In a complex, interactive network, it is not possible to follow clear paths of causality. "A lot happens to the concept of agency once nonhuman things are figured less as social constructions and more as actors" (Bennett 2010, 76). Agency is no longer localized in humans and only produced by human efforts. Instead, it is spread across an ontologically heterogeneous field with interactions occurring between diverse actants, many of whom are not human (Bennett 2010). ANT gives real power to nonhuman forces and challenges human narcissism. Oddly, ANT humanizes the nonhuman by giving it real agency. The LFV puts humans center stage, but ANT can move them backstage or even offstage altogether. It is easier to grant value to the nonhuman if the nonhuman is seen as active, dynamic, vibrant, and even willful.

5. Entanglements

Entanglement is a popular word in the current academic discourse, but it has odd implications. You could have romantic entanglements, or you might be entangled in a spider's web. Entanglement has a slightly negative connotation and you might prefer to be free from entanglements. Entanglements suggest two discrete entities, a spider and a fly, perhaps, engaged in a murderous dance. Entangle has to do a lot of work. I understand it to refer to flows, exchanges, permeable boundaries, lack of limits, non-dualistic and non-hierarchical systems. It is osmotic, multi-disciplinary, non-binary, fluid, dynamic, non-static, category breaking, un-cageable, messy, non-reducible. Entanglements require a departure from standard categories and systems of organization to reconceptualize the nonhuman and the more-than-human world. This is not unproblematic. Science derives much of its power from dividing and conquering, establishing dependent and independent variables, determining causality. Entanglements thrust us back into the hurly-burly of an undifferentiated, non-deterministic mess.

Entanglement challenges dualities but these dualities, these opposites, these dichotomies, these categories influence and construct our Weltanschauung. Even more so if they appear to be natural or obvious or logical. Blurring these boundaries can be upsetting and unsettling. Haraway (1991) maintains that biology and evolution have increasingly dissolved the human/animal boundary. Removing the clear separation between animal and human yanks us from an exalted throne in the great chain of being and entangles us in a sticky web of earthbound existence.

Haraway speaks of entanglements, entwining, interconnections, messy agency, and riotous assemblages. DES connects "corporations, farms, clinics, labs, homes, sciences, technologies … multispecies lives are entangled in multiscalar, multitemporal, [and] multimaterial worlding" (Haraway 2016, 210). DES is urine, "urethras, damaged heart valves, 'abnormal pregnancy outcomes… cancer-ravaged breasts and uteruses" (Haraway 2016, 233). She connects language and hormones. "Conjugated estrogens are about yoking molecules and species to each other in consequential ways." (Haraway 2016, 236). The concept of entanglement suggests new ways of thinking about population genetics in domains such as "embryology and development, symbiosis

and collaborative entanglements of holobionts and holobiomes, the vast worldlings of microbes, and exuberant critter biobehavioral inter- and intra-actions," which could lead to "transdisciplinary biologies and arts … tying together human and nonhuman ecologies, evolution, development, history, affects, performances, technologies, and more" (Haraway 2016, 122-23).

Thinking in entanglements leads to innovative conceptions of categories. Bacteria pass genes back and forth and do not resolve into well-bounded species, giving the taxonomist headaches. "The creative force of symbiosis produced eukaryotic cells from bacteria. Hence all larger organisms—protests, fungi, animals, and plants—originated symbiogenetically. But the creation of novelty by symbiosis did not end with the evolution of the earliest nucleated cells. Symbiosis still is everywhere" (Haraway 2006, 112). Bacteria are lateral gene exchangers and do not submit to precise speciation. Haraway questions whether species reflect actual organic entities or are instead taxonomic conveniences used by biologists. The concept of neatly divided species suggests that we are still in the tidy taxonomic world of Linnaeus. But entanglement scrambles the contents of the previously well-ordered taxonomic categories.

When we think of ourselves and our bodies, we think of insides and outsides. We make a sharp distinction between the self and the world, but this is an illusion. The environment, this Umwelt, crosses the mucous barriers of the body and the permeable skin. Each breath is an exchange between this illusory 'inside' and 'outside.' The dynamic processes change us and shape how the body develops, grows, and lives. Our bodies are themselves dynamic systems that respond to social, historical, and biological changes. The microbiome does violence to simple cause and effect, subject and objects relationship. We are made up of over 100 trillion microbes, which outnumber human cells ten to one. The microbiome is composed of the bacteria, fungi, protozoa, and viruses that live on and inside the human body (Hair and Sharpe 2014). We depend on the microbiome and its symbiotic co-existence within and in us. Physical growth, health, and well-being all depend on the microbiome, which, like so many other objects, surpasses our efforts to define or circumscribe it. The microbiome means that the more-than-human world is not just out there. The more-than-human world is in us.

Soil entangles the biotic and the abiotic. In modern agriculture practice, soil is taken to be the passive basis for producing crops. If it is insufficiently productive, it can be treated with chemical nutrients. But Krzywoszynska (2019) writes that soils are ecosystems in which distinctions between 'alive' and 'lively' are problematic. She urges us to break down the artificial barriers between above- and below ground ecosystems, between physics, chemistry, and soil biota. Soil is a crucial living ecosystem. 'Dirt' turns out to be a dynamic, entangled world that dissolves organic and non-organic boundaries. Soil is "less of an isolatable entity than continuous, relational movement" Lyons (2014, 229).

Entanglements produce endless emergent properties and bizarre outcomes. The parasite Toxoplasma gondii can make cat urine, usually a potent fear inducer, into an attractive 'perfume' and a recipe for radically shortening a rat's life. The parasite rewires the rat's brain and affects primal emotions such as fear, anxiety, and sexual arousal. Contact with felines may also change human behavior and cause everything from car wrecks to schizophrenia. The resistance to such a notion, to dancing to the tune of a parasitic marionetteer is, to say the least, significant (McAuliffe 2012). To the extent that Toxoplasma gondii infects and affects the human brain, it is a blow to the conception of free will emanating from a relatively independent and inviolable self.

Latour (1993) describes a newspaper article that links esoteric science, sordid politics, distant atmospheric conditions, a suburb of Lyon, global climate change, and local elections for a town representative. Entanglements create strange, unexpected offspring. A slag heap in northern France, which was an eyesore and a reminder of worker exploitation and lung disease, is suddenly reclassified as an ecological preserve. Why? This monstrosity promotes the flourishing of rare flora (Latour 1993).

The concept of entanglement underscores the power of actants and their agency. Entanglement provides a more dynamic epistemology than conventional dualisms. It essentially eliminates simple dualisms, such as subject and object or nature and culture or human and nonhuman. These boundaries, these apparently neat barriers, dissolve into a flux of interpenetrating tentacles, multi-dimensional networks, intertwined root, and branch systems.

6. The Anthropocene

The Anthropocene takes in humanity as a whole and considers its effect on the Earth's geological systems. The Anthropocene puts the relationship between human beings and the earth at the center of the discussion. The nature of this relationality, its effects, impact and its meaning are at the divisive core of this discourse. The Anthropocene is both a potential geological epoch and a hotly debated cultural concept. The concept marks severe discontinuities. "What comes after will not be like what came before" (Haraway 2016, 186). Like Gaia, the Anthropocene demands further expansion of the ontology of the more-than-human world. The impact of individuals and small groups, which the LFV highlights, is relatively insignificant. It is the effect of large segments of humanity, particularly the industrialized countries, that is re-shaping the planet and leading us into a new geological age. Relationality at massive scales is the issue. Both Gaia and the Anthropocene raise questions of how we are to move conceptually from the small groups, that we can understand, to a scale that we cannot easily comprehend.

The Geological Society of London is apparently still considering whether to officially adopt the Anthropocene. "Recognition of intimate feedback mechanisms linking changes across the atmosphere, biosphere, geosphere and hydrosphere demonstrates the pervasive nature of humankind's influence, perhaps to the point that we have fashioned a new geological epoch, the Anthropocene" (Waters *et al*. 2014, 1).

> The Anthropocene …may become the most pertinent philosophical, religious, anthropological, and … political concept … [T]his oxymoron linking geology and humanity [is] the product of the cogitations of serious geologists who, until recently, had been totally indifferent to the ins and outs of … human and social sciences. No postmodern philosopher, no anthropologist, no liberal theologian, no political thinker would have dared measure the influence of humans on the same scale as rivers, volcanos, erosion, and biochemistry. (Latour 2017, 279)

The validity of the concept is hotly debated, and it has both friends and foes. The wilderness deniers, for example, are ready to embrace the Anthropocene as a pragmatic and realistic description of our present state. Its critics, on the other hand, are inclined to view the

Anthropocene discourse as an indication of our profound dilemmas, as an indicator of how vaunting human arrogance and hubris has brought us to this perilous situation.

There are many narratives of the Anthropocene and as the concept grows in acceptance, the variety of narratives will probably increase. Haraway (2016, 102) writes, "I am aligned with feminist environmentalist Eileen Crist when she writes against the managerial, technocratic, market-and-profit besotted, modernizing, and human-exceptionalist business-as-usual commitments of so much Anthropocene discourse." Crist (2013) argues that those who embrace the Anthropocene expect human population to grow until it reaches a level of something like 10 billion. They assume that consumer culture and economic growth will continue to be the social models. They maintain that wilderness is gone and that we live on a domestic planet. They argue that we should set aside catastrophizing narratives and embrace an optimistic attitude towards a humanized planet that requires the use of technology, industrial-scale systems and geo-engineering. Human impact is 'natural,' and we must employ a managerial mindset to actively guide the Earth's natural systems. As Brand (2009) said, "we are as gods and have to get good at it." Crist (2013) argues that those who embrace the Anthropocene do not scrutinize the legacy of human domination, let alone seek to abolish it.

Haraway has no doubt that anthropogenic processes have effects at the planetary level and says these effects go back tens of thousands of years. The consequences of a few thousand years of agriculture are more significant and cause "inter/intra-action with other processes and species" (Haraway 2016, 159). This continues her theme of entanglements and the dissolution of clear human/nonhuman boundaries. She writes that the "extraordinary burdens of toxic chemistry, mining, depletion of lakes and rivers under and above ground, ecosystem simplification, vast genocides of people and other critters … threaten major system collapse after major system collapse after major system collapse" (Haraway 2016, 160). But, although her worldlings are contaminated hybrids, strange products of natureculture, "there can be an elsewhere, not as utopian fantasy or relativist escape, but an elsewhere born out of the hard (and sometimes joyful) work of getting on together in a kin group" (Haraway 2004, 77).

Haraway (2016) proposes other names for the Anthropocene, including the Plantationocene, the Capitalocene, and the nearly unpronounceable Chthulucene. This Chthulucene, "burdened with its problematic Greek-ish rootlets, entangles myriad temporalities and spatialities and myriad intra-active entities-in-assemblages—including the more-than-human, other-than-human, inhuman, and human-as-humus" (Haraway 2016, 186). Haraway argues that more than one name is warranted because of the speed, scale, complexity, and synchronicity of the Anthropocene. It is essential to ask when "changes in degree become changes in kind, and what are the effects of bioculturally, biotechnically, biopolitically, historically situated people (not Man) relative to, and combined with, the effects of other species assemblages and other biotic/abiotic forces" (Haraway 2016, 159).

Some argue that the plantation system is the precursor to capitalism, which is Haraway's rationale for the Plantationocene. Tsing (2012, 148) claims that the plantation system "made navies, science, and eventually industrialization possible." Plantations raise one crop, such as sugar or cotton, and are embedded in complex international trading systems. The agricultural workers on plantations are not owners; they are imported from other areas of the world and were often slaves. The European owners introduced "cultivation through coercion" (Tsing 2012, 148). The plantation laborers relate to the plantation land in a way quite different from a farmer. For the laborer, the relationship is exploitive. For Tsing, the crucial missing relationship is love and a romance that connects people to plants and places, which is an argument for intrinsic values. The plantation is a harsh foreign world to the laborers, who are often men taken from their families. The cotton plantation system in the American south, based on enslaving African peoples, is one of many egregious examples of this practice. The growth of oil palm plantations (LCLUC 2009) in southeast Asia today may not involve slave labor, although it often involves military oppression, but it is a continuation of a monoculture that destroys complex rain forest biome systems and has made Indonesia the world's fourth-largest producer of carbon dioxide (Dunne 2019). The structure of plantations is intimately tied to globalization, and so both names, the Plantationocene and the Capitalocene are appropriate. Results include the increase of CO_2 in the atmosphere, changes in weather patterns, the destruction of tropical rainforests, and the loss of biodiversity.

The Anthropocene results from an inconceivable number of human actions, decisions, cultural practices and ethical perspectives. Morton (2018, 67) compares our time to the Victorian age in which humanity's sense of place in the world was shaken by Darwinian evolution and Freud's discovery of the unconscious. The "unconscious, unintended consequences of our faith in progress … A 12,500-year-long social, philosophical, and psychic logistics is now showing its colors, and they are disastrous." Identifying underlying intrinsic values and relational values at the level of large social groups is one tool to counter the destructive aspects of the Anthropocene. One driver of the Anthropocene is our desire for a continual growth economy. Governments across the globe focus on GDP growth, and so a rough measure never meant to convey the economy as a whole (Sims 2005) has become a standard metric for political failure or success across the globe. The great acceleration has brought staggering growth (Maddison 1995 and Shane 2104), but with that has come a comparatively massive increase in environmental destruction (Alkemade *et al*. 2009 and Brink *et al*. 2010). Latour (Watts 2020) says that we "should remember that this idea of framing everything in terms of the economy is a new thing in human history. The pandemic has shown us the economy is a very narrow and limited way of organising life and deciding who is important and who is not important. If I could change one thing, it would be to get out of the system of production and instead build a political ecology."

This chapter attempts to demonstrate the deep relationality and connectedness between people, ideas, objects, and natural forces. The human world and the more-than-human world may themselves be inadequate categories. Older conceptual frameworks granted agency to humans alone but ANT, the Anthropocene and Gaia point to more complex, dynamic systems.

Chapter 6 – Ethics and Values

This chapter returns to the question of values and ethics. It takes up the theme of instrumental values, which Haraway does not necessarily condemn. It looks again at intrinsic values, which may relate to sacred values and supports aesthetic, supporting identities and spirituality which are included in the living in and living as portions of the LFV. I attempt to uncover some of Haraway's major ethical concerns, which leads to a discussion of animal ethics and questions concerning her position on that topic. The final portion of this chapter is an attempt to discover a Latourian ethics. A prominent candidate is sensitization, which I attempt to unpack.

1. Instrumental Values

O'Connor and Kenter are concerned that ES and NCP may be too focused on instrumental values. If these approaches are taken too far, it could boil down to the crude formula: no price equals no value. An approach focused on instrumental values can be unidirectional and concerned only with what nature brings to people. The ultimate result of this can be the commodification of nature.

Haraway, however, does not view instrumental relations as inherently problematic and does not categorically condemn them. Haraway (2008, 74) writes that "to be in relation of use to each other is not the definition of unfreedom and violation." Terranova (2019) shows footage of Haraway with her dog Cayenne Pepper competing in the sport of agility. Both participants appear to be passionately involved, both participants are critical to the sport, and there does not appear to be instrumental misuse. Both human and canine are essential in this pairing, that involves play but much more than that. "The epistemological value of the performative sport of agility … lies in revealing the dog's mind, transparent and alive in ways that cannot be ignored within a 'reciprocity of inductions', a coordination of movements, and the shared emotional wavelengths of joy, disappointment, excitement, listlessness, enthusiasm, and the like" (Crist 2010, 645). Ontologically, Haraway speaks of becoming with others and symbiogenesis occurs in both social and biotical worlds. Haraway advocates co-flourishing and this, it seems to me, blurs the boundaries between subject and object and hence between instrumental and intrinsic.

2. Intrinsic values

O'Connor and Kenter (2019, 1254) argue that a "strong objective concept of intrinsic values provides advantages regardless of whether one takes a virtue-based, consequentialist, deontological or another ethical approach." This desire to accommodate several ethical theories could be regarded as openness or as trying to have one's cake and eat it too. But since their goals are pragmatic, rigorous philosophical distinctions may not be required. Kenter (2018, 43) writes that "using highly abstract (e.g., instrumental, intrinsic) or ill-defined (e.g., relational, sociocultural) terms, is not an effective means of communicating values to non-academics." It is not clear what Kenter means by ill-defined relational or sociocultural terms. Kenter (2018, 42) notes that "values are not necessarily held in a preformed way by individuals, waiting there to be measured, but may need to be formed through a social process of informal or formal deliberation and expression, potentially resulting in shared or social value." So, one aspect of making intrinsic values work is to ask people to articulate these values. This can come through narrative and seeing oneself in a network of relationality and contributions.

Opponents of intrinsic values argue that intrinsic values merely reflect beliefs and attitudes, in other words, that they are essentially subjective. To assert their existence as independent entities may require a belief system, perhaps even a religious belief system. Because intrinsic values are more felt and intuitive than explicitly stated, they can be like the response to a great piece of art. But this raises questions. Is the Taj Mahal actually a magnificent work of art, or is this merely a collective agreement, a popularity contest? Is there something intrinsic in the Taj Mahal that makes it a superb work of art? If so, what is that intrinsic 'stuff?' Is there an objective way to determine the intrinsic value of the Taj Mahal? The same problem arises with natural or wilderness sites. The claim that the Grand Tetons have intrinsic value is to request or even demand acquiescence. It is easy to establish that millions find the Grand Tetons splendid or awe-inspiring or worthy of preservation for future generations, but to say that they have intrinsic value is more difficult to establish and can seem in the end to be subjective.

Moore (1922) writes that the term 'subjective' is desperately ambiguous. Calling something beautiful "merely expresses a psychological assertion to the effect that some particular individual or class of individuals either actually has, or would, under certain circumstances, have, a certain kind of mental attitude towards the thing in question" (Moore 1922, 28). This, in short, is the problem that every claim to an intrinsic value must wrestle with. When we attempt to establish intrinsic values, we would like to offer solid proof. We want to have something objective, something that is not merely based on feelings and emotional attachment. To a certain degree, intrinsic values are like sacred values. We would like our sacred values to be acknowledged by others. We want others to acquiesce and join us in our beliefs. So, is there something that separates the sacred from the intrinsic? It seems that there is, but that's not an easy distinction to clarify. Millions of Muslims make a pilgrimage to Mecca because it has sacred value. Does this suggest that it might also have intrinsic value? Perhaps there is a Venn diagram-like overlap between the sacred and the intrinsic. Or maybe there is family resemblance in a Wittgensteinian sense.

Intrinsic values can grow out of a strong attachment to a familiar place. Such placees may not seem spectacular or even noteworthy to other people. It does not need to be the Taj Mahal or Mount Fuji. The German word Heimat is often associated with place. It is not easily translated into English and has different meanings for different German speakers. Typically, it would be an attachment to a local area with its people and customs, but it could be more diffuse and connected to a dialect or local customs or folk music. For a person who experiences this kind of Heimat, these experiences and emotions may be deeply significant. In giving it some greater worth, something like intrinsic value, even if that is not expressed in philosophical terms, she is giving it more weight and significance. In this sense of Heimat, "the capacity to appreciate the natural world and to care for other species requires us to sustain particular environments" (O'Neil *et al*. 2007, 471-72). For important things, we want to see them as having external validity and not be merely a question of predilection or preference. Preferences can be ephemeral and personal. In cases that are particularly important to us, we want to establish more heft, more meaning and, importantly, we want other people to share this sense.

From the perspective of environmental hermeneutics, we can observe that relationships and experiences of a particular environment lead to narratives that express understanding and increase identification with that environment (Drenthen 2016). It is possible, of course, to have a relationship with something without attributing intrinsic worth to it. In fact, relationality is neutral, and a relationship can be negative, for example a master slave relationship. Therefore, a further step is required. The attribution of intrinsic value is an attempt to give that relationality more significance. It is an assertion that there is something in that thing itself is not reducible to instrumental value. It is an assertion that the thing has more significance. When speaking of nature, we use words like awe, wonder, and love. These feelings contain relationality, but relationality may seem neutral and lacking in emotional depth. Powerful emotions like awe and love demand greater validation, and hence the notion of intrinsic values is compelling. Intrinsic values seem to be related to sacred values, perhaps also to honor and duty. We think of love within the context of a family as having intrinsic value. This kind of intrinsic value may not be reflected in the quality of the relationships. In other words, the relationships within a family can be strained or painful and yet we attribute intrinsic value to these familial relationships. For Naess, when "we consider ourselves and our family and friends to have an intrinsic value, the widening identification inevitably leads to the attribution of intrinsic value to others. The metaphysical maximum will then involve the attribution of intrinsic value to all living beings" (Naess 2011, 228).

3. Harawayan Ethics

Haraway wants to stay with the trouble and to avoid "Big Principles, Ethical Universals, and Grand Theory in favor of messy engagements [and] 'imaginative politics" (Crist 2010, 643). By paying attention to specifics, to relationships, to entanglements, Haraway keeps us in the moment, so to speak and avoids abstractions that level, flatten, and remove details. Haraway maintains that we "have the habit of mind of going for a theory of everything very fast, and we need to uncultivate that habit" (Denvir 2019). She says that ethics "are often proposed as lists of rules with what is good and bad known in advance. Or a kind of sorting of the good from the bad in a series of principled actions" (Denvir 2019). The problem here is that a framework is established a priori and then applied to particular situations. This implies that we know

beforehand what shapes and forms will be taken. Haraway prefers, instead, to regard ethics as an inquiry. She argues for the cultivation of openness and the capacity to respond. We have to cultivate this openness because we are "in a historical conjuncture in time [and] place … where we don't know in advance what is to be done, where we are inquiring with each other how to respond to the urgencies and double deaths, the killing of ongoingness, that we find, non-optionally, ourselves to be part of" (Denvir 2019).

This accords with her focus on situated knowledge, relationality, and care. "It should therefore be the job of all of our stories to remind us of how terribly contingent each one of them is" (Denvir 2019). The focus on stories suggests the particularity of a situation and not its universality. Stories are, by their very nature, more open to interpretation. Haraway's stories suggest contingency and the fact that things could turn out otherwise. Haraway states that she has never been a humanist and that we live in a nonhuman world. "There are a lot of people who think that the most fabulous things about the world are the other critters" (Williams 2009, 154). Haraway wants us to understand that we have a shared, post-human condition and that this includes hybrid objects, mixed breeds and objects composed of technology, genes and intraspecies attachments (Haraway 2008). Hankins (2015, 354) writes that "for Haraway, the question of ethics then becomes the question of recomposing the isolated, autonomous ethical subject within an expanded sphere of attachments, natures, and cultures."

Perhaps as a result of her self-acknowledged allergy to abstractions and universalizing, it is not possible to label Haraway's thinking with standard ethical categories. Her writings, however, give clear indication of passionate involvement with moral and political problems, so it may be helpful to look at some of the issues that engage her. Her "attention is centered on the extermination and extinction crises happening at a worldwide level, on human and nonhuman displacement and homelessness" (Haraway 2019). She writes that "extractivism and exterminationism …come from a situated historical conjuncture of about five hundred years in duration that begins with the invention of the plantation and the subsequent modeling of industrial capitalism. It is a situated historical conjuncture that has had devastating effects even while it has created astonishing wealth" (Haraway 2019). She opposes the "managerial, technocratic, market-and-profit besotted, modernizing, and human-exceptionalist business-as-

usual commitments of so much Anthropocene discourse" (Haraway 2016, 102). Haraway opposes the use of instrumental values to modify nature and continue the practices of colonialism" (Whyte and Cuomo 2016).

4. Animal ethics

The more-than-human world contains nonhuman animals, and so our ethical relationship with them is significant. Latour, O'Neil, and Kenter and do not write about animal ethics. For Haraway, however, our relationships with animals is a central topic. What then is her position on animal ethics and, in particular, on factory farming?

Haraway shows clear awareness of issues surrounding factory farming, but it may be helpful to summarize the major problems with the industry. Anthis (2019) estimates that over 90% of the animals farmed globally live in factory farms. The United States Department of Agriculture (USDA 2018) reports that 33 million cattle, 124 million pigs and 2 million sheep were slaughtered in 2018. According to the Animal Welfare Institute (2020), most farm animals are raised in industrialized facilities that maximize profits by treating animals as production units and ignoring their sentient aspects. In other words, their value is purely instrumental. Millions of animals are raised in tight, cramped quarters that barely allow movement. These animals spend their entire lives in stressful, crowded, and unsanitary conditions. PETA (2020) notes that these "animals will never raise their families, root around in the soil, build nests, or do anything that is natural and important to them."

In addition to animal suffering, livestock production is a significant contributor to global greenhouse gas production. According to the FAO (2020), the "emissions from global livestock [are] 7.1 Gigatonnes of Co2-equiv per year, representing 14.5 percent of all anthropogenic GHG emissions …Cattle are the animal species responsible for the most emissions, representing about 65% of the livestock sector's emissions." In short, raising animals, particularly cattle, for human consumption and use, is a significant driver of climate change.

Haraway (2008, 290) writes that the industrial rearing of pork is a particularly egregious example of factory farming. Pigs are treated as production units that can be calculated. The industry is infamous as a polluter of entire watersheds that results in damage to thousands of species as well as people. “It is easy to know that factory farming and its sciences and politics must be undone. But what then?” (Haraway 2008, 56). Haraway makes her struggles to find answers palpable and admits that no answer will be satisfactory for long. “But not to take all this killing seriously is not to be a serious person in the world. How to take it seriously is far from obvious” (Haraway 2008, 355).

Haraway (2008, 77-78) writes that “the Animal is forever positioned on the other side of an unbridgeable gap, a gap that reassures the Human of his excellence.” For me, this is a kind of Mount Everest that every attempt at animal ethics must surmount. The Mount Everest is the claim to the unqualified moral superiority and value of human beings. All claims for animals must compete with the Olympian status of Homo sapiens. Thus, “only human beings can be murdered… Every living being except Man can be killed but not murdered.” Haraway asserts that the enormous, systematic violence against animals deserves to be called ‘exterminism.’

In the end, however, it is not clear what Haraway’s answer to factory farming and animal ethics is. Crist (2010, 642) says that Haraway does not take a position on animal rights because she “struggles to articulate a position of ‘staying in the open’ within unavoidable instrumental bonds.” Haraway allows that vegans come “closest to living without causing other animals to ‘die differentially’” (Haraway 2008, 80). It is not clear what it means to die differentially. But she maintains that veganism “would consign most domestic animals to the status of curated heritage collections or to just plain extermination as kinds and as individuals.” It is difficult to unpack this last statement. I assume she means that an extreme position on veganism would mean that animals would only live in the wild.

Weisberg (2009) criticizes Haraway for lacking a clear position on animal ethics. Weisberg’s fundamental premise is that “that instrumental domination of nonhuman animals is politically and ethically unacceptable—full stop” (2009, 60). Weisberg takes Haraway to task for the following statement. “Even factory meat industries have to face the disaster of chickens’ or pigs’

refusal to live when their cooperation is utterly disregarded in an excess of human engineering arrogance" (Haraway 2008, 71-72). "By suggesting that the death of these creatures is a 'refusal to live,' Haraway attributes to them an agency which they are denied in reality" (Weisberg 2009, 35). It does seem absurd to assign animals agency if they 'refuse' to live in the utterly wretched conditions of a factory farm. A sow residing in a metal cage that does not even allow her to turn around is not the hero of an existentialist novel who commits suicide in the face of life's absurdity.

Weisberg (2009, 37) writes that "Haraway takes up the Latourian designation of nonhuman entities, both inanimate and animate, as 'actors' or 'actants,' or active participants in a nature-culture-science-politics mish-mash." Weisberg implies that ANT lacks morality, and if the study of actors and actants is entirely empirical and without judgment, then this accusation has validity. Waelbers and Dorstewitz (2014) accuse Latour of having no ethical system, of only being interested in the activity of his ever multiplying actants without any reference to some more fundamental moral system.

I would argue that Haraway's advocacy of situated knowledge, her rejection of universalizing principles, and her notion of deep entanglement makes her reluctant to make unqualified statements. But to my mind, the immense animal suffering and environmental degradation call for a clear position that could also form the intellectual basis for action.

5. Latourian ethics

The search for Latourian ethics does not follow a straight path. For Latour, ethics is related to epistemology. As a starting point, Latour rejects reductionism. Harman recounts a kind of Saint Paul on the road to Damascus experience in which Latour had a profound insight that caused him to reject reductionism (Harman 2009). Thinking about reductionism raises a fundamental question about intrinsic values. Do intrinsic values entail some kind of reductionism? Are they based on some sort of ethical primitive? Utilitarianism and deontology each stand on an ethical primitive, such as the maximization of utility or duty. If we could establish intrinsic values on some kind of firm foundation, as keystones, as support for an ethical superstructure, as some

kind of axiom, then we could have more confidence in the stability and validity of these values. Latour rejects system building based on reductionism, however. His training as an anthropologist inclines him to take an empirical viewpoint and study the natives on the ground. What makes him more than an anthropologist in the usual sense is that his natives are not just human beings. His ontology of actors is far broader and more complex and more interactive than merely human beings as subjects and the rest of the world as objects. Hence, Latour is intensely interested in relationality, in networks, in the interactions between his various actants. In the spirit of Ryle (1949), intrinsic values might be some kind of ghost hiding behind relationality. Relationships can be observed and analyzed. They are subject to an empirical methodology, but intrinsic values must be, at least in most cases, extracted and made visible. As O'Connor and Kenter (2019) write, they must be articulated, and they must be visible. If they are not made explicit, if they exist merely on an intuitive level, then they have less power, or the power is submerged and is difficult to harness or guide. Relationality is there to be seen, to be mapped, to be followed. Latour, with his actor-network theory, wants to do precisely that, and so relational values fit tightly with his philosophical and anthropological approach. Intrinsic values, however, do not.

But it is not so simple. The following citation taken out of context could demonstrate opposition to intrinsic values. "Ordinary people imagine that the power of gods, the objectivity of money, the attraction of fashion, the beauty of art, come from some objective properties intrinsic to the nature of things" (Latour 1993, 51-52). The implication is that ordinary people are deluded or at least misguided. Social theory cannot endorse this notion of objective properties in objects "because it has no conception of objects except the one handed down to it by the alternative 'hard' sciences" (Latour 1993, 54). Here Latour is talking about the dilemma of social scientists. They, of course, have read their Durkheim, and will not be deluded by naïve assumptions. "To become a social scientist is to realize that the inner properties of objects do not count, that they are mere receptacles for human categories" (Latour 1993, 51-52). But Latour is not endorsing this conception of objects. As we have seen, his actors are lively and have agency. How do you talk about money, fashion, and art if these are passive and only humans have agency? I'm not sure that Latour wants to talk about objective properties that are intrinsic to the nature of things. But I think that Latour does want to talk about an ethics of objects. What could that be?

Latour (2013a) is an indescribable, uncategorizable not-catholic catholic. He describes himself as neither a believer, sitting inside the churches fold, nor an unbeliever, standing outside of the church and mocking its pretensions. He writes of G. but does not want to speak of God. He certainly doesn't seem to ascribe to a moral system such as Kantian ethics with its rigorous logicality and steely-eyed focus on the value of duty. (Much too German, that!) But if you have grown up in the middle of unum sanctum catholicum, and still struggle with that legacy, and sit struggling with doubt in the pews of a gothic cathedral, a desire for ethical stability must tug at your heart.

Latour (2018) denounces the climate deniers. His forceful political statement must derive from fundamental beliefs, and I ask again, what are the relationship between such fundamental beliefs and intrinsic value? As I have tried to indicate, it is not easy to derive a clear ethical system from Latour's philosophy. One thing is clear, however, and that is his rejection of ethics based on an appeal to nature. Any "effort to stabilize an ethical judgment by the invocation of nature will appear as the scarcely concealed disguise of an ideology" (Latour 2017, 47). The question of what nature is, or perhaps, of what the more-than-human world is, continues to reemerge and often with a political dimension. "The invocation of nature is never satisfied with defining a moral law; it always serves, as well, to recall to order those who are straying from it. In the notion of 'nature,' there is thus always, inevitably, a polemical dimension" (Latour 2017 53). The very process of defining nature is a means of demarcating the territory. It can be a way of setting the rules, so to speak, for the debate. It can also be a way of saying what is allowed and what is not allowed. "As soon as any authority sets out on a campaign to keep acts said to be 'against nature' from being committed, protests arise at once: in the name of what do you dare decide which behavioral norms are 'natural' and which are 'against nature? … The indignation aroused by such invocations is proof enough that 'nature,' here with its quotation marks, cannot invoke nature, without quotes, in order to end a moral controversy" (Latour 2017, 48).

Latour notes that when people invoke the 'natural world' in an argument "the normative dimension will remain present, but in a more convoluted form, since the principal injunction will insist precisely that the 'natural world' will not have a moral lesson to impart, or even that it will not allow anyone to draw any moral lesson whatsoever. Here is a very powerful moral

requirement: the one according to which one must abstain completely from moral judgment if one wants to take the full measure of the reality of what is!" (Latour 2017 50). Latour seems to argue against the concept that moral claims can be derived from ontology. At the very least, he suggests that this puts the argument into a double bind

Hache and Latour (2010) give us important clues regarding Latour's ethical stance. The critical concept is sensitization. Hache and Latour examine four texts, and the text by Lovelock receives the highest praise. "Lovelock's text … appears higher on the scale because it hesitates in every possible way over the sensitivity we should feel for the most diverse beings" (Hache and Latour 2010, 323). This brings us to what I am calling an ethics of objects, with objects conceived of in broad terms, perhaps even in terms of the more-than-human world. Hache and Latour criticize the first text by Comte-Sponville (1995) because the author treats cats, which are the purported subject of his ethical arguments, as inanimate and instrumentalized. Thus, 'reality' cannot "supply him with anything, since 'meaning, value or ideal' comes only through language, which unfortunately comes only to humans and not to animals!" (Hache and Latour 2010, 314). Therefore, cats lack moral competence because they are objects and not human beings. In ANT, objects have agency and perhaps interests. In this call for sensitization, Hache and Latour move towards an ethical stance by increasing what we could call the competency of actants.

Hache and Latour also consider a text from Kant that includes wonderful passages about nature's power, about nature's ability to inspire awe or create a sense of the sublime in a Burkean fashion. "Bold, overhanging, and, as it were, threatening rocks, thunderclouds piled up the vault of heaven, borne along with flashes and peals, volcanoes in all their violence of destruction, hurricanes leaving desolation in their track, the boundless ocean rising with rebellious force, the high waterfall of some mighty river, and the like, make our power of resistance of trifling moment in comparison with their might" (Kant 1914, § 28). So, we have here a rich description of nature's terrifying power. But what does Kant do with this setup? He makes an act of renunciation in order to desensitize himself. Kant almost seems to ignore his description with his assertion that nature can no longer humiliate us. "It is this hesitation before the nascent division between facts and values, between amoral objects and moral subjects, rather than any affirmation of the superiority of humans as moral beings, which constitutes the moral dimension of the text"

(Hache and Latour 2010, 317). Again, the problem is desensitization. But this desensitization is critical for the modern act of separating fact and value.

Epistemology has an ethical aspect because it controls what philosophy allows itself to think. "So long as nonhumans are taken for the objects that the epistemological tradition has made of them, it will always seem ridiculous to lengthen the list of beings to whose call we should respond and become scrupulous; that will only ever be seen as anthropomorphism" (Hache and Latour 2010, 324). Thus, if the epistemological tradition treats all nonhumans as objects, then we must go to ever greater lengths to avoid any hint of anthropomorphism. This, naturally, assumes that anthropomorphism is a significant intellectual mistake. The 'problem' of anthropomorphism is most acute with animals, particularly with animals that are part of our lives. Apparently, cats are difficult to study scientifically because they are so receptive to people in them. The need for epistemic objectivity demands disconnection and lack of sensitivity. We should, if we want to be 'objective and scientific,' study cats as if they were rapidly moving rocks, without emotional affect. But Hache and Latour criticize Comte-Sponville for his lack of sensitivity to cats. Here they are also in agreement with Haraway, who writes extensively about her relationships and relationships with companion species.

One takeaway (Hache and Latour 2010) is that the project of modernity, with its scientific and epistemological structures, drives our ecological crisis. This assertion could hold the key to discovering Latour's ethical stance. To put it crudely, in a manner that would no doubt make Latour shudder, bad philosophy, bad ontology, and bad epistemology lead to bad results, namely the ecological crisis. This solution then, again to put it into the crudest fashion, is good philosophy, good ontology and good epistemology. To put it into more delicate terms, it is a process of sensitization, of much greater openness to what might have moral consideration, that is key.

Waelbers and Dorstewitz (2014, 36), as we saw above, criticize Latour. They note that he "rejects the rational, autonomous, atomistic subject and the universality of moral norms that is advocated by modernist philosophies." His alternative, though, is to place people into networks made of both human and nonhuman actors. These various actors exert power against one

another. It is a political conflict and, at worst, a Hobbesian world of all against all. But Waelbers and Dorstewitz (2014, 36) assert that Latour makes the same mistake as the moderns who he criticizes. He "neglects the importance of emotions, empathy, sympathy and moral disposition in decision-making." Naturally, people can behave in an undesirable manner, but still, people typically act according to some kind of morality and from an intrinsic desire to do what they see as good. Therefore, "any adequate account of socio-technological agency networks must take into account moral motivations and the capacity of normative reasoning. In ANT, people are presented in a behaviorist manner, robbed of their core identity as moral beings" (Waelbers and Dorstewitz 2014, 29).

I think this criticism is valid, and it underscores my difficulty in identifying a clear Latourian ethics. On the other hand, ANT is a powerful corrective to standard ethical systems, which, at most, extend moral considerability to a chosen set of animals that exhibit higher levels of sentence or intelligence. Latour's call for sensitization opens a constrained view of ethical considerability. The overwhelming tendency of human beings to put themselves in first, second, third, fourth, and fifth place in the domain of ethics means that counterbalance is critical. Latour, however, does not explicitly include animals and this returns us to the criticism of Waelbers and Dorstewitz. A flat ontology allows us to see many more actants in dynamic processes and it helps us overcome an excessive emphasis on human beings. But there are significant differences between cocker spaniels and gravel, or between chimpanzees and dust motes. Dogs and chimpanzees are sentient, have emotions, interests and social relationality. A flat ontology may be useful for empirical descriptions, but it is not sensitive to differences. In the conflict between humans and nonhumans, it is rare for the nonhumans to be the victors. Perhaps, in the end, the call to sensitization and recognition of the nonhuman is a profound and necessary moral step. Singer (1981) speaks of an expanding moral circle. Latour suggests that the circle could be far more capacious than Singer imagines.

O'Connor and Kenter (2019) speak of operationalizing intrinsic values. To my mind, operationalizing is an ugly functional word. Latour's concept of sensitization is much more attractive. The LFV could be effective in making people more aware of how they live in relationship to the more-than-human world. Becoming aware is a more attractive way of framing

the goal. But sensitization suggest a process with greater potential impact. The senses are connected both to our perceptions and to our emotions. When we become sensitized to something, it goes below the surface. Becoming aware may be more of an intellectual process. Operationalize sounds like an industrial or manufacturing process. Sensitizing suggests an opening out of experience to make connections at multiple levels. Becoming sensitive to the interpenetrating aspects of relationality and living in the more-than-human world, could lead to deeper and longer lasting transformations.

Chapter 7 – Final analysis

The final analysis brings together the most important findings from the thesis and identifies significant ramifications. Table 1 summarizes key findings from the thesis, followed by a listing of contributions from Latour and Haraway. Figure 3 offers a counter argument to figure 1. The next section emphasizes the significance of the Anthropocene and Gaia. Figure 4 shows how the COVID-19 pandemic could be understood using the ANT. The concluding section on ethics looks at the strengths and weaknesses of different conceptual models.

Table 1 Comparison of O'Connor and Kenter to Latour and Haraway

Theme	**O'Connor and Kenter**	**Latour**	**Haraway**
		Ethics	
Overall approach	Eclectic – emphasizes intrinsic and relational values - Open to standard ethical systems such as consequentialism and deontology – Call for the integration of values	Sensitization to objects – Broadening of moral considerability – Does not overtly subscribe to standard ethical systems	Troubles and care – Broadening of moral considerability – Suspicious of universalizing systems
Intrinsic values	Want to make intrinsic values work, operationalize them and assert their value despite criticisms within the conservation movement	Intrinsic values don't seem to fit into his conceptual world but perhaps some sense of the sacred or sensitization includes them in an indirect way	Not a part of her vocabulary but there are interesting connections with relational values
Instrumental values	Criticizes ES and NCP – criticizes tendency to commodify	Anti-reductionist criticism of centrality of economics in current politics suggests opposition to strong use of intrinsic values	Criticizes commodification of resources but sees instrumental values tied up with intrinsic values – Her discussion of dog/human relations supports this
Relational values	Important theme – tied to shared values and relational values – part of ES and NCP Non-substitutable and incommensurable with	Relationality is key but the term relational values is not used	Relationality is key but the term relational values is not used – She also speaks of kinship

	instrumental values, they are still anthropocentric – justified as a value category in their own right		
Ontology			
More-than-human world	Important – not well defined	Greatly expands theme with ANT, Anthropocene	Expands theme with Anthropocene and Cyborgs
Nature	Important but vaguely defined despite frequent use – relationship to rural and urban landscapes unclear	Contests validity of concept	Complex interpretation - see natureculture
Natureculture	Implicit – examples from regulating, provisioning, tourism, recreation, leisure	Speaks of nature/culture	Central theme
Wilderness	Implicit support – not in text – wildlife and wildflowers in text	French – partial denial – Views it as a problematic category	Emphasizes problematic history in US context
Anthropocene	Not mentioned but refer to anthropocentric	Critical theme	Critical theme Plantationocene Capitalocene
Gaia	Not mentioned	Central theme – topic of recent work – advocates for concept	Important theme
Epistemology			
Living	Central metaphor – Co-production of meaning embodied relational and phenomenological perspectives of life – relational expressions of place articulation of intrinsic values, and vice versa.	Locked into critical zone – We must redefine where we live Terrestrials and worldlings	Becoming with Partial vision Worldlings
Situated knowledge	Relates well to LFV	Not exactly his term but related to anthropological work	Principle theme – Decenters the human – Basis for making ethical decisions
Networks	Use frameworks	Developed ANT	Uses ANT
Agency	Human are primary agents	Widely distributed	Widely distributed in surprising ways
Economics	Criticize instrumental values Concerned about ES and NCP	Centrality of economic orientation driver of destruction	Marxist background - Critic of neo-liberalism and allure of progress

Following are key additions that Haraway and Latour have made to our understanding of the LFV.

Haraway and Latour

- Provide a deeper understanding of how science is produced and entangled with our environmental problems
- Delve into some of the historical and political causes of the current environmental crisis
- Highlight the significance of relationality

Latour

- Demonstrates that ANT could add to and modify the LFV
- Establishes the significance of Gaia and the Anthropocene
- Emphasizes the role of nonhuman actors
- Provides an ontology that gives agency to nonhuman and non-living actors
- Questions standard conservationist conceptions of nature

Haraway

- Reframes the nature culture relationship
- Demonstrates through her writing on animals a more intertwined relationship between intrinsic and instrumental values
- Argues for the ontological and historical relevance of the Anthropocene, Capitalocene and Plantationocene
- Advocates for a feminist perspective
- Opposes universalizing and simple dualisms

Figure 3 Human contribution to nature

Figure 3 is the negative twin to Figure 1 (page 15) and depicts some of the primary anthropogenic threats to environmental and climatic stability. Figure 1 is a benevolent image with an optimistic view of relations between humans and nature. Figure 3 is not a comforting or optimistic image. It could, however, be seen to complement and emphasize figure 1. As the negative contributions from figure 3 grow, the positive contributions from Figure 1 decrease.

1. Defining the World

This thesis demonstrates that our understandings and conceptions of nature should be broadened. Although the concept of nature is complex, problematic, and contested, it remains central to our thinking. There does not seem to be an alternative to using this term. Images of nature from O'Connor and Kenter (2019) describe gannets diving into shoals of fish and 10,000 boxes of squid swelling the harbor's bank account. Nature is a massive, unexplained elephant die-off in northern Botswana (Weston 2020), Latour's neatly tended French countryside or a devastated rain forest in Java, where only 5% of the original biosphere remains (WWF 2020). A rural landscape with cows grazing next to a red barn appears on a package of sausages. But those cows never grazed in a field. Instead, they stood by the thousands in an industrial feedlot, injected with antibiotics and covered mid-leg with manure. Alternatively, a rural landscape is a meadow in the Gyimes Valley in Transylvania, with some of the highest levels of biodiversity in Europe (Molnár *et al*. 2020).

These images illustrate the increasing inter-penetration of nature and human culture and more-than-human culture. And what of the many urban dwellers who have almost no contact with anything resembling wild nature? For many of them, a city park is the closest approximation of nature, and of course, a city park is no wilderness. More and more of the world's population – perhaps some 55% (Ritchie 2018) – now lives in urban areas. So, there are ever more people who have little to no contact with agricultural lands or wilderness areas. Those who have come from villages in recent decades have had more direct contact with food production, natural forces, and perhaps wilderness. The younger generation born into these urban landscapes may have no experience of the countryside at all. For these urbanites, nature's contribution to people (NCP) and environmental services (ES) are abstract concepts at best. O'Connor and Kenter want to make intrinsic values work, but how can that happen with so little lived experience of wilderness or nature? This problem indicates that experiential education and training that takes people into more natural settings is necessary. Both intrinsic and relational values could be bolstered through direct experience. Latour's sensitization could be a useful practice in urban and mixed landscapes. Children learning to identify individual pigeons and people growing their own vegetables and fruits in urban areas could also promote these values.

The Anthropocene takes us from a local level, at a conceivable scale, to a new global conception. This demands an even greater reconceptualization. A classic image of the globe is the blue marble photograph of the Earth taken by the Apollo 17 crew in 1972. Latour believes this gives us a false image of the Earth. The Anthropocene narrative means that we have become earthmovers on a geological scale. We no longer burrow into the Earth to extract the coal; we now rip off the tops of mountains. After water, concrete is the most used substance in the world. If all the concrete producers on the planet were a country, this 'country' would be the third-largest CO_2 emitter on the plane (Watts 2019). The Anthropocene means that we have become a geological force and that we are engaged in an awkward dance with the Earth's most extensive systems. If urban dwellers have difficulty in conceiving of wilderness, for example, then what of the much larger problem of understanding a mega story like the Anthropocene? Morton (2013a) has coined the term hyperobject, which is an immense object made up of other objects. The Anthropocene is a hyperobject, but "we do not yet have a mode of representation that can capture the in-it, of-it, with-it, not-it existence of the objects that co-exist as hyperobjects" (Frost

2016). We may not yet have the proper mode of representation, but we must somehow find ways to tell stories about the Anthropocene if we are to live successfully in this strange new reality.

The central driver of the Anthropocene is probably economic. As Bill Clinton famously said, 'it's the economy stupid.' Latour reminds us, however, that we "should remember that this idea of framing everything in terms of the economy is a new thing in human history. The pandemic has shown us the economy is a narrow and limited way of organizing life and deciding who is important and who is not important." (Watts 2020). If economics is king, then our notions of consumerism and continuous growth supported by the concepts of neoliberalism will continue to reign. Modern economics has brought a host of benefits (Pinker 2018, Rosling *et al*. 2018), but it is not based on a scientific or sustainable understanding of environmental boundaries. The centrality of modern economics also demonstrates that the conceptions of the Plantationocene and the Capitalocene have real explanatory power.

Another image for the more-the-human world is spaceship Earth. But Lovelock (2006, 44) writes that our image of the Earth should not be "something inanimate like that disreputable contraption 'spaceship Earth." "Until this change of heart and mind happens we will not instinctively sense that we live on a live planet that can respond to the changes we make, either by cancelling the changes or by cancelling us. Unless we see the Earth as a planet that behaves as if it were alive, at least to the extent of regulating its climate and chemistry, we will lack the will to change our way of life and to understand that we have made it our greatest enemy."

Gaia is the largest and grandest reconceptualization of the Earth we have. She is too complicated, vast, and ornery to fit comfortably into the LFV. Nonetheless, we live in, with, from, and as this system. If the Anthropocene is a hyperobject, then we must find an even more encompassing term to describe Gaia. Gaia's complexity exceeds our comprehension. If we are engaged in an awkward dance with the Anthropocene, then Gaia is a monstrous movie set we stumble on to. We do not know our role, we don't know our lines, we don't know who the director is, we're not sure what the film is about, and we certainly don't know how it will end.

Accepting the concept of Gaia means that we must re-evaluate role of reductionism. Reductive processes provide insight into the underlying mechanisms of the various systems within Gaia, but the endless interactions and emergent properties that arise from simpler elements cannot be captured with reductionist methods alone. Gaia is a turbulent whirlwind of systems that shatters dualisms and bifurcations. Newtonian causality is inadequate to explain the infinite interactions and reactions of this complex system. In discussing the difficulty of understanding climate, which is just one of the many systems in Gaia, Schmidt (2009) notes that the problems are horribly complex, horribly non-linear and irreducibly complex. "There is never going to be a theory of climate that somebody will come up with just by thinking about how the climate should work. People have tried, but they all fall pretty much at the very first hurdle." Climate is a significant aspect of Gaia, but it is only one of many other systems. The reluctance to accept the concept of Gaia arises from the idea that it is some sort of superorganism, from its mythical origins, from the notion that it is feminine, and from the dismaying realization that it is beyond the capabilities of current science to comprehend.

Latour states that he has done everything he can to make Gaia accepted. "But scientists are reflexively cautious. The cosmological shift from Aristotle to Galileo is the same as that from Galileo to Gaia. With Galileo, our understanding moved outwards to an infinite universe. Grasping that took a century and a half and faced resistance. Gaia is not just one more concept. It is not just about physics and energy. It is Life" (Watts 2020). Latour argues that a starting point of modernity is when Galileo placed the Earth within a universal context. Latour asks what it means if we are not in a politics based on the infinite cosmology of Galileo. He replies that it "means we cannot behave in the same way. It means we cannot just endlessly extract resources and discard our waste. In the critical zone, we must maintain what we have because it is finite, it's local, it's at risk and it's the object of conflict" (Watts 2020). This suggests we must think of ourselves as worldlings or earthlings, as Haraway (2016) suggests or Terrestrials, with a capital T, as Latour suggests.

I submit that we will have to accept some form of Gaia because we have already begun to study and understand essential components, such as the climate, that are contained within Gaia. These dynamic systems, such as soil erosion, ocean acidification, and vegetation patterning, are

inevitably affecting one another and creating emergent processes. As I understand it, we are only at the beginning of understanding these processes at a systems level. Whether Gaia is the best name, or the best conceptual framework is a question that we will continue to debate. We may not like the idea of living in such a complex and inhospitable home, but if that is where we live, then we must come to accept that reality and try to create narratives that help us understand it.

"For Lovelock, everything that is located between the top of the upper atmosphere and the bottom of the sedimentary rock formations – what biochemists aptly call the critical zone" (Latour 2017, 219). Latour asserts that we must realize that the critical zone is our only home and argues that the "idea of the "critical zone" is useful because it gets you out of nature. Nature is vast. It covers everything from the big bang to microbes. Conceptually, that makes it a complete mess. The critical zone is limited. It is just a few kilometres thick – above and below the surface of the Earth. But all discovered life is within it. This brings us inside in a way that nature does not" (Watts 2020). We are not very good at judging distance upward, perhaps because we are not birds. But most people can walk a few kilometers and so that is a distance we easily comprehend. We must take this short horizontal distance and tip it 90° into a vertical position. That is the space we live in, that is our home.

2. Relationality

ANT provides deep insight into the relational systems in which we live. These systems mix the human and the more-than-human. Latour expands the social world by recruiting a vast array of nonhuman objects (Pollini 2013), and his arguments might suggest that the LFV diagram should be different. Figure 4 below attempts to show how the COVID-19 pandemic could be described using ANT. Ideally, this would be a three-dimensional representation with the elements in constant motion, having strange and unexpected knock-on effects and emergent properties. Video animation with real-time inputs would be the most effective kind of representation.

Figure 4 ANT pandemic diagram

Figure 4 does not have humans in the center, surrounded by a circle of identities and contributions. Instead, there are objects, humans, institutions, and phenomena flowing about in a complex and ceaseless motion. This kind of network is more like neural connectivity in the brain, with both local and distant connections, as well as dense and weak connections. A danger of this diagram, as well as the concepts of the Anthropocene and Gaia, is that they are too complicated. The LFV is less sophisticated but more user friendly. Figure 1 (page 15) is more likely to help people understand how they fit into the more-than-human world than Figure 4. It is also more likely to help in the aims of conservationists, such as increasing biodiversity. But figure 4 it's probably more revealing and accurate.

3. Ethics and Values

Figure 1 (page 15) lists the five kinds of contributions we receive from nature. These are mixed, context-specific, regulating, material, and non-material contributions. I would argue that the most fundamental ethical response to this should be gratitude. Gratitude can be embodied in instrumental values, intrinsic values, or relational values. Gratitude is an attitude that does not take things for granted and expresses positive attitudes and perhaps humility towards what we receive.

A central goal of the LFV is to make intrinsic values work. I would argue that it is not intrinsic values per se that are important. The question is fundamentally about which kinds of values and ethics will help us to achieve the goal of mitigating environmental damage and ultimately finding a way to live in harmony with the more-than-human world. In the end, we need to employ all the tools in the ethical toolbox. When the problems are so large and diverse, we require a correspondingly broad set of responses. Instrumental values are a critical step in understanding NCP and ES. Because of the dominance of economics, calculating ES and NCP in monetary terms emphasize their importance. If the game is economics, then we may need to use economic weapons. Moreover, if we show that much current economic thinking is destructive because it does not incorporate actual costs and benefits, then we have won a major battle. If we can

establish or reestablish the centrality of intrinsic value, then we can also shift the focus of our political life. If intrinsic values are about love, care, awe, inspiration, and gratitude, then we may appeal to the better angels of our nature. I assert, in addition, that there is a close link between intrinsic values and sacred values. I think there is a substantial overlap between the two, and perhaps sacred values involve a heightening and extension of intrinsic values. Assigning sacred value to something entails the highest worth we can give it. That which is exalted is most worthy of honor, sacrifice, and protection. Finally, all the models above points to the richly complex relational networks in which we live. Relationality demonstrates that independence is limited and often a fantasy. We are deeply inter-dependent.

The process of articulating values proposed by O'Connor and Kenter is worthy and essential. Inevitably, conflicts, misunderstandings, and challenges will arise through this process. O'Connor and Kent argue for democracy as the method to deal with this plurality. As messy, inefficient, and problematic as the democratic system is, it's probably the only viable and just tool available to us.

Chapter 8 – Conclusion

This thesis has attempted to show that relevant works by Haraway and Latour add significantly to an analysis of O'Connor and Kenter's (2019) work. It has sought to integrate insights from Latour and Haraway into the discourse of environmental ethics and to show how such insights might affect the concepts of value, relationality and the more-than human world in the LFV.

One major theme of this thesis is values. Intrinsic values are difficult to establish and will probably always be contested. They don't have the bottom-line objectivity of instrumental values and cannot be calculated straightforwardly. Thus, it can be difficult to make convincing arguments for intrinsic value because these values require acceptance, perhaps even belief in some cases. However, intrinsic values contain fundamental human emotions and aspirations such as awe, love, attachment and worth. Intrinsic values can be attached to beauty, aesthetic quality, sacredness and a sense of home. Haraway shows that instrumental values and intrinsic values are often entangled and thus inseparable. This mixture is beneficial because it can be mutually reinforcing. O'Connor and Kenter, although they argue for intrinsic values, remain open to a variety of ethical positions. This stance, though it may lack philosophical rigor, is probably more likely to have pragmatic success.

Relational values suggest a bridge between intrinsic and instrumental values. The LFV emphasizes relationality with its account of people receiving contributions from them more-than-human world. ANT demonstrates that a range of nonhuman actors and actants relate to one another in complex fashions, have agency and should be taken into consideration. LFV shows people at the center of a circle, but ANT argues for a flatter ontology, a wider distribution of agency and a multi-dimensional network. Haraway uses analysis based on situated knowledge, which shows complex relationality as opposed to universalizing presuppositions. Her work on animals reveals the strength of this approach but leaves her without a clear-cut ethical position regarding animal ethics, particularly in relationship to factory farming.

This thesis paints a complex picture of nature and the more-than-human world. The increasing urbanization of the world means that fewer people have direct contact with wilder versions of

nature. This has significant implications for those working in the conservation and sustainability fields. The analysis of nature ranges from Spinoza's account to the garden of Eden to Darwin's loss of faith and perhaps to modern urban environments. The competing images of nature range from pristine wilderness to slag heaps from abandoned coal mines containing rare plants. Both Latour and Haraway argue against simplistic conceptions of nature. The existence of wild nature relatively unaffected by humanity is a contested point and there are even those who deny its existence now. How we conceive nature will affect the approaches we take to environmental problems. The relationship between nature and human culture is complicated but some indigenous cultures have a more integrated conception. Latour and Haraway argue that seeing human culture and nature as competing dualities is problematic. So, it may be more realistic to adapt Haraway's natureculture as a means of understanding the dynamic interactions of our current reality. Latour sees sensitization as both an ethical perspective and as an epistemological stance. Haraway argues for care, acknowledgment of our troubles, understanding historical and contemporary dynamics as an ethical perspective. Her intellectual position does not support straightforward answers or solutions but does provide a rich, messy picture of our world.

This thesis argues strongly for the importance of the Anthropocene and Gaia. These conceptual frameworks are enormous, complex, wickedly entangled, dirty concepts. They are anything but user-friendly. But the Anthropocene does help us to understand some of the historical, political and economic causes of our current economic crisis. Understanding historical trends has the potential to help us correctly analyze our ecological problems and propose viable solutions. The Anthropocene and Gaia do not submit to reductionism, clear causality and standard dualism. Gaia is very much a contested concept in the scientific world and this may come from the mythological origins of its name and the mistaken understanding that it is an organism or some kind of mother earth. Latour says it took 150 years to take the Galilean revolution onboard conceptionally. Paradoxically, the conceptual revolution of the Anthropocene and Gaia require us to move our focus from the universal to the critical zone. Hence, we must move from a view of the Earth from outer space to a view that concentrates on the gossamer-thin layer of the atmosphere in which we live.

If the Anthropocene and Gaia become central to the environmental discourse, this will pose challenges to communication for environmental practitioners. Massive quantities of scientific data regarding the climate crisis have failed to sway the opinions of large sectors of society. This scientific information has not yet led to the necessary large-scale systematic action that are required to address the climate crisis and environmental degradation. The Anthropocene and Gaia seem to make the story even more complex. But perhaps the notion of the critical zone is the story we must tell. Because stories and narratives are so compelling, it is essential to create stories that help us understand how we live and what our relationship to nature is.

The LFV has pragmatic and narrative goals that involve some simplification while still attempting to be comprehensive. It paints an optimistic picture, but it should also include the darker story from figures 3. This is both a matter of truth and a warning that nature's contributions are endangered and are not guaranteed. There is probably no easy method to integrate the Anthropocene and Gaia into the LFV, but the notion of the critical zone and Earth's limitations should be part of the story. Environmental practitioners face the problem of being called fear mongers and doomsayers. The LFV seems to be an attempt to avoid fear and bring good news. If people develop strong intrinsic and relational values in regard to the more-than-human world, then they may be more willing to face difficult news and engage in the necessary sacrifices and political struggles.

The LFV achieves many of the goals set out by O'Connor and Kenter. The LFV should be used in a variety of circumstances to test its ease-of-use and to gather a body of qualitative research. We should also look for other tools that can elicit stories about nature and articulate values concerning the more-than-human world. This is a potentially fruitful avenue, which deserves further support, research, funding and experimentation.

References

Alaimo, S. 2008. Ecofeminism without nature? *International feminist journal of politics* 10 (3): 299-304.

Alkemade, R., van Oorschot, M., Miles, L. *et al*. 2009. GLOBIO3: a framework to investigate options for reducing global terrestrial biodiversity loss. *Ecosystems* 12: 374–390.

Anderson, E. 2007. Wild versus tame. In the *Encyclopedia of environment and society*, ed. P. Robbins. London: Sage 1966-68.

Anthis, K. 2019. Global farmed and factory farmed animals estimates. *Sentience institute* 21 February. https://www.sentienceinstitute.org/global-animal-farming-estimates

Batavia C. and Nelson M.P. 2017. For goodness sake! What is intrinsic value and why should we care? *Biological Conservation* 209: 366–376.

Bauer, M.W., Bicquelet, A. and Suerdem, A. K. 2014. Text analysis: an introductory manifesto. In, *Textual analysis. Sage benchmarks in social research methods*, 1, ed. M.W. Bauer, A. Bicquelet and A.K. Suerdem xxi- xlvii. London: Sage.

Bennett, J. 2010. *Vibrant matter: A political ecology of things*. Durham: Duke University Press.

Bennett, J. 2012. Systems and things: A response to Graham Harman and Timothy Morton. *New literary history* 43 (2): 225-33.

Berliner Festspiele. 2017. https://www.berlinerfestspiele.de/en/berliner-festspiele/programm/bfs-kuenstler/bfs_kuenstler_detail_199957.html

Bilger, B. 2005. Sole survivor. *New Yorker*. 14 February.

Brand, S. 2009. We are as gods and have to get good at it. Stewart Brand talks about his ecopragmatist manifesto. A talk with Stewart Brand. *Edge.org* 18. August.

Brink, B. ten, *et al*. 2010. Rethinking Global Biodiversity Strategies: Exploring structural changes in production and consumption to reduce biodiversity loss. *Netherlands Environmental Assessment Agency*.

Callon, M. 1987. Society in the making: The study of technology as a tool for sociological analysis. In *The social construction of technological systems,* ed. W. Bijker, T. Hughes, and T. Pinch. Cambridge: MIT Press.

Cavazza, E. 2014. Ecosophy at the end of nature. *The trumpeter* 30 (2) 115-140.

Chan, K.M., Gould, R.K., and Pascual, U. 2018. Relational values: What are they, and what's the fuss about? *Current opinion environmental sustainability* 35: A1–A7.

Comte-Sponville, A. 1995. Sur les droits des animaux [On animal rights]. *Esprit* 217 (12) 140-170.

Cressman, D. 2009. A brief overview of actor-network theory: Punctualization, heterogeneous engineering & translation. ACT lab/centre for policy research on science & technology (CPROST). School of Communication, Simon Fraser University. April. https://summit.sfu.ca/item/13593

Crist, E. 2010. Cat's cradle with Donna Haraway. *Social studies of science* 40 (4) 641–646.

Darwin, C. 1868. *The variation of animals and plants under domestication*, 2 vols. London: Murray.

Davies, C. 2017. In Białowieża my worst nightmares are coming true: Last major primeval forest in Europe on 'brink of collapse.' *The Guardian* 23 May.

Devall, B. and Sessions, G. 1985. Deep ecology: living as if nature mattered, in *Environmental Ethics*. Salt Lake City: Peregrine Smith Books.

Diaz, S., *et al*. 2015. The IPBES conceptual framework— connecting nature and people. *Current opinion in environmental sustainability* 14: 1-16.

Díaz, S. *et al*. 2018. Assessing nature's contributions to people. *Science* 359 (6373): 270-272.

Disch, L. 2016. Ecological democracy and the co-participation of things. In T*he Oxford handbook of environmental political theory*, ed. T. Gabrielson, C. Hall, J.M. Meyer, and D. Schlosberg, 624-639. Oxford: Oxford University Press.

Dennett, D. 1991. *Consciousness explained*. London: Penguin.

Denvir, D. 2019. Cyborg revolution with Donna Haraway. *The Dig*. https://www.thedigradio.com/podcast/cyborg-revolution-with-donna-haraway/

Drenthen, M. 2016. Environmental hermeneutics and the meaning of nature. In *The Oxford handbook of environmental political theory*, ed. T. Gabrielson, C. Hall, J.M. Meyer, and D. Schlosberg, 457-489. Oxford: Oxford University Press.

Dunne, D. 2019. The carbon brief profile: Indonesia. *CarbonBrief* 27. March.

Ellis, E, 2009. Stop trying to save the planet. *Wired Magazine* 5 June.

Evelyn-White, H.G. 1914. *Hesiod, the Homeric Hymns, and Homerica*. London: William Heineman.

Erizanu, P. 2018. What really matters? An Interview with Rebecca Goldstein. IAI.TV

FAO (Food and agriculture organization of the United Nations) 2020. Key facts and findings. http://www.fao.org/news/story/en/item/197623/icode/

Foster, E. 2018. Foucault and ecology. In *After Foucault: Culture, theory, and criticism in the 21st century*, ed. L. Downing, 122-138. Cambridge: Cambridge University Press.

Frost, S. 2016. Challenging the human X environment framework. In *The Oxford handbook of environmental political theory*, ed. T. Gabrielson, C. Hall, J.M. Meyer, and D. Schlosberg, 178-191. Oxford: Oxford University Press.

Gabrielson, T. 2016. Bodies, environments, and agency. *The Oxford handbook of environmental political theory*, ed. T. Gabrielson, C. Hall, J.M. Meyer, and D. Schlosberg, 399-411. Oxford: Oxford University Press.

Gallagher, J. 2018. More than half your body is not human. *The Second Genome* BBC Radio 4. 10 April.

Gomez. L. 2012 El ecofeminismo de Donna J. Haraway (The econfeminism of Donna J. Haraway). *Revista gestión y ambiente*. 15 (1) May : 165-20.

Gould, R.K., Pai, M., Muraca, B., and Chan, K.M.A. 2019. He ‘ike ‘ana ia i ka pono (it is a recognizing of the right thing): how one indigenous worldview informs relational values and social values. *Sustainability science* 14: 1213–1232.

Guilherme, A. 2011. Metaphysics as a basis for deep ecology: an enquiry into Spinoza’s system. *The trumpeter* 27 (3): 60-78.

Hache, E and Latour, B. 2010. Morality or moralism? An exercise in sensitization. *Common knowledge* 16 (2): 311-330.

Hair, M. and Sharpe. J. 2014. The center for ecogenetics and environmental health, University of Washington. https://depts.washington.edu/ceeh/downloads/FF_Microbiome.pdf

Hankins, G. 2015. The objects of ethics: Rilke and Woolf with Latour. *Twentieth-century literature* 61 (3): 330-351.

Haraway, D. 1991. A cyborg manifesto: science, technology, and socialist-feminism in the late twentieth century. In *Simians, cyborgs and women: The reinvention of nature*, 149-181. New York: Routledge.

_____. 2003. *Companion species manifesto: Dogs, people, and significant others*. Chicago: Prickly Paradigm.

_____. 2004. A kinship of feminist figurations. In *The Haraway reader*. New York: Routledge

_____. 2006. Encounters with companion species: entangling dogs, baboons, philosophers, and biologists. *Configurations* 14 (1) 97-114.

_____. 2008. *When species meet*. Minneapolis: University of Minnesota Press.

_____. 2016. *Staying with the trouble: Making kin in the Chthulucene*. Durham: Duke University Press.

_____. 2019. A giant bumptious litter: Donna Haraway on truth, technology, and resisting extinction. *Logic* 9 December 07.

Haraway, D. and Goodeve, T.N. 2000. *How like a leaf: An interview with Donna Haraway*. New York: Routledge.

Hardin, G. 1968. The tragedy of the commons. The population problem has no technical solution; it requires a fundamental extension in morality. *Science* 162 (3859): 1243-1248.

Harman, G. 2007. The importance of Bruno Latour for philosophy. *Cultural Studies Review*. 13 (1).

_____. 2009. *Prince of networks: Bruno Latour and metaphysics*. Melbourne: re.press.

_____. 2014. *Bruno Latour: Reassembling the political*. London: Pluto Press.

Harris, S. 2014. *Waking up: A guide to spirituality without religion*. New York: Simon & Schuster.

Heaney, C. 2015. Review of Graham Harman's Bruno Latour: Reassembling the political. *Theory, culture & society* 2. February.

Hume, D. 1739. *A Treatise of Human Nature*.

IPBES. 2018. Natures contributions to people. In: IPBES consultation and capacity building workshop. Bonn, Germany, 4–6 June.

Kant, I. 1914. *Critique of Judgement*, trans J.H. Bernard. London: Macmillan.

Kenter, J.O. et al. 2015. What are shared and social values of ecosystems? *Ecological economics* 111: 86–99.

Kenter, J. O. 2018. IPBES: Don't throw out the baby whilst keeping the bathwater; Put people's values central, not nature's contributions. *Environmental Services* 33: 40-43.

Klain, S.C., Olmsted, P., Chan, K.M.A, and Satterfield, T. 2017. Relational values resonate broadly and differently than intrinsic or instrumental values, or the new ecological paradigm. *PLOS ONE* 12 (8): 1-21.

Kofman, A. 2018. Bruno Latour, the post-truth philosopher, mounts a defense of science. *New York Times* 25. October.

Krzywoszynska, A. 2019. Caring for soil life in the Anthropocene: The role of attentiveness in more-than-human ethics. *Transactions of the institution of British geographers* 44: 661–675.

Kuhn, R.L. 2016. Is your 'self' just an illusion? *Livescience.com* 7 September.

Latour, B. 1988. *The pasteurization of France*. Cambridge: Harvard University Press.

_____. 1993. *We have never been modern*. Cambridge: Harvard University Press.

_____. 1996. On interobjectivity. *Mind, culture, and activity* 3 (4) 1996: 228-245.

_____. 1999. On recalling ANT. *The sociological review* 47: 15–25.

_____. 2004. *Politics of nature: How to bring the sciences into democracy*. Cambridge: Harvard University Press.

_____. 2005. *Reassembling the social: An introduction to actor network theory*. Oxford: Oxford University Press.

_____. 2007. "It's development, stupid!" or: How to modernize modernization. A chapter commenting upon T. Nordhaus, and M. Schellenberger in *Breakthrough: From the death of environmentalism to the politics of possibility*. New York: Houghton Mifflin.

_____. 2013. Rejoicing: Or the torments of religious speech. Cambridge: Polity Press.

_____. 2013a. *An inquiry into modes of existence: An anthropology of the moderns*. Cambridge: Harvard University Press.

_____. 2014. Agency at the time of the Anthropocene. *New Literary History* 45: 1-18.

_____. 2017. *Facing Gaia: Eight lectures on the new climatic regime.* Cambridge: Polity Press.

_____. 2018. *Down to Earth*. Cambridge MA: Polity Press.

_____. 2018a. Bruno Latour tracks down Gaia. Los Angeles review of books 3. July.

Latour. B and Lenton, T.M. 2019. Extending the domain of freedom, or why Gaia is so hard to understand. *Critical inquiry* 45 (3) 659-680

Law, J. 1999. After ANT: Complexity, naming and topology. In *Actor-network theory and after*, ed. J. Hassard and J. Law. Oxford: Blackwell Publishers.

Law, J. and Callon, M. 1988. Engineering and sociology in a military aircraft project: A network analysis of technological change. *Social Problems* 35 (3): 284-297.

Lee, S. 2018. Who on earth is Donna Haraway? Why the art world can't get enough of the ecofeminist cyborg enthusiast. *Artspace*. https://www.artspace.com/magazine/art_101/in_depth/who-on-earth-is-donna-haraway-why-the-art-world-cant-get-enough-of-the-posthuman-ecofeminist-and-55676

Lehmann J., Lee P.C., and Dunbar R.I.M. 2014. Unravelling the evolutionary function of communities. In *Lucy to language: The benchmark papers*, ed. R.I.M Dunbar, C. Gamble, and J.A.J., Gowlett 245–276. Oxford: Oxford University Press.

Leopold, A. 1981. *A Sand County almanac*. Oxford: Oxford University Press.

Lovelock, J. 2006. *The Revenge of Gaia*. New York: Basic Books.

LCLUC (Land cover land-use expansion). 2009. Oil palm plantation expansion. https://lcluc.umd.edu/hotspot/oil-palm-plantation-expansion.

Lyons, K. M. (2014). Soil science, development, and the "elusive nature" of Colombia's Amazonian plains. *The journal of Latin American and Caribbean anthropology* 19: 212–236.

Maddison, M. S. 1995. Research Service, United States Department of Agriculture (USDA). http://www.anthropocene.info/ga-se2.php

Margulis, L. 1995. Gaia is a tough bitch. In *The third culture: Beyond the scientific revolution*, ed. J. Brockman, 129–51. New York: Simon & Schuster.

Marty, C. 2009. Darwin on a godless creation. *Scientific America* 12 February.

McAuliffe, K. 2012. How your cat is making you crazy. *The Atlantic magazine* March.

McGonigle, I.V. 2012. Bruno Latour: A philosophical critic of 'facts' and 'modernity' *Science as culture* 21 (4): 556-560.

McGrail, S. 2011. Environmentalism in transition? Emerging perspectives, issues and futures practices in contemporary environmentalism. *Journal of Futures Studies* 15(3): 117 – 144.

McShane, K. 2007. Why environmental ethics shouldn't give up on intrinsic value. *Environmental Ethics* 29 (Spring): 43-61.

McShane, K. 2016. Truth and goodness: Metaethics in environmental ethics. In *The Oxford handbook of environmental ethics*, ed S.M. Gardiner and A. Thompson, 395-427. Oxford: Oxford University Press.

Merchant, C., 1980, *The death of nature: women, ecology and the scientific revolution.* San Francisco: Harper and Row.

Millennium Ecosystem Assessment (Program). 2005. *Ecosystems and human well-being*. Washington, D.C.: Island Press.

Molnár, Z. *et al*. 2020. Informing decision-making with indigenous and local knowledge and science knowledge co-production with traditional herders on cattle grazing behaviour for better management of species-rich grasslands. *Journal of applied ecology* 12 May.

Moore, G. E. 1903. *Principia ethica*. Cambridge: Cambridge University Press.

_____. 1922. The conception of intrinsic value. In *Philosophical Studies,* 254-275. London: K. Paul, Trench, Trubner & Co.

Morito, B. 2003. Intrinsic value: A Modern albatross for the ecological approach. *Environmental values* 12 (2003): 317–36

Morton, T. 2018. *Being ecological*. Cambridge: MIT Press.

Naess, A.1977. Spinoza and ecology. *Philosophia* 7, 45–54.

Naess, A., 2011. Ecosophy T: deep versus shallow ecology. In *Environmental Ethics: Readings in Theory and Application,* 6th edition, ed. L. P. Pojman and P. Pojman. Boston: Wadsworth. 133–142. (Original work published 1985).

Nadler, S. 2020. Baruch Spinoza. In *The Stanford encyclopedia of philosophy,* ed. E. N. Zalta.

National Park Service. 2020. John Muir. https://www.nps.gov/yose/learn/historyculture/muir.htm

Newey, S. and Gulland, A. 2020. What is coronavirus, how did it start and how big could it get? The answers to all your questions on the disease outbreak spreading across the world. *The Telegraph* 10 June.

O'Connor, S. and Kenter J.O. 2019. Making intrinsic values work; Integrating intrinsic values of the more-than-human world through the LFV. *Sustainability Science* 14: 1247–1265.

O'Neill, J., Holland, A. and Light, A. 2007. *Environmental Values*. New York: Routledge.

Overstraeten, B. V. 2020. Stop! French philosopher Latour urges no return to pre-lockdown normal. *Reuters* 8. May.

Perpiña Castillo, C. et al. 2018. Agricultural land abandonment in the EU within 2015-2030. JRC.B.03 – LUISA Territorial Modelling Platform.

Pinker, Steven. 2018. *Enlightenment now: The case for reason, science, humanism, and progress*. New York: Viking.

Pollini, J. 2013. Bruno Latour and the ontological dissolution of nature in the social sciences: A critical review. *Environmental Values* 22: 25–42.

Reader, J. A. 2017. A tour around Latour: Religion and fidelities. *Temple tracts*: 2 (3).

Regan, T., 1985. The radical egalitarian case for animal rights. In *In Defense of Animals,* ed. Peter Singer, 31-38. Oxford: Basil Blackwell.

Ritchie, H. 2018. Urbanization. Published online at *OurWorldInData.*org.

Rolston III, H., 2011. Naturalizing values: Organisms and species. In In *environmental ethics: readings in theory and application,* 6th edition, ed. L. P. Pojman and P. Pojman, 105–118. Boston: Wadsworth. (Original work published 2001).

Rosling, H., Rosling, O. and Rosling Rönnlund, A. 2018. *Factfulness: Ten reasons we're wrong about the world - and why things are better than you think*. New York: Flatiron Books.

Ryle, G. 1949. *Descartes' myth: The concept of mind*. Chicago: University of Chicago Press.

Routley, R. 1973. 'Is there a need for a new environmental ethics?' *Proceedings of the fifteenth world congress of philosophy* (Varna, Bulgaria: World Congress of Philosophy), 205-210.

Rubenstein., M-J, 2018. *Pantheologies: Gods, worlds, monsters*. New York: Columbia University Press.

Sandler, R. 2012. Intrinsic value, ecology, and conservation. *Nature education knowledge* 3(10):4

Schmidt, G. 2009. The physics that we know. A conversation with Gavin Schmidt. *Edge.org* 27 May.

Shiva, V. 2014. *The Vandana Shiva reader*. Lexington: The University Press of Kentucky.

Sims, A. 2005. *Ecological debt*. London: Pluto.

Singer, P. 1981. *The expanding circle: Ethics and sociobiology*. New York: Farrar, Straus and Giroux.

_____. 2011. *Practical Ethics*. third ed. New York: Cambridge University Press.

Spinoza, 1988. *Theological-political treatise*. Indianapolis: Hackett.

Taylor, P.W., 1981. The ethics of respect for nature. *Environmental ethics* 3: 197–218.

Terranova, F. 2019. *Donna Haraway: Story telling for earthly survival* (film).

Tsing, A. 2012. Unruly edges: Mushrooms as companion species for Donna Haraway. *Environmental humanities* 1: 141-154.

Tucker, H. 2020. Coronavirus bankruptcy tracker: These major companies are failing amid the shutdown. *Forbes*. May 30.

United Nations. 2020. The climate crisis – a race we can win. https://www.un.org/en/un75/climate-crisis-race-we-can-win

USDA. 2018. Livestock and meats domestic data. https://www.ers.usda.gov/data-products/livestock-meat-domestic-data/livestock-meat-domestic-data/#Livestock%20and%20poultry%20slaughter

Vicsek, L., Király, G. and Kónya, H. 2016. Networks in the social sciences: Comparing actor-network theory and social network analysis. *Corvinus journal of sociology and social policy* 7 (2): 77-102.

Waelbers, K. and Dorstewitz, P. 2014. Ethics in actor networks, or: what Latour could learn from Darwin and Dewey. *Science engineering ethics* 20: 23–40

Warren, K. J., 2015. Feminist environmental philosophy. In *the Stanford encyclopedia of philosophy*, ed. E N. Zalta.

Waters, C.N, Zalasiewicz, J.A, Williams, M., A. Ellis, M.A. and Snelling, A.M. 2014. A stratigraphical basis for the Anthropocene. *Geological society, London, special publications* 395: 1-21, 24 March.

Watts, J. 2019. Concrete: the most destructive material on Earth. *The Guardian* 25. February.

_____. 2020. Bruno Latour: This is a global catastrophe that has come from within. The Guardian 1. July.

Weisberg, Z. 2009. The broken promises of monsters: Haraway, animals and the humanist legacy. *Journal for critical animal studies* VII (II).

Weston, P. 2020. Hundreds of elephants dead in mysterious mass die-off. *The Guardian* 1 July.

Whipps, J. and Lake, D. 2017. Pragmatist feminism. In *The Stanford encyclopedia of philosophy*, ed. E.N. Zalta.

Whitney, E. 2015. Lynn White Jr.'s 'The historical roots of our ecologic crisis' after 50 years. *The compas*s 13 (8): 396-410.

White, L. 1967. The historical roots of our ecologic crisis. *Science* 155 (3767): 1203-1207.

Whyte, K.P and Cuomo, C. 2016. Ethics of caring in environmental ethics: indigenous and feminist philosophies. In *The Oxford handbook of environmental ethics*, ed. S.M Gardiner. and A. Thompson Oxford: Oxford University Press.

Williams, J.W. 2009. Science Stories: An interview with Donna J. Haraway. *The Minnesota review* (73-74): 133–163.

Wille, B. P. 2014. Review of an inquiry into modes of existence. An anthropology of the moderns by Bruno Latour. *The ignatianum philosophical yearbook* XX (2): 107-124.

Woods, K. 2016. Environmental human rights. In In T*he Oxford handbook of environmental political theory*, ed. T. Gabrielson, C. Hall, J.M. Meyer, and D. Schlosberg, 333-345. Oxford: Oxford University Press.

WWF (World Wildlife Federation). 2020. Indonesia: Island of Java. https://www.worldwildlife.org/ecoregions/im0168

Zaleha, B.D. and Szasz, A. 2015. Why conservative Christians don't believe in climate change. *Bulletin of the atomic scientists* 71 (5): 19–30.