The University of St. Mark & St. John

Nature connections for the Anthropocene: a vital materialist exploration of human relationships with nonhuman natures.

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Thesis submitted in part-fulfilment of the requirements for

Doctor of Philosophy

2024

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Statement of Originality

I confirm that I have acknowledged all sources of information and help received and that where such acknowledgement is not made the work is my own.

Signed: Damien Hackney

Date: 30/11/2024

Acknowledgements

Thank you, Debby, for your golden wisdom and for keeping my feet on the ground while my head was in the clouds.

Thank you, Greg, for sharing my enthusiasm and cheering me on.

To my participants, I am honoured and privileged to have shared in your stories.

To the sentinel, most courageous and unrelenting of trees.

To the Major Oak of Sherwood Forest, who ignited the romance of a lifetime.

To my mother and my father. I hope I have honoured you.

To Miriam. Thank you for all your love and support, and for walking with me until the last mile.

To Lotta, Magda, and Connor. Thank you for all your words of kindness. I love each of you more than you could know.

To Viki, who was happy for me.

Abstract

This thesis rests on the premise that Anthropogenic climate change and ecological damage present problems that require a fundamental shift in human relationships to nonhuman natures. Whilst not objecting to technology driven solutions to specific problems, I assert that any solutions must be guided by perceiving the nonhuman world as a more-than-human community. This is contrary to the dominant Western worldview since the enlightenment, from which humans have learnt to separate themselves from the rest of nature, which tends to be perceived as inert and passive (Merchant, 2005).

Since the early 2000s, the Anthropocene concept troubles this separation by challenging a perception of nature as a domain separate from humans and human culture, and highlighting the interconnectedness of human and nonhuman natures (Arias-Maldonado, 2015). This perspective has prompted concerns among conservationists that support for habitat protection will diminish because of the deconstruction of human/nature dualism (Büscher & Fletcher, 2019; Wilson, 2016; Wuerthner, Crist & Butler, 2015).

Seeking to resolve this tension, I explore the implications of human relationships with nonhuman natures in the Anthropocene through a qualitative study of people involved in the nature-connection and bonsai communities. The research is interdisciplinary, bridging environmental psychology, environmental ethics, and political ecology. I employ Clark et al.'s (2018) situational analysis as my method because of its cartographic approach to analysing material and discursive situations of more-than-human relationality.

Drawing on in-depth interviews with people from the UK and across Europe, I examine the interplay between worldviews, environmental discourse, perceptions of nonhuman value, and material practices. My findings contribute to understanding the multi-paradigmatic contradictions within nature-connection, and the role of human culture in addressing ecological challenges in the Anthropocene. I propose a theoretical shift toward panpsychism – a worldview that acknowledges the intrinsic value of nonhuman natures and creates a rational premise for their moral consideration. I argue that a movement in Western cultures toward a panpsychist outlook could facilitate a profound transformation in human relationships to nonhuman natures and strengthen support for conservation endeavours.

Chapter 1: Introduction

1.1 Background and context

We are living in a time that is so markedly different from the Holocene of the last 11,000 years that a new epoch has been proposed: the Anthropocene (Crutzen & Stormer, 2000). The Anthropocene was initially meant to recognise a new period of earth's history where human influence on earth systems is so ubiquitous it will be observable in the geologic record by future generations (Crutzen, 2002).

Nevertheless, in 2024 the International Union of Geological Sciences (IUGS) voted against ratification of the Anthropocene as a division of geologic time (Witze, 2024). Yet, this decision is unlikely to diminish use of the Anthropocene as a cultural concept that has developed at pace over the last two and a half decades, and which has sparked reflection and debate across the social sciences, humanities and environmental education, as well as capturing the public imagination (Koster, 2020; Witze, 2024).

Anthropocene discourse revolves around the question of how humans and our social world are positioned in relation to nonhuman species and the natural world (Machin, 2019). It is this cultural aspect to Anthropocene discourse that provides the broad context for my research. Within this context I work through the lens of critical environmental psychology, and more specifically within an area of research called nature-connection (Sheffield et al., 2022). My approach is critical for two reasons. Firstly, engagement with environmental ethics, cultural and political factors are salient throughout this thesis. Secondly, I challenge the anthropocentrism of extant frameworks dominating nature-connection literature and have attempted to research from an ethical standpoint that honours the ontological sovereignty and moral consideration of nonhuman as well as human natures.

1.2 The research problem from distal and proximal perspectives.

1.2.1 The distal perspective

Anthropocene discourse asserts that social and natural systems are now so entangled that to speak of nature as a domain free of human influence is no longer possible. Given that the Anthropocene concept was initially developed by a group of scientists acculturated in western Europe (Steffen et al., 2011) the proposal may seem discontinuous with previous framings of the human/nature and culture/nature dualisms often associated with the modern West (Plumwood, 1998). Aspects of Anthropocene discourse challenge the mainstream western worldview, which has been marked by human exceptionalism and separation from the natural world (Merchant, 2005).

The characteristics of the mainstream western worldview, summarised in what Dunlap (2008) calls the Old Social Paradigm (OSP), have been critiqued by a growing western environmentalism that sought to reposition humans as *of* the natural world, rather than separate from or above it (Peterson,

2021). Nature-connection practices are connected to this movement in that they are designed to facilitate an experience of being connected to, rather than apart from, natural environments.

In one sense then, the central message of the Anthropocene seems to align with environmental discourse which itself seeks to move away from enlightenment notions of human exceptionalism and toward a perception of immanence in a more-than-human world (Abram, 1996). Yet, Anthropocene discourse has also been accused of reproducing tropes of human domination over nonhuman natures in ways that are antithetical to environmental justice and conservation aims (Malm & Hornborg, 2014).

Thus, the Anthropocene intersects with multiple worldviews from which different environmental attitudes and values proceed. That the same worldview can be both affirmed and challenged by Anthropocene discourse points to the contested definition of the concept itself. Some scholars use it to highlight the observation that human activities never proceed without consequences for the nonhuman world (Wright, 2014), whilst others use it to assert a new role for humans as the dominant force of nature (Steffen et al., 2007).

These conflicting positions matter because worldviews matter, especially in a time of ecological and climate crisis. Whether worldviews are seen as significantly shaping behaviour (Kagee & Dixon, 1999; Lonner & Adamopoulos, 1997), or whether they function more as frameworks for the justification of behaviours (Sheikh, 2018), the cultural expressions of a worldview have long been associated with the formation of thoughts, attitudes and actions in the world (Koltko-Rivera, 2004). In the context of this research, worldviews are relevant to understanding how people perceive human relations to nonhuman natures, and the environmental attitudes, values and cultural practices that are connected to worldviews.

The best available environmental science suggests that our world is undergoing systemic change in ways that are already having radical consequences for human and nonhuman life (Ripple, 2024). For example, predicted changes in climate present an existential challenge through the possibility of tipping points beyond which human efforts at mitigation are unlikely to be efficacious (Dakos et al., 2019). Therefore, how humans continue to pursue their relationships with nonhuman natures and ecosystems may be critical to both continued human habitation on earth as well as the well-being of myriad other species. If, as I assume here, worldviews matter, then it is imperative that as humans we construct our worldviews in ways that are most facilitative of ways of life that will achieve multi-species flourishing rather than extinction, and environments that are supportive of life. The Anthropocene concept is still in production through its ongoing interpretation and the ways it is used to tell stories about human relationships to the nonhuman world. The Anthropocene is, I suggest, a

worldview in the making. It is thus imperative that whatever Anthropocene discourse stabilises into, it facilitates beneficial, rather than destructive, influences.

From a distal perspective, my research here uses empirical exploration and theoretical argument to contribute my own story of the Anthropocene. This is not a story told by me alone. Rather, it is a collaborative effort involving many other human and nonhuman natures. My hope is that this research story may help navigate a direction toward a future planet that is not just habitable but flourishing with life.

1.2.2 The proximal perspective

My research has both empirical and theoretical aims. My empirical aim is to explore specific nature-connections between humans and nonhumans. My theoretical aim is to draw on the findings from this exploration to contribute something of value to the ongoing conversation about what kind of worldview might best support practices of right relationship with nonhuman natures, landscapes and ecosystems.

1.3 Ontology and epistemology

My ontological and epistemological assumptions for this study rest on a vital materialism (Bennett, 2010). Vital materialism theorises a distributed agency across a myriad of materialities that extend beyond human individuals to include nonhuman species, natural life forms, as well as artefacts and technologies (DeLanda, 2016; Latour, 2005). As such, agency is not seen as the sole prerogative of the human individual (Fox & Alldred, 2017). Rather, a vital materialist perspective attributes the active participation of nonhumans in shaping human experience and thus assumes a distributed agency across human and nonhuman entities. The human individual is not lost in this perspective, but rather de-centred through the admission of an extended more-than-human relationality to psychological life.

1.3.1 Ontology

Vital materialism asserts that matter is not inert, but active and inherently creative. This proposition is encapsulated in Bennett's (2010) concept of vibrant matter. The consequence of this is a shift from perceiving humans as the sole location of creativity and agentic action to perceiving any number of materialities as capable of agentic shaping of the world. The implications of this for environmental psychology are that to research the interaction between human individuals and environments, those environments must be recognised as constituting a multiplicity of nonhuman agencies. As part of the environments that we find ourselves in, nonhuman natures may actively condition human psychology. From this ontological stance, human experience is always emerging from more-than-human assemblages and the relationality constituting those assemblages (DeLanda, 2016).

1.3.2 Epistemology

Vital materialism is aligned with a body of related philosophies constituting the ontological turn to matter known as the new materialisms (Coole & Frost). A common philosophical framing across the new materialisms comprises the entanglement of ontology and epistemology in the form of an onto-epistemology (Barad, 2007). Bennett (2010) theorises a material world that is not detached from human cognition, but rather one of lively matter capable of participating in knowledge production. As such, knowledge production is not the privilege of a human mind, but that which emerges from relationships between human and nonhuman forces. From this premise, knowledge is not understood to the product of a detached reflection of a pre-existing reality but is continually being produced through the dynamic relationality of a more-than-human world. The onto-epistemology of vital materialism therefore refers to the way that knowing is inseparable from the material conditions of reality. Human and nonhuman natures actively participate in knowledge production in dynamic and ever-changing entanglements, and as such, acts of knowing are inseparable from acts of being.

This onto-epistemological perspective cuts through the dichotomised epistemologies of positivism or interpretivism. Unlike positivism, where knowledge reflects a pre-existing reality, an onto-epistemological stance assumes that knowledge is a continuous feature of the process of creation, not detached from it. The implication for research is that the researcher does not discover a pre-existing truth about the world but is part of a continuous process of knowledge production. However, the onto-epistemological position also differs from interpretivism in that rather than privileging the human imagination as creating a socially constructed reality independent of material conditions, social constructs are understood to be the result of both human and nonhuman material influences. Research findings, therefore, are contingent on the dynamic material relationships by which they are formed.

1.3.3 Implications for environmental psychology

Working with a vital materialist framework has some significant implications for research in environmental psychology. The most significant is the decentring of the human individual, even in a research project that may be most concerned with human behaviour. A vital materialist perspective assumes that human psychology always emerges within a more-than-human assemblage of influences. As such, consideration of the perspectives of nonhuman natures are as important in understanding the formation of environmental attitudes, values and practices as the reported experiences, thoughts and feelings of human research participants. I have implemented this approach in my research through a consideration of the nonhuman natures' agentic contributions to the nature-connections I have studied.

1.4 Research groups and questions.

The consequences of the unfolding Anthropocene are of existential importance not just for many humans, but for a myriad of nonhuman species, ecologies and landscapes. As such, my motivation for this research is predicated on an ethical imperative to understand what kinds of nature-connections – in both their material and discursive aspects – might best support greater ecological awareness and action toward a flourishing biodiverse world.

To this end, my empirical work focused on the relationships between human and nonhuman natures and how these relationships might be productive of specific worldviews, environmental attitudes, values and behaviours. My choice of participants was guided by this focus and consisted of two groups. One was a group of nature-connection practitioners, and the other was a group of bonsai practitioners. I chose the nature-connection practitioners on the assumption that they would have strong ties to nonhuman natures and that they were likely to be cognizant of the worldviews, attitudes and values that framed their practices. I chose the bonsai group through noticing how inextricably entangled the roles of human culture and nonhuman nature are in the life of a bonsai tree. Bonsai seemed to mirror at a microcosmic scale the socionatural entanglements proposed by Anthropocene discourse, and through this I saw a chance to study the psychology of this entanglement at the scale of the individual.

These combined groups' data allowed me to contribute usefully to some of the concerns expressed by conservationists about the proximity of nature and human culture by understanding how these entanglements shape participants' broader worldviews, environmental attitudes, values and behaviours, and how participants' worldviews relate to the specifics of their nature-connection practices.

With this background in mind, and after an extensive review of extant literature, I formulated the following research questions:

Questions for the nature-connection practitioner group:

How are nature-connection practitioner's relationships with nonhuman natures informed by their underlying worldviews?

How do nature-connection practitioners understand the role of nature-connection experiences in the Anthropocene?

How are nature-connection practitioners experiences materially, psychologically, and discursively configured?

Questions for the bonsai group:

How does nature-connection function in a context where human culture and nonhuman natures are inseparably entangled?

What are the consequences of a nature-connection where the natural and the artefactual are irreducibly entangled for practitioners' environmental ethics and attitudes toward conservation?

What role do nonhuman natures play in the relationality of the bonsai assemblage?

1.5 Methodology

I took a purely qualitative approach to this research. This was for several reasons. Firstly, more qualitative research is needed in nature-connection research within environmental psychology to gain a deeper understanding of how nature-connections are formed and how they relate to people's worldviews (Barrable & Booth, 2022). Secondly, I needed a qualitative approach to consider the active participation of nonhuman natures in this research. Thirdly, my intention was to explore and understand the complexity of nature-connections in specific situations. To this end, I wanted to avoid quantitative methods that would necessarily simplify and aggregate my data, losing the detail I was most interested in. Fourthly, my intention was to explore two nature-connection situations to support solution focused theoretical work toward an environmental worldview for the Anthropocene. This undertaking did not require a need to generalise numerical patterns from my sample to a population. Finally, the qualitative method I chose was highly congruent with my onto-epistemological assumptions, and so allowed for an internal coherence across the design and workflow of this study.

1.5.1 Method

I chose Clarke et al.'s (2018) situational analysis (SA) as my method. SA is a qualitative method developed with a relational perspective in mind, having a series of cartographic techniques as its analytical toolkit. Furthermore, the method is explicitly stated as congruent with new materialist philosophy, to which Bennet's (2010) vital materialism would belong. This gave internal coherence to the connections linking my underlying philosophical assumptions, my methodological framework, and my analytical methods.

1.5.2 Sampling and procedure

My data was drawn from 18 in-depth interviews across two participant groups who were purposively recruited. The first group was comprised of 8 nature-connection practitioners. I chose this group because of extant literature suggesting that nature-connection practices can promote greater care and concern for nonhuman natures and being facilitative of what have been described as pro-environmental behaviours (Steg & Vlek, 2009). I wanted to look more closely at the specificities of

human relationships with nonhuman natures, as well as explore more deeply how participants' worldviews related to their nature-connection practices, environmental attitudes and values.

My second participant group consisted of 10 bonsai practitioners. When I first began looking at bonsai trees, I was struck at the way human culture and a nonhuman life pursuing its own purpose seemed so inextricably entangled. This natureculture (Harraway, 2016) seemed to present a wonderful example of a more-than-human assemblage which in many ways I saw as a microcosmic scale version of the Anthropocene. Extant environmental and conservation literature have included concerns that a deconstruction of the perception a natural world defined by the absence of human activity might lessen conservation support (Caro et al., 2014; McKibben, 2003; Wuerthner et al., 2015). My work here responds to this concern, since the bonsai assemblage offers an opportunity to explore in depth how participants' perceptions of nonhuman natures might be influenced by their intensely cultural interactions with trees, and how this cultural relationship with trees contributes to their environmental values and attitudes. Specifically, I was interested to find out whether bonsai practice informed or helped to frame participants thoughts around wider landscapes and how they understood humans living in right relationship with those landscapes.

Together, these samples gave me the empirical foundation from which I was able to theorise from an evidence base. In this theoretical phase of my discussion chapter, I explore a future imaginary in the form of a transition toward a panpsychist worldview for modern western cultures and the potential implications of this for human relationships with nonhuman natures.

1.5.3 Ethics

The study was approved by the University of St. Mark and St. John's ethics committee in April 2021. Participants were recruited through a process of informed consent. Systems of secure data storage were put in place in advance of data collection, and participant anonymity was upheld throughout. Gatekeepers were used for recruitment rather than direct solicitation. I remained cognizant of the strong emotions that are often tied to issues such as climate change and environmental damage, and the need to balance my responsibility for participants' wellbeing with their right to express themselves. I was also aware of the need to maintain a non-judgemental interview environment to allow participants to speak their minds without challenge if their views did not align with my own. I also felt a strong sense of responsibility to the nonhuman natures involved in this study, as well as the potential wider impact of my thesis on people's worldviews. That my research should be beneficial to both social and natural worlds was an ethical stance that has shaped every aspect of it.

1.5.4 Limitations

There are several limitations to this study. Some of these are practical and related to necessary limitations in scope due to the time frame for completing a PhD. From a methodological perspective, my research here has not produced a predictive model for increasing nature-connection that can be used with a quantifiable degree of confidence. Nor can I make any probabilistic claims that the situations I studied are likely to reflect the populations from which they were sampled, and therefore any statistical generalisation from my findings is inappropriate. Furthermore, I did not attempt to generate themes as a way of generalising qualitative data. However, these limitations are perspectival and dependent on research values and purpose. I am explicit in chapter 3 that my methodological intention is to stay with the complexity and difference of my data rather than attempt to simplify and aggregate, and the method I chose to work with affirms this approach. I argue that this has been fruitful in developing theoretical nuance in relation to nature-connection that otherwise might have gone unattended to. A more serious limitation was the self-report I relied on by use of interviews. I acknowledge the potential for social desirability to have influenced my data, although being cognizant of this possibility from the start, I made every effort to create a non-judgmental atmosphere for participants to speak freely within.

1.5.5 Positionality and reflexivity

Clarke et al. (2018) clearly position the researcher as part of the situation they are studying. This perspective necessitates an active role for researcher reflexivity if a study is to be complete. Thus, I have included section 3.7 in chapter 3 where I discuss my own role during this research and how my intellectual, ethical and philosophical evolution has progressed over the course of it. I have undoubtedly influenced the conclusions drawn from this study, and therefore I have documented my contribution along with those of my participants. I am *of* the data I have studied. My entanglement with my participants and the many nonhuman natures I have met over the course of this study have also changed me. As much as it could be said that I have influenced this study, I have also been influenced by it. In this sense, it is accurate to say that my contributions to knowledge here have been co-constituted by multiple elements, human and nonhuman, making up the research process.

1.6 Findings

My findings are presented across two chapters. The first of these chapters focuses on the nature-connection sample. I found that the transition from a worldview rooted in enlightenment thinking toward a more ecological perspective was nonlinear, and the one worldview did not proceed from the other, but rather both were expressed in multi-paradigmatic entanglement. The nature-connection participants both rejected and exhibited enlightenment and dualistic discourse, and animistic perceptions were clearly delineated by whether nonhumans were seen as natural or artefactual. These findings led to my conceptualisation of an inverse dualism and a selective animism.

Another key finding was participants' emphasis on land management through a participatory approach and practices of reciprocity.

The second findings chapter focused on the bonsai participants. I found numerous examples of animistic perceptions despite participants' Western acculturation. A perception of the ontological sovereignty of trees was salient, which led to a discomfort around their commodification for financial gain. The cultural practices of bonsai only enhanced pro-environmental attitudes, values and behaviours, and I found no evidence that intense human manipulation of trees diminished participants' ability to recognise the habitat needs of nonhuman species. Rather, bonsai practice heightened environmental awareness around deforestation and deepened an appreciation of big trees in the landscape.

1.7 Discussion and conclusion

My discussion explores my key findings in relation to my initial research questions, highlighting the utility of attributing ontological sovereignty and moral consideration to nonhuman natures. However, I argue that as a philosophical proposition, vital materialism fails to provide a complete justification for the moral consideration of nonhuman natures and seek to extend the concept of Bennett's (2010) vibrant matter with Goff's (2019) panpsychism. I propose that panpsychism also resolves the contradictions inherent in inverse dualism and selective animism, as well as presenting a standpoint from which engagement with indigenous knowledge can be undertaken with less risk of cultural appropriation. I end my discussion with an imaginary of how a Western cultural transition into a panpsychist worldview might influence human relationships with nonhuman natures.

My conclusion summarises this thesis before addressing the limitations of this study, as well as its potential impact and application moving forward. I suggest the potential for panpsychism to facilitate a more inclusive understanding of nature-connectedness. Recommendations for future research include investigating the potential presence of animistic relationships with nonhuman natures in cultural groups whose nature-connectedness is less obvious or deliberate. Future work could also test the explanatory power of inverse dualism and selective animism across diverse Western cultures, particularly in populations who favour urban and technology driven environments.

1.8 Thesis chapters overview

In chapter 2, I offer a review of previous literature. I begin with the scientific evidence framing the environmental and climate crisis (IPCC, 2023). The ubiquitous presence of human activity in earth systems leads to introducing the proposed onset of an Anthropocene epoch (Crutzen & Stormer, 2000). I outline the various discursive positions and interpretations of the Anthropocene concept, highlighting throughout the widespread theme of human relationships with nonhuman natures.

The Anthropocene concept challenges conservationism and environmentalism in so far that these seek to protect the natural world from activity (Caro et al., 2014). The possible implications of deconstructing a human/nature dualism for conservation support are also introduced, as well the possibility of the Anthropocene facilitating the further neo-liberalisation of nature (Lorimer, 2012).

I then move on from the Anthropocene as a continuation of the anthropocentric and instrumentalist aspects of the Western scientific tradition to a posthuman interpretation through the idea of distributed agencies that are shared across networked human and nonhuman natures (Fox & Alldred, 2017; Latour, 1993). The posthuman perspective contrasts with a discourse of human domination by emphasising a sense of the interconnectedness and more-than-human relationality (Trischler, 2016).

Introducing sociological work on the New Environmental Paradigm (NEP) (Dunlap, 2008) leads to the concept of nature-connection as it has been researched within environmental psychology (Schultz, 2002). I unpack the heterogeneous use of terms within the nature-connection literature. I look at the ways nature-connection's internal logic has been criticised, the ways in which human/nonhuman relationships have been configured, and the implications of these for environmental attitudes.

The review culminates with my justification for this study and its aims, which are to explore how nature-connection practitioners' and bonsai practitioners' nature-connections are configured, and how these relate to their environmental worldviews. I finish this chapter by presenting my research questions.

Chapter 3 presents my methodology. This begins with a critical presentation of the biophilia hypothesis (Wilson, 1984), which is the dominant theoretical framework used in nature-connection research within environmental psychology (Richardson & Sheffield, 2017). I critique the biophilia hypothesis for its dualist framing and anthropocentric lens before introducing the New Materialisms (specifically vital materialism) (Coole & Frost, 2010) as a more effective lens for exploring nature-connection in the Anthropocene. This leads to presenting Situational Analysis (SA), an analytical method that is congruent with a new materialist lens (Clarke et al., 2018).

My sampling strategy and process is then laid out, including detailed demographic information on my participants. In this section I also discuss the reflexive development of my interview schedule.

I then report on the ethical approval gained for this study and measures I implemented, including detailed discussion of further ethical considerations I took throughout this study.

Finally, I discuss the topic of generalisability in the context of my research aims and explain my preference for use of the terms transferability and extendibility in relation to the wider impact this study may have.

Chapter 4 presents the findings from my analysis of the nature-connection participants' data. This begins with an overview of the social worlds involved in the situation and their relationships with each other before moving toward smaller scale interactions. Of special analytical interest here is the various positioning and discourses around natural and artefactual materialities and their relationship to participants' underlying worldviews. In this chapter I minimise use of theory and comparisons to extant literature for the sake of remaining within the thicket of the data and the relationships that make it up. I conclude with a summary and presentation of the key findings to be further discussed in chapter 6.

Chapter 5 presents the findings from my analysis of interview data with a sample of bonsai practitioners. This chapter follows a similar structure to chapter 4, beginning with a broader scale analysis of the social worlds before moving in on the detail of individual relationships between participants and the trees they work with. The bonsai situation is one where nature and culture, trees and artefacts, are explicitly entangled as assemblages of human and nonhuman natures (DeLanda, 2016). The influence of working with bonsai trees on human participants' relationships with trees in general are explored, but I have also sought to de-centre the human by taking an analytical lens that seeks to consider the trees' perspectives, as well as their influence on participants. As with chapter 4, chapter 5 concludes with a summary and presentation of the key findings to take forward into chapter 6 for discussion.

In chapter 6 I discuss my research findings in the light of my initial questions and the overall aims of this study. I discuss my findings of the conflicting environmental worldviews expressed by the nature-connection group, which I use to construct the concepts of inverse dualism and selective animism. I argue that these concepts are explained by an entanglement of modern Western dualist perceptions and indigenous ontologies of immanence and relationality. I also discuss how the experiences and attitudes of the nature-connection participants informed their approaches to land management and their relationships with nonhuman natures. Relating these to the various interpretations of the Anthropocene concept and its implications for conservation, I suggest a more complex dynamic is present than can be captured in the simple question of whether humans should limit their involvement in natural landscapes and ecologies. I end this section with three succinct statements presenting my contributions to knowledge from the research with the nature-connection group. These include calling for a need to work on an internally coherent worldview to underpin nature-connection practice that resolves the problems of inverse dualism and selective animism, the inevitability of cultural participation in the natural world, and a need to extend the concept of nature-connectedness to include the human-built and artefactual.

I discuss the findings from the bonsai group, which present a unique situation for exploring nature-connection due to the more-than-human assemblage of bonsai. I discuss the entanglement of the human's purpose and the tree's purpose, the imperative to achieve human goals through collaboration with the trees, the intrinsic value participants saw in the trees they tended, as well as the strong animistic perception they had of those trees. I also discuss the impact that participant's relationships with bonsai trees had on their relationships with trees more generally, and the specificity of the impact of bonsai on their environmental awareness and conservation support and behaviours. Finally, I discuss the agentic and powerful influence the trees had on the lives of the human participants, and the extent to which bonsai trees defined the daily practices and decision-making of their human cultivators. Furthermore, I discuss the capacity of the trees to contribute to participants' mental health, enchant and move them, and function as mentors in living and dying.

I present my contributions to knowledge from researching the bonsai group, including the strong attribution of an intrinsic value to trees in a sample of participants who were not pursuing alternative worldviews to those of modern western cultures, the heightened sensitivity to the needs of trees that came about through intense cultural involvement, and the focused extension of care for trees in the wider landscape.

The chapter moves on to focus discussion on the core of my thesis, which is based on my finding evidence for a ubiquitous perception of the intrinsic value and moral consideration of nonhuman natures through the animistic perceptions and ecological consciousness of participants across both groups. I emphasise the role of cultural practices in the cultivation of this perception as well as the restricting factors of inverse dualism and selective animism. I seek to untangle the coupling of technological development with capitalism and how this influenced participants' political ecologies. I argue that a first-principles level of attention to human relationships with nonhuman natures is needed to negotiate the Anthropocene, but that this need not oppose the pursuit of technological development. I argue that to achieve this, inverse dualism and selective animism must be resolved, and that a vital materialism is in the end insufficient to support this resolution or advance a perception of the moral consideration of nonhuman natures. Rather, such a re-perceptualisation can be achieved by moving toward a panpsychist understanding of inclusive nature-connectedness.

I finish my discussion with some of the implications of a panpsychist worldview for present policy developments, and I offer a future imaginary for a western culture where panpsychism becomes the mainstream ontological assumption.

In chapter 7, I offer an overall conclusion to this study, articulating the potential impact of my findings for modern western culture and environmentalism moving through the Anthropocene, discuss limitations, and provide recommendations for future research.

Chapter 2: Literature Review

2.1 Climate Change, Biodiversity Loss, and the Anthropocene

Humans have enjoyed unprecedented environmental benefits as 'children of the Holocene' (Wilson, 2016, p. 8). Beginning 11,700 years ago, continental glaciers retreated, and species diversification intensified, whilst global average temperatures during this time have remained relatively steady, with fluctuations staying within 0.5 °C (Purdy, 2015). Mathez and Smerdon (2018, p. 260) suggest that the convivial conditions of the Holocene 'likely contributed to the widespread transition from hunter-gatherer societies to pastoralism, domestication, and sedentism', factors which themselves led to the emergence of civilisations and organised societies. These convivial conditions have been jeopardised by anthropogenic climate change (MacCracken, 2019). The rise of industrialisation and technological development since the 18th Century have led to climate changes largely driven by the burning of fossil fuels (Steffen et al., 2015). This has led to unprecedented outputs of carbon dioxide (CO_2), methane and other so-called greenhouse gases into the atmosphere, which in turn has caused a heating effect (Lovejoy and Hannah, 2019). These changes have altered earth systems, producing dramatic effects on ecosystems and radically impacting the evolutionary resilience and rich biodiversity through the onset of mass species extinction (Barnosky et al., 2011; Park, 2019). The activation of tipping points is also concerning, where thresholds that may be crossed due to relatively small changes, such as a minor increase in temperature, but which can trigger much larger changes in the climate system. These may be irreversible due to feedback mechanisms that cause the initial change to become self-perpetuating (Brennan & Lo, 2010). An example of this is the Greenland ice sheet collapse, where a decrease in surface albedo reflects less sunlight, accelerating melting. The consequences would be sea level rise of up to 7 metres over time with devastating effects on coastal regions (McKay et al., 2022). Melting ice sheets would also contaminate fresh water, leading to 'widespread death of plants and animals and reduction in agricultural production' (Brennan & Lo, 2010, p. 2). With global heating predicted to increase by 1.5°C higher than pre-industrial levels by 2030, and up to 4°C by the end of the century, the International Panel on Climate Change (IPCC) has articulated an urgent need to keep the average temperature below a 2°C increase if catastrophic consequences for human and non-human life are to be minimised (IPCC, 2023). Current projections of present policy efforts predict an increase of 2.7°C above pre-industrial levels (Climate Action Tracker, 2023), suggesting this need will not be met if present conditions continue.

The ubiquitous impact of human activity on earth systems and biodiversity led Crutzen and Stormer (2000) to propose a new epoch – the Anthropocene – due to the assertion that human impacts will be visible in the geologic record. Crutzen (2002) proposed the late 18th century as the start of the Anthropocene due the increased global CO_2 and methane concentrations becoming apparent through analysis of air trapped in polar ice. Subsequently, however, Steffen et al. (2015) proposed the

beginning of the Great Acceleration over the beginning of the industrial revolution. The Great Acceleration refers to a dramatic increase in measurements of various human activities and their impacts on earth systems that clearly breaks from previous rates of change before the 1950s. As such, although the late 18th century industrial revolution will be visible in the geological record, it is from 1950 onward that anthropogenic factors exert the most radical effects on the planet and society. However, in March of 2024, the International Union of Geological Sciences (IUGS) finally voted not to ratify the Anthropocene (Witze, 2024).

2.2 The complex and contested arena of Anthropocene discourse

Anthropocene discourse has spread throughout the social sciences and humanities, as well as circulating throughout the media (Koster, 2020), suggesting that despite the lack of ratification by geologists, it will likely remain as a concept referring to the interconnectedness of social and natural systems (Adam, 2024). Yet the proposition of the Anthropocene heralding an age of humans is not without its critics. The concept is highly contested and variously interpreted, with some claiming the Anthropocene represents a recognition of humans 'running the whole earth' (Marris, 2013, p. 6), whilst others caution against confusing 'human-induced planetary change' with 'human planetary control' (Fremaux, 2019, p. 23).

Furthermore, Anthropocene discourse is closely woven with issues of social justice (McAfee, 2016; Bauer & Ellis, 2018; Steffen et al., 2015). Whilst some have advocated working toward a positive Anthropocene by which humanity as the dominant species can manage the rest of nature (Ellis, 2015), the Anthropocene has also been read as a homogenising discourse that renders invisible the conditions of cultural, social, material and economic inequality by which the industrial revolution unfolded (Malm & Hornborg, 2014). In support of the first position, Koster (2020, p. 59) reads the Anthropocene as a 'valuable shorthand for recognising humanity as the dominant species'. Yet the sense of universality attached to the development of the Anthropocene as the rise of a generalised Anthropos capable of 'overwhelming the great forces of nature' (Steffen et al. 2007, p. 614) has received strong critique. Challenging the association of the Anthropocene as representing any kind of universal phenomenon, Malm and Hornborg (2014, p. 64) assert the following:

> *Capitalists in a small corner of the Western world invested in steam, laying the foundation stone for the fossil economy: at no moment did the species vote for it either with feet or ballots, or march in mechanical unison, or exercise any sort of shared authority over its own destiny and that of the Earth System (Malm and Hornborg, 2014, p. 64).*

Steffen et al. (2015) have responded to this criticism by updating previous measures of the Great Acceleration from global aggregates to measures differentiated by groups of countries categorised by

economic and developmental status. However, there remains a deeper criticism to be made here. The advocation of a 'great' Anthropocene (An Ecomodernist Manifesto, n.d.) has been accused of continuing a modern project of human exceptionalism and domination over the nonhuman world – a trajectory that has arguably facilitated the climate and environmental crisis to begin with (Coates, 2013; Hamilton, 2016; Leiss, 2023). Thus, Moore (2016, p. 79) has politicised the Anthropocene with the proposed alternative name of 'Capitalocene', purporting to expose the 'dirty secret' of 'how capitalism was built on excluding most *humans* from Humanity' by documenting how historically, those humans made up of indigenous peoples, African slaves, most women, and specific white minorities such as Jews or Irish, 'were regarded as part of Nature, along with trees and soils and rivers – and treated accordingly'.

Furthermore, Hartley (2016) suggests that many scientists working on technological solutions to climate change fail to see the political dimensions of this approach, critiquing propositions such as geoengineering as perpetuating a business-as-usual attitude. The concern is that a technological approach diverts from addressing more fundamental problems of how relationships between some humans and the rest of nature are lived out in the processes of extraction, production, consumption, and waste (McBrien, 2016).

It has been proposed that the ease with which capitalism can transform nature into capital assets, and thus reduce the nonhuman world to 'something that can be valued and traded and used up just as any other asset' (Altvater, 2016, p. 145) is related to a western tradition of hierarchical human/nature dualism (Plumwood, 1998). This dualism separates a living human soul from an inert world of matter, inhibiting the attribution of intrinsic value to nonhuman natures (Merchant, 2005; Plumwood, 1993; Washington et al., 2021). This matters because without the perception of intrinsic value, there are no rational grounds for the moral consideration of nonhuman natures. This allows nonhuman natures to be aggregated into an environment whose value is solely determined by its utility for humans.

How far Anthropocene discourse is continuous with human/nature dualism is contested. On the one hand, the Anthropocene has been read as separating humanity yet further from the rest of nature by continuing a colonialist discourse of domination and control (Crist, 2013; Malm & Hornborg, 2014). Others use the Anthropocene to highlight the entanglement of social and natural systems, calling for humans to pay closer attention to the complex and nonlinear causes and effects of human/nonhuman interactions (Arias-Maldonado, 2015). The Anthropocene has been used to declare humans as earth's dominant species (Marris, 2013; Steffen et al., 2007), yet also serving to trouble a separation of human agency and a passive environment, asserting a world where

nonhuman natures are always acting back (Wright, 2014). Adams (2020, p. 2) frames this tension thus:

> Whilst it might seem to consolidate the notion of human influence on ecological systems, the Anthropocene also amplifies the interrelationship that defines the co-constitution of human with other forms of life' (Adams, 2020, p. 2).

This co-constitutive perspective shifts away from framing the nonhuman as an inert environment, and towards a perception of nonhuman natures actively shaping human projects (Bennett, 2010; Latour, 2005).

Ideas of human and nonhuman natures co-constituting the world have been a central theme within the new materialisms – a conglomerate of philosophies that form the ontological turn (or turn to matter) of the last three decades (Coole & Frost, 2010). As a group of philosophical strands that challenge a perception of humans as the sole embodiment of creativity in an otherwise purely reactive universe, new materialisms are a radical departure from the mechanistic materialism of mainstream enlightenment science (Fox & Alldred, 2017), and have advanced the use of the Anthropocene concept to highlight the need for more considered, ecologically sensitive, and accountable action in the world (Alaimo, 2016; Wright, 2014). However, whether ideas of human/nature entanglement do in fact steer such a trajectory has been met with deep suspicion by some conservationists (Sessions, 2014). It may have quite the opposite effect. If the allocation of agency is distributed across a myriad of human and nonhuman actants (Latour, 2005), where is the premise for individual accountability once humans are seen as nothing more than 'assemblages of bacteria, raw matter and technology' (Purdy, 2015, p. 276)? A central tenet of the new materialist project is found in the troubling of dualisms of all kinds, including those that separate the *natural* from the *artefactual* (Fox & Alldred, 2017, Whatmore, 2017). This has prompted concern amongst conservationists as to whether rendering a distinctly *natural* world invisible as it is subsumed into a hybrid socioecological network will diminish support for the protection and conservation of nonhuman habitats (Crist, 2013). This point will be pursued in section 1.3. I raise it here as part of an initial indication of the complexity of Anthropocene discourse and the contested nature of the concept itself.

Some scholars embrace the idea that humanity has taken charge of the planet (Marris, 2013). Eco-modernists see the negative impacts of climate change as something like teething problems of what will otherwise be a new pinnacle of human achievement (Ellis, 2015). Rather than taking a precautionary principle regarding potential unintended outcomes of technologies for the environment, ecomodernism endorses a push for more technological innovation, greater

urbanisation, and intensive farming in the human creation of a '*great* Anthropocene' (An Ecomodernist Manifesto). Ecomodernists maintain optimism in human ingenuity and enterprise (Shellenberger, 2014), whilst playing down the seriousness of environmental threats such as tipping points (Wang, 2023) or accusing environmentalists who are critical of big oil as demonising companies like BP (Trembath, 2023). Furthermore, whilst traditional environmentalists have called for radical systemic change to the capitalist structures that have overseen many aspects of environmental damage and climate change (Kallis & March, 2015; Macy, 2021; McKibben, 2003), ecomodernists are more inclined to work with capitalist structures, promoting the idea of green growth (Nordhaus, 2020; The World Bank, 2012, TEEB, 2010). More cautious voices point out that the Anthropocene is produced not by pre-mediated design, but by a far more chaotic process of experimentation, accident, and unforeseen consequences (Malm & Hornborg, 2014), challenging the evidence in favour of reliance on technological advancements for solving existential and global threats. Critics claim that ecomodernism simply furthers a sense of human hubris (Washington et al. 2021), remains fully embedded within an unsustainable capitalist paradigm and does nothing to address the continued exploitation of cheap nature (Moore, 2016).

Underlying these perspectives is the ubiquitous theme of human relationships to nonhuman natures. I suggest that whether the Anthropocene is framed as ushering in a new age of human global management, or the latest escalation of an out-of-control human hubris, each interpretation may be facilitated by how we see ourselves in relationship to nonhuman others. I conclude this introduction to the discursive landscape of the Anthropocene by quoting Machin (2019, p. 10):

> Some might regard the Anthropos as dangerously homogenizing. Others might see it as a stimulant of a salutary sense of commonality. It might be both. What is important here, I suggest, is that the Anthropos provokes political disagreement over the articulation of collective identities in the Anthropocene and opens the opportunity for us to reinvent ourselves for a new ecological condition (Machin, 2019, p. 10).

2.3 Conservation and environmentalism in the Anthropocene

That the Anthropocene has been used to challenge the separation of human culture from natural environments is an arena of contestation for many conservationists and environmentalists (Caro et al., 2014; Crist, 2013). This is because the deconstruction of a nature/culture separation effectively dismantles what has historically provided the justification for conservation of wilderness by protecting the natural world from human interference (Corlett, 2016). In fact, challenging nature/culture dichotomies pre-dates the proposal of the Anthropocene at the beginning of the 2000s, as social constructionists have long since detailed the way nature has been made and re-made through the lens of human culture (Macnaghten & Urry, 1998). This has led to long standing debate

over whether conservation is really about the preservation of wilderness as much as it is about the preservation of a set of cultural ideals situated within a discourse of nature romanticism (Cronon, 1996; McKibben, 2003). The Anthropocene seems to have contributed to the idea of nature being made in the image of man through evidence from the natural sciences that suggest the ubiquitous influence of humans on earth systems (Crutzen, 2002; Steffen et al., 2007). Thus, for some the 'death of nature' as 'a world apart from man' is a loss to be mourned (McKibben, 2003, p. 47). For others, however, it is the welcome exit of a misanthropic world view (Cronon, 1996).

Büscher and Fletcher (2020) have articulated these opposing standpoints as a split between new conservationists and neo-protectionists. New conservationists argue that in the Anthropocene it is no longer tenable to conserve a construction of wild nature untouched by human activity. Rather, new conservationists advocate the point of view that we should accept the role of humans as drivers of change to the natural world, just as any other species. As Holmes (2015, p. 97) asserts:

> Human activity should not be viewed as an external force disturbing the patterns and processes of species distribution and ecological change, but as a fundamental driving force alongside the biotic and abiotic factors traditionally considered by biologists and ecologists (Holmes, 2015, p. 97).

Various future imaginaries are being produced by this line of thinking. These range from the eco-modernist proclivity toward technological solutions to climate change discussed earlier, to visions of 'mosaic' landscapes (Ziegler, 2015, p. 97) that together form a 'half-wild rambunctious garden' of biodiverse, cultural landscapes and sustainable ecosystem services (Marris, 2013, p. 6).

Kareiva and Marvier (2012, p. 962) propose a movement from conservation biology toward a 'conservation science' that would 'jointly maximise benefits to people and to biodiversity' by working with the 'dynamics of coupled human-natural systems'. Seeking to push beyond historical arguments of biocentric concerns conflicting with anthropocentric concerns, Kareiva and Marvier (2012) suggest that these are inseparable incentives for pro-environmentalism, since environmental degradations are simultaneously detrimental for both human and nonhuman life, just as both human and nonhuman life benefit from conservation activity. Furthermore, Kareiva (2020) challenges the association of nature with fragility and vulnerability, claiming that environments are more robust than conservationists have led people to believe, and that rather than limiting conservation to wilderness preservation, attention should turn to urban nature and 'human-altered landscapes' in pursuit of improving human coexistence with other species (Kareiva & Marvier, 2012, p. 996).

By contrast, so-called neo-protectionists read the Anthropocene as a catastrophic consequence of excessive human involvement in natural processes. Whilst accepting the Anthropocene as a

geological phenomenon, the sociocultural and conservation implications are read as overwhelmingly negative. For example, Wilson (2016, p. 13) imagines future geologists talking about the Anthropocene as the epoch that married 'swift technological progress with the worst of human nature'. For Wilson (2016, p. 26), the Anthropocene is a time where the 'planet exists almost exclusively by, for, and of ourselves', and as such would be more aptly termed the 'Eremocene': the age of loneliness. Rather than embrace the Anthropocene as cause for the optimistic collaboration of social and natural forces, Wilson (2016, p. 91) asserts that anyone with a deep enough knowledge of biodiversity would follow a 'precautionary principle in the treatment of earth's natural ecosystems', and avoid 'careless talk about quick fixes, especially those that threaten to harm the natural world beyond return'. Furthermore, aspects of Anthropocene discourse such as the suggestion that most invasive species are not disruptive to native ecosystems has been called 'politically dangerous' in that it could lead to justifying environmental damage (Holmes, 2015, p. 99). Thus, Caro et al. (2014, p. 187) express concern that the Anthropocene concept will 'undermine both conservation and restoration objectives' by disseminating the idea amongst the public that there are no pristine environments left on earth to conserve, and therefore little point in supporting conservation efforts. In apparent acceptance of the inevitability of the Anthropocene concept's dissemination into public discourse, Corlett (2016, p. 39) asserts that the Anthropocene concept is 'likely to catch the public imagination, so conservationists must be ready with positive messages and practicable ways forward to minimize the risk of a "nothing is natural so anything goes" philosophy reducing support for biological conservation'.

Lorimer (2012) suggests a further concern regarding the deconstruction of a human/nature divide in that it may create an ethical void to be filled by the neo liberalisation of ecosystems, leading to a perception of nature as 'natural capital' and 'ecosystem services' over upholding the intrinsic value of nonhuman natures as reason enough to afford protection of species and habitats from damaging human impacts.

The concept of natural capital is related to Anthropocene discourse is so far that it is built on an admission of the impact of human activity on ecosystems, and a recognition that some of the historical consequences of this have been profoundly negative. Like the Anthropocene concept, natural capital also invites reflection on how we understand the relationships between humans and nonhuman natures, and whether the ways these relationships have been conducted needs revision (Hawken et al., 1999).

Advocates of natural capital call for the financial valuation of nonhuman nature and its integration into financial markets (Hawken et al., 1999; Kareiva et al., 2011). This is operationalised in numerous ways, including biodiversity offsets and carbon credits. Biodiversity offsets permit 'ecological impacts'

in one location by contributing to conservation or restoration efforts elsewhere (Mann, 2015, p. 267), whilst carbon credits permit companies whose carbon output exceeds an allowed limit to buy credit from companies who have kept carbon output below an allowed limit, and thus have surplus credit that can be sold (Gaast et al., 2018; Singh, 2009). Kareiva et al. (2011) argue that the integration of ecosystem services into economic planning is essential to realising the future of sustainable development. This advocation has found support in the United Nations Environment Programme (UNEP) (2011) which also stresses the importance of transitioning to a green economy through investment in natural capital, stating the following:

> The development path should maintain, enhance and, where necessary, rebuild natural capital as a critical economic asset, especially for poor people whose livelihoods and security depend on nature (UNEP, 2011, p. 2).

However, the idea of natural capital serving communities, especially indigenous peoples and those with existential ties to their local landscapes has come under critical scrutiny. Sullivan (2013) highlights the potential for a monetisation of ecosystem services to exacerbate inequalities in the Global South, where local populations have found themselves denied access to lands designated as protected areas because of biodiversity offsetting.

The re-branding of nonhuman natures as a portfolio of assets has been accused of simply increasing the ease with which the wealthy and powerful can accumulate new forms of capital through the 'corporate takeover of conservation' (Spash, 2022, p. 1). Whilst UNEP (2011, p. 7) have called for nonhuman nature to be 'evaluated in monetary terms and incorporated into the national accounts', other voices from the conservation literature insist that capitalist growth and conservation are fundamentally incompatible (Moranta, 2022). The apparent incompatibility between economic growth and environmental health has led to calls for change at a structural level, pursing alternatives such as models of degrowth or a universal basic conservation income (Büscher & Fletcher, 2020).

The first principle underpinning the marriage between conservation and capitalism is the commodification of nature (Scales, 2014). Natural capital de-personifies nonhuman natures, constructing them as capital and services. By this understanding of nonhuman natures, the destruction of a habitat and its biodiversity in one place is unproblematic from an ethical perspective, since commodities can be traded, offset or replaced somewhere else. It is this kind of integration of socioeconomic and natural systems that concerns conservationists who fear the Anthropocene could not only catalyse a sense of 'hopelessness in those dedicated to conservation', but also open a flood gate for further exploitation of nature motivated primarily by the goal of economic gain (Caro et al.,2014, p. 185).

I suggest there is a certain incoherence in the conservationist logic regarding human/nature and nature/culture entanglement. Conservationists and environmentalists critique human exceptionalism and the hierarchical dualism of dominant modern western thought (Alberro, 2020; Coates, 2013; Garlick & Austen, 2012, Leiss, 2023). Humans are at once charged with an arrogant hubris for perceiving themselves as outside or above the natural world (Washington et al., 2021) and yet the logical consequence of perceiving humans as *of* nature in no less a way as any other species is seen to threaten important distinctions between human and nonhuman domains (Crist, 2013). These apparent contradictions are pursued in more detail both empirically and theoretically throughout this study. As with my conclusion section 2.2, I wish to highlight here the way these tensions rest on the deeper question of how we perceive human relationships to nonhuman natures. Are we to see ourselves as part of nature or apart from nature? If we are of nature, are we a dominant geologic force (Steffen et al., 2007), or are we just coordinates in a processual network of sociomaterial configurations in which human agency is vastly overstated (Bennet, 2010; Latour, 2005)? What are the implications of these different perspectives for how we envisage the principles upon which arguments for conservation, or environmental policies, might be made? Would the decoupling of the human world from the rest of nature protect the natural world from exploitation, or would it cut us off from the sense of connection we need to recognise the intricate ways in which our human activities are always already entangled with the natural environment? In the final section introducing the Anthropocene I move to exploring the concepts implications for anthropocentrism and dichotomous thinking.

2.4 The implications of the Anthropocene for anthropocentrism and dichotomous thinking.

Regarding the Anthropocene concept, Bauer and Ellis (2018, p. 209) point out, 'scholars now using the designation have also reoriented the concept in multiple directions, many of which work at cross-purposes from each other'. This, however, maybe be part of the generative potential of Anthropocene discourse (Machin, 2019). I suggest that the Anthropocene invites engagement in topics long since discussed in environmental ethics; namely, ideas of anthropocentrism and human/nature dualism (Curry, 2006; Des Jardins, 2001; Kalof & Satterfield, 2005; O'Neill, Holland & Light, 2008; Varner, 1998). This is because both these ideas are significant in determining underlying approaches to human relationships with nonhuman natures, and as such, provide the frameworks within which policy and decision-making regarding environmental issues are processed.

The Anthropocene concept has been interpreted in terms that are diametrically opposed, with some suggesting it is instrumental in moving beyond nature/culture dualisms (Trischler, 2016), while others worry that naming a new geological epoch after humankind will only serve to strengthen an already out of control sense of human exceptionalism (Affifi, 2016). Hartley (2016, p. 165) concludes the following from this conceptual conundrum:

> For the great irony of the Anthropocene discourse is that it was developed to explain the merger of “man” and “nature”, yet at the conceptual level has split them further apart than ever (Hartley, 2016, p. 165).

Anthropocene critics point to the magnification of an existing narrative of human mastery over nature (Schulz, 2017). This criticism stems from work in anthropology, environmental history and philosophy, where unrestrained exploitation of the environment is argued to be predicated on a peculiarly western scientific worldview that has objectified nonhuman natures (Goff, 2019; Jarwar et al., 2024; Merchant, 2005; Plumwood, 1998; Plumwood, 2005). From this perspective, enlightenment science has consciously limited human perception of nature to what can be quantified by mathematical physics (Goff, 2019, Moore, 2016). With the qualities of nature extracted, it is proposed that humans could no longer relate to nonhuman natures as subjects, leading to the diminishment empathy and reverence toward nonhuman natures by humans (Naess, 2008). A mechanistic view of nature ushered in by the enlightenment, whilst credited with accelerating technological advances, has also been blamed for helping construct a perception of nonhuman nature ‘not as an organism but as a machine – dead, inert, and insensitive to human action’ (Merchant, 2005, p. 45).

Merchant (2005) suggests that a psychology of mastery over nature and the bending of inert stuff to the human will was only furthered through subsequent Baconian, Cartesian, and Newtonian developments. Kant epitomises the human exceptionalist and anthropocentric perceptions of the enlightenment in the following quote in which he argues for moral consideration as being the sole prerogative of humans on account of their status as rational agents.

> The fact that the human being can have the representation ‘I’ raises him infinitely above all other beings on earth. By this he is a person… that is, a being altogether different in rank and dignity from things, such as irrational animals, with which one may deal and dispose at one’s discretion (Kant, 2006, p. 127).

Thus, one aspect of the western scientific tradition since the enlightenment may be seen as anthropocentric and instrumentalist in its relationship to nonhuman natures since that relationship concentrated on the manipulation of an inert environment for the benefit of human life. The effect of this tradition on human relationships with nonhuman natures was profound, since whilst this type of hierarchical human/nature dualism permits an instrumental value of nonhuman natures, it renders invisible a perception of intrinsic value (Naess, 2008).

Inextricably connected to this anthropocentrism is the influence of cartesian dualism, which made an ontological distinction between a lively, moral, reasoning human intellect and a world of matter that could be reactive to human agency, but not responsive (Merchant, 2005). This substance dualism, which denied any nonhuman animals a soul, had profound implications for the ill-treatment of lives

that did not fit a particular set of parameters defining what it is to be human (Braidotti, 2013), leading Crist (2017) to propose that the term human supremacy is a more accurate descriptor than anthropocentrism for this human-focused worldview.

Regardless of the truth-value presented by human/nature dualism's depiction of the world, the belief in such a depiction is sufficient to inform human actions toward nonhuman natures. Thus Moore (2016, p. 88) argues that 'We do well to grasp Society and Nature not merely as false, but also as *real* abstractions with real force in the world'. In other words, even if the perception of a human/nature dualism is imaginatively projected onto a world where none is in fact to be found, that is enough for humans to proceed accordingly, and so such a perception becomes real in its material expressions (Burkitt, 2008). The Anthropocene's picture of a generalised humankind finally ascending to the position of the most dominant force influencing earth systems is, for many, a dangerous exaggeration of an already highly destructive imaginary of humans as exceptional, distinct from, and superior to, nonhuman natures (Chernilo, 2017). Yet not everyone reads the Anthropocene this way. For example, Trischler (2016) suggests that the Anthropocene concept helps strengthen a posthuman perception of distributed agencies that traverse human and nonhuman actants, whilst Lorimer (2012, p. 593) suggests the Anthropocene poses a 'challenge to the modern understanding of Nature as a pure, singular and stable domain removed from and defined in relation to urban, industrial society'. Far from an anthropocentric perspective, this reading opens reflection on the accountability of humans as they act within systems that are simultaneously social and natural and always already more-than-human. This kind of discourse emphasises relationship over hierarchy. Moore (2016, p. 88) however, is not convinced, arguing that cartesian dualism is 'unconsciously embraced' by the Anthropocene concept, whereby the coupling of socioeconomic structures with the natural world only serve to consign nature 'to a simple, fetishized category: natural capital'. From this perspective, the naming of a new epoch as the age of humans, far from promoting a relational ontology of distributed agency, simply takes the tradition of human domination over nature to new heights. In this interpretation the Anthropocene is simply code for humans as the managers of nature (Marris, 2013), which for many – especially conservationists – is just the latest neglect of the human capacity to appreciate the rights of nonhuman natures to flourish according to their own purposes, regardless of any potential utility for human profit.

My own position takes seriously the concerns of socionatural entanglement providing ever easier access to nature as a portfolio of assets as opposed to a more respectful approach of relating to a biodiverse world of natures that have their own purposes in the project of life. That said, I also see the incoherence inherent in rejecting human/nature dualism but protesting the Anthropocene concept on account of its deconstruction of that dualism. I agree with Affifi (2016, p. 156) on the need to '*more-than-humanize*' the Anthropocene by arguing that although the concept should work

to heighten a sense of accountability in humans regarding the intentions and implications of their entanglements in a more-than-human world, it should not indicate an Anthropos as a dominant force, since 'While it is possible to see our print in all that catches our eye, it is just as easy to pull apart apparently human things and expose the colossal number of interactions, conditions, and processes that bear the print of a wild otherness, of unexpectedness, of causal relationships that are not of our own origin' (Affifi, 2016, p. 171). Given this astute insight, I question whether it is even appropriate to use the term Anthropocene to describe the present complexity of more-than-human relationships. Afterall, the term Anthropocene still means age of the human, not age of the more-than-human. Whilst a humbler view of the Anthropos may make for a more measured and equitable approach to human relationships with nonhuman natures, it stretches the intended meaning of the Anthropocene so far that it becomes a different concept entirely.

If worldviews can facilitate some behaviours whilst inhibiting others (Kagee & Dixon, 1999; Koltko-Rivera, 2004), the ultimate framing of the Anthropocene matters. Whether we perceive ourselves as exceptional and independent sources of creativity tinkering in a workshop of inert materials, or something more alike to co-habiting the world alongside a myriad of nonhuman natures exerting their own agency, could lead to important differences to our treatment of environments and how we relate to nonhuman natures. Affifi (2016, p. 156) uses the term 'reperceptualisation' to describe the shift in self-concept needed to think and act as though we were truly entangled in a more-than-human world, materially, psychologically, and ethically. I agree, but this leads to the question of what kind of reperceptualisation will lead to the best outcome for a flourishing, biodiverse world. For this reason, I locate my research here within a critical environmental psychology that reaches into the realm of environmental ethics. The Anthropocene has one rallying point around which all can gather, which is the assertion that the climate and environmental crisis are as much social issues as they are issues for the natural world, however one understands the relationship between the two. As Corlett (2016, p. 39) suggests, 'the current focus on the biophysical aspects of global environmental change makes little sense when the problems being studied are caused by humans, harm humans, and can only be solved by humans'. And yet, as I will argue, the Anthropocene concept also challenges people to move beyond relationships that are exclusively inter-human and take an analytical lens wide enough to consider a relational assemblage of the more-than-human (Abram, 1996; DeLanda, 2016).

Initially the climate and environmental crisis was identified as being produced through technologies, so research into mitigation focused on technological solutions, rather than looking toward people and how they understand and experience their relationships with nonhuman natures as a significant driver of environmental change (Clayton & Opotow, 2003). This position has shifted, with Kareiva and Marvier (2012, p. 963) stating, 'the psychology and ethical reasoning that underlie people's actions and views of nature are a key but too often neglected dimension of conservation'.

The environmental psychology literature over the last three decades has demonstrated that whether we perceive ourselves as apart from, in, or of the natural world makes a difference to both our environmental values and behaviours (Frantz et al., 2005; Nisbet et al., 2009; Schultz, 2001). As the Anthropocene and its consequences for life on earth continue to unfold, how we understand our human selves in relation to nonhuman others will significantly impact on the future of human and nonhuman life alike (Larson et al., 2022). Therefore, in the next section I examine extant research on a particular research area within environmental psychology called nature-connection (Mackay & Schmitt, 2019). Proceeding from this, I will set out my proposal for a new direction of nature-connection research to be pursued in this study, which I argue is responsive both to the conceptual challenges of the Anthropocene and to recommendations for future research identified in extant literature. This will culminate with a statement of my research questions and their aims for this study.

2.5 Nature-connection as a research area within environmental psychology

How people perceive, value and interact with the natural world fundamentally shapes the goals and paradigms underpinning many systems of interest (Abson, 2017, p. 34).

The nature-connection literature is related to the environmental movement of the 1970s, with a seminal paper called The New Environmental Paradigm by Dunlap and Van Liere (2008) investigating the changing environmental attitudes of the time. In this paper, the authors outline a Dominant Social Paradigm (DSP) of modern western cultures characterised by a Laissez-faire capitalism and individualism, which along with many environmentalists and conservationists, they suggest has supported growing ecological destruction. Whilst Dunlap and Van Liere (2008, p. 19) view the 'anti-ecological' DSP as still representing the mainstream worldview, they suggest the emergence within modern western culture of a 'New Environmental Paradigm' (NEP). The NEP is seen as a 'direct challenge' to the DSP, as it promotes limits to growth, the imperative for humans to live in greater harmony with nonhuman natures, and a rejection of an anthropocentric instrumentalism where nonhuman natures' value lies solely in their utility for humans. Dunlap and Van Liere's (2008) purpose for the NEP as a research instrument was to try and quantify the degree to which the DSP was shifting toward the NEP. In a retrospective paper on the history of the NEP since its inception, Riley Dunlap recounts the origin of the NEP as located in his own transition from understanding the natural world as a set of resources to a more intrinsic valuation. This transition was catalysed through his personal experience of the California redwoods, as well as the writings of turn of the 20th century conservationists such as Aldo Leopold (Leopold, 2002) and John Muir (Muir, 2002), and more recent environmentalists such as Paul Ehrlich (Ehrlich, 1996). Thus, the NEP itself is also broadly continuous with preceding environmental ethics and discourse since the late 1800s. Since the first publication in 1978, the NEP has been used across multiple nations and has undergone periodic revision and development to strengthen its psychometric properties and theoretical foundations and is one of the

most popular instruments for measuring environmental values and attitudes (Dunlap and Van Liere, 2008).

Similarly, researchers within environmental psychology have sought to identify psychological constructs that correlate with pro-environmental values and behaviours. One such correlate has been identified as a phenomenon called nature-connection (Clayton & Myers, 2015). Over the last three decades a body of empirical evidence has been published suggesting that people who have either a spiritual (Bethelmy & Correliza, 2019), emotional (Carmi et al., 2015; Perkins, 2010), or cognitive (Schultz, 2002) connection to various features of the natural world also score higher on metrics of pro-environmental attitudes and behaviours. Furthermore, it has been suggested that nature-connection can be increased in people through their participation in nature-based interventions (Richardson & Sheffield, 2017; Schultz, 2000), suggesting that although nature-connectedness is often presented as trait like, it is also considered malleable and receptive to cultivation through nature-based exposure and/or interventions (Schultz, 2000).

A recent meta-analysis conducted by Mackay and Schmitt (2019, p. 8), which included both published and unpublished findings, found strong support for a relationship between measures of nature-connection and pro-environmental behaviour, concluding that overall evidence suggests that 'connecting people with nature may be a promising avenue for promoting action to protect the environment and prevent harm to nature', and should therefore be of interest to environmental and conservation organisations. Another meta-analysis conducted three years later concluded that 'Targeting sustained improvements in nature connectedness can help address the global calls for a new relationship with nature required for a sustainable future' (Sheffield et al., 2022, p. 19). But what constitutes a 'pro-environmental behaviour'? For that matter, what exactly does it mean to 'connect' to nature? And finally, when scholars talk of nature-connection, what is the 'nature' they are referring to? In the next section I outline the various ways in which these terms, ubiquitous throughout the environmental psychology literature, have been defined by the researchers who use them. This examination is necessary because there is no universally standard set of definitions, but rather a loose set of definitions. Whilst these definitions do aggregate around similar themes, they constitute enough heterogeneity as to demand firstly explication, and secondly a clear statement on my part as to how I intend to use these terms during this study.

2.5.1 What constitutes 'pro-environmental behaviour'?

What constitutes a pro-environmental behaviour may depend on which researcher you ask. Zylstra et al. (2014, p. 121) refer to 'Environmentally Responsible Behaviour' (ERB) as a catch-all to represent the variety of similar terms such as pro-environmental behaviour or sustainable behaviour, although they fall short of defining a concrete set of behaviours that would belong to this category. Hinds and

Sparks (2007) do not define their use of the term pro-environmental behaviour, but they do offer some examples of how pro-environmental behaviour might be concretely expressed, including behaviours such as re-cycling, signing environmental petitions, being a more conscientious consumer, and donating to environmental organisations. Kollmus and Agyman (2002, p. 240) offer a definition of pro-environmental behaviour as 'behavior that consciously seeks to minimize the negative impact of one's actions on the natural and built world (e.g. minimize resource and energy consumption, use of non-toxic substances, reduce waste production)'. Comparing the examples offered by Hinds and Sparks (2007) and Kollmus and Agyman (2002), only re-cycling and reduce waste reduction offer a point-to-point correlation. In general, the literature seems to either rely on the reader having a tacit understanding of what constitutes pro-environmental behaviour, or pro-environmental behaviour is represented by whatever dependent variable is used in a particular study. Given the way the term 'pro-environmental behaviour' has been used in extant literature, I will employ it as an umbrella term to encompass conservation activities such as tree planting, and sustainable practices such as monitoring energy efficiency or choosing non-polluting modes of transport. I will also include under the term those political activities that seek to support the agendas of environmental and conservation organisations. The term nature-connection is a trickier term by far and will require a thorough and critical analysis if I am to justify a meaningful use for the term here.

2.5.2 What does 'nature-connection' refer to?

In recent years the term nature-connection has been subject to multiple interpretations and definitions, as well as critique on account of accusations of tautology and a potentially alienating effect on urban dwelling humans for whom contact with the natural world is rare or inaccessible (Fletcher, 2017; Patuano, 2020; Vogel, 2013; Zylstra et al., 2019). Recognising that use of the term 'nature-connection' in extant literature is 'fragmented and fraught with diverse meaning', Baird et al. (2020, p. 368) sought empirical data from participants of an outdoor expedition organisation that specialised in leadership and wilderness adventure. Whilst making a valuable contribution in that Baird et al. (2020) turned to the lived experiences of participants for definitions rather than relying purely on the theoretical assumptions of researchers, the definitions themselves were heterogeneous.

It is not just the meaning of nature-connection that shows variability: even the term itself can be used interchangeably with similar expressions, such as 'nature-relatedness' (Nisbet et al., 2009), or 'connectedness to nature' (Restall & Conrad, 2015). This variability can be partly explained by the fact that terms such as 'nature-relatedness' are also titles of the various quantitative instruments that have been developed to measure different constructs of nature-connection. Furthermore, the relationships between these instruments in terms of the underlying construct they measure is contested. For example, Perkins (2010, p. 455) developed the Love and Care for Nature scale (LCN) as

'differentiated from established measures of similar constructs'. By contrast, Tam (2013) provides empirical evidence to suggest that the different instruments may to a certain extent spotlight particular aspects of nature-connection as a multi-dimensional construct or could be considered similar measures of an even more latent variable than any single instrument has captured. Thus, nature-connection varies both by name and definition, although all interpretations have in common some kind of relationship between human and nonhuman natures.

Whether there are numerous constructs of nature-connection that need identifying with a unique term of their own, or whether all previous attempts at measuring nature-connection have captured some facet of a super latent variable remains open to debate and further research. This is a problem that is specific to quantitative approaches to nature-connection research, reliant as they are on establishing factors and the relationships between those factors and other variables of interest. My purpose here is simply to present some examples where nature-connection has been defined by identifying its psychological components. For example, Zylstra et al. (2014, p. 119) define connectedness with nature as a stable state of consciousness 'comprising symbiotic cognitive, affective, and experiential traits that reflect, through consistent attitudes and behaviors, a sustained awareness of the interrelatedness between oneself and the rest of nature'. Hinds and Sparks (2007, p. 112) focus on the emotional content of nature-connection, defining this as 'the subjective experience of an emotional attachment with the natural environment'. Lumber et al. (2017, p. 3) predicate nature-connection on an intrinsic environmental value, defining it as 'an appreciation and value for all life that transcends any objective use of nature for humanity's purposes', and is 'comprised of cognitive, affective, learnt, experiential, and personality factors that together create a connection with nature'. Dornhoff et al., (2019, p. 2) suggest that 'Nature relatedness can be understood as a perceived cognitive, affective, and experiential connection to the natural world that is regarded to be "trait-like," because it is relatively stable over time and across situations but not completely fixed'. Other definitions are far more general, such as Mackay & Schmitt's (2019, p. 1) definition of nature-connection as 'a subjective sense of "oneness" with nature that arises from incorporating nature into one's self-definition'. Another even more general definition is offered more recently came from Barrable and Booth (2022, p. 1) who defined nature-connection as simply 'a positive relationship between humans to the rest of the natural world'. Despite the variation, there is a consensus that nature-connection points to the importance of first-person experiences, accompanying emotions, and cognitive processes to do with environmental identity. One of the most influential definitions of nature-connection has been offered by Schultz (2002, p. 67), who connected theoretically and empirically the phenomenon of nature-connection to a person's self-concept. The quote is worth citing in full:

> Many of the philosophical and sociological theories about human-environment relationships use the term connectedness to describe the extent to which individuals believe that they are part of the natural world. Although it is often used in a broader context, the core of a connection with nature is cognitive. Connectedness refers to the extent to which an individual includes nature within his/her cognitive representation of self (Schultz, 2002, p. 67).

Schultz (2002, p. 4) highlights the importance of environmental identity, suggesting that 'environmental concern is tied to a person's notion of self'. Drawing on affective and cognitive processes of empathising and perspective taking, Schultz's (2002) empirical work suggests that if a human feels themselves to be part of nature, a sense of care and commitment toward the natural world will ensue. By contrast, where separation is felt from nature, such as a feeling of being above nature in a hierarchy of life, such an obligation will be minimal, and nature will be viewed as nothing more than a pool of resources or threats to be controlled or exterminated. In other words, 'connectedness' to nature refers to the extent that an individual 'includes nature within her/his cognitive representation of self' (Schultz, 2002, p. 67). The link between this understanding of nature-connection and pro-environmental behaviours rests on the assumption that a person wishes well for themselves. Based on that assumption, if nonhuman natures are seen as part of a person's self-concept, or they identify so strongly with a nonhuman nature that they would feel incomplete without it, then to harm that nonhuman nature would feel like harming oneself. This is the basis for Schultz's (2002) concept of the Inclusion of Nature in Self (INS). The INS was operationalised for use as a metric of nature-connection, designed to measure the extent to which the natural environment is included in a person's self-concept. Schultz (2000, p. 16) understood the INS as something malleable and open to influence, as is clear in his assertion that 'just as a relationship between two people can deepen and become more "interconnected", so too can our relationship with the natural environment'.

As well as using the INS scale to establish the strength of individual environmental identity, Schultz and Tabanico (2007) attempted to mitigate the vulnerabilities of using conscious self-report by applying a modified version of the implicit association test (IAT) to measure participants' sense of connection to both natural and built environments. For example, paired categories such as 'Nature' with 'Me', or 'Built' with 'Me' were used infer strengths of association with different nonhuman elements. Furthermore, Schultz and Tabanico (2007) looked for correlations between participants' implicit environmental identities and their environmental values. They found that participants who identified more with natural than built environments were positively associated with biospheric concerns. By contrast, those who identified with built environments were negatively associated with biospheric concerns and positively associated with egoistic concerns.

By biospheric concerns is meant the valuing of all nonhuman natures that comprise the natural world, whereas egoistic concerns are centred on the good of the human individual. Schultz (2001) established three value constructs consisting of egoistic, altruistic, and biospheric values, and suggested each construct has the potential to support pro-environmental behaviours in the right contexts. For example, an individual high in egoistic value may undertake pro-environmental behaviours if a direct benefit to their self was perceived. An individual with a strong altruistic value may be motivated to pro-environmental behaviours if their human community could benefit. An individual with a strong biospheric value may be motivated to undertake pro-environmental behaviours if they would perceive a benefit to the lives of other species. Schultz (2002) argued that biospheric values are the surest way to support conservation and environmental causes. The reason for this is that an instrumental use of nature is valued for its benefit to humans rather than for the sake of the nonhuman nature itself. Therefore, if a technology were developed that could provide the same benefit – such as carbon capture device – the imperative to protect forests may be weakened. By contrast, a biospheric value would provide motivation to protect forests for their own sake and thus show greater resistance to the use of technology in ways that could be detrimental to the natural environment. Thus Schultz (2002, p. 74) concludes that 'I am left with the conclusion that the only sure path to sustainability is through inclusion – individuals must believe that they are a part of nature'. Thus, according to Schultz's (2002) definition of nature-connection as self-identification with the natural world, a psychological sense of being part of nature is associated with values of caring for nonhuman natures.

I would not want to give the impression that defining nature-connection, however loosely, is common practice. More often terms such as 'nature' and 'nature-connection' are left with the reader as if self-explanatory (Ives et al., 2017). In fact, Ives et al. (2017, p. 108) suggest that the heterogeneity of the nature-connection literature is one reason why this area of research 'has yet to reach its full potential in supporting humanity on a pathway towards sustainability'. To further this goal, Ives et al. (2017, p. 108) recommend a set of future research priorities, the following of which I take up in this study.

> future research (particularly in psychology) must specify the characteristics of nature that people are connected to. Without such information, it is difficult to know how policies and decisions for sustainability should be formulated (Ives et al., 2017, p. 110).

Ives et al. (2017) certainly present a challenge for nature-connection researchers with this recommendation, since to 'specify the characteristics of nature that people are connected to' one must understand what constitutes a characteristic of nature. A scan over the definitions of nature-connection I have described above certainly gives the impression that the characteristics of nature at

issue here are those nonhuman natures and features of environments that would be considered separate from the influence of human intervention, development, or transformation into human made artefacts. This conforms to the standard western understanding of nature as everything that is not culture. In a world untroubled by the Anthropocene concept, one might safely assume that any characteristic void of human presence can be considered of the natural world as *opposed* to the human-built environment. However, Anthropocene discourse troubles such a simplistic separation of human from nonhuman natures.

Unlike other disciplines, the Anthropocene concept has been slow to enter nature-connection research within environmental psychology. Where it is addressed, it is framed in decidedly negative terms. For example, in Zelenski et al.'s (2023, p. 1) work on the role of nature-connection in a biodiverse, sustainable future, their interpretation of the Anthropocene is clarified as follows:

> The Anthropocene has been characterised by a disconnection from nature as humans have turned away from traditional ways of living in harmony with the natural world and have adopted increasingly extractive and exploitative relationships with the environment (Zelenski et al., 2023, p. 1).

Among the 'mindsets of the Anthropocene', Zelenski et al. (2023, p. 1) include 'Extractive, exploitative attitudes toward nature'. Here, the Anthropocene is clearly framed as the result of relationships to nonhuman natures that have been dominated by an unrestrained capitalist model of economic growth and its accompanying need for the unending production of desire for commodities. For Zelenski et al. (2023, p. 1), the cost of this has been the neglect of 'deeper intentional wisdom' that 'recognizes the vital reciprocity of and balance of nature'. This reading is, of course, far from the ecomodernist's interpretation of a great Anthropocene (Ellis, 2015). Nor is there mention of the Anthropocene discourse of social and natural entanglement as something that might bring humans closer to an appreciation of the impacts of our actions on the natural world.

There is a commonality across the nature-connection literature, which is the emphasis on built environments and human made artefacts as antithetical to nature-connection. I suggest this may create an analytical blind spot that has prevented interesting and potentially important lines of inquiry for the field. Research into environmental identity often pre-empts an assumption that built environments are 'barriers' (Schultz, 2002, p. 61) separating individuals from natural environments rather than *connections* to natural environments. I suggest that such a starting assumption might be hindering the potential for understanding how human relationships with the built and artefactual might mediate greater ecological awareness of, and appreciation for, the natural environment. For example, while Schultz and Tabanico's (2007) research suggest that people who identify with natural environments over built ones have stronger biospheric values, why those who identify more with

built environments should seem to lack biospheric values was not qualitatively understood. This gives rise to the unanswered question of what it is about human relationships with built environments that may be experienced as a barrier to nature-connection.

2.5.3 Which 'nature' are we connecting to?

Understanding what scholars refer to when speaking of nature is far from straightforward. For some, referencing nature points to a realist understanding of an objective natural world that exists independently of how humans define it (Proctor, 1998). For others, there is no such thing as a natural world outside of its social construction (Macnaghten & Urry, 1998). From a constructivist perspective, what nature is depends on historically contingent human ideals, values, aesthetics, and needs of the time (Cronon, 1996). This variation in ontological understandings of nature is mirrored in the nature-connection literature. For example, Baird et al. (2020, p. 369) define nature in realist terms as 'the biophysical environment within the more-than-human world'. Such a definition certainly suggests a nature that could contain nonhuman animals, trees and landscapes as real objects existing independent of their social construction. Nor does the definition necessarily preclude the inclusion of human made buildings or artefacts, although there is nothing to suggest such an inclusion. Bethelmy and Correliza (2019) do not explicitly define nature, but refer frequently to nature as wilderness, and Clayton and Myers (2015) identify studies that seek to connect people to physical natures such as certain types of landscape, wilderness, or urban green spaces. By contrast, Zylstra et al. (2014, p. 121) define nature as 'largely a social-cultural construction'. As Zylstra et al. (2014) themselves admit, their socially constructed nature produces a nature/culture dichotomy because their definition of nature is that of a biophysical environment free of human presence. Although Zylstra et al. (2014) recognise this dichotomy as itself being a cultural perception, they defend their use of this conceptualisation of nature as a 'necessary demarcation', although fall short of explaining on what grounds. It might be assumed that the demarcation is necessary for the same reason conservationists as Corlett (2016) would deem it necessary; namely, to provide clarity on where nonhuman natures and their habitats flourish and need protecting from human development. However, Zylstra et al.'s (2014) paper is a review, and since most of the nature-connection literature either implicitly or explicitly upholds some form of nature/culture dichotomy (Lumber et al., 2017; Restall & Conrad, 2015, Schultz, 2002), the 'necessary demarcation' may simply have been to enable an accurate description of the literature.

Whilst the nature-connection literature is rich with ambiguity and sparse in clarity, the general implication seems to be that 'nature' comprises those green and blue natures (e.g., trees, mountains, oceans), as well as wild animals, that exist uninfluenced by humans or human culture. This implication is troubled by the Anthropocene concept. However, the most serious threat to the coherence of a theoretical framework for nature-connection is found in its potential for self-contradiction. Studying human connections to nature through a lens that demarcates humans from

nature opens the possibility of such a self-contradiction. This possibility has not been lost on Fletcher (2017), who suggests that the term 'nature-connection' is an oxymoron.

2.5.4 The (il)logic of nature-connection

In chapter one, I discussed the assertion that our present climate and ecological crisis is rooted in a worldview defined by human exceptionalism and a cartesian dualism that ontologically separates humans from nature (Kureethadam, 2018). This worldview is spatially and historically rooted in western enlightenment thinking and is the dominant philosophical paradigm of modernity (Merchant, 2005; Plumwood, 1998). These explanatory discourses are also drawn on to situate the nature-connection literature and frame the idea of being disconnected from nature. For example, Franz et al. (2005, p. 428) seek the underlying influences on human exploitation of nonhuman natures in a common-sense understanding people have of themselves in western, industrialised, individualistic societies as 'object-like, separate from, and above the rest of the natural world'. This sense of being ontologically separate from an environment of nonhuman matter is widely understood to be the root of what it means to be disconnected from nature, and in turn, for many this disconnect is assumed to be 'the primary driver behind the global environmental crisis' (Zylstra et al., 2014, p. 120). Although Ives et al. (2018) point out the difficulty in empirically evaluating the assertion that an underlying philosophy within western culture is the root cause of unsustainable development, it is a common theoretical and historical assumption amongst scholars. It is this cultural perception of separation, then, rather than an ontological separation from the natural world and the nonhuman natures that inhabit it, that allows us to talk of being disconnected. Thus, the fundamental aim of nature-connection is to repair that sense of separation and bring the human back in relationship with the nonhuman. This relationship takes ecocentric forms, seen in Schultz's (2002) work on biospheric values, and anthropocentric forms, such as the literature focusing on the benefits of nature-connection to human health and wellbeing (Chang et al., 2024; Jackson et al., 2021; Robinson et al., 2020). In either case, nature-connection literature presents promising evidence for the benefits of forging relationships with nonhuman natures for human wellbeing and pro-environmental attitudes and behaviours. However, nature-connection research is not without its critics. Fletcher (2017, pp. 226-227) suggests the theoretical basis of nature-connection is 'fundamentally oxymoronic in that the way this notion is both discursively framed and materially manifest paradoxically exacerbates a sense of separation from the very entity with which it seeks reconciliation'. Fletcher (2017, p. 229) goes on to claim that the very term nature-connection 'reinforces the impression of an entity from which we are fundamentally separate even in its advocacy of our overcoming this ostensible separation'. Although Fletcher's (2017) concerns over the apparent self-contradiction of the nature-connection narrative is a useful prompt to clarify how its meaning should be received, the claim that the term nature-connection is an oxymoron may be based on conflating biological fact with

subjective experience. I would suggest that from a psychological perspective, there is nothing fundamentally contradictory in stating that one *feels* connected or disconnected from the natural world or stating that one feels part of or separate from the natural world, even whilst acknowledging the indelible interconnectedness of matter in either case. This dissonant relationship is expressed by environmentalist Bill McKibben:

> It is fine to argue, as certain poets and biologists have, that we must learn to fit in with nature, to recognise that we are but one species among many, and so on. But none of us, on the inside, quite believe it (McKibben, 2003, p. 68).

Just as a person may feel a sense of belonging to a social group, there is nothing oxymoronic about seeking, and then acquiring, a sense of kinship with nonhuman others where previously none existed. Whether the human individual is ontologically closer to nonhuman natures in an objective sense is not in question. Of course, everything shares the same material identity at the level of the fundamental particle, and in that sense to talk of being connected or disconnected is senseless. But nature-connection is a felt experience informed by specific emotions, understandings of nonhuman natures and *ways of relating* to those natures. The point of nature-connection lies in what it does to the human's orientation toward nonhuman natures, and how the human expresses that orientation through behaviour. Cultivating a *sense* of nature-connection may make a difference to whether a person then takes the attitude and actions of such a stance in life, as is evidenced by extant nature-connection literature (Mackay & Schmitt, 2019). I am not arguing that a psychology of nature-connection is unrelated to physical fact, however. As has already been discussed, the emerging awareness of the close relationship between social and natural systems that led to the proposal of the Anthropocene has presented a body of geological evidence which is influencing the way people perceive their relationship to nonhuman natures. What I am suggesting is that the term nature-connection, when used to imply the experience of relating as subject to subject with nonhuman natures, has utility in describing a process whereby an individual moves from a sense of human exceptionalism and separation from nonhuman natures to a sense of immanence and kinship with them.

Never-the-less, I agree with Fletcher's (2017, p. 231) call for a greater level of sophistication than the binaries of dichotomising language when discussing human relationships within a more-than-human world in the hope that this may facilitate 'a more nuanced appreciation of ways in which specific constellations of humans and nonhumans are connected across the traditional nature-culture divide'. My research here goes some way to responding to this call. However, if dichotomy and contradiction exist in nature-connection discourse, simply discounting it as oxymoronic is unhelpful in furthering understanding. Vinning et al. (2008) have documented research participants' self-contradictions in

their assertions of seeing themselves as part of nature yet going on to define nature as environments devoid of human presence or influence. Vinning et al. (2008) explained this apparent contradiction on account of participants spending time in urban environments whilst logically positioning themselves as of nature, where the urban environments give rise to a sense of separation from the natural landscape. Whilst this explanation is both rational and coherent, I am interested in whether there might be more to these conflicting perceptions, and my work through this study will proceed in a way that is sensitive to these contradictions, and careful not to try and rationalise them too quickly.

Crist (2017) argues that just because hierarchical dualism may have ill served human accountability toward nonhuman natures and made redundant any imperative for their moral consideration, it does not necessarily entail that all dualisms are inherently antithetical to ecological aims, asserting an importance to differentiating between what has and has not been influenced by human activity. The need for such delineations in conservation is understandable, yet some nature-connection discourse carries evaluative content, which when unpacked, communicates dichotomising moral judgements around a nature as pure and good for its absence of human influence, and a world of the built and artefactual as bad for having been cleaved from nature by tainted human hands (Patuano, 2020). Consider the statement below written by the late biologist E. O. Wilson:

> Artifacts are incomparably poorer than the life they are designed to mimic. They are only a mirror to our thoughts. To dwell on them exclusively is to fold inwardly over and over, losing detail at each translation, shrinking with each cycle, finally merging into the lifeless facade of which they are composed (Wilson, 1984, p. 115).

Implicit in the above quote is the assumption that the natural world, when transformed by human design, makes an ontological leap out of nature and into a lifeless, artificial existence of its own. This type of nature/culture dualism does not just render invisible the complexity, interconnectedness, and metabolisms that would otherwise describe the relationships between nonhuman natures and human made artefacts, but in addition presents an ethical concern. For example, Patuano (2020, p. 16) suggests that the kind of nature/culture dualism found to underpin much biophilia inspired nature-connection research appeals to an innate tendency to feel an affinity to green environments *as opposed to* built environments. This suggests Patuano (2020, p. 16), creates an 'echo-chamber' in which 'people who already feel connected to nature continue to produce evidence that this connection is healthy, whereas people who do not share this connection are at best not included in the conversation and at worst negatively judged for their perceptions as being a sign of mental dysfunction'. Taylor (2017, p. 65) concludes that a dichotomy that splits an intrinsically good and pure nature to an intrinsically polluted and morally fallen society perpetuates a narrative of 'heroes and villains', with the environmentalists ready to save nature against corrupt humanity. Ironically, themes

of human exceptionalism are far from overcome in this story, but reinforced. Taylor (2017, p. 66) calls out both the villains and the heroes of this use of nature/culture dualism as follows:

> In the human progress camp, this means linking the myopic western belief in our exceptional human capacity to objectively study the natural world, as if we were not already a part of it, with the delusional belief that we can act upon this same world to 'improve', modify, or exploit it with impunity. In the pro-nature pedagogy camp, it means resisting the urge to cast nature as a pure sanctuary to which we can send children in order to 'cure' them of social ills, and to cast ourselves (and them) as heroic environmental protectors and protagonists (Taylor (2017, p. 66).

The above quote highlights the need to be attentive to the complexity of nature-connection discourse. Dualisms in themselves are not obviously offensive to nature-connection practices, conservation aims, or environmentalism and the ethics and values belonging thereto. It is when culture/nature and human/nature dualisms become expressions for ontological asymmetries that they may be problematic. Whether the asymmetry be of a lively, creative human spirit set against the backdrop of a dead, inert environment, or whether it be a lively, creative natural world set against an artificial façade of human-built artefacts, in both cases the possibility for understanding relationality is blocked. Perhaps a positive contribution of Anthropocene discourse is found by challenging us to develop a more sophisticated perception of human relationships with nonhuman natures; one that can accommodate the deep entanglement of human cultures and nonhuman life.

The cumulative evidence from the last 30 years of research in environmental psychology suggests that nature-connection practices have the potential to function as a significant leverage point for promoting more ecologically sensitive actions in the world (Mackay & Schmitt, 2019). However, the now well-established correlations between psychological nature-connectedness and pro-environmental values suggested by quantitative studies needs to progress to a deeper analysis of what constitutes nature-connection and how such connections are lived. This need provides the broad framing of this study.

The psychology of nature-connection offers the potential for deep, societal transformation, which it is argued may be of greater importance that any single technological fix to a specific ecological issue (Clayton & Opotow, 2003). This is not to say that technological solutions to specific environmental challenges have no place. Rather, it is to point out that, assuming the climate and ecological crisis is underpinned in no small part by a modern western worldview characterised by a perception of human supremacy, technological advances alone will not address the underlying worldview. Hamilton (2016, pp. 41-42) illustrates this point well:

> Just as Bacon understood Nature as a passive object to be manipulated once her secrets had been extracted, and saw the exercise of human creative power facing no constraints, so today's eco-moderns understand the Earth as a 'system' that can be subjugated with knowledge and technological power (Hamilton, 2016, pp. 41-42).

Abson (2017, p. 34) complicates Hamilton's (2016) disapproval of systems thinking by asserting that 'the functioning of a system is influenced by the degree to which humanity's reliance on the natural world is acknowledged, and the extent to which a close relationship with nature is identified as essential to a good life'. Proposing that nature-connection may function as a point of deep leverage for transforming systems toward greater sustainability, Abson (2017, p. 34) proposes exploring 'how material, experiential, psychological and philosophical connections to the natural world shape the values and paradigms that underpin human action'. This recommendation is close to Ives et al.'s (2018) suggestion that nature-connection could be analytically differentiated by its material, experiential, cognitive, emotional, or philosophical meanings, and in doing so, achieve greater clarity over what is meant by specific nature-connections and the role they might play in promoting sustainability. I have taken these recommendations for further research into account and carried them into this study through my pursuit of a more detailed understanding of human relationships with nonhuman natures.

2.6 Introducing the present study.

The New Environmental Paradigm (NEP) was designed to measure a shift in worldview regarding human relationships with nonhuman natures. Since then, much of the environmental psychology research on nature-connection has sought to establish the degree to which environmental values and attitudes correlate with definitions of pro-environmental behaviours (Mackay & Schmitt, 2019). More recently, a smaller but growing amount of research has sought to test nature-connection interventions to see if a person's nature-connectedness can be increased, and if so, which approaches are most effective (Sheffield et al., 2022). For example, work by nature-connection researcher Professor Miles Richardson has pushed towards a more detailed understanding of how nature-connection can most effectively be cultivated, and this research has informed the development of a structured course in nature-connection open for public engagement (Richardson & McEwan, 2018). Such work is vital in that it constitutes a grassroots approach to promoting appreciation for nonhuman natures, especially amongst urban dwelling humans (Richardson & Sheffield, 2017). However, the power of nature-connection may be hindered from working to its full potential without a clear theoretical foundation capable of responding to the various interpretations of the Anthropocene concept, some of which agitate assumed categorical differences upheld in human/nature and culture/nature dualisms. One of my contributions to nature-connection research here is to explore the ways in which those actively involved in nature-connection practices

understand and frame their experiences. If my research participants have grown up in modern western cultures, it is reasonable to assume acculturation in some of the evaluative dualisms discussed earlier. How nature-connection practices fit into this may provide insights into the roles such practices are playing.

Furthermore, the theoretical frameworks that have underpinned much of the nature-connection literature may constrain rather than facilitate the deeper analysis I am proposing here. This will be treated in detail in chapter 3. Suffice to say for now, extant theoretical frameworks, such as the biophilia hypothesis (Wilson, 1984), used in nature-connection research are vulnerable to the kinds of evaluative culture/nature dualism discussed earlier (Patuano, 2020; Taylor, 2017). Anthropocene discourse is a contested arena of conflicting interpretations, yet a common component of the concept is found in the framing of social and natural systems as inextricably entangled, and this assertion requires a reflexive response from nature-connection researchers, amongst whom I count myself. The biophilia hypothesis may not be fit for this task. Simply put, the Anthropocene challenges the expectation that connecting people to trees, rivers and mountains *as opposed to* cultural artefacts and built materialities, will influence the practices of people in their day-to-day relationships with the built and artefactual as profoundly as such nature-connections might. I would like to theorise here that if the distinction between the *natural* and the *artefactual* is too complete, the relationships between them may not be as salient in the awareness of people as it might otherwise. For many of us who are urban dwelling, this presents an important consideration. If humans are surrounded by the built and artefactual, and they perceive these materialities as *artificial*, having nothing to do with the natural world, are the conditions that led to the Anthropocene in the first place not left unchecked? Furthermore, nature-connection research should take seriously the concern expressed by some scholars who suggest that attempts to connect people with an ontologically distinct *natural* world, even when successful in that aim, may produce a negative side effect of psychologically alienating people from the environments that make up their actual living conditions, which are mostly urban and built (European Commission, n.d.; Vogel, 2014). It is a reasonable challenge to question the utility of connecting people to the natural world if the net result is to make them feel even more distant from their more salient built and artefactual environments. As King (2000, p. 115) points out, ‘if we are to contribute to articulating the outlines of an environmentally responsible culture, we must be prepared to address the problems faced by people in the places they inhabit’. This tension is something I explore throughout this study with an open mind, following lines of theoretical interest and empirical evidence through nature connections between human and nonhuman natures.

Environmental philosophers point to a western tradition of human/nature dualism as providing fertile cultural ground for the over exploitation of the earth (Matthews, 2003; Merchant, 2005; Plumwood, 1993), and that this has led to the Anthropocene of humans as a dominant power ‘overwhelming the

great forces of nature' (Steffen et al., 2007, p. 614). However, a logical consequence of the deconstruction of human/nature dualism would be a deconstruction of the dualism separating the natural from the artefactual. This has been highlighted as a problem for environmentalism if entities of the natural world are subsumed into an undifferentiated set of *materialities*, leaving us with an even poorer model with which to analyse the relationships between human and nonhuman natures than the dualistic model they replace (Conty, 2016; Vetlesen, 2019). If natural and artefactual elements of environments lose their distinct identities, how can the impacts each has on the other be evaluated? My aim with this study, then, is to explore ways in which nature-connection research might meet the challenges of the Anthropocene through an investigation into a range of relationships between human and nonhuman natures. I am interested to explore how competing environmental paradigms are present in the understandings and practices of nature-connection practitioners, and the relationship between human culture and nonhuman natures.

Extant nature-connection research has been dominated by quantitative approaches seeking to establish correlations between scores on nature-connection instruments and a variety of environmental values and behaviours (Barrable & Booth, 2022). These studies have been invaluable in establishing the positive impact of human relationships with the natural world against a variety of metrics. However, as Muhr (2020) points out, the nature of quantitative scales does not account for the complex ways in which humans' cultural understandings of nature and the relationship between human culture and the natural world are present in their discourse and practices. Furthermore, where qualitative approaches to nature-connection research have been implemented, they have focused on the human perspective of the human/nonhuman relationship. With few exceptions, neither quantitative nor qualitative approaches to nature-connection research to date have been designed to give voice to the nonhuman elements that make up those connections. Therefore, taking my lead from Adam's (2020, p. 3) critical psychology, I too am seeking to 'contextualise the human in the life forces and liveliness of what is other than human'.

2.6.1 Criteria and Research questions

In this literature review I explained why Anthropocene discourse provokes uncertainty as to whether social and natural entanglement would be beneficial or detrimental to conservation and environmentalist aims. Nature-connection research may contribute to resolving this uncertainty through a deeper, qualitative analysis of human relationships with nonhuman natures that considers the agency of the nonhuman – whether natural or artefactual. Furthermore, by exploring the worldviews, environmental attitudes, values and practices that frame nature-connections, I seek to contribute a clearer and more detailed understanding of the tensions between nature/culture dualism and the notions of human immanence in nature. I propose that the potential utility of this may be found in developing a clearer idea of which perspective to promote for the purpose of

increasing ecological awareness and an environmental ethic capable of negotiating the challenges of the Anthropocene.

As such, the criteria I will follow for the present study are outlined below:

- This study explores a set of nature-connections in their material, psychological and discursive modes of expression.
- For this study, the term nature-connection may include human relationships with nonhuman natures in ways that may not conform with dominant perceptions of culture/nature dichotomy.
- To succeed in exploring a rich and nuanced set of nature-connections and their potential for thinking with the Anthropocene concept, a qualitative approach to research which aspires toward taking a more-than-human perspective will be employed.

With these criteria in mind, this study draws on two groups of participants to form the overall sample. The first group consists of nature-connection practitioners. The second group consists of bonsai practitioners and trees (for details see chapter 3). My research questions are thus divided across the two groups, as laid out below. These research questions will be explored through primary data collected via semi-structured interviews and the expressive presence of trees.

Questions for the nature-connection practitioner group:

How are nature-connection practitioners' relationships with nonhuman natures informed by their underlying worldviews?

How do nature-connection practitioners understand the role of nature-connection experiences in the Anthropocene?

How are nature-connection practitioners experiences materially, psychologically, and discursively configured?

Questions for the bonsai group:

How does nature-connection function in a context where human culture and nonhuman natures are inseparably entangled?

What are the consequences of a nature-connection where the natural and the artefactual are irreducibly entangled for practitioners' environmental ethics and attitudes toward conservation?

What role do nonhuman natures play in the relationality of the bonsai assemblage?

The rationale behind this choice of participant groups is based on the aim of exploring beyond the boundaries of traditional nature-connection research in environmental psychology, which has either been restricted to conceptualisations of nature framed by the biophilia hypothesis (Wilson, 1984) or has pre-empted an assumption of human-built environments and the artefactual as presenting barriers to human connections with nonhuman natures (Schultz, 2002). The above research questions allow for an exploration of nature-connections that are clearly defined yet allow for a more porous boundary between culture and nature, and between the natural and the artefactual. I have not done this with the intention of setting out to deconstruct such boundaries, but to allow for an open and unrestricted analysis of human relationships to nonhuman natures. The evaluation of how human and nonhuman elements of environments are delimited will be discussed using the results of this study and should therefore not pre-empt it. My hope is that the fruits of the empirical phase of this research will develop knowledge that can be used to theorise what kind of a reperceptualisation of human relationships to nonhuman natures could be most effective for working toward the recovery of a world characterised by mass extinction to one of multi-species flourishing.

Chapter 3: Methodology

3.1 Chapter overview

Building on the previous chapter's review of the nature-connection literature, I begin this chapter with a critical presentation of Wilson's (1984) biophilia hypothesis, which is the dominant theoretical framework underpinning much of the nature-connection research in environmental psychology. This is necessary to help contextualise and justify the vital materialist perspective that frames this study, which involves a departure from the central assumptions of the biophilia hypothesis.

The biophilia hypothesis will be critiqued on account of its strong nature/culture dualism and its anthropocentric perspective. Bennett's (2010) vital materialism, which is one strand of a diverse group of philosophies known as the new materialisms (Coole & Frost, 2010) is proposed as a more suitable alternative. Vital materialism facilitates a more nuanced approach to studying relationships between elements of both the natural and social worlds, and de-centres the human in ways that support consideration of nonhuman contributions to nature-connections. These points will be explicated in detail during this chapter.

Following my theoretical considerations, I introduce Clarke et al.'s (2018) Situational Analysis (SA) as a method that is congruent both with my philosophical assumptions and aims for this research. SA's analytical techniques will be presented, as well as sampling procedure and ethical considerations. Then I discuss the topic of generalisability in qualitative research and explain my position in relation to it for the purposes of this study. Finally, I include a section on my own reflexive work regarding my part in this study.

3.2 Theoretical considerations

I indicated toward the end of the last chapter that extant theoretical frameworks may not adequately support the nuanced exploration into human relationships with nonhuman natures that I am seeking to undertake. Despite the popularity of the biophilia hypothesis, in this chapter I will explain why it would fundamentally impede the aims of this research. The central reason I discuss is to do with how the biophilia hypothesis frames the human built or artefactual as separating people from the natural environment. Since one of the aims of this study is to explore nature-connections in relationship to, rather than separate from, cultural artefacts and practices, I needed to search for an alternative methodology that would be congruent with, and effectively facilitate, this aim. This was especially the case for my research into the bonsai group, which attends to bonsai as an assemblage of both natural and artefactual expressions of nature (DeLanda, 2016). The combination of wanting to meet the agency of the nonhuman and the relationship between human and nonhuman aspects of nature led me to choose a Vital Materialist approach (Bennett, 2010).

3.2.1 The Biophilia Hypothesis as dominant framework for nature-connection research

The biophilia hypothesis proposes an evolutionary basis for nature-connection based on a heritable predilection toward an 'innately emotional affiliation of human beings to other living organisms' and is claimed to form a part of 'ultimate human nature' (Kellert and Wilson, 1993, p. 33). Thus, biophilia is understood to be an evolved emotional predilection that should be found universally among humans.

Biophilia rests on a largely theoretical, rather than an empirical, basis. Even the founder of the theory, the late biologist E. O. Wilson (Wilson, 1984, p. 106) was open about the lack of an identifiable genetic basis for biophilia, stating that 'There is no evidence of a hereditary program hardwired into the brain. We learn most of what we know, but some things are learned much more quickly and easily than others'. Indeed, biophilia may be more appropriately situated within evolutionary psychology than evolutionary biology, since its focus is on hypothesising various evolved psychological schema classified as 'learning rules' (Kellert and Wilson, 1993, p. 33). Each learning rule is theorised as bestowing a distinct survival advantage, and all the rules are proposed to have evolved during a period of evolutionary adaptation that pre-dates settlements, towns, or cities. Building on this proposition, Kellert and Wilson (1993) suggest that contemporary urban settings lack opportunities for the expression of our biophilic tendencies, leading to a generalised frustration affecting urban populations due to constraints placed on the fulfilment of our true (genetic) heritage. Biophilia is said to be 'atrophied and fitfully manifested in the artificial new environments into which technology has catapulted humanity' (Kellert & Wilson, 1993, p. 33).

The logic of the biophilia hypothesis proposes that if urban dwellers were to re-engage with natural environments their biophilic genes would finally find expression, and the sense of meaning and belonging that follows would inspire a care and commitment to preserve and protect nature, as well as enhance individual wellbeing. Thus, the biophilia hypothesis produces a strong nature/culture dichotomy along a temporal dimension: back when humans were living through the so-called environment of evolutionary adaptation (constituting an estimated 2 million years on the African Savannah) (Hampton, 2010), they were in some sense psychologically fulfilled through their connection to an environment for which they were naturally selected (Wilson, 1984). By contrast, most contemporary humans live in cities, which according to the biophilia hypothesis, separates them from their true belonging in the natural world.

Wilson's (1984, p. 131) personal motivation for developing the biophilia hypothesis was predicated on his lack of confidence in altruistic or biospheric perspectives as a powerful enough premise for environmental concern, claiming that 'The only way to make a conservation ethic work is to ground it

in ultimately selfish reasoning'. Thus, Kellert and Wilson (1993, p. 40) proposed an anthropocentric argument for an environmental ethic based on the 'hereditary needs' of humans.

The biophilia hypothesis is not only intrinsically anthropocentric; it also asserts a strong nature/culture dualism whereby natural environments and those of the human-built and artefactual are juxtaposed. This juxtaposition focuses on the benefits that natural environments offer to human wellbeing on the one hand, whilst asserting inherently negative effects of human-built environments, which are seen at best as cutting humans off from the natural world.

Despite this, one off-shoot of the biophilia hypothesis, generally referred to as biophilic design (Kellert, 2018), has taken a more connecting than separating approach. Biophilic design research has developed particularly within architecture. Human-built environments are not just decorated with natural elements, but rather the building materials and structures themselves are considered in terms of their relationship to the natural world and human wellbeing (Zhong et al., 2022). It is important therefore to acknowledge that the biophilia hypothesis has also undergone development since the principles of the initial hypothesis, although the fundamental premise remains.

Although hugely popular as a hypothesis employed to promote greater engagement with green spaces (Davis et al., 2009; Dornhoff et al., 2019; Hinds and Sparks, 2007; Lumber, Richardson and Sheffield, 2017; Nisbet et al., 2009; Perkins, 2010; Zelenski et al., 2015), and cited almost as a matter of course in the introduction sections of nature-connection papers, the biophilia hypothesis has been criticised for its theoretical self-contradictions and definitional heterogeneity, which according to Joye and De Block (2011, p. 194), render it 'an almost vacuous concept'. However, my own criticism of the theory is based on the biophilia hypothesis' strong nature/culture dualism being innately limited in its capacity to think with the Anthropocene, which is a concept that demands a more nuanced lens when analysing the entangled relationality of human and nonhuman natures. To assert that human-built environments are inherently detrimental to human wellbeing is overly simplistic and at odds with empirical evidence of the positive and restorative relationships people have with the human-built and artefactual (Weber & Trojan, 2018; Patuano, 2020). Furthermore, I have ethical concerns over the hypothesis, which seems to deny the possibility that the urban-dwelling majority of humans may find meaning and fulfilment in their relationships with built environments.

The biophilia hypothesis cleaves a categorical divide between a homogenised natural world and human-built world. This framing renders invisible the complex material and social processes by which human life in specific places and cultures transitioned from hunter-gatherers to rural agriculturalists, to urban dwellers. Even more importantly, the present metabolisms that render the line between nature and culture porous and entangled are hardly analysable from such a dichotomising lens

(Dinarès, 2014). Therefore, I fear the kind of theoretical assumptions that come with the biophilia hypothesis would bind more than facilitate the freedom to explore in an open and curious manner the human relationships with nonhuman natures that I seek to undertake.

Finally, the overt anthropocentrism of the biophilia hypothesis places too much focus on the human well-being aspect of nature-connection research for this study. Conservation and environmental action might be promoted under certain circumstances based on their benefits for humans, and thus, the instrumental value of nonhuman natures is not without some merit. However, as discussed in chapter 2, I agree with Schultz (2002) that a perception of the intrinsic value of nonhuman natures is likely to provide a more robust environmental ethic. The biophilia hypothesis is anthropocentric and emphasises the instrumental value of nature for human well-being. This again is productive of the kind of hierarchical human/nature dualism I am seeking to avoid as my starting premise.

For the reasons explained thus far, I found the biophilia hypothesis, despite its pervasive presence in nature-connection literature, an unsuitable premise for a study that seeks to extend the possible entrance points by which humans might come into relationship with nonhuman natures in ways that could cultivate greater ecological sensitivity.

As challenging as it may be for a human researcher, my aim here is to consider the perspectives and interests of nonhuman natures as well as those of my human participants. To be theoretically supported in this approach, I need a premise that grants the nonhuman environment its own ontology as a multiplicity of real and forceful presences, capable of constituting the human as much as the human constitutes the nonhuman. I am unconvinced by the Anthropocene narrative that positions humans as 'dominant' and 'overwhelming the great forces of nature' (Steffen et al., 2007, p. 614). Whilst not wishing to downplay human impacts on nonhuman natures, as the body of climate science grows, it is becoming ever more apparent that the nonhuman world, far from being overwhelmed, is acting back in ways that human societies are finding hard pressed to cope with (Wright, 2014; IPCC, 2023). Therefore, I need a theoretical framework that will de-centre the human individual without losing them in the process and allow me to consider the real presence of nonhuman natures and their relationships with humans.

Jerolmack & Tavory (2014, p. 66) criticise a social construction of the environment as 'only portrayed on the receiving end of interaction'. This construction perpetuates the idea of the nonhuman world as an inert backdrop to human activity, which is the antithesis of the analytical gaze I am seeking to cultivate. Thus, in pursuit of a new way of undertaking nature-connection research I turn to Bennett's (2010) vital materialism, which is one of a group of philosophical approaches that are becoming

influential in the social sciences (Fox & Alldred, 2017), and which are collectively known as the 'new materialisms' (Coole & Frost, 2010).

3.2.2 New Materialism

The singular 'new materialism' and the plural 'new materialisms' are both in use, with the latter pointing to a diverse set of perspectives that comprise the 'turn to matter' (Fox & Alldred, 2017, pp. 3-4). As a philosophical project, new materialist scholars seek in part to address a perceived imbalance brought about by a 'cultural turn' that began in the 1970s that 'privileges language, discourse, culture, and values' (Coole and Frost, 2010, p. 3). Whilst acknowledging the importance of this cultural turn in challenging naïve realism, new materialism in part functions to challenge a movement within the social sciences where 'language has been given too much power' (Barad, 2007, p. 132). What Barad (2007) means by this is that the necessary challenging of positivistic objectivism by social constructivism has gone to the point where representationalism now functions in a semiotic void, detached from its materiality. It is therefore that Coole and Frost (2010, p. 3) assert that it is 'now timely to reopen the issue of matter and once again to give material factors their due'.

However, the matter of this new materialism is a far cry from matter as it has been culturally and scientifically inherited from Descartes or Bacon. That is, as a set of inert and bounded objects whose only signs of life become apparent when something is done to them (Merchant, 2005; Tillman, 2015). In his history of western philosophy, Bertrand Russell expresses his concern about the extraction of subjectivity from nonhuman natures by the methods of mathematical science and is worth quoting here in full.

> The philosophies that have been inspired by scientific technique are power philosophies, and tend to regard everything non-human as mere raw material. Ends are no longer considered; only the skilfulness of the process is valued. This also is a form of madness. It is, in our day, the most dangerous form, and one against which a sane philosophy should provide an antidote (Russell, 1991, p. 482).

Perhaps the new materialisms might be presented as such an antidote, since the turn to matter is a *re*-discovery of the liveliness, agency, and creativity of matter (Barad, 2007; Bennet, 2010; DeLanda, 2016).

In seeking to move beyond an understanding of the discursive and the material as occupying separate realms, new materialisms assert a type of monism visualised as a 'flat ontology' (McLeod, 2014). The flat ontology refers to a refusal to hierarchically divide separate realms for material, psychological, and social realities, preferring to treat these as relational positions on a single analytical plane (Fox & Alldred, 2017). The purpose of the flat ontology is to cut across human/nonhuman dualisms, and by drawing on the agentic capacities of matter in and of itself, trouble traditional categorical divisions

separating the animate from the inanimate (Coole & Frost, 2010). However, care should be taken not to misunderstand this approach as negating difference. Bennet (2010, p. 9), whilst rejecting reading difference through a 'hierarchy of being', suggests that differentiating between things and persons is a 'feature of our world'. To flatten difference, then, is not to negate it, but to acknowledge that 'the sort of world we live in makes it constantly possible for… two sets of kinds to exchange properties' (Bennet (2010, p. 9).

Most importantly for the methodological premise of this study, Bennet (2010, p. 9) goes on to state that 'to begin to experience the relationship between persons and other materialities more horizontally, is to take a step toward a more ecological sensibility'. Vital materialism presents an appropriate methodological framework for this study. The flattening of hierarchical dualisms and the re-enchantment of matter facilitates exploring how both human and nonhuman elements of a situation co-constitute my human participants' nature-connections.

Although not a framework for this study, I feel it would be remiss not to acknowledge the developmental debt the new materialisms owe to ecofeminist literature. Ecofeminism was conceptually developed during the late 1970s (Buckingham, 2015) and 1980s (Gaard, 2011), and thus pre-dates the rise of new materialist literature, which gathered its momentum from the 2000s (Alaimo & Hekman, 2008; Coole & Frost, 2010). Central themes of ecofeminist work have carried over into new materialist literature, such as the troubling of hierarchical dualisms (Plumwood, 1993; Plumwood, 2002), and the intrinsic value and animism of the natural world (Matthews, 2003). Braidotti (2022, p. 69) devotes a chapter to ecofeminism in her book on posthuman feminism, suggesting that ecofeminism foresaw the posthuman turn by extending 'the critique of humanist reason to the ecological dimension'. Clearly congruent with new materialist concerns such as culture/nature dualisms and a rejection of the social operating independently of its material configurations, Braidotti asserts the following:

> Ecofeminists are the exception to the dominant twentieth-century social-constructivist paradigm, in that they are critical of the separation of nature from culture and the hierarchical binary distinctions that were built upon it (Braidotti, 2022, p. 74).

As will be explicated further in section 3.2, new materialist approaches are also congruent with the analytical techniques I employ through Situational Analysis (SA). Clarke et al. (2018) are explicit about this in their writing. SA considers the active contributions of nonhuman elements of a situation, rather than treating the nonhuman as an environment that remains passive as humans project their own meanings onto it.

3.2.3 Vital Materialism

The new materialism I employ in this study is Jane Bennett's (2010) vital materialism. Bennett's (2010, p. ix) advocacy for a 'vitality of matter' both enlivens nonhuman materialities with agentic capacities whilst recognising differences between human and nonhuman agents. By the term vitality, Bennett (2004) refers to the intrinsic creativity of nonhuman natures. Drawing in part on the work of Manuel DeLanda, Bennett (2004) uses the example of certain waves capable of maintaining their own structure – even as they interact with external influences – as evidence of the self-organising capabilities of nonhuman natures traditionally classed as inert. Other examples include the self-organising capacities of crystals, which Bennett (2004) uses to challenge the idea that only organic entities are capable of creative behaviour. Bennett (2004, p. 355) also makes use of Bruno Latour's term 'actant' to refer to a nonhuman nature's ability to 'produce effects' and 'alter situations'. The implications of these examples are used by Bennett (2004) to assert the capacity for inorganic materialities to actively exert an influence on their environment, thus exhibiting a kind of vitalism. In her later work, Bennett (2010) presents her vital materialism through her concept of vibrant matter. This concept will be further explicated in section 3.3.1.3.

Bennett's (2010) vital materialism offers a methodological framework by which a psychology of nature-connection can be studied in ways that are non-anthropocentric. Furthermore, a vital materialist lens encourages a sensitivity toward the role nonhumans play in shaping human experience, allowing me, as the researcher, to 'engage productively with the wider environment beyond the human' (Fox & Alldred, 2017, p. 7).

In addition, Bennett's (2010) vital materialism assumes the agentic capacities of artefacts as well as natural entities. This approach invites an analytical gaze that accommodates the connectivity running through the social and natural worlds; a connectivity which is missing in the biophilia hypothesis. Therefore, for all these reasons I chose vital materialism as the philosophical and methodological framework for this study.

3.3 Method

In searching for a method that would give me the analytical tools with which to explore nature-connections from a vital materialist lens, I found Adele Clarke's Situational Analysis (SA) the most capable candidate for this study (Clarke et al., 2018). SA is a theory/methods package developed by Clarke which began by extending the analytical parameters and capabilities of constructivist grounded theory (Charmaz, 2006), but which has matured into a stand-alone method (Clarke et al., 2018). SA explicitly highlights the importance of including nonhuman natures as active conditioning influences on social worlds, stating that new materialisms 'offer fresh and useful provocations regarding the study of precisely *how* the nonhuman can be taken into account' (Clarke et al., 2018, p.

87). This emphasis of the method was especially important for my work with Bonsai as I sought to account for the co-constitutive roles of human and tree. Furthermore, by seeing each analytical element in relation to multiple other connections that make up a broader, more-than-human *situation*, SA facilitates an analytical approach that can support my efforts to take a non-anthropocentric lens to this study. All this is supported by SA's cartographic methods which provide powerful analytical tools for operationalising a non-anthropocentric approach to nature-connection research. Although SA originated within sociology, the cartographic techniques for studying multiple elements of a situation are entirely applicable to a more-than-human psychology that seeks to render analysable the varied human and nonhuman influences that coalesce to form expressions of nature-connectedness at the scale of the individual.

3.3.1 Sensitising concepts

In discussing approaches to doing situational analysis, Clarke et al. (2018) introduce the utility of certain concepts as heuristics during research. It is worth clarifying from the outset that the employment of concepts in SA is entirely different to theoretical concepts against which hypotheses are tested. So called 'sensitising concepts' (Clarke et al., 2018, p. 121) are not used to indicate what the researcher might expect to see in their data, but rather *how* to approach looking at their data. I will draw on three guiding concepts in this study: namely, the *assemblage*, the *rhizome*, and *vibrant matter*. Each of these are introduced in turn below.

3.3.1.1 Assemblage

Clarke et al. (2018, p. 91) describe the mapping methods of SA as 'deeply indebted' to Deleuze and Guattari's concepts of rhizome and assemblage, pointing to them as the foundation of situational and relational maps. An assemblage is a multiplicity of actions that include semiotic, material, and social 'flows' at once, thus cutting through the 'tripartite division' of an external world, socially constructed representations of an external world, and individual subjectivity (Deleuze & Guattari, 1987, pp. 43-44). This assemblage thinking can be seen in both Clarke et al.'s (2018) insistence that the researcher stands as part of the research process and knowledge production rather than separate to these, as well as the inclusion of material and discursive elements within a situational map.

An assemblage as a collective is not bounded by a membrane. Rather, it is formed as a coagulation of 'connections among heterogeneous entities' that embody characteristics of 'looseness' and 'instability' (Clarke et al., 2018, p. 94). This looseness or instability suggests that individual elements making up an assemblage can change position or leave the assemblage entirely, as well as keeping open the possibility of new elements entering (DeLanda, 2016). Deleuze and Guattari (1987) refer to the porosity of assemblages through processes of territorialisation and de-territorialisation (Deleuze & Guattari, 1987).

When employing the concept of assemblage, it is important to be aware that the purpose of assemblage thinking is not to identify the presence of an assemblage, but rather to pursue analytically '*how it is working* in the specific situation under analysis' (Clarke et al., 2018, p. 95). As such, my intention is to employ assemblage thinking, not to tell me what to see, but how to look. McLeod (2014) offers some guidance in this regard by describing three ways of 'thinking with' the assemblage concept. Firstly, assemblage thinking de-centres the human individual as the primary focus of analysis, and rather orientates the researcher to look at how a heterogeneity of human and nonhuman elements co-constitute the assemblage. This is in tune with Clarke et al.'s (2005) SA, where the situation is the unit of analysis. Secondly, agentic capacity is distributed across all elements, whether human or nonhuman, which are producing the assemblage at any point in time (Latour, 2005). Thus, assemblage thinking draws the researcher away from the anthropocentric gaze and toward a view of multiple human and nonhuman agencies in relationship. Thirdly, the concept of the assemblage allows for the discernment of an emergent property, where the assemblage itself has a capacity to act as a subject that is greater than the sum of its parts. Thus, an assemblage can be studied both in terms of the relationships that structure it as well as its overall process of territorialisation or deterritorialization and relationships with other assemblages. This third point is salient in Clarke et al.'s (2018) presentation of mapping social worlds in SA. Therefore, the assemblage concept will facilitate my exploration of nature-connection, not as the exclusive possession of the individual human, but as a coalescing of multiple material-discursive influences that include human and nonhuman influences.

3.3.1.2 Rhizome

The concept of the rhizome is used by Clarke et al. (2018, p. 93) to describe the generation of 'fluid, tentative – wide open and responsive systems of relationalities'. In other words, the rhizome describes how assemblages form.

Perhaps the most useful and powerful effect of thinking with the rhizome is the freedom it offers from an 'arborescent' mindset (Deleuze & Guattari, 1987, p. 8). In this sense, arborescent refers to the tendency to seek linear progressions of cause and effect, and a reduction of the complex to the simple. Contemplation on the rhizome encourages a pathless gaze that is comfortable with chaos and contradiction. In contrast to the metaphor of the tree, with its variation emanating from and tracible to a unitary, central trunk, rhizomatic activity conjures images of shoots that might develop from any point without a controlling centre (Deleuze & Guattari, 1987). I draw on the concept of the rhizome in this study as a reminder to be open to perceiving nature-connections and disconnections that aren't necessarily an easy fit with dominant assumptions, and perspectives on nature connection that may exist as new shoots that are not easily plotted as off-shoots connected to the main trunk of accepted understandings.

I understand the employment of the rhizome as a guiding concept to mean taking on a rhizomatic attitude during research and analysis. Part of that attitude means letting go of the will to make sense of things for a good while. McLeod (2014, p. 386) reflects on how she approached her data analysis with a sense of trust that 'experimentation will lead to something being produced', meeting the data openly and exploring relational configurations through analysis – for which McLeod (2014) also drew extensively on Clarke's (2005) situational, relational and positional mapping methods.

The rhizomatic approach to analysis can be seen in Figure 1, found in section 3.3.2 below, referred to by Clarke et al. (2018) as a messy map. Figure 1 shows an early draft of a messy map of elements that make up the nature-connection situation, and includes human, nonhuman, material, and discursive elements in no order or arrangement.

It may be helpful to clarify precisely how I employ the rhizome as part of the analytical process. The rhizome is not an analytical method. There is nothing to tell you what to do or how to do it. My understanding of the role of the rhizome in the research process is that of an attitude. Deleuze and Guattari's (1987) descriptions of the rhizome conjure a sense of chaos, randomness, novelty and surprise that is conducive to an open-minded analysis. As qualitative analysts we tend to aggregate, to home in on similarity, symmetry, sense making patterns and a movement toward abstraction supposed to represent a deeper, more essential truth than the particulars from which it is constructed. However, the rhizome resists the coalescence of fixed identities presented in static transcendence. Rather, a rhizomatic analysis emphasises movement, process, and a continued capacity for surprise. In a rhizomatic analysis, then, the aim is not to seek closure, but to exercise the space and freedom where 'new events of thinking' are possible (Lather, 2013, p. 639).

3.3.1.3 Vibrant Matter

In addition to the concepts of assemblage and rhizome, I draw on Bennet's (2010) concept of vibrant matter as an aid to thinking with my data.

Bennett's (2010, p. ix) motivation for promoting a 'vitality of matter' is a response to her 'hunch' that the perception of matter as innately inanimate and inert only makes it easier for humans to exploit nonhuman natures. As such, vibrant matter is political, the advocation of which is to 'move selves from the endorsement of ethical principles to the actual practice of ethical behaviours' (Bennett, 2010, p. xi). Thus, Bennett (2010) clearly hopes the concept of vibrant matter can move beyond the purely theoretical, and function as a guide to seeing.

It is important to note that Bennett (2010) is clear in differentiating between her conceptualisation of the vibrancy of matter and early western anthropologists' interpretations of indigenous peoples' animistic beliefs. These early interpretations of vitalism read non-western experience through the

lens of a matter/spirit dualism in which an animating spirit inhabits and brings to life otherwise dead stuff. By contrast, Bennett's (2010) vibrant matter finds kin with Ingold's (2006, p. 10) argument that the vitalism of cultures that have been uninfluenced by the substance-dualism of western modernity experience the 'animacy' of their 'lifeworld' not as 'the result of an infusion of spirit into substance, or agency into materiality, but is rather ontologically prior to their differentiation'. Ingold (2006) argues that in their interpretation of indigenous animism, early western anthropologists completely failed to recognise the radical more-than-human relationality of animist cultures; a radical relationality that would deeply trouble enlightenment notions of human exceptionalism. Again, Bennett's (2010, p. xiii) vibrant matter finds kinship with Ingold's (2006, p. 10) rejection of animacy being read as a 'property of persons imaginatively projected onto the things with which they perceive themselves to be surrounded', wishing rather to 'theorise a vitality intrinsic to materiality as such'.

As someone who was raised in a culture of substance dualism and human exceptionalism, a first step toward becoming open to the perception of vibrant matter is simply to remind myself of Ingold's (2006, p. 10) statement that 'people do not universally discriminate between the categories of living and non-living things'. This simple fact is my own starting point to taking a non-anthropocentric perspective on my research.

When thinking about how to become 'perceptually open' to the vitality of the nonhuman (Bennett, 2010, p. 14), Bennett (2010, p. xvi) invites us to 'linger' at moments when we find ourselves 'fascinated by objects', seeking to sense the common vitality of which we are a flow. Ultimately, Bennet's (2010, p. 4) theoretical development of a vital materialism is motivated by a hope that a shift in the perception of a world of essentially inert stuff to that of a world of vibrant matter 'will generate a more subtle awareness of the complicated web of dissonant connections between bodies, and will enable wiser interventions into that ecology'. This study is motivated by a desire to explore how such a hope might be realised.

3.3.2 The Cartographic techniques of Situational Analysis

Situational analysis has at the core of its toolkit three types of 'mapping' techniques (Clarke et al., 2018, p. 17). An introduction to each type of map is described below.

3.3.2.1 Situational Maps

Situational maps are a method by which the researcher can present all the conditioning elements that assemble to constitute the situation. All elements are ontologically flattened, and thus, specific materialities may sit alongside discursive themes, social institutions, and psychological experiences, schema or constructs. Clarke et al. (2018, p. 128) describes initial versions of situational maps as 'messy' attempts at plotting the complex networks of often disparate elements that assemble to

create the situation, and it is generally expected that multiple maps will be worked and re-worked over the course of research. Although initial messy maps should contain as many elements making up the situation as possible, the intention is not to go on to give every element equal analytical attention. Rather, as data is collected and analysed, the most analytically interesting and relevant elements to the research questions will be selected and the relationships between them studied at greater depth. A messy map from early in my research process is shown in Figure 1 below.

Figure 1 Example of an early messy map from the nature-connection analysis

After working up a situational map, the researcher proceeds on to relational mapping, which is a way of visualising the relationships between conditioning elements. This is a vital step toward analysing the relationality of the *situation*. The example of relational map in figure 2 below clearly demonstrates the way social, material, and psychological elements are not stacked, but rather relationally organised.

pots – aesthetics
pots – commerce
pots – practitioners
pots – bonsai trees
commerce – bonsai trees
commerce – practitioners
commerce – non-practitioners
aesthetics – practitioners
aesthetics – bonsai trees
aesthetics – shows
aesthetics - knowledge
clubs – bonsai trees
clubs – community
death – bonsai trees
death – practitioners
death – researcher
community – shows
community – practitioners
community – bonsai trees
shows – bonsai trees
shows – non-practitioners
shows - practitioners
big trees – bonsai trees
big trees –researcher
knowledge – practitioners
knowledge – researcher
knowledge – bonsai trees
tools – bonsai trees
tools – practitioners
non-practitioners – bonsai trees
researcher – bonsai trees
researcher – practitioner
practitioners – bonsai trees

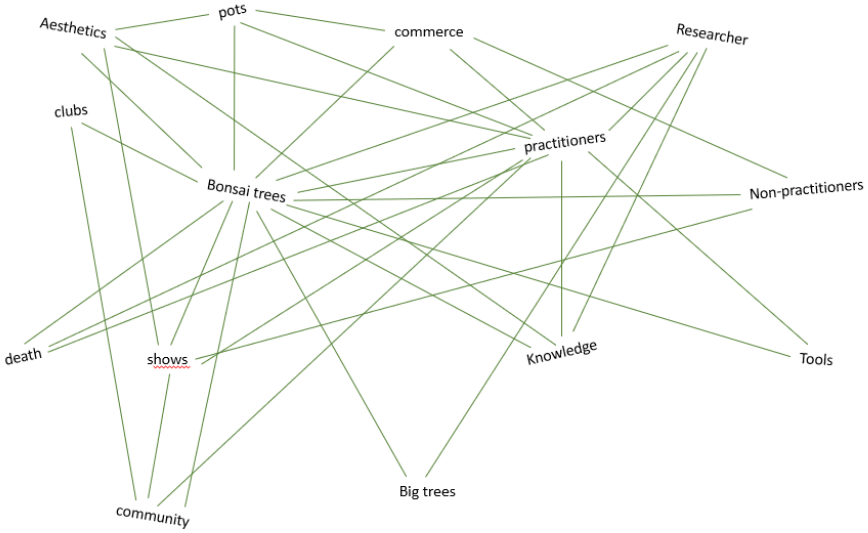

Figure 2 An example of relational mapping from the bonsai group

3.3.2.2 Social Worlds/Arenas Maps

The social worlds/arenas maps are a way of visualising collectives. These collectives can be large or small, and Clarke et al. (2018) cite possible examples as being leisure groups, professions, organisations, or traditions. An example from this study would a bonsai club, or a nature-connection course. Arenas are made of social worlds that collectively express a common purpose or aim. It is worth noting that Clarke et al. (2018, p. 148) emphasise that social worlds/arenas – although being nouns – are not static or final structures, but rather 'emergent and fluid entities'. Social worlds/arenas do not exist on some macro-level above elements of the situational maps. Rather, they offer a way of grouping the elements of the situational maps as dynamic collectives. Analytically, social worlds/arenas maps are useful for looking at broader issues and collective identities. Figure 3 below shows the interconnectedness of various social worlds making up the bonsai situation.

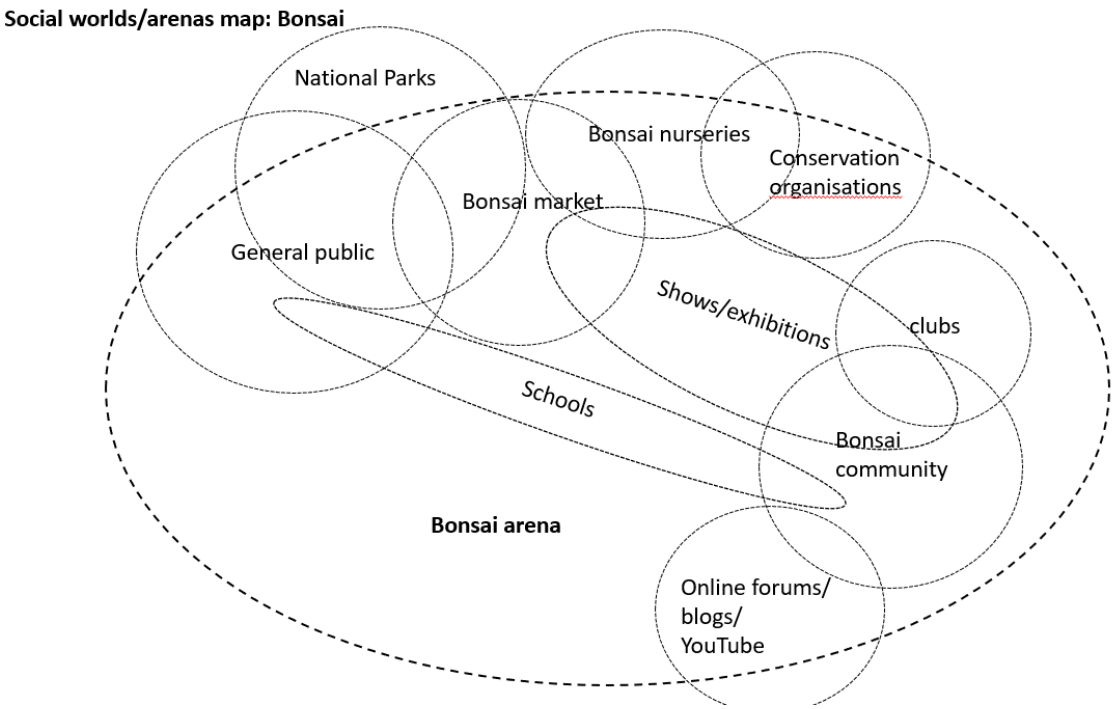

Figure 3 Mapping the social worlds/arenas of the bonsai situation.

3.3.2.3 Positional Maps

Clarke et al. (2018, p. 165) describe positional maps as 'the analytic tools applied to the discursive materials in the situation'. As such, positional maps visualise the major stances taken on issues, helping clarify different perspectives taken on a certain topic. Clarke et al. (2018, p. 166) emphasise that the discursive elements on a positional map should not express the researcher's interpretations of an issue, but rather the positions taken '*by those who produced the materials'*. This approach is demonstrated in figure 4 below, where the various positions are drawn from a heterogeneity of discourses, attitudes, and practices expressed by participants. These mapping exercises should be free of theorising or interpretation.

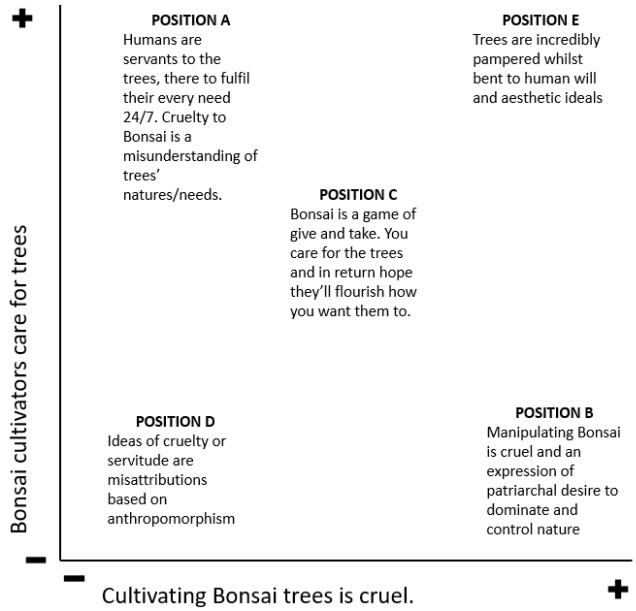

Figure 4 Example of a positional map from the bonsai participants.

3.3.2.4 Memos

Analysis in SA focuses on relationality. For example, as the connections between elements on relational or positional maps are looked at, memos are constantly written to document insights and observations as to what those relationships co-constitute. Unlike the maps, memos allow space for the researcher's ideas, inferences, and early theorising. Memos are also used to document researcher reflexivity, as the researcher in SA is treated as another conditioning element on the situational map. A memo can be short, akin to a code from other forms of qualitative analysis or comprise a more substantial piece of writing that may go on to form a section of formal writing. I frequently found myself needing to write a memo outside of formal research sessions, such as when out walking, commuting to work, or showering. If fact, these activities were often non-research actions that became sites of inspiration and the forming of connections that pushed analysis further. Over the course of this study the research assemblage has been leaky, often trickling into other worlds, suddenly becoming visible in new ways. I feel slightly vulnerable including figure 5, as memos are spontaneous and not polished prose, but this excerpt illustrates the type of connections and surprises that came to mind outside of formal research hours.

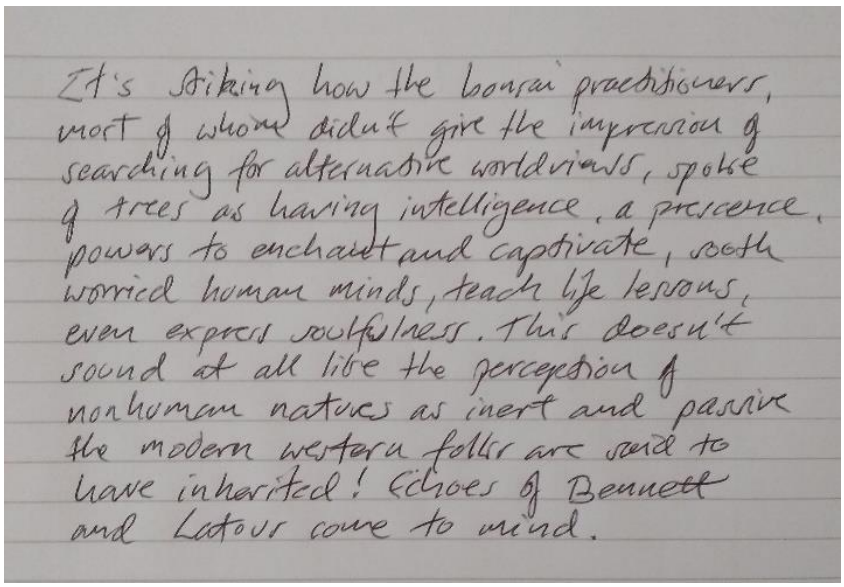

Figure 5 Example of a memo.

3.3.2.5 Coding

SA does not include a process of coding as is often understood in qualitative research, such as where the coder makes small descriptive summaries of text before using these to build categories and themes (Braun & Clarke, 2022; Creswell & Poth, 2018; Gibbs, 2018). This approach to coding could be said to accord with a humanist framework of qualitative research and is likely to be front loaded with an anthropocentric lens, missing the agentic contributions of nonhuman elements in the situation (Jackson, 2013).

Mazzei (2013) suggests a post-humanist approach to qualitative research where knowledge is produced from a more-than-human assemblage. In this approach, a human participant's voice is not assumed to 'emanate from a singular subject' (Mazzei, 2013, p. 733). Rather, participants' experiences are explored in their more-than-human relationality. Clarke et al.'s (2018) relational mapping is completely congruent with this methodology. The main process of what might be called coding in SA is the detailing of the relationships between the human and nonhuman elements in a situation. Relational mapping is visually attuned to the flat ontology of the new materialisms as can be seen by comparing the left and right sides of figure 6 below. On the left is a representation of a relational map, comprised of nodes and edges. Whilst complexity and relationship at different scales can be effectively analysed with this method, relational mapping resists simplification and aggregation toward higher order themes, as is exemplified by the code-category-theme structure on the right.

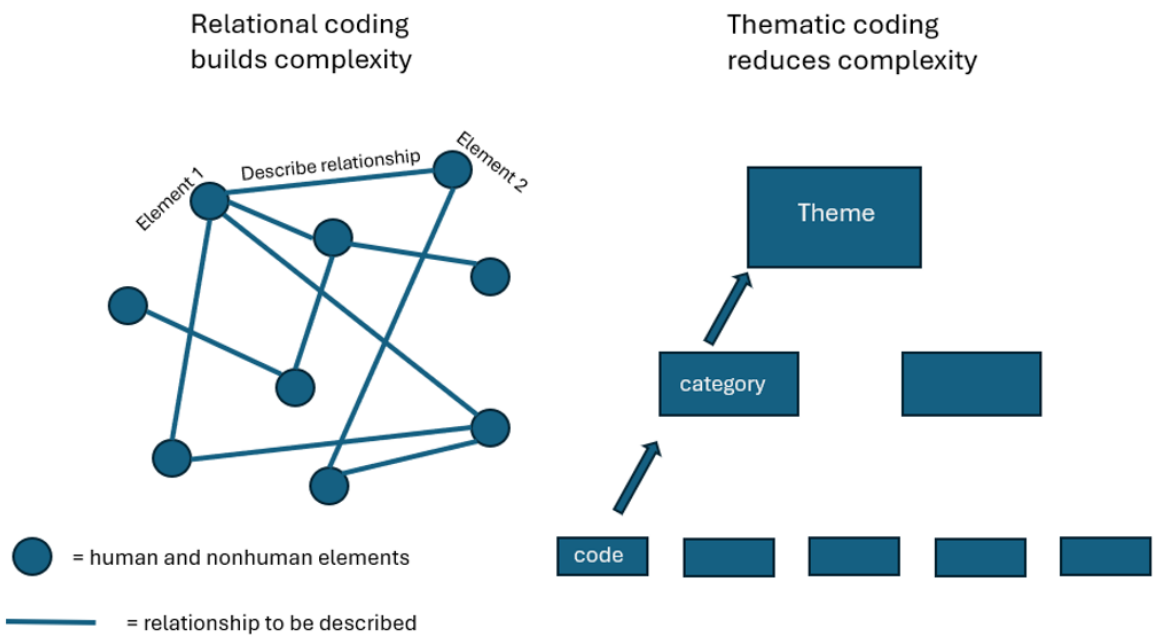

Figure 6 Comparison of relational coding and thematic coding.

My approach to coding, therefore, is informed by SA's methodology and the underlying process and relational ontologies that frame it. For each participant I undertook a relational and more-than-human analysis to describe how the human participants' nature-connections are assembled from more-than-human relationships. Each participant's voice in the form of an interview transcript was analysed, not as that of a single rational agent, but as a complex expression made from multiple influences.

The reason behind choosing this approach to coding is because SA's cartographic techniques are ideally suited to exploring *how* nature-connections are formed by their discursive-material connections across human and nonhuman natures. The same can be said for my exploration of participants' environmental worldviews and values, where SA's cartographic techniques allow for an exploration of the relationships between different discourses, attitudes and perceptions.

I have included figure 7 below to show a concrete example of what this relational coding looks like in this research.

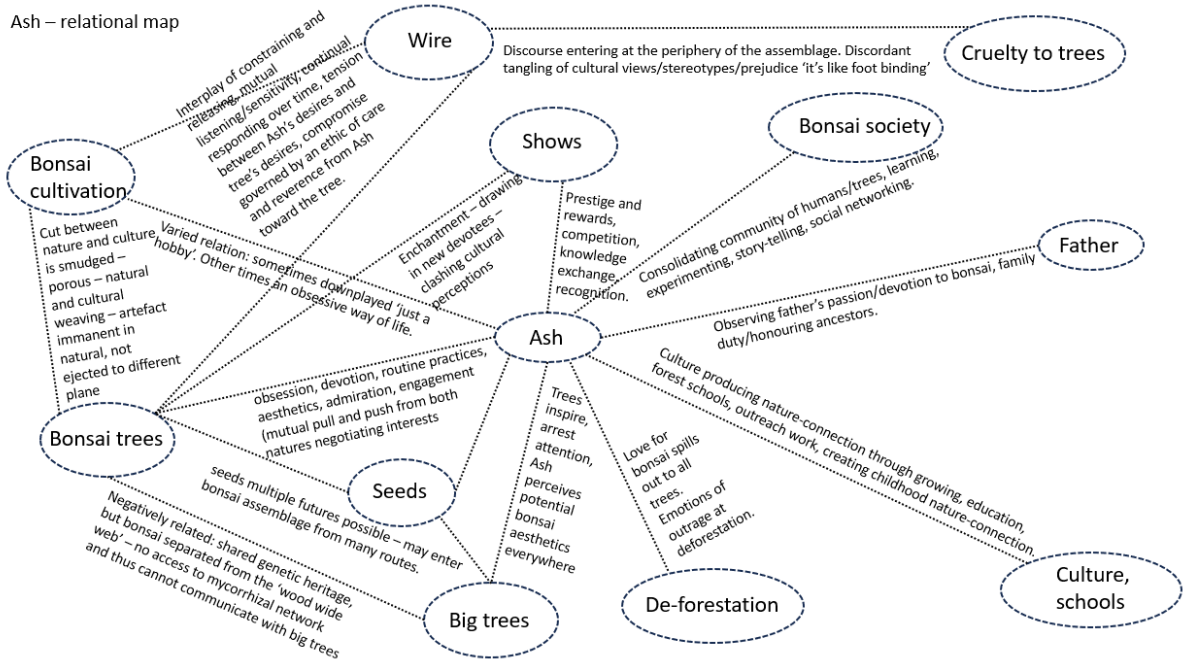

Figure 7 Individual participant relational map (Ash)

My research ultimately leads to three conceptual developments (see Figure 18 in chapter 6), and so ultimately moves from the purely descriptive and becomes interpretive. The concepts I develop take the discussion into the realm of theory. I mention this here to emphasise that relational mapping is not intended to bind the researcher to purely descriptive work, but rather to facilitate an analysis of the complexity and relationality of human and nonhuman elements of an assemblage that is less explicit in theme building methods.

3.4 Sampling

'follow your theoretical excitement' (Clarke, Friese & Washburn, 2018, p. 113)

SA permits both purposive and theoretical sampling approaches to data collection. Purposive sampling is non-probabilistic. The selection process is based on whether potential participants have specific characteristics, expertise, or experience relevant to the research questions and aims. Purposive sampling, therefore, ensures that the sample is representative of the phenomenon or situation under study. Details of how purposive sampling was applied for this study are given in section 3.4.1 on sampling procedure.

Further to purposive sampling, theoretical sampling may be employed over the course of an SA project. Theoretical sampling refers to a process-oriented approach to sampling where the initial sampling criteria may be modified according to initial findings. The extent to which theoretical sampling is used is not preordained. Clarke et al. (2018, p. 107) simply articulate the likelihood that a researcher using SA will 'end up pursuing new and unanticipated directions'. A new direction may in

turn require new mappings. In turn, the whole point of these re-mappings is to 'provoke analytic decisions regarding future directions of interest, and detail what kinds of new data to collect to address these topics' (Clarke et al., 2018, p. 104). Although the two groups of participants for this study were pre-defined, recruitment continued over a period, and theoretical sampling played a part in modifying the demographic parameters of potential participants early in the process. This process is detailed in section 3.4.2 on the theoretical sampling procedure.

Clarke et al. (2018) consider the sampling process to be finished once saturation has been reached. The term 'saturation' is commonly used to indicate a stage in the research when the acquisition of new data ceases to bring anything new to the analytical aims (Bryant, 2017). Judgements over data saturation are ultimately subjective, and this is an unavoidable part of research with an inductive element to it. After all, a researcher can never know whether something new will present itself around the corner. I have taken a pragmatic approach to saturation, taking seriously Clarke et al.'s (2018, p. 196) warning of the 'risk of *premature closure of analytic possibilities*', whilst recognising that any single study will always be nested within a movement of continued research and development. Along with remaining cognizant of Clarke et al.'s (2018) advice, I have based my judgement of completion on whether I have rigorously addressed my initial research aims and provided answers to my research questions such that a genuine contribution to knowledge has been achieved. This, of course, is not a judgement that will be made by me alone. As Bryant (2017, p. 254) points out, 'ultimately the issue of whether or not the research findings actually bear out the conclusions is a matter of judgement, initially for the researcher(s) and later for those evaluating or scrutinizing the work'.

A final consideration around when to stop sampling must also be made, even though it is a far less elegant justification for drawing the sampling process to a close. This consideration pertains to deadlines. As Bryant (2017, p. 249) points out 'All research involves a series of compromises. There is only a finite amount of time for the study'. A well-planned study should not be too influenced by deadlines, but at some point, a deadline will inevitably play into working toward a study's closure. Regarding these considerations, I have also aimed to balance each stage of the research with surrounding structural constraints in order achieve a study that can be judged to be complete.

3.4.1 Purposive sampling procedure

I began implementing my sampling procedure after receiving my ethics approval at the end of April 2021. I collected and analysed data from two separate groups. These were a group of nature-connection practitioners and a group of Bonsai practitioners. The purposive focus on recruiting is different for each group. I was interested to recruit nature-connection practitioners as I was aware through both the literature and my anecdotal experience that nature-connection practitioners are

often conscious of their environmental ethics and worldviews. I wanted to explore how these worldviews are understood by participants, and how they perceive the relationship between their worldviews, nature-connection practices, and environmental attitudes. From a psychological perspective, I also wanted to explore how participants' individual perceptions of different nonhuman natures might be influenced through their entanglement with wider material and cultural influences. Given the framing of the Anthropocene as depicting the entanglement of social and natural systems, I was particularly interested to explore how nature-connection practitioners perceived the human built and artefactual in relation to the natural world from their individual scale experience.

Regarding the bonsai practitioners, I chose this group because they comprise an assemblage of elements that would be considered both natural and artefactual in ways that trouble a hard distinction between the two. I wanted to explore how participants' involvement in this assemblage might influence their perception of trees, but also their environmental values and attitudes. The purposiveness of this group's recruitment is also found in my aim to take seriously the role of the nonhuman in this study. The role played by both human and tree in the emergence of bonsai presented an ideal situation in which to explore the agency and influence of both. Recruiting bonsai practitioners allowed me to approach the nature-connections comprising this assemblage with a vital materialist lens such that I viewed the trees as nonhuman participants in this study.

In Spring of 2021 I secured the assistance of two gatekeepers for the nature-connection participants group. One gatekeeper was a nature-connection walking guide who takes individuals and groups out for walks on Dartmoor in the Southwest of England. Integrated into the walks are various nature-connection activities. The other gatekeeper runs a yearlong nature-connection course which includes activities and experiences both in Devon, UK and in Africa. I did not receive any research participants through my first gatekeeper, but I interviewed 8 participants through the second gatekeeper.

I also had success with chairpersons of several bonsai clubs after sending an initial contact email to 21 clubs around the UK. This led to further participants through word of mouth. I interviewed 10 bonsai cultivators, some of whom are recognised as highly experienced and skilled amateurs, and two of whom are internationally recognised professionals.

Tables 1 and 2 below show the demographic variation of participants from both groups.

Table 1 Demographic information on the nature-connection participants.

Pseudonym	**Gender**	**Location**	**Profession**	**Age**	**Date of interview**
Chloe	Female	Cornwall	Permaculturist	No data	06/07/2021
Joel	Male	Forest of Dean	Food distribution network worker/woodland manager	32	09/07/2021
Frank	Male	Sicily/UK	Stock trader	38	14/07/2021
Kirsten	Female	Cornwall	Nature and Health Practitioner	41	19/07/2021
Lily	Female	East Sussex	Writer	26	13/08/2021
Wolfgang	Male	East Sussex	Gardener	31	23/05/2022
Moss	Female	Denmark	Coach	35	13/06/2022
Jackie	Female	Cornwall	Community Health Champion	47	13/06/2022

Table 2 Demographic information on the bonsai participants.

Pseudonym	Gender	Location	Profession	Age	Date of interview
Marie	Female	Wiltshire	Arboriculturist	No data	08/07/2021
David	Male	Berkshire	Retired	77	16/07/2021
Lisa	Female	Wiltshire	Retired	73	20/07/2021
Jack	Male	Wiltshire	Retired	73	26/07/2021
Hazel	Female	Gloucestershire	Bowen therapist	61	30/07/2021
Ash	Male	North Yorkshire	Retired	74	03/08/2021
Gareth	Male	Berkshire	IT manager	31	05/08/2021
Maple	Male	Kent	Bonsai Master	42	20/09/2021
Bob	Male	Wiltshire	Retired	70	13/06/2022
Taxo	Male	Italy	Bonsai Master	46	11/08/2023

3.4.2 Theoretical sampling procedure

My original project proposal stated an intention to focus on recruiting participants who lived in cities. My rationale for this sampling strategy was based on an assumption that I would be better placed to explore how participants relate to both natural and built materialities. Furthermore, some scholars have suggested that a certain discursive strand within nature-connection discourse alienates urban people from their homes and surroundings (Patuano, 2020; Vogel, 2014), and this was a possibility I wanted to be alert to during my interviews. However, by the end of the first two interviews it became clear that this approach would hinder the aims of the research rather than support them. It quickly became apparent that nature-connection as a phenomenon could not be fully understood by situating the research in towns and cities in such a way as to cut out rural or wild places. In fact, it became clear that participants' nature-connection practices and experiences were strongly linked to spatial movements and changes of residencies. Descriptions of both urban and rural places were needed to interpret these movements in relation to participants perceptions of human and

nonhuman natures. These flows from urban to rural locations were important parts of the situation under study, and so to try and focus on an urban context only would have missed half the story. Indeed, participants' nature-connections to urban elements of the situation were more fully explicated in relation to rural or wilderness elements, and vice versa. Ironically, even though as a researcher I had the intention of troubling simplistic dichotomies, I realised that my own mental cutting of the phenomenon into urban nature-connection and rural nature-connection had been a product of my own dichotomous thinking. In line with Clarke et al.'s (2018) guidance on theoretical sampling, therefore, I modified my sampling parameters to accommodate participants from any kind of environment and informed my gatekeepers accordingly.

Another part of this study's original sampling frame that I modified was an initial restriction to England. However, early on interviewing nature-connection participants it became clear that I had entered a community with strong international connections. Although I did want to restrict my participants to people acculturated in modern western societies, to focus on nature-connection as an English phenomenon would have missed important social and cultural influences on this phenomenon, as well as to incompletely describe the relationships making up the situation. Frequently, nature-connection participants would travel internationally to take part in courses, as well as draw on nature-connection traditions from different places and cultures. Looked at from the framework of situational analysis, the situation was assembled from rich network of relationships far beyond any one nation. To adequately work on SA's cartographic techniques, I needed to open the study to an international scene.

3.4.3 A reflexive development of the interview schedule

Initially, I wrote a detailed interview schedule, modified to be appropriate to each participant group. The function of this first interview schedule was simply to create a starting point and give me a set of relevant questions to fall back on should my participants need further prompting and follow up questions to the main topics. However, my aim from the beginning was to conduct interviews that would be semi-structured yet sit more toward the unstructured end of the spectrum. In no way was the interview schedule intended to function as a template to stick to. Rather, eliciting participants' perspectives and following up on those contributions that I saw as analytically important to the research was my priority. Therefore, over the course of the interviews I conducted, the interview schedules developed and changed as I took notes on issues brought up by early participants that I wanted to follow up on across the rest of the samples. For example, an early interviewee from the bonsai group relayed to me his experiences of members of the public who had accused him of being cruel to trees whilst exhibiting at shows. I found this a relevant conflict of positions regarding human relationships to trees since the bonsai cultivators generally consider themselves as serving their trees every need. Therefore, I built the issue of cruelty to trees into the interview schedule so I could

further pursue possible insights this might have for the role of cultural practices in human relationships with trees.

Another way my interview schedule developed was through a process of reflection on what I could reasonably and appropriately expect my participants to comment on. For example, I was interested in how the nature-connection participants felt about the relationship between their environmental values and the concept of natural capital. My first interviewees expressed strong socio-political views and seemed comfortable conversing with me on this topic. However, I also found myself interviewing participants who had never heard the term natural capital. Initially, my approach in these circumstances was to offer a brief explanation of the concept and then ask for their thoughts on the matter. However, after one participant stated that they would normally want to educate themselves more on this unfamiliar idea before commenting on it, I realised that I was expecting too much from my participants. Furthermore, asking participants for whom natural capital was an unfamiliar idea for their thoughts was unlikely to yield high quality data. From then on, I stopped asking about specific environmental policy solutions unless participants demonstrated an interest and understanding thereof. This also led me to reflect more broadly on some of my follow up questions, and I gained greater clarity on what I should and should not expect of my participants. I made clear to myself that I could reasonably expect my participants to talk about their personal involvement in their nature-connections or activities, their relationships with nonhuman natures, and their personal environmental values and beliefs. However, I could not reasonably expect them to offer solutions to political or philosophical challenges, such as the potential congruence or incongruence of the co-existence of intrinsic rights of nature and the idea of natural capital. In short, I reminded myself that my participants were there to provide data that I could use to address my research questions: they were not there to simply answer my research questions for me. This again influenced my interview schedule moving forward and helped improve the overall quality and relevance of subsequent interview data.

3.5 Ethics

This study was examined and approved by the University of St. Mark and St. John's ethics committee in April 2021. The following outlines the considerations and practical actions I took to ensure this study was undertaken in a way that respected and upheld the dignity and best interests of all research participants.

3.5.1 informed consent

Informed consent lies at the heart of an ethical approach to research (Flick, 2014). The process of informed consent provides evidence of the voluntary nature of participation, but also other protections and mechanisms that uphold participants' dignity and agency in the research process. My

informed consent process had several stages built in to ensure these ethical considerations were put into practice.

The first consideration was to respect potential participants' privacy and autonomy (British Psychological Society, 2021). To achieve this, no participants were contacted directly by me. Through internet searches, I identified two potential gatekeepers through which to access participants for the nature-connection group. These gatekeepers were then initially approached by email and invited to a phone conversation should they be interested in playing a role in recruitment for the study. Furthermore, the potential gatekeepers were asked to initiate contact. If I did not hear back from a gatekeeper, I did not pursue any further attempts at communication. The same approach was used for the bonsai gatekeepers. These gatekeepers consisted of 21 chairpersons, each associated with a different UK bonsai club or society (See Appendix 3 for a copy of the initial email sent to bonsai gatekeepers).

When a gatekeeper responded and expressed interest to be involved, I sent an introductory invitation script for them to pass on to potential participants. In the case of the nature-connection gatekeepers, these were passed on to course participants. In the case of the bonsai practitioners, these were passed on to club or society members. This correspondence gave a transparent description of the nature of the research and its aims in non-specialist language. Again, only participants who actively reached out were then offered further information (See Appendix 4 for a copy of the email to be passed on by gatekeepers to potential participants). One extra piece of correspondence was published after a suggestion by one of the nature-connection gatekeepers, who offered to include a call out for the research in his monthly newsletter (See Appendix 5 for a copy of this call out). Both gatekeepers also suggested they recommend my research by word of mouth should appropriate circumstances arise.

Interested nature-connection and bonsai practitioners who reached out to me were then directly acknowledged and sent an information document with a detailed description of the research, including explanations of why they had been invited, what they could expect to happen, how they might benefit from participation, and a detailed breakdown of how their data would be stored. This information document also included the contact details of my PhD supervisors with an invitation for participants to contact them directly at any time during their participation should they wish to raise an issue but not directly with me (See Appendix 6 for a copy of the information document).

Due to the geographical spread of participants' residencies from the university, all interviews apart from two were conducted via Zoom. Two interviews were conducted via telephone and recorded with a USB recording device. All interviews were transcribed manually by me. At the point of

transcription, participants names were replaced with pseudonyms and any identifying text omitted from the transcripts. Interview recordings and transcripts were password encrypted using 7-Zip software and stored on a OneDrive that only I had access to. Participants were informed that they could withdraw their consent at any time during the research process and request all their data be destroyed without needing to supply a reason up until the point when their interviews had been transcribed and anonymised. Otherwise, their audio interview files could be securely stored until September 2030. All participants agreed to this. All participants also gave their verbal consent at the start of their interview.

3.5.2 freedom of speech and respect for difference

I was cognizant from the outset of this study that I would be exploring issues that are often accompanied by strong emotions and specific worldviews and political perspectives. Throughout the research process I held foremost in my mind that my aim was to understand participants' nature-connections and how they are produced. To do this, I was careful during interviews to maintain the difference between prompting participants to further unpack their experiences and practices, and challenging them, especially if they held views that were contrary to my own. My priority was to create an interview atmosphere that would allow participants to feel they could speak freely and without judgement.

On a small number of occasions some participants expressed intense emotions when expressing their feelings about the kind of future climate change might bring, or species loss. In these situations, my focus turned entirely to the participants wellbeing by acknowledging their strength of feeling and asking them if they would like to take a break. No participants felt the need to pause an interview. One participant affirmed to me how important it was for them to be able to feel their emotions around environmental issues and reassured me they were happy to continue with the interview. This instance was an important moment for my own reflection as a researcher as I realised the possibility that concern at an emotional situation may be felt more by myself than the participant I interviewed.

3.5.3 Personal responsibility toward nonhuman natures

As someone who perceives the nonhuman world as alive with natures worthy of moral consideration, I carry an ethical responsibility not just to my human participants, but to the nonhuman natures with whom I come into contact, and the broader world of human and nonhuman natures that might, in however small a way, be affected by this research. I have addressed this in two ways. Firstly, the nonhuman natures with whom I have had direct contact with as part of this study were trees, both big trees and bonsai. In all cases where I have presented trees directly through writing or imagery, I have done so in a positive and life affirming manner that highlights the contribution made by these trees to our social and natural ecologies. Secondly, I have been acutely aware of aspects of my

theoretical development throughout this study, some of which conflict with views of conservationists I include in my literature review and final discussion. The development of my thesis, whilst informed by my research findings, has also been accompanied by an ethical consciousness of the potential impact of my conclusions. This includes potential impacts on people's environmental values and attitudes, especially moving forward as I look toward various forms of dissemination for my work. I have tried my utmost to maintain both intellectual integrity along with a continued appraisal of the beneficence of my research for the social and natural world (British Psychological Society, 2021).

3.6 Position on generalisability.

Generalisability in qualitative research is a far more complex and contested topic than it is in quantitative research. Perhaps this is because in quantitative research it is far easier for everyone to rally around the universally applied foundation of probability theory: there are no *alternative* approaches. The world of qualitative research, by contrast, includes a heterogeneity of philosophies and frameworks. Clearly, as I am employing a qualitative approach, I am not seeking to generalise my findings by asserting the identification and applicability of a truth that exists independent of the situation within which it was defined. In that much I agree with Carminati (2018, p. 2098), who suggests that 'the idea according to which true knowledge is only that which can be replicated in different places and times has to be rejected'.

My understanding of knowledge generation is less about capturing a transcendent truth, and more about how meetings with discursive and material elements are creatively worked with to configure possible futures. Based on this perspective, I will assume that knowledge produced through this study is contingent on the situation rather than transcendent of it, and that the knowledge produced is at work and in movement. As such, a contingent, situated knowledge is a valid and appropriate outcome of research (Clarke et al., 2018). A necessary clarification then is to reiterate Clarke et al.'s (2018) statement that 'The goal of SA is *not* prediction' (Clarke et al., 2018, p. 55). However, this does not mean that the conceptual developments from this research cannot be put to work beyond the circumstances within which they were developed. Knowledge produced through SA that may be effectively *transferable* to other situations that share similar conditions (Bryant, 2017; Lincoln & Guba, 1985).

Even if the concepts or theory developed from research are not considered transferable to a particular context, there may yet be sound reasons to believe a concept or theory may be effectively *extendable* to other situations. The difference between extendibility and transferability is that transferability refers to the application of a concept or theory based on a similar set of circumstances to those within which it was developed, whereas extendibility refers to the theoretical proposition that a concept or theory may be put to work in dissimilar circumstances to those within which it was

developed. Drawing on Goffman, Gobo (2007, p. 423) illustrates the extendable power of concepts well:

> While maybe to lie a page of newspaper on the floor and declare one's sovereignty over it (Goffman, 1961) is a behaviour observed in one psychiatric clinic only, the need to have a private space and control this territory has been reported many times, though in different forms.

Thus, there may be theoretical grounds to propose the application of knowledge beyond the situation from which it was produced. This approach is to a certain extent experimental, and knowledge may be further developed through its extended application in new situations. As (Clarke et al., 2018, p. 56) state, 'As the world changes, the work of theorizing is never done'.

I make recourse to both transferability and extendibility when discussing the implications of my thesis beyond the present work. For example, I suggest the transferability of some of my findings about human relationships with trees, and I rely on the potential extendibility of my findings on animistic perceptions when I advocate the promotion of a panpsychist worldview for modern western cultures. The transferability and extendibility of my findings will be presented in detail in chapter 7.

3.7 Researcher reflexivity.

I am part of the situation being researched. There is no view from above, or vantage point from which to capture an object which I can somehow know and yet not be in relationship with (Clarke et al., 2018). This study was the result of a heterogeneity of influences, human and nonhuman; influences that include my own positioning and perspective, but also the positioning and perspectives of others. By becoming part of the research situation, the knowledge produced is not new in the sense that it has remained yet undiscovered. It is new in that it did not exist before. This statement should not be mistaken for a strong social constructivist perspective. I assume a real world of which I am part, and that real world shapes my own position in it as much as I in turn contribute to the continued creativity of being. There is no room for solipsism in my assumptions about my felt experience. My entering into relationship with the multiple other agencies that have contributed to this research are what have co-constituted what I am calling, along with Clarke et al. (2018), *the situation*. By way of a concrete example, at the time of writing this draft I have already interviewed several participants. Two of these participants wrote to me shortly after our interviews to say how our conversation had got them thinking more deeply and *in new ways* about what nature-connection means to them. One even reported having been prompted to reflect on their relationship to trees from only having read the participant information sheet, and thus can be assumed to have entered our interview differently to how they would have without already having established a relationship with my research. Furthermore, my relationship with my participants has been reciprocal. Some of my participants

expressed understandings that stimulated new lines of thinking in my own understanding of living in a multi-species world. An example of this was Wolfgang's assertion that nature is capital for a myriad of species, not just humans. This statement was a catalyst for a new sense of clarity and appreciation for the perspectives of nonhuman species, and for me, brought the anthropocentrism of the concept of natural capital into sharp relief. I share these anecdotal experiences to demonstrate how the research process is always changing what is being researched. As such, what is produced is not a reflection of the researched, but perhaps something more akin to a diffraction (Barad, 2007).

Other instances of my relationships with participants were less inspirational, and more challenging. Central to these was my discomfort with the word 'wild human' to refer indigenous people. Participants approached talking about indigenous people with reverence and admiration. The aim of engaging with indigenous culture was to re-assemble the capitalist West from within by transitioning from a global network of nature commodification toward a self-sufficient bioregionalism where human identities were defined foremost by living relationships with immediate landscapes. Yet even though I did not doubt their best intentions, I found linking indigenous people with wildness hard to disassociate from colonialist tropes of the noble savage that position indigenous people as closer to nature, a narrative that has also been used to insinuate indigenous people as primitive compared to modern Europeans (Raymond, 2007). I found this aspect to my interview especially hard to navigate for myself as I had not anticipated the extent to which indigenous people and culture was being looked to by my participants. My own reading of indigenous literature was not such that I was always sure how far my European participants' talk about indigenous perspectives would be confirmed or refuted by indigenous voices.

Similarly, I was not entirely comfortable with participants' use of the word indigeneity. I have employed the word in my findings to engage authentically with my data, since I considered that to replace my participants' voices with an alternative terminology would have been tantamount to tampering with the data. I did consider a term such as *place attachment*, which is a well-known concept in psychological literature (Manzo & Devine-Wright, 2013), but this would have only captured a minor aspect of what participants meant by the word indigeneity. My solution is to clarify here that as a non-indigenous nature-connection researcher I would restrain from personal use of the term indigeneity to describe aspects of nature-connection practices in modern Western cultures. The risk of using a term like indigeneity from my perspective as the researcher is that the term becomes detached from wider context of indigenous experience. For example, Kurth et al. (2020) attempted to create a quantitative instrument to measure ecological empathy as an indigenous characteristic. This prompted a response from Schmitt et al. (2021, p. 65), who were disturbed by the lack of context given to indigenous ecological empathy, which Kurth et al. (2020) had attempted to capture as a metric detached from the wider indigenous experience of colonisation. Whilst recognising the good

intentions of the paper's authors, Schmitt et al. (2021) considered this a form of cultural appropriation. Their rationale for this response is best presented in their own words.

> This approach reduces a historical, ancestral, and lived connection to specific lands to a psychological orientation toward nature in general. If non-Indigenous peoples can develop something worthy of the label ''Indigenous Nature Connection'' (and we are not comfortable claiming they can), surely we would want that to include a deep understanding of colonization and actual relationships with contemporary Indigenous Peoples.' (Schmitt et al., 2021, p. 65).

Similarly, I have no doubts over the good intentions of the participants who employed the term indigeneity. Yet my personal perspective is that to use the term indigeneity to describe practicing relationships of reciprocity with nonhuman natures in one's local landscape is, as Kurth et al. (2020) had innocently done, to cherry pick an aspect of indigenous experience with little acknowledgement of the wider social and political context of that experience.

My own understandings of terms such as nature and the relationship between the natural and the human-built or artefactual have undoubtedly influenced my discussion. However, I believe this has played a minor role compared to the degree that I have been influenced by this research process. I see this as a positive. Entering this study, I was aware of my imaginative, narrative and symbolic associations with nature. Raised on stories of Robin Hood living in the great Sherwood Forest, along with the epic detail of Tolkien's middle earth, my nature aesthetic is inseparably bound up with vast landscapes of snow peaked mountains and endless, enchanted forests of ancient oaks. True to my acculturation, my view of the modern urban landscapes was immeasurably poorer than that of the natural world that fuelled my inner life. It was on reading with absolute fascination Jane Bennett's (2010) book *Vibrant Matter* that catalysed a radical shift in perception, expanding my felt experience of the world as alive and lively in a way that cut through my nature/culture dualism. This undoubtedly sparked my interest in the potential of such an expanded enchantment and what it could mean for an environmental ethic for the Anthropocene. Even then, I have been changed in multiple ways at different stages of this research process. Throughout, I have been cognizant of an imperative to progress ethically, leading to frequent reflection on the possible consequences of my thesis for conservation and environmentalism. My own intellectual evolution has been such that toward the end of this thesis I argue that the vital materialism that provided so much energy for this study was itself insufficient in providing a philosophical framework for nature-connection in the Anthropocene. My own ontological assumptions had transitioned from a vital materialism toward entertaining a form of panpsychism. Whilst the way this research has changed me has undoubtedly fed back into my own contributions to it, I have maintained a resolute discipline in not retrospectively revising my

methodology or the interpretations and conceptual developments of my analysis, preferring to leave this thesis as a testament to transparent, transformative enquiry.

Chapter 4: Nature-connection findings

4.1 Nature-connection findings: introduction.

This chapter presents the findings from my analysis of eight in-depth interviews conducted with nature-connection practitioners from modern Western nations. Participants are comprised of males and females and present a varied range of professions and ages (see table 1 in section 3.4.1 for this group's full demographic details).

As introduced in chapter 2, the research questions guiding my work with this group are as follows:

How are nature-connection practitioners' relationships with nonhuman natures informed by their underlying worldviews?

How do nature-connection practitioners understand the role of nature-connection experiences in the Anthropocene?

How are nature-connection practitioners experiences materially, psychologically, and discursively configured?

In this chapter, I make minimal reference to literature. The relevance of my findings and their contribution to extant literature are addressed in chapter 6. This allows me to focus on presenting my explorative findings first.

The section headings that follow should not be understood as themes commonly found in qualitative research. Section heading descriptors are simply a convenient way to organise my findings for the sake of effective communication and presentation.

I hope the presentation of my findings will convey the commitment I have carried throughout my analysis to 'stay with the trouble' (Haraway, 2016), and remain within the thicket of the data, mapping the connections and seeking to understand the relationships that make nature-connection what it is for this group of participants. My work takes a more conceptual turn in chapter 6 when I discuss my key contributions, which I present in the form of a set of concepts developed from this analytical work.

4.1.1 Social worlds and discursive positions.

This section presents the different social worlds that make up the nature-connection situation as far as it was mapped with available data. Figure 8 below shows a cartographic representation of these worlds and their intersections. I begin with the relationships between the modern Western cultures within which the nature-connection participants grew up and the indigenous cultures to which they look for inspiration and guidance on living a more nature-connected way of life. This leads to how the

relationships between these worlds informed participants' ideas and practices around what some called indigeneity to place. Then, the relationships between urban and wild worlds are discussed, as well as smaller connected worlds such as gardens and urban green spaces. These social worlds are positioned in different ways, shaped by participants' worldviews, relationships with natural and built environments, cultural upbringings and aspirations, and their political ecologies. Situational analysis (SA)'s maps are included below where I have deemed them likely helpful in presenting my findings.

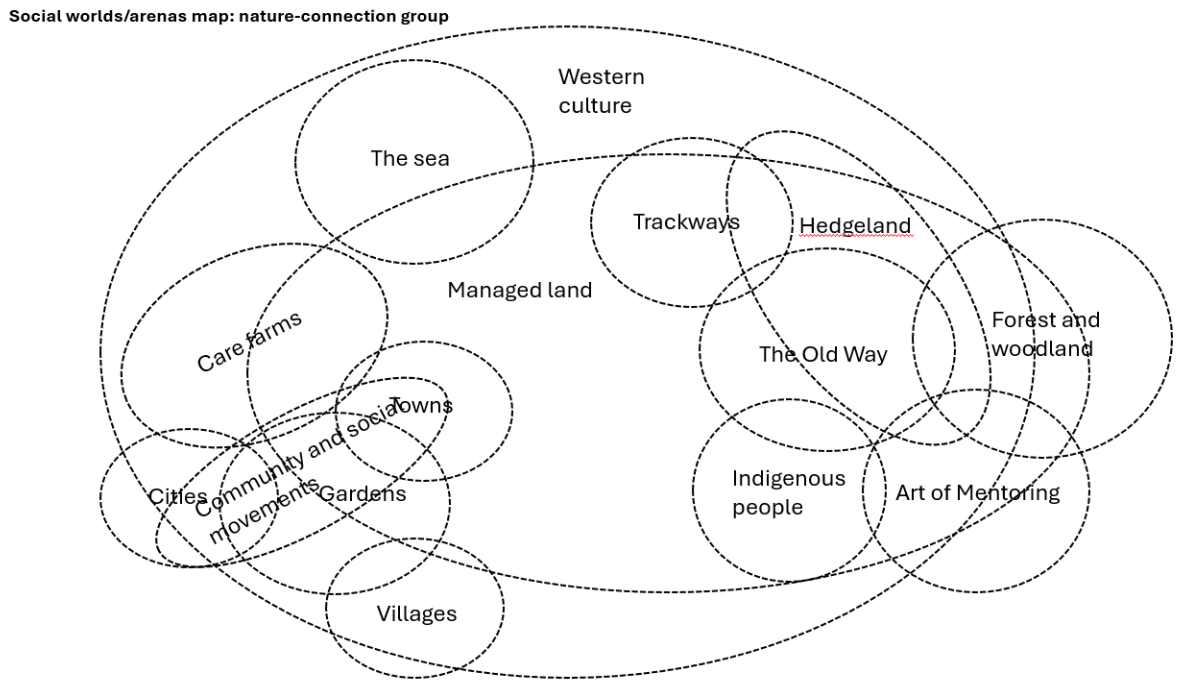

Figure 8 Social worlds making the nature-connection situation.

4.1.1.1 Modern Western cultures and indigenous people

Nature-connection is both a product of and a resistance to specific aspects of Western culture that hierarchically separate humans from the nonhuman world. One participant pointed out that the indigenous people he visited would have been bemused by the term nature-connection. The implication was that some cultures outside of the modern West – in this instance the San people of Namibia – are so embedded within their environments that their more-than-human relationality is pre-conscious. Having apparently never been psychologically separated from the rest of nature, immanence is invisible without any reference of separation for comparison. However, in Figure 8 above, indigenous peoples are mapped entirely within Western culture. This is because it is only through the lens of their contribution to participants' nature-connection development that they appear as data. It is important, therefore, to be transparent at the start of this section that I did not travel to indigenous cultures outside the modern West or conduct interviews with any indigenous

people. Where indigenous people and cultures enter my analysis, they are always being read through participants' interviews and my own reading of the literature.

The relationships between Western culture and non-Western indigenous cultures weave through each other materially and discursively in participants' nature-connection practices. For example, some of the nature-connection courses taken by participants involved international travel to live for a temporary period with non-Western indigenous people. The purpose of this was to experience a radically different mode of relating to nonhuman natures than the participants – who were all European – had experienced during their own acculturation. These trips are not designed as one-off experiences. Rather, the idea is to learn and take inspiration that could be brought back to participants' own cultures to be used for advancing a transition to more nature-connected ways of living in the modern West. For example, in one of the nature-connection courses, a course outcome was to qualify participants to become nature-connection mentors themselves, and so spread this cultural transition further.

The relationship between participants' modern Western cultures and the indigenous lands they looked to for inspiration and guidance is complex, and not without some tensions (see figure 9). On one hand, the participants saw modern Western cultures as largely destructive of nature-connection, and thus looked toward non-Western indigenous cultures for alternative worldviews and practical know-how on how to live in more ecologically respectful and harmonious ways. For example, participants learn about a more relational ontology, but also practical skills foraging, hunting nonhuman animals, and tracking or recognising bird songs. On the other hand, participants' engagement with indigenous people and culture was complicated by different perceptions of cultural appropriation. Wolfgang expressed disdain at witnessing nature-connection participants at a course event in Scotland creating a 'Lakota style' sacred fire that he clearly saw as a form of appropriation and an insult to long standing difficulties faced by the Lakota people in the fight to reclaim their right to practice their traditions (see position A2 of Figure 9). By contrast, Chloe spoke without issue on how her nature-connection course was developed by combining different aspects of indigenous traditional knowledge and practice (see position B of Figure 9). Speaking of the course's founder she explains:

> He tried to see what was needed and came up with these models and these ways based on many indigenous practices. But he was also in that work supported by some elders; people from very different indigenous backgrounds that helped him reflect and build that model (Chloe).

Lily, who was part way through the nature-connection course that involves a trip to stay with the San people of Namibia, had mixed feelings about the prospect (see position A1 of Figure 9).

> I sit in a very uncomfortable place where I think err, I wonder to what extent going to these communities, it feels like taking their knowledge and their wisdom like that in itself feels kind of exploitative (Lily).

There was a sense across the participants that indigenous people are incredibly important as exemplars of nature-connected living and repositories of knowledge lost to the modern West. And yet at the same time some of the participants were also cognizant of their own identities as modern Westerners, and the history of exploitation and colonisation that they saw as part of that identity.

Frank was a particularly poignant example of this tension, using the term 'ecotourism' to describe his visits to indigenous cultures. He also clearly saw indigenous people as the last remaining living repositories of a range of skills and abilities that facilitate a nature-connected way of life.

> The bushman has a wide knowledge of the flora, fauna, soil, connections, weather, and err, they have senses… they have better hearing, they have skills that we cannot develop because we don't need them (Frank).

Frank saw the modern Western human as having lost the ability to live ecologically. For him, indigenous people like the San could be used as a comparison to highlight the poverty Western culture in terms of nature-connectedness (see position D of Figure 9).

> The wild is like a newspaper: it's full of information. You need a lifetime of training in a sense; but our senses can do it. So, what of the urbanised human whose senses cannot do 50% of what the bushman's sense can do, is that not half a person then? (Frank).

Whilst not addressing the issue of cultural appropriation explicitly, Frank's palpable respect for indigenous people was accompanied by practical support for what he saw as a people under existential threat (see position C of Figure 9).

> Practically I've been involved in fund-raising for the bushmen. (Frank).

Therefore, if Frank's activities as an ecotourist could be charged with cultural appropriation, it was simultaneously mixed with reparation.

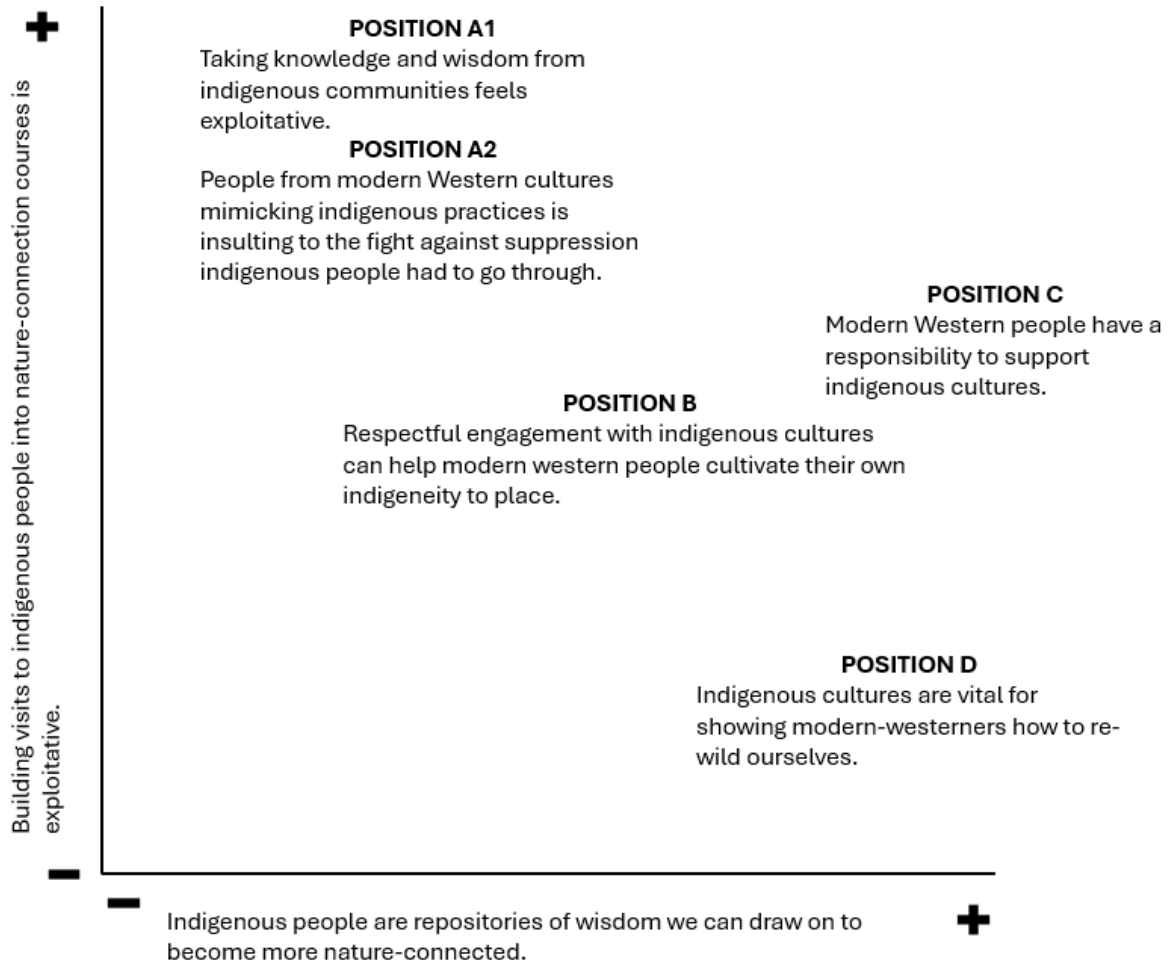

Figure 9 Positional map plotting tensions around perceived role of indigenous people in nature-connection practice.

Being Sicilian, English was not Frank's first language – even though his command of English was excellent. Therefore, it was hard to know what may have been lost in translation, but his descriptions of indigenous people as 'wild humans' effected a discomforting reaction in me during our interview that contrasted with Frank's appreciation of and support for the San people.

> One of the most endangered things that we have is wild humans, at the moment. The amount of culture that we're going to lose if we're going to lose our hunter gatherers is going to be lethal (Frank).

This instance of the researcher-participant relationship was a complex and uncertain mix of discourse and emotion. In my own mind I was aware of the exclusionary hierarchy of being that has been imposed on people from within and outside the West by those with the power to do so (Braidotti, 2023; Moore, 2016). To speak of indigenous peoples as wild humans felt laden with the framings of colonialism, as well as a romanticisation of peoples considered closer to nature and the connections to primitivism that have historically come with that discourse. Yet in the wider context of Frank's talk,

I also considered that Frank saw the identity of the wild human, not as indicating something less than human, but indicative of an ecological skill set he saw as lost on most moderns, who for Frank were the ones in a state of cultural poverty.

There is a discourse active within the nature-connection community that advocates for the re-wilding of modern Western urbanites. Wildness in this sense is not meant to position indigenous people as less than fully human. Rather, it is to position modern Western humans as such.

> Their knowledge is something we can learn so much from, and I believe it's our duty to support and respect their way of life (Frank) (see position C of Figure 9).

Whilst my personal discomfort with describing indigenous people as wild humans may be accounted for by my own understandings of the politics of power associated with humanness (Braidotti, 2023), I did not have any communication with the San people or other indigenous people during this research and was therefore unable to ascertain how they would perceive themselves in relation to ideas of wildness.

The meeting of two worlds – modern Western culture and indigenous culture – produced ideas of what participants called indigeneity to place. Participants felt a sense of collective loss of connection to place in Western culture. For example, Joel suggested modern Western people are 'disconnected from our ancestry' on account of the numerous times different European countries have been invaded and colonised. For Joel, then, it seemed that some sense of localised ancestral continuity was important for what he called indigeneity. This was considered important for accumulating ecological wisdom over generations.

Joel understood European civilisations as having assimilated or pushed out indigenous people through a process of social 'domestication' in which nature-connection was lost. Wolfgang, whilst also perceiving the loss of a European nature-connected culture, was keen to assert that anyone can begin to 'heal a place' by participating in the land.

> I think it doesn't matter if you're white, if you're black, if you're yellow, it doesn't matter. I think being indigenous to place is having that relationship to place whoever you are, and it doesn't matter where you're born. I think that's really, really important. Otherwise, it becomes exclusive (Wolfgang).

For Wolfgang, then, nature-connection is something anyone can do wherever they find themselves by engaging in respectful relations with place.

> We have a massive opportunity to create indigeneity and create culture and create nature-connection and whatever that means for you. And so, I try and celebrate midsummer with whoever surrounds me. And with that I mean plants, animals and humans. (Wolfgang).

Similarly, Kirsten's nature-connection practice is focused on reviving what she perceived as her own lost indigeneity to place – in this case the Cornish landscape.

> I am fascinated by and want to learn more and more – particularly in Cornwall – around the ways that we used to connect with the land; and the practices that were around what I believe was a place culture (Kirsten).

The meeting of modern Western cultures and indigenous peoples took place materially, through international travel and nature-connection participants temporarily re-locating to non-Western indigenous lands. This meeting also took place discursively, in the way specific readings of indigeneity around the place of humans in more-than-human ecologies were invoked to trouble enlightenment notions of human exceptionalism and species supremacy. The modern West seen as having forgotten its immanence as part of the natural world, prompting an imperative re-discover this through a process of re-connecting to the life and character of the land and ecologies of participants' own places.

Participants' cultivation of what they called indigeneity to place was done through a mix of looking to cultures seen as deeply nature-connected for guidance and inspiration, and attempts at reviving cultural practices that have become remnants of European nature-connection practices, such as celebrating midsummer fires, May pole dancing and learning about local plants for making teas (see position B of Figure 9).

Participants approached talking about indigenous people with reverence and admiration. The aim of engaging with indigenous culture was to re-assemble the capitalist West from within by transitioning from a global network of nature commodification toward a self-sufficient bioregionalism where human identities were defined foremost by living relationships with immediate landscapes (see position D of Figure 9). Nevertheless, I was not entirely comfortable with participants' use of the word indigeneity. I have employed the word in my findings to engage authentically with my data, since I considered that to replace my participants' voices with an alternative terminology would have been tantamount to tampering with the data. I did consider a term such as *place attachment*, which is a well-known concept in psychological literature (Manzo & Devine-Wright, 2013), but this would have only captured a minor aspect of what participants meant by the word indigeneity. My solution for the present is to clarify that as a non-indigenous nature-connection researcher I would restrain from personal use of the term indigeneity to describe aspects of nature-connection practices in

modern Western cultures. The risk of using a term like indigeneity from my perspective as the researcher is that the term becomes detached from the wider context of indigenous experience, which I would not be able to do justice within the scope of this study. I have elaborated on this in section 3.7 of chapter 3.

4.1.2 Nature-connection and place.

This section and the ones thereafter shift the focus from the scale of worlds to the more granular relationships that assemble those worlds. However, this is a loose division. My analysis moves through different scales as needed, linking worldviews to actual practices, and treating both the material and discursive elements of the situation as active agents. By way of illustrating this I have included Figure 10 below. Figure 10 is a relational map that describes the connections between elements that were of most analytical interest for this group.

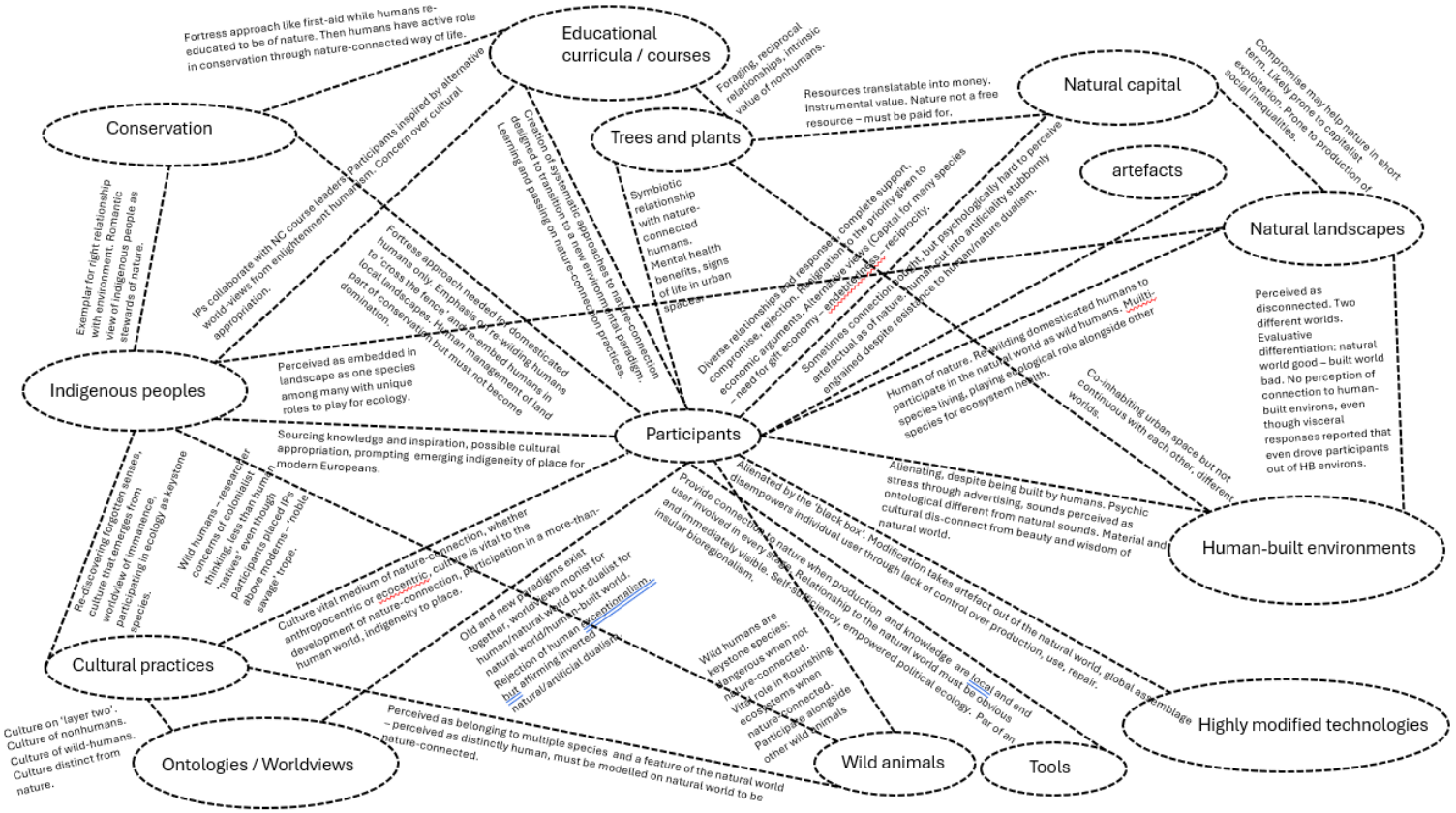

Figure 10 Relational mapping of elements co-constituting the nature-connection situation.

Participants' nature-connection practices involved developing deep ties to local places and the human and nonhuman natures that make up a place. More-than-human relationality was worked through participation in the life of a local landscape, often through the medium of cultural practices. However, for these cultural practices to facilitate nature-connection, particularly when the production

of technologies is involved, localised processes that do not compromise the self-sufficiency of the human individual, or at most a small community, were a prerequisite. For example, Joel's political ecology was expressed by his assertion that if a human individual cannot fully participate in the process of manufacturing a technology, then that technology will be nature dis-connecting. Full participation was seen as compromised when a technology requires the specialist abilities of multiple individuals not in direct relationship with each other, and the raw materials to build a technology cannot be acquired from one individual's local place of dwelling.

> I believe that certain technologies have separated us from our natural state (Joel).

Furthermore, anything less than full ownership of the means of production was seen as disempowering the individual. Using smartphones as an example, Joel asserts the following:

> I have no understanding of where the minerals and resources to create the device come from, how to extract those resources and how to create the technology I use. I can't either learn how to fix it if it breaks… If there's a technology which has this specialisation, or resources that have been imported from so far away that I am being dis-empowered to re-create that technology, I believe we're creating a disharmony in our connection to nature (Joel).

Thus, Joel sees the process of tool manufacture as an exercise in nature-connection only if the individual tool user has participated in every stage of production. The self-sufficient production of tools is integral to his conceptualisation of indigeneity to place as an expression of nature-connection.

> And those [technologies] empower us. And those embed us into that landscape and make us part of that landscape. To become part of a location you are then connected to that nature – that part of nature (Joel).

Joel's political ecology critiques global processes of extraction, production, consumption and waste. From this critique, he calls for a return to simpler technologies whose value remains with the individual who is engaged with every stage of production and consequent use.

The politics of this level of self-sufficiency offers solutions to issues of sustainability in that each individual carries full responsibility for human manipulation of nonhuman natures and environments. The restriction – and for mainstream modern Western culture this is a huge restriction – is that qualifying as a nature-connecting technology necessarily restricts the development of technologies from reaching beyond a certain level of sophistication. The raw materials needed to build a smart phone include multiple metals and minerals that are distributed at a global scale. Furthermore, the knowledge specialisation needed would be impossible for an individual human to learn. Even if the

one person could access the necessary materials and had the knowledge to build and compile all components of hardware and software, without a global supply chain the labour costs would be huge, even for a single phone intended for use by the individual maker.

The loss of a smartphone may be a small price to pay for an ecologically sustainable and nature-connected way of life. However, other consequences of modernity and global systems of development may be harder to argue against. Medical technologies, for example, are reliant on the kind of global processes already described. Yet it is hard to imagine the voluntary abandonment of Magnetic Resonance Imaging (MRI) machines, Pacemakers, or Robotic Surgery Systems being embraced in the name of ecological primitivism.

Connected to this sense of primitivism, Joel's understanding of indigenous peoples and culture seemed at times bound up with an idealisation of the past as a simpler time where people lived closer to nature.

> I am very much what you would call an urban modern Western person, but I feel like I'm born into the wrong epoch, like I'm some kind of person that doesn't kind of fit in with this modern culture and I want to be out in an indigenous tribal setting, but here in the UK (Joel).

The use of the word *epoch* implies a timeline, and thus the implication is that indigenous culture belongs to a past where technology remained at a local and limited level. Whether or not that is intended as a positive thing, indigenous literature suggests this is not the view that indigenous people today have of themselves (Shedlock & Vos, 2018).

4.1.3 Cultural practices and place.

For Wolfgang, cultural practices can facilitate nature-connection, as long as what Wolfgang calls indigeneity to place is being cultivated thereby. For example, Wolfgang talks about his relationship with drinking tea as a way of connecting to the land.

> Whenever I travel somewhere the first thing I do is brew myself a tea with herbs from that place because it connects me exactly to that place. The taste of that place (Wolfgang).

It is important for Wolfgang to drink tea from the place he finds himself in, and preferably to have foraged the plant himself, because the tea is literally of the place where he is, and by drinking the tea, he is being infused with the nature of the place. The ceremony of tea drinking is a literal, material act of binding human and nonhuman natures to a landscape that is accompanied by a feeling of participation in the place from which the plant was foraged.

Moss also saw a vital role for culture in nature-connection, but with certain caveats. Unlike Frank, who saw many species other than humans exhibiting culture, For Moss culture is not immanent to nature, but something humans can use to create social worlds that are in harmony with nature. Here there is an important difference in the perception of culture between Frank and Moss. For Frank culture itself is of the natural world, and not the sole prerogative of humans, whereas Moss made an ontological distinction between the natural world and human culture.

> I think that there is a difference and the culture that human beings make is something that they themselves make, that doesn't have to have a lot to do with the rest of nature actually (Moss).

Since Moss perceived culture as something uniquely human, and in some sense separate from the natural world, humans must pay attention to nature and model their cultures accordingly if they are to live in ecological harmony (see position B of Figure 11).

> If a culture is inspired and really purely built upon, I want to say the wisdom of nature. If a culture springs from that, is motivated from that, it's a very wise culture. Where the culture is just being made from ideas in the mind only and we're no longer relating to nature it really becomes a problem (Moss).

Moss's perception of culture fits with a kind of human exceptionalism and her distinction reveals a human/nature dualism (see position A of Figure 11). Thus, care must be taken to model human culture on the characteristics of nonhuman natures and the metabolisms of ecologies and landscapes. In this sense, nature-connection implies building a responsiveness to the natural world when building social worlds. By contrast, Frank does not see culture as belonging in a separate human/social domain. Rather, culture is a ubiquitous feature of the natural world, expressed by a multitude of species (see position C of Figure 11). Indeed, Frank sees more sophisticated cultures in nonhuman species compared to what he sees as cultural poverty in modern humans.

> Animals have a lot of culture, so many things they have to know to not poison themselves, to not be predated, you know, to not be killed by the elements, so much they have to know. To cooperate, many species are cooperative, and they have to know how to deal with their own kind. So much culture is needed to… such a big skill set is needed to – which is why, personally, one of my pet peeves, is to see a 21st century urban human have less culture than a sparrow. I thought 'if you were a sparrow, you wouldn't have survived your first flight'. You wouldn't have the wits or where with all to survive an environment that isn't 100% friendly to you (Frank).

Moss is also highly critical of modern culture. Since she sees culture as separate from the natural world, Moss perceives culture as capable of existing in a realm of ideas unconnected to nonhuman

nature. This is why, for Moss, culture requires keen monitoring if it is to facilitate rather than destroy nature-connection.

Thus, despite their differing ontological positions regarding the relationship between culture and nature, both Frank and Moss are critical of modern cultures in their own ways. Frank's critique is like Joel's in that he sees modern culture as disempowering to humans in the way it relieves them of many of the skills needed for self-sufficient survival. Moss sees modern culture as existing in complete detachment from the natural world and functioning only to serve the marketing of unnecessary commodities.

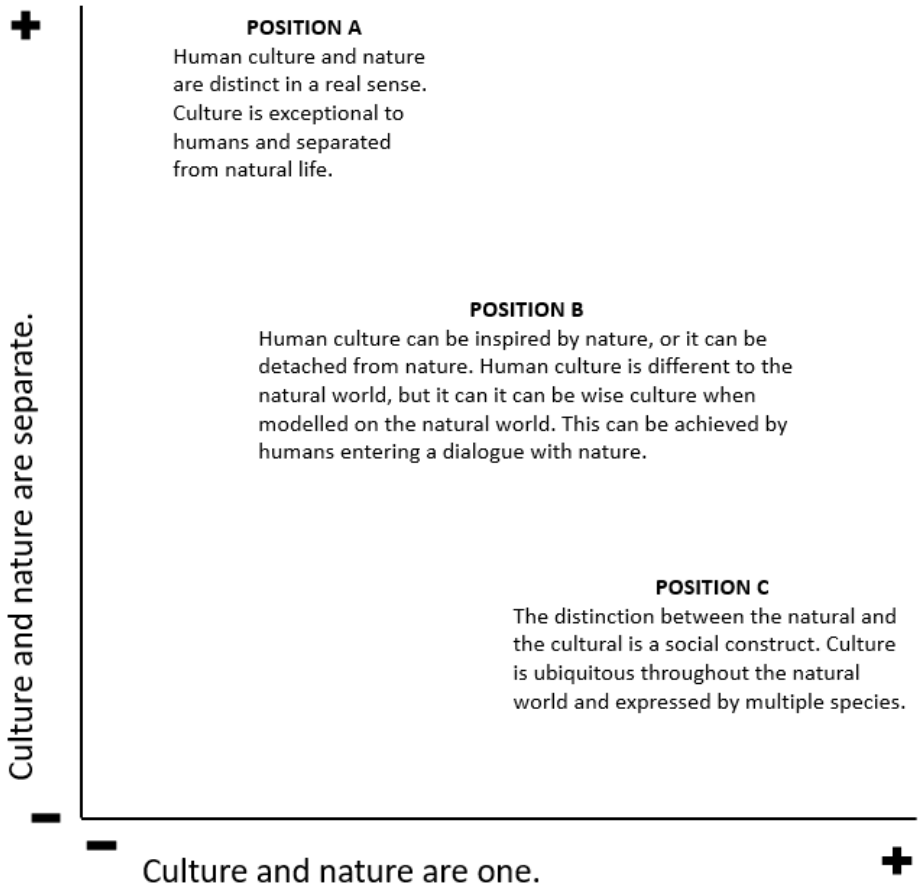

Figure 11 Positional map of culture/nature relationships.

For all the participants, then, cultural practices have a vital role to play in facilitating nature-connection and creating ties to a local place. Whether it be the making of tools from locally sourced raw materials or the procurement and consumption of herbal teas, it is the immediate material relationships within nonhuman natures that connect the participants to the landscapes and ecologies they feel part of. The way human made artefacts were located closer to the natural world when their

lifecycle remained local and became more alienating in their effect on participants as they became more complex and outside the individual's sphere of influence stood out to me. This observation is picked up in detail in section 4.6.1.

Although cultural relationships with nonhuman natures could mediate nature-connection, certain criteria must be met. These include the need for a culture to attune to the characteristics of nonhuman natures and environmental patterns, and to tie one to a locality. Like Moss, Wolfgang differentiates between culture that facilitates meaningful relationships with nonhuman natures and commercial culture.

> It kind of saddens me in the UK to see that people drink Chinese tea that they have to then brand so much, English tea or builder's tea and it's so British (sarcasm), but for me this plant… it tastes so alien for me because I can't find it in the landscape. I find that really strange. And it's not seasonal at all. It's just a tea, and tea just has a seasonality for me. Of course, I collect and dry herbs, but it still has a sense of seasonality and a sense of place. Which for English tea is not there, there's no seasonality there's no sense of place (Wolfgang).

Wolfgang sees a similar loss of nature-connecting culture in summer festivals in the sense that although the festivals still exist, their purpose in cultivating what he called indigeneity to the land has been forgotten.

> We have a maypole where I live. We have massive fires on midsummer. Nobody knows why there is a fire. We call it St. Johannes fire, erm, but nobody knows why there is a fire (Wolfgang).

For Wolfgang such festivals can still work in that they hold a fascination for people, and people are moved to celebrate, even if they are not entirely sure what they are celebrating. However, once the knowledge of why a festival is celebrated is lost, Wolfgang sees a danger of cultural practices becoming completely divorced from their original purpose: to connect humans to the rhythms and metabolisms of the more-than-human environment.

Tea ceremony, maypole dancing, and making fires, are always material as well as discursive, binding people to landscapes in their seasonality literally and symbolically through meaningful activities that produce and re-enforce their relationships with the natural world. Therefore, a defining feature that differentiates culture that is nature-connected and culture that is not can be found in whether cultural practices heighten awareness of cyclic patterns found in many aspects of the natural world, and a sense of human participation in those cycles. In this sense, Wolfgang's evaluation of human culture is like Frank's and Moss's in that there is an understanding that culture can be nature-

connecting when it is sensitive to the multiplicity of life forms and processes within more-than-human ecologies.

The importance of ecological participation through cultural practices was influential in participants' views on fortress approaches to conservation. For example, Wolfgang only saw a fortress approach to conservation as necessary if peoples' cultures are not modelled on the rhythms and metabolisms of the natural world. This, for Wolfgang, is the main utility of a formal pedagogy of nature-connection.

> I would really like to see in the future people allowed to cross the fence in nature conservation. Teach people not only to stay behind the fence, which I think is important because we're not indigenous to place anymore, but also teach them to cross the fence. I think teaching kids is great, but we also need to educate our adults, allowing them to cross that fence, living wild, to maybe one day become part of wildlife. We're not wildlife: we are Chihuahuas (Wolfgang).

This discourse of the wild human was present across the participant group, and represented a person closely tied to a particular landscape through various cultural practices that promote awareness of human relationships to nonhuman natures. However, the term *wild human* is vulnerable to misinterpretation and unintended implications. Although participants did not cite literature about wild humans directly, tropes of wildness have been used in contemporary environmental and nature-connection discourse to indicate a positive re-discovery of relationships with landscapes and the nonhuman natures for whom those landscapes are home (Monbiot, 2014; Shepard, 2013). However, terms such as *wild human* become problematic when used in relation to indigenous peoples. This is because historically this association indicated a savagery or primitivism that has been used to excuse the mistreatment of indigenous people by modern colonisers who have used such tropes to dehumanise others considered lower down in a naturalised hierarchy of being (Frazer, 2012; Morgan, 1985). My feeling during these parts of the interviews was that even the positive associations of indigenous peoples to ideas of wildness were the product of identities conferred on indigenous peoples by a non-indigenous, uniquely Western gaze.

4.1.4 Urban environments, gardens, and the wild.

Urban environments had an overwhelmingly negative effect on participants. This negativity was experienced viscerally through meeting human-built features, and discursively through the symbolic messaging that saturates those environments. Both seemed to impact on participants' mental health, for some to the extent that they chose to re-locate to more rural settings. For example, Kirsten, who left London to live in a yurt in Cornwall, described her reaction to returning to London after having participated in a nature-connection course as follows.

> I realised that it was my nature-connection that had actually become massively depleted, and that I also recognised probably within a day that actually I didn't want to live in a city anymore and that that was having a massive impact on my mental health, and my ability to really move forward in life (Kirsten).

All the participants had either moved from cities to more rural locations because they felt urban life was antithetical to a nature-connected way of life, or they expressed frustration at their present urban locations. For example, Lily spoke of her need to travel out of her city to find nature-connection, and a sense that these visits were too few and far between. Similarly, Jackie also needed to re-locate from human-built environments to feel nature-connection. Examples such as these indicated a fundamental sense of incongruence between natural and human-built worlds. This human/nature dualism was most explicit in a statement Frank made about a 'man-made world' of human-built environments as existing on a 'layer two', disconnected from the natural world. Furthermore, Frank asserted that this separation between natural and human-built environments was the reason 'why everyone's crazy now-a-days'. Human-built environments such as cities were not just perceived as constituting barriers to nature-connection, but actively destructive of it.

> They're eradicating every last bit of what was wild (Chloe).

A positive sense of connection to nonhuman features of urban environments that were considered artefactual or artificial was entirely absent in participants' accounts. Rather, urban environments were described as forces of death and loss. Frank compared the grey of urban concrete to 'another dead world we know of', meaning the moon. Kirsten talked of how the joy she felt when noticing elements of the natural world in urban places would quickly turn into a sense of grief. Chloe spoke with a sense of animosity toward human-built worlds. Talking about the ruined car industry of Detroit, Chloe expressed joy at the collapse and subsequent succumbing of urban infrastructure to greener nonhuman natures.

Where nature-connection was seen as possible in urban environments, it was despite human-modified materialities rather than because of them. For example, Moss described the possibility of being nature-connected in human-built environments, but only by drawing on a bank of nature-connection experiences. Chloe saw potential for nature-connection from an urban planning perspective by building more green spaces.

> As a designer I know that there are many ways that we can make better use of green spaces in cities: bring in more green spaces, have more green roofs (Chloe).

Joel also saw the possibility of nature-connection in a city, but again, this had nothing to do with human-modified materialities, but rather increasing the presence of green nature through community gardens.

I was particularly fascinated by these responses because frequently I would ask in explicit terms how participants understood human-built artefacts and urban materials in relation to their understandings of nature. None of the participants seemed to consider human-built environments as part of nature, and therefore nature-connection in urban settings was only conceivable in terms of drafting in more of what they did consider to be of nature. Again, a strong sense of dichotomy between the natural and the artefactual came through in these exchanges where participants seemed to see beneficence as inherent to the natural world, and maleficence to that of human-built places.

When I asked Kirsten what it was about city life that she felt was so destructive to her nature-connection she offered material and psychological causes:

> Concrete. (laughs). Well, concrete, and just the pace of life and actually that I really felt that I was on a treadmill the whole time (Kirsten).

When I offered participants a picture of a restorative urban environment, such as a peaceful plaza with a fountain and cafes with outdoor seating, they felt no connection to the human-built materials, but rather identified where they might find elements of the natural world in this situation.

> I think I'd probably feel more peaceful in a setting where it wasn't really crowded, and where the sun's shining and the weather conditions are nice; and I'd imagine in that scenario I'd be finding the bits of nature where they were, I'd be looking at the birds, I'd be looking at what plants were growing through the concrete and things like that (Kirsten).

Chloe equated urban environments with a felt stress which located as coming from the subliminal and overt messaging of advertising billboards and digital screens. These features of urban environments demanded Chloe's energy and thoughts in ways that she found draining. By contrast, she found green spaces restorative 'lifelines' because the natural world 'cuts through the crap' of commercial culture. As such, the deleterious effects of built environments seemed associated not just with their natures as human modified materialities, but as places where desires are manufactured, and consumption encouraged. The participants found this draining and found in the natural world a refuge from the psychic pressures of urban culture and its material expressions.

Another imperative for escaping urban environments was to do with their association with groups of people at scale. For this reason, Jackie's nature-connection was something best practiced 'away from

built up areas'. The increased population density, sense of alienation from built materials and artefacts, and the way urban materialities are put to work manufacturing desire and consumption, were all reasons for a felt aversion to urban places and the practitioners' sense of dis-connection in urban environments. The materiality of this aversion was clear in Chloe's assertion that 'There's definitely a direct physical stimulation within cities that slightly unnerves me'.

Urban worlds showed their destructive force on participants' nature-connectedness through material interactions between human-built elements of a city and participants' bodies. There were sense perceptions from the sounds and scents of the city that participants experienced negatively, as well as the overwhelming metabolic complexity of a city's material flows, which prevented participants from establishing feelings of direct connection to place. Furthermore, urban places exerted symbolic forces in the form of advertising that were felt to impoverish culture and detract from right relationship with the natural world. Frank encapsulated the overall sentiment with the following:

> I think in a few centuries from now we'll end up looking on the urban living of today, totally disconnected from nature, as a sort of old age barbarism (Frank).

The solution for Frank was absent of attention to human-built materialities, but rather focused on green urban spaces:

> We're going to have to let more of the wild in (Frank).

4.1.5 Are humans *of* nature or separate from nature?

Participants positioned humans in relation to the rest of nature in varied ways. For example, Chloe understood full nature-connection as no longer the coming together of two separate things, but rather something like a larger ecological identity in which Chloe and the rest of nature are subsumed.

> Developing in full connection with all of nature. And we are part of that. So not wanting to say 'nature' and 'us', because actually we are simply a part of nature (Chloe).

Similarly, Frank asserted an ontological kinship shared by human and nonhuman natures, comparing humans and nonhuman species through their ecological roles and unique ways of participating in environments. For Frank, both groups are fully embedded natural actors that can improve their environments. Frank described both human and nonhuman species as 'managing' their environments, suggesting that unmanaged environments are 'a mess'.

> You know, there's specialised animals like worms and beavers without whom the environment is going to have a very hard time. You know you're going to have species that eat themselves to death, having decimated the whole soil, the whole vegetation. The role that the wild human has in this is amazing. It's absolutely crucial (Frank).

For Frank, then, nature-connection involves managing environments. A curious contradiction exists across the participants' discourses here. Whilst Chloe talked of humans as part of the natural world, she also separated nature and culture according to the level of human involvement, which brings in the idea of human activity lying on a spectrum of more or less natural. By contrast, Frank understands culture as a natural phenomenon shared across a myriad of species. However, a human/nature dualism still exists through humans' 'false' belief of being disconnected from nature. Frank sees the self-understanding of humans regarding their relationship to the rest of nature as critical to environmental health and flourishing.

> The human that is not nature-connected is the most dangerous pathogen of the biosphere there will ever be. Short of a comet the size of the moon striking our planet, nothing can be as destructive as us when we are not connected with nature (Frank).

Thus, for Frank even a false belief in separation from nature has real and serious consequences for behaviour. Without nature-connection the human loses the cultural skill set needed to act in right relationship with nonhuman natures in ways that promote ecosystem health. The consequence of losing that nature-connection, as perceived across the participants, is a cultural forgetting. Th nature-connected human, on the other hand, does not behave as an outsider acting on an environment, but one of many contributors to the making of an environment.

> When the human is connected with nature, he is like a beautiful gardener of the world (Frank).

Frank and Joel both presented understandings of the contribution of the human as that of a keystone species, helping to manage the health of the overall ecosystem. This cultural forgetting and false belief of separation is what leads to the assertion that modern Western people need re-wilding, largely by learning from those indigenous peoples still perceived as living a nature-connected way of life.

The role of nature-connected humans as a species with important ecological roles to fulfil resulted in a departure from the negative attitude toward population growth common across environmentalists.

> I'm a fan of population increases because you see you can have three people on a continent that are hell bent on destroying it and that's too many people. On the other hand, you can have 160 million people on a country the size of the UK, but if they're all like [mentions nature connection mentor], or like myself, you will never see that country thrive as much! (Frank).

This is the heart of Frank's understanding of nature-connection as a response to the climate and environmental crisis: it is not humans per se that are the problem, but humans that are under the false belief that they are not of nature, and therefore fail to build culture that is nature-connected.

The assumption that a nature-connected or 'wild' human will build practices that contribute to the flourishing of ecosystems has to do with the transformative effect of nature-connection on the individual's environmental identity. To be *of* nature makes human nature irreducible to the human individual in isolation from a greater ecology of relationships. The nature-connected identity is one that is always already in relationship with nonhuman others.

> When we stop being stupid we start understanding, 'well what is wellbeing?'. Perhaps we could start with the fact that we are a manifestation of our natural environment, so if we start looking after the environment, infinitely more wellbeing will arise (Frank).

Frank's conceptualisation of an ecological self is rooted in self-interest, yet that self-interest always includes an ecological perspective due to his perception of humans' immanence as part of the natural world. This poses an interesting kind of ecocentric self-interest. For Frank, when a nature-connected human acts in their own self-interest, that action will also benefit the wider ecology because behaviour will issue from an ecological perspective.

Joel echoes Frank's focus on positioning humans as another species in an ecosystem, where contributing to the health of the ecosystem also yields benefits for the individual. This emphasis on participation fuels his critique of 'hands off' or fortress conservation.

> It disassociates our kind of involvement in that [the landscape] and says that humans are not part of nature, and I don't prescribe to that belief system (Joel).

Joel accepts the premise of the Anthropocene, that humans are presently the dominant force of nature, but stresses that this only makes the need to understand how humans impact the rest of nature more urgent. For Joel, this is done by looking more closely at human nature and culture.

> I believe that to connect to nature one has to understand that you are a part of nature, and that when you are part of nature then you form a different relationship to what is around you, including the same species as yourself (Joel).

When asked how he understood the climate crisis, Joel suggested that to locate the climate crisis in an environment that awaits human fixing misses what the Anthropocene demands of people. The crisis is not taking place in the climate or a landscape, but in modern Western peoples' understanding of themselves in relation to the nonhuman world.

> I think it's more psychological in our heads, and that when we remove ourselves from the mindset of there being a climate emergency and there being more of an emergency of disconnection from nature as a whole, we then see the value of nature connection (Joel).

A common expectation across the participants was that the climate and ecological crisis can be resolved through the personal transformation of each individual toward a more nature-connected identity and way of living. With this kind of personal transformation occurring, the big picture will take care of itself.

The perception of the climate and environmental crisis distracting from a crisis of human separation from the rest of nature had ramifications for participants' attitudes toward technological solutions to environmental challenges. A resistance to externalising the climate crisis seemed to feed into a rejection of technological solutions that were developed outside of a local context. For example, Chloe saw the possible application of geoengineering as a solution to global heating as fundamentally at odds with all that nature-connectedness should mean.

> Geoengineering… No. Just no. It's all that man knows better than the miraculous way that all these living beings have been designed and the way everything works together. It's a slightly flawed thinking of humans being above nature somehow (Chloe).

Kirsten's response to the question of geoengineering was just as strong.

> It makes me not know whether I want to laugh, cry, or scream to be honest (Kirsten).

Kirsten's main argument against geoengineering was bound up with her assertion that attempts to alter systems with technology will not encourage the behaviour change needed to prevent a catastrophic Anthropocene. Technological applications miss the source of the problems, which for Kirsten lies with how humans relate to nonhuman natures in the first place.

Participants commonly referred to the class Mammalia to discursively locate humans as *of* nature.

> It's really important to remember we're mammals. Before anything else we're mammals (Kirsten).

Classifying humans as related to nonhumans through their shared mammalian nature discursively opens a human identity to a more-than-human identity. To 'remember' this is to conceptually shift toward from a sense of exceptionalism toward a sense of kinship with nonhuman others. To be of an environment filled with nonhuman relatives offers a powerful moral check on the ease with which damage to that environment might be enacted. To act destructively on nonhuman others in an environment is to attack one's own extended family members.

> If you truly believe that you aren't separate, then you know any harm you put on the environment you're putting on yourself as well (Kirsten).

Similarly, Lily grounds humans as contingent and a part of specific environments as a way of developing a more-than-human identity.

> It's re-wilding people as an element of the land (Lily).

4.1.6 Multi-paradigmatic entanglements.

Participants were sometimes aware that the use of language they had inherited made expressing their sense of immanence in nature difficult. For example, having asked Chloe to define the word nature in her own words, she replied with the following:

> Yeah, it's tricky isn't it because we're in a transition of understanding, as a society, Western society, the Western mindset, which has always separated – or for many centuries – separated us humans as we stand above and have dominion over and all that stuff. Whereas increasingly in my personal paradigm, I'm a cog in a wheel, or a node in a web, of all that is, and some of that is other beings – living beings, plants, animals and microbes; but also other things like rock and soil and air and elemental, things like that. So um, I guess I use the word nature still in the way that it's understood in the previous paradigm (Chloe).

Chloe shows she was aware that her personal paradigm, which seems to describe a kind of relational ontology, is not represented in the way she uses the word 'nature'. Chloe was aware of going through a 'transition of understanding' involving new ways of experiencing self, culture, and nature, do not lend themselves to the linguistic habits of human/nature dualism. She felt trapped in the linguistic structures she was acculturated into by virtue of growing up in a modern Western culture. This situation seems to present an incongruence between experience and language that was frequently visible across participants' talk, and which led to instances where meaning and language were in contradiction.

Wolfgang expressed unease with the dichotomising implication of the term nature-connection. Like Chloe, he located the problematic nature of this term within a Western cultural mindset.

> Nature-connection is a funny term I really struggle with that, erm, yeah the word nature-connection implies that there's a disconnect from nature obviously. It's a very sort of Western, for me it's a Western mindset coined term. Erm, as well as the term nature itself I kind of struggle with just a little bit (Wolfgang).

The participants negotiated the conflict between a language of human/nature dualism and the experience of immanence in nature in different ways. Sometimes new words and phrases were employed, such as Chloe's 'node in a web'. More often, however, dichotomising language was used even though it did not accurately express participants' nature-connection experiences. It felt clear to me during my interviews that this use of dichotomising language often went unnoticed by participants themselves. At other times, when explicitly asked about their understandings of the words nature and nature-connection, a pragmatic approach was adopted.

> I go along with the language (Wolfgang).

For Wolfgang, this pragmatism was based on the communication value of using language that others would understand and be recognisable, even if Wolfgang himself would rather talk about his relationship to nonhuman natures differently.

> It's the way we communicate and the way we understand things and I think, erm, yeah it's very useful and nature-connection work is something I use to describe partly what I do because it's something other people can understand (Wolfgang).

This use of the term nature-connection as implicitly pointing to a perception of standing outside of the natural world is seen again in Frank's talk. Frank sees the language of modern Western culture as having shaped a belief of separation where none ever existed.

> I mean it's funny that we talk about nature-connection isn't it because we're an animal. So, we're a product of our environment and I think the strange thing is not that nature-connection is available. We've grown to believe that there are things that are not connected to nature (Frank).

Wrestling with dualistic language and perception also reached into participants' talk about the relationship between the natural and the artefactual. For example, Kirsten seemed to recognise how the discursive separation of the artefactual from the natural world can lead to a lack of attention to

those materialities, even though human-built artefacts may arguably be that which needs most attention when thinking about sustainability and the non-human world.

> Again, it's that labelling and that separation thing. And I think that plays a massive part in where we've got to as a society and how unwell we are as a society (Kirsten).

Kirsten was unique amongst the nature-connection practitioners in that she consciously brought the artefactual into the practice of nature-connection exercises and included reflection on human connections to artefacts, and the relationships between those artefacts and the natural world, in her formal course activities. One way Kirsten did this is by encouraging her course participants to trace the history of their household objects.

> One of the pathways that we do in our programmes is looking at the value and meaning of objects; and we ask people often to look around what they have in their house and look at where that's come from (Kirsten).

Kirsten's integration of human-made artefacts into her nature-connection exercises was an almost unique instance of perceiving connection to the natural world through the human-made artefacts. The only other time that human-made artefacts were perceived as facilitating nature-connection was through Joel's construction and use of tools from local materials. The general perception of the human-built and artefactual was that such materialities are at best obstacles to nature-connection, and in the worst-case scenario, destructive of nature-connection. Even Kirsten, despite integrating connection to the artefactual into her pedagogy, was aware of the difficulty she had in recognising artefacts as part of nature.

> I'm sitting in a house now and I've got a phone and a laptop in front of me, and I do find that, to be honest I find that quite difficult to remember that the tech that I'm using has come from nature; whereas it's sat on a wooden table and that actually makes me feel quite happy (laughs). So those natural materials, I do think, I find it difficult to really see, even though I know it's a fact, it's confusing that there is no such thing that, you know it might have been manufactured but it's all come from the natural world. I think it's really quite confusing, a lot of the time to be honest, trying to remember that (Kirsten).

Of interest in the above quote shows how Kirsten spoke of the artefactual as having 'come from nature'. That is, the materials that comprise her laptop were once part of nature until they were transformed by human design, at which point they leave the domain of the natural. Thus, Kirsten got as far as acknowledging that the origin of artefacts is natural, but not as far as perceiving them in their transformed state as *of* nature. Along with Moss and Joel, who also acknowledged that 'ultimately' everything is nature, the human-built leaves the natural world once modification by

human design has reached a level of sophistication beyond the understanding of participants, who then feel alienated from the artefact. Kirsten was clearly trying to enter a living relationship with her artefacts, but the dualisms of her perceptual acculturation presented a thick wall of resistance.

One question posed in Anthropocene discourse is the question of whether troubling a natural/artefactual dualism might cause the natural world to lose its identity, and therefore its visibility and protection. However, there may be a negative consequence to this dualism in so far that it blocks perception of the continuity and connection across the natural and artefactual, and therefore the relationship between the two. Perhaps a natural/artefactual dualism makes the environmental impact of the lives of artefacts less visible or conscious to humans who are surrounded by them. Kirsten made a similar distinction between the naturalness of food she has grew and harvested herself, and food she bought in a tin.

> I'm growing something that I can go out and pick from my garden, the relationship that I have with that and really recognise that's something that's been grown and all of the different processes – natural processes – that have been involved in that, when I'm opening a tin of chopped tomatoes it's not the same, you know, I'm not having that same thought process, I'm not having that same connection (Kirsten).

The quote above echoes Joel's rejection of artefacts that he cannot observe and participate directly in throughout their development, as well as Wolfgang's lack of connection to imported tea. This line of reasoning offered by the participants for their lack of connection to artefacts and human-built environments is of interest because of its selective application. Afterall, there are limits as to how far a human can be involved in the life of natural entities too. Many of the deeper processes of plant growth, for example, will remain hidden and unattended to by the gardener who grows that plant. Indeed, from an ecological perspective, the human gardener may play a minor role in the many processes and nonhuman natures involved. And yet participants spoke of a black box when it came to artefacts like a smart phone. That black box, within which unknown processes of modification occurred, seemed to play a key role in participants' inability to feel connected to an artefact. Yet, the many black boxes of nonhuman natures that populate the natural world did not seem to exert the same effect.

Another interesting aspect to the difference between participants' relationships with artefacts and natural entities was spatial in nature. The sense of disconnection to artefacts may be associated with participants' sense of distance from the natures, processes, and historicity that culminated in an artefact's present assemblage. The difficulty of learning about, and maintaining an awareness of, the sheer spatial distribution of global connections to unknown natures that eventually came to assemble an artefact may contribute to it being perceived as alien.

The examples above show how many of the contradictions in the nature-connection practitioners' talk about being *of* nature or separate from nature, and the separation of the natural from the artefactual, stems from a multi-paradigmatic entanglement. This entanglement consists of ideas about nature rooted in dominant traditions of modern Western philosophy, interpretations of indigenous ontologies, and efforts to express experiences of more-than-human living in language designed to cut humans off from the environment rather than connect them to it.

It is also analytically important to consider that dichotomising discourse does not just constrain and hinder accurate communication of nature-connected experiences but may itself actively shape experiences of human-nature relationships. That is, such discourses are conditioning elements in the situation. They are productive agents acting in the world, reproducing ways of thinking about humans, nature, and culture in the ways they cut and divide matter. For example, even though Frank suggested that separation from nature is a false belief, he went on to assert the following:

> For many centuries we've lived on layer two, you know. So, it's like a world where everything is artificial. It's not compulsory anymore to have a direct connection with the environment. So of course, an entire civilisation has taken the option to just stay in the man-made world (Frank).

Even if Frank sees the oxymoronic nature of the term nature-connection when prompted to reflect on it, a discourse of nature/culture and human/nature dualism continues to shape his positioning of these relationships.

4.1.7 Nature-connection reserved for green natures only.

Culture/nature dualism was frequently present in the attitudes and beliefs of the nature-connection participants in the way that more-than-human relatedness was reserved exclusively for relationships with nonhuman natures that were considered to belong to the natural world as opposed to the artefactual. Except in moments when questioned on the origin of artefacts, participants' perception of the natural world carried an implicit assumption that nature is everything that has not been modified by humans. Hence, urban nature-connection did not mean promoting a sense of connection to urban materialities designed by humans. Rather, the focus was on bringing in more features of the natural world to relate to. Except for Kirsten's nature-connection exercise of tracing the history of artefacts, the idea of developing a felt connection to artefacts and calling that nature-connection was seen as absurd. For example, Frank described walking into nature 'energetically and mentally' in ways that were psychically and biologically transformative. He then made a comparison with this nature-connection experience by describing walking into a 'home', 'office', or 'supermarket' as 'getting lost in the big black box'. Here again descriptions of the human-built and artefactual were accompanied by a sense of alienation.

Joel saw local tool building and usage as a step toward sustainable living and independence from a reliance on globalised markets. However, when asked whether technologies such as a raspberry pi might qualify as mediating nature-connection due to the level of engagement and personal involvement, Joel responded as follows:

> I guess in essence yes. I see that there is an element of resilience and autonomy going through and learning about things like open-source software, and also decentralised hardware, um, but these technologies are still connecting us up to a digital platform which disengages us from a certain field of consciousness (Joel).

Joel went on to differentiate between environmental stimuli, in the form of soundwaves, which come from wind or the ocean, and stimuli in the form of soundwaves coming from a technological device. Joel described the latter as 'a completely different form of information'. Thus, Joel seemed to infer an ontological separation between the natural and artefactual right down to the level of soundwaves. This assertion is in contradiction to any known scientific definition of sound waves, which are the same physical phenomenon whether they emanate from a natural or an artefactual source. Yet for Joel, there is a perceptual difference, and the character of natural sounds seems to have a different effect on Joel's feeling of nature-connection than do the sounds of artefacts.

Moss also rejected the potential for nature-connection between humans and the artefactual. For Moss, natural entities facilitate nature-connection, while artefacts act as an obstacle to nature-connection.

> I would definitely say that absolutely of course it has an impact or an effect whether the materials are wood and fresh water and green stuff, or if it's concrete or plastic. Of course, it makes it easier to connect with yourself and the outer nature when you're surrounded with life matter (Moss).

Of analytical interest here is not that the participants felt a difference in relationship between a particular natural entity and a particular artefact. The nonhuman world consists of myriad differences, such that a heterogeneity of effects from different materialities is to be expected. What is of analytical interest is the wholesale rejection of the set of artefacts as capable of nature-connection compared to the set of natural entities, the latter of which all qualify by virtue of their set belonging.

This privileging of the natural over the artefactual was in contradiction to the rejection of human/nature dualism also expressed by participants. Despite advocating for an environmental paradigm predicated on a relational ontology in which humans were immanent in the *rest* of nature, what was often expressed was more like an inverted hierarchical dualism. The privileged place of humans over nature, as framed by Western enlightenment thinking, was replaced by an ontological

privileging of a nature that was perceived as more vibrant, more alive, and more real that of human-built artefacts. Thus, participants' sense of nonhuman animism was selective – even prejudiced. Nonhuman natures were perceived as animate if they belonged to the set of natural things, and inanimate if they belong to the artefactual. This introduced a conflict of logic within participants' nature-connection discourse. On the one hand, participants' asserted humans as *of* nature, and modern Western humans suffering from a *false belief* of separateness from their environments. Yet, at multiple points across the interviews, humans were positioned as that which separates the natural and the artefactual. It was human modification of nonhuman natures that exiled them from the realm of nature and into the realm of the artefactual.

When I prompted Moss further by asking her to define what would make one materiality nature and another not nature, she, like other participants, accepted that everything is ultimately from nature. And yet at some degree of modification, a nonhuman nature ceases to become natural and is then artificial. Despite participants' efforts at transitioning away from human/nature dualism, the perception of humans lifting objects out of nature was not so easily released.

> An iPhone for example, is modified quite a lot. It's quite far away from the original materials that you would find in… I don't even know what it's made of (laughs) but of course it's made of some sort of natural materials in the end. It's just been modified so many times and so many processes have been put into it, that as I see it, the more we spend time with highly modified nature, the more difficult it becomes to experience this nature connection that we're talking about (Moss).

The 'nature-connection that we're talking about' is one in which humans have as little involvement as possible. And yet, participants were frequently positive about the role of humans as a key-stone species, and the contribution of human culture to facilitating nature-connection. It is hard to reconcile a discourse that asserts humans as of nature along with other species like the beaver, yet at the same time asserts that nature-connection reduces the more humans are involved in those nonhuman natures.

4.1.8 Dominating, participating, managing, or stewarding?

Joel's nature-connection is partly a way of reflexive re-wilding of people and places where humans play a role as an apex species within the wider ecology. Land management is seen as integral to this process through a recognition that human and nonhuman natures have been deeply transformed by cultural practices of domestication. For Joel, this fact must be acknowledged and worked with. Continued land management with the aim of re-wilding people and place was seen as a way of making reparations to the land and its inhabitants – both human and nonhuman.

For Wolfgang, the word 'stewardship' was key, and tied to what he described as indigeneity to place. To play a stewarding role within a landscape, an intimate knowledge of that landscape is a prerequisite. There is also a connection to Joel's argument for bioregionalism over globalisation. The expectation is that if humans are tied to specific localities, there is an opportunity for them to gain an intimate knowledge of the needs of that locality, and thus be able to act as authoritative stewards of that place.

> The problem often comes when people come from outside into an ecosystem and know the plants but don't know if the species in this place are either nationally scarce but locally abundant, or the other way around. So, when I go to Wales, I would always ask my friends, who stewards the land? Who knows the place? Although I know most of the plants who grow there, I always ask for permission, because I'm not stewarding the land, I'm not tied to that land even though I know the plants intimately well (Wolfgang).

Notions of land management and stewardship were seen as important areas for nature-connection to exert an influence. Permaculture was an example given by Chloe, which is guided by an attitude of working with nature rather than against it and managing land for increased diversity. Nature-connection, then, involves both learning about nonhuman natures as well as taking a certain environmental ethic toward those natures. Wolfgang's ethic of land stewardship is encapsulated in a single question: 'how can I help'.

> I'm basically like a deer who goes into a forest, participates, and comes back out, rather than cutting everything down, ploughing it, and then growing monoculture. That's a way of dominating and controlling the land rather than participating and stewarding the land (Wolfgang).

For Wolfgang, nature-connection is much more than a feeling of connection to nonhuman natures. Nature-connection needs more than emotion: it needs knowledge. With Wolfgang's nature-connection comes a responsibility on the part of the human to learn about and understand the needs of nonhuman natures so that appropriate relationships and practices can be confidently established.

For Lily, learning about indigenous stewardship of land has influenced her sense of nature-connection from an appreciation of nature as an outsider to a feeling of participating as part of nature. This approach to nature-connection, which embeds humans within a particular landscape, also informed Lily's environmental ethic by heightening her awareness of the connection between human made artefacts and nonhuman natures. This was a notable difference to the general attitude toward human-built materialities, which tended toward aversion or simple rejection. It was the minority of instances that revealed reflection on the material continuity across the categorical division of the natural and the artefactual.

> It's recognising a sense of community and that things don't come from nowhere and they don't go to nowhere when you throw them away (Lily).

For Lily then, participating in a more-than-human community was always accompanied by a sense of responsibility for the wider impact of individual behaviour. In recognising her relationship to others, she was prompted to reflect on her role in production, consumption, and waste, and impact on the environment.

Frank situated the management role of humans alongside those of other species, emphasising that management in the context of nature-connection is not associated with a particular status or natural hierarchy, but rather a behaviour exhibited by a myriad of species, each in their own specialised way. Thus, Frank separated a management role for humans from a sense of hubris or superiority over nonhuman species by pointing to the distribution of management roles across species. Whilst Frank saw the contribution of humans to the healthy functioning of the wider ecology as 'crucial', that role was not seen as lording over, but sitting alongside the equally crucial roles of a myriad of other species that all contribute.

> When we think of wild environments, the average person tends to think of them as things that just came up in an absolutely non-managed way. Not so. You know the fungi helps the plants to breathe, and feed, and you know the plants feed the microorganisms, so the herbivores get fed; they have an important role in managing the wild (Frank).

Overall, the nature-connection participants revealed a nuanced and complex understanding of human participation in landscapes and ecosystems that cannot be explicated through dichotomous thinking. Humans are at once *of* nature, yet clearly differentiable from other species by the specialist roles they play in land management. Furthermore, the specialist role of the human arises in part through a reflective ability to analyse an ecosystem or landscape *as if* from the outside, and thus gain an awareness of the needs of nonhuman natures. This is expressed in the reflective questions asked by the nature-connection practitioners, such as Moss's 'what needs to happen here?', or Wolfgang's 'how can I help?'. An important ethical consequence of this ability to analyse as if from the outside is to acknowledge the degree to which humans influence nonhuman natures. Far from rejecting a role for humans as managers of landscapes on the basis that such a perspective belongs to the hubris of enlightenment tropes of domination, nature-connection practitioners positively encouraged embracing the role of the human as an apex predator whose role in ecosystem management is considered crucial. The critique from participants was less about human management of landscapes and ecosystems as such, and more about whether that management was done in consultation and coordination with the roles of other species. For the nature-connection participants, land

management was undertaken by a more-than-human team. This was apparent through the emphasis on 'participating' in a landscape or ecosystem rather than 'dominating'. However, not all humans were perceived as capable of this kind of participation. Modern Western people were generally perceived as lacking nature-connection. As 'domesticated' rather than 'wild' humans, they should not be allowed to 'cross the fence' of protected areas. This separation of humans from the natural world was seen as the product of a culture gone wrong. Hence the need for human re-wilding. The role of a nature-connected culture was seen as a vital part of humans' ability to live harmoniously within their wider ecologies and involves the continuation of practices and knowledge that are guided by a sense of symbiosis and reciprocity with nonhuman natures.

4.1.9 Nature-connection and Natural capital.

In this section I explore the relationship between participants' approaches to land management or stewardship and their responses to the concept of natural capital.

Joel was deeply suspicious of the motivation behind, and practice of, natural capital. For Joel, nature-connection is inherently political. For Joel, that natural capital is a concept advocated by economists and practiced by international business takes too much emphasis away from local, democratic decision-making being made by people who are embedded as part of a particular landscape. For Joel, natural capital is a relationship between a powerful few, too distant from the land their evaluation concerns, or the people that dwell there as part of that landscape (see position A of Figure 12).

> We're living in a broken system where the representation isn't accurately shared and that we need to have direct representation from the people who are on the landscape, who are maybe more engaged and involved and knowing of how to participate in connecting with nature (Joel).

In Chloe's ideal world, natural capital would have no place in human nature/nonhuman nature relationships. The sticking point for Chloe is that natural capital takes place within a capitalist framework.

> Ultimately, it's the capitalist, growth paradigm that's really not helping here. That just needs to be pulled (Chloe).

However, this does not mean that Chloe sees no short-term utility for natural capital as an environmental strategy. Rather, Chloe takes a pragmatic attitude toward natural capital, seeing that for perhaps the mainstream of people, it will be a more accessible nature-connection than perceiving nonhuman nature as simply vital to 'life and love and health'. Choe's personal connection to nonhuman natures was firmly grounded in a perception of their intrinsic value, and my sense was

that if she believed either an intrinsic value or an instrumental value approach had an equal chance of success, she would have rejected natural capital completely. However, during our interview Chloe also expressed doubt at the extent that her perception of nature-connection is likely to be shared, or even understood, by people in mainstream modern Western culture. As such, Chloe had adopted a pragmatic stance that an instrumental value of nature is better than no value at all (see position B of Figure 12).

> Natural capital, it's not it, but I see it as a transition… I guess if people appreciate nature in terms of money, they can start beginning to add up the sums and see that it doesn't add up (Chloe).

Kirsten was unequivocally clear about her personal view toward natural capital.

> It doesn't sit comfortably with me at all, because I do think you can't put a monetary value on it (Kirsten).

However, like Chloe, Kirsten felt that natural capital might be a better than nothing way of at least attempting to protect overexploitation of nonhuman natures in a way that could be implemented in the present system of economics and governance.

This reluctant resignation to compromise came from a general assumption across the participants that the kind of nature-connection philosophy and practice they were seeking to realise in their own lives would fall on deaf ears in the world of policy making. For example, Chloe spoke at length on various ways she attempts to bring in an appreciation of more 'spiritual' aspects of nature-connection experience when leading workshops for business leaders. However, she sees the implementation of non-monetary ways of valuing nature as more challenging when it comes to pushing for policy change.

> I don't know how you would write that into a government policy document, other than let's learn about water and not just the chemistry of it; but what does it mean to me, and what is this water inside me, and that it's like a vein in the earth, you know those sorts of connections (Chloe).

Similarly, for Kirsten it was the assumption that more spiritual nature-connection experiences would not be taken seriously enough to influence policy that led to a sense of necessary compromise.

> I can't see Boris Johnson, for example, being swayed by anything around nature-connection, relationship, you know sustainability, anything like that. An economic argument, yes, sadly (Kirsten).

The mix of attitudes toward natural capital expressed by individual participants needs to be clearly differentiated from the kinds of conflicting experiences and discourse explored So far. I have already demonstrated how participants' transitions to more nature-connected lives have not unfolded as a simple switch from old to new. Rather, nature-connection discourse is a weave of acculturated conceptualisations rooted in modern Western dualisms, and aspirations toward a more relational and immanent conceptualisation of more-than-human connectivity perceived in certain indigenous cultures. These worldviews, although incongruent with each other, shared the same discursive space in participants' articulation of nature-connection. However, in the case of natural capital, the mixing of old environmental and new environmental paradigms was not the result of a confusion between acculturated and adopted worldviews, but the result of conscious and rational decision-making around what some of the participants saw as a necessary short-term compromise (see position B of Figure 12).

> I don't like it as an idea; but I also understand that within our current society that is probably one of the main ways that we're going to get to the people that have the ability to make change. Because that's the baseline of most people's activity, isn't it? 'What does it mean for the economy'? (Kirsten).

However, not all nature-connection practitioners saw an inherent incongruence between intrinsic and economic modes of attributing value to nonhuman natures. When I asked Frank about his evaluation of the concept of natural capital, his response was immediate:

> That's us finally giving more of a damn about nature (Frank).

Frank understood humans as carrying a 'selfish drive for wellbeing', and as such, seemed to accept some form of capitalism as aligned with human nature. Rather than rejecting natural capital, or seeing it as a necessary evil, Frank saw it as a positive development for capitalism. The recognition that nonhuman nature was capital was for Frank a sign that people were starting to realise that attributing monetary worth to nonhuman nature is a more mature act of self-interest.

> Finally, we're starting to understand. What is at the centre of that selfish, undying drive for wellbeing? And finally, we're starting to give that value to the most important thing: nature (Frank).

For Frank, where value is perceived, investment will follow. As such, natural capital is a sign of socio-environmental maturity (see position C of Figure 12).

When asked about a possible role for natural capital in a nature-connected society, Jackie expressed concern about how natural capital could play out across different scales and socioeconomic brackets.

For example, whilst at first, Jackie was prepared to consider the utility of large-scale valuation of forests, at a smaller scale she questioned whether the model would be vulnerable to the commodification of nonhuman natures, and the unequal access that could ensue from such a model.

> I suppose it sort of depends on how far you go with it. Would it get to the state that you go into the forest and you pay £3 for a walk, or £5 for a run or £10 for a bike ride, you know depending on what damage your presence being there was doing. Is it again a case of if you're rich you can exploit it and if you're poor then, sorry you can't come in (Jackie).

Jackie did not seem to see an inherent incongruence between natural capital and an intrinsic valuing of nature. Rather, the way natural capital could dictate access to nonhuman nature based on income and privilege was her main critique. Furthermore, Jackie was not convinced that natural capital would afford adequate sustainable management on its own. Protection for certain ecosystems and landscapes would still be necessary to prevent nonhuman natures from being overexploited by businesses who could afford to offset their damage elsewhere.

For Lily, the idea of natural capital was just too closely tied to a capitalist paradigm, which she saw as inherently incongruent with environmental care. Lily also pointed out that since she understood humans as being *of* nature, exploitation of labour for profit is part of the inevitable mode of capitalism at work in the world, whether the natures being exploited are human or nonhuman (see position A of Figure 12). Given her misgivings about the alignment of Western governments to a capitalist paradigm, Lily draws this conclusion regarding the idea of natural capital:

> I don't see it as magically being the answer. I don't see this theoretically positive thing is not going to be hugely exploited when our governments around the world have exploited everything else (Lily).

Moss echoed Lily's sentiment.

> My feeling is that something else would need to change first for me even to consider an idea like this. I think if we just did it the way society is now, if we just included it the way society is now it would be terrible. But I'm not saying it cannot be done in the future if the whole system is built in a different way, but not like this (Moss).

Wolfgang offered another consideration when thinking about the application of natural capital.

> I think in this idea we must not forget that we are only one of many species that uses nature in that sense [as a resource]. So, when I forage a hawthorn tree I have to remind myself that I'm one of over 300 species that uses that tree. And in that

> sense, it's not just our capital: it's many others' capital as well. So, for this idea to work we have to make sure that we are inclusive (Wolfgang).

The quote above shows how Wolfgang expanded the term capital beyond its mode of monetary exchange, since humans are the only species that trade through money. Wolfgang's concern with natural capital was that the medium of valuation, money, is only valued by one species – humans. Since nature is capital for many species, all but one are left out of having a stake or a say in what needs to happen. Wolfgang also expressed concern that a relationship with nonhuman natures brokered by money is not enough to foster an ongoing sense of responsibility toward those natures. A financial contract is often too short lived. Wolfgang offered the example of buying fruit from a supermarket to illustrate.

> The moment I pick this banana up we are in some sort of relationship. And the relationship ends when I give him or her [the cashier] what they see as the perfect amount of value this banana has. So, when they give that banana that value our relationship has ended (Wolfgang).

Contrasting the monetary valuing of nonhuman natures, Wolfgang used the example of foraging to suggest an alternative way of coming into relationship with the environment that he suggested is more likely to inspire an ongoing sense of obligation to the place from where a particular nature was harvested.

> When you go foraging, I get given the medicine, I get given the food, I get given an experience and a benefit, and that is for free, whether I'm an awful person or an absolute nice person the apple tree gives me the same amount of apples every year. Nature doesn't judge in that sense. So as soon as I start foraging and feeling the effect that has on myself, I'm tied to that place. It's a relationship that doesn't end because I'm indebted to nature in that sense (Wolfgang).

Thus, Wolfgang proposed an alternative way for humans to operationalise the need for resources. This nature-connected system would be on based on a gift economy managed by feelings of gratitude, indebtedness and reciprocity. Like some other nature-connection practitioners, Wolfgang did not discount the possibility that natural capital could act on behalf of nonhuman nature. However, for Wolfgang, the emphasis would need to be on asking the question of how humans can give back to the nonhuman natures and environments they take from, rather than walk away from an environment with no sense of indebtedness because any obligation to that environment had been offset by actions or investment elsewhere. The guiding principle is as follows:

> How can I heal the place? (Wolfgang).

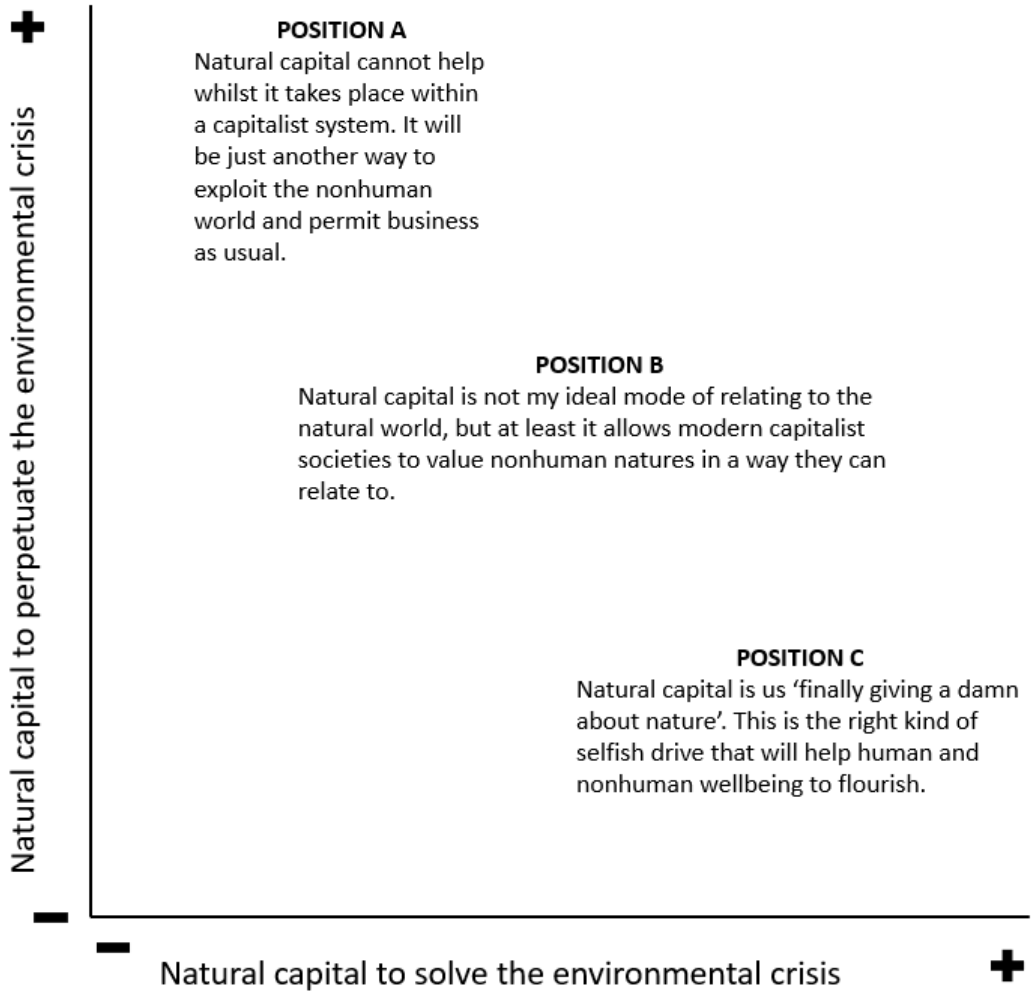

Figure 12 Plotting discursive positions toward natural capital.

Overall, participants' approaches to land management from a nature-connection perspective took a critical stance toward the concept of natural capital because of worries that natural capital as a system will fail to appreciate the local needs of landscapes and ecosystems. Furthermore, the intrinsic perspectives of nonhuman species are not accounted for when money is the medium of exchange. Simply offsetting environmental damage in one location by tree planting in another, without considering the ongoing needs of a local region is far from nature-connection practice, where a culture of 'indigeneity to place' is encouraged. A nature-connected land management cannot be undertaken purely by working with accounting spreadsheets somewhere detached from specific, located natures, and intimate human participation in those natures. Nor can the unique natures of a specific place be replaced through a system of financial equivalence, such as that of carbon trading or biodiversity offsetting.

4.2 Nature-connection findings: summary and key research contributions.

This chapter presented the findings from my analysis of eight in-depth interviews with nature-connection practitioners. In this summary I offer a succinct version of my key findings. These findings are important because they represent those aspects of my analysis which make original contributions to this area of research.

Previous literature has suggested that environmentally conscious people from modern Western cultures have increasingly turned their backs on a previously dominant social paradigm that positioned humans as separate from nature and superior to other life forms (Dunlap & Van Liere, 2008). A new environmental paradigm has been proposed. The new environmental paradigm is characterised by an ecocentric environmental ethic and a positioning of humans as part of the natural world (Dunlap & Van Liere, 2008, Schultz, 2002). Empirical evidence for the new environmental paradigm and its associated environmental values has been collected through large scale quantitative surveys (Dunlap & Van Liere, 2008). However, a weakness of this quantitative work is found in the loss of detail that comes with the simplification of phenomenon through statistical aggregation (Muhr, 2020). Recent literature has called for more qualitative research into the specificities of human relationships with nonhuman natures (Barrable & Booth, 2022). Therefore, the research presented in this chapter explored the qualitative detail of a proposed new environmental paradigm in the context of a group of nature-connection practitioners.

The transition to a new environmental paradigm is further complicated by the proposal of an Anthropocene epoch (Cruzten & Stormer, 2000). Despite the Anthropocene having been rejected as a formal geological epoch (Witze, 2024), as a concept it has quickly become established across multiple disciplines and has provoked an interdisciplinary conversation that moves beyond the NEP's sociological lens.

The Anthropocene concept engages environmental values, but also prompts reflection on the relationship between human and nonhuman natures in terms of political ecology and challenges the traditional categorical division between social and natural systems. This in turn has challenged the logic and purpose of conservation and an environmentalism that perceives nature as in need of protection from humans – the so-called fortress conservationism (Moore, 2016).

In response to these contemporary issues, my research here also aimed to explore the nature-connection community for contributions to the Anthropocene debate, specifically in terms of relationships between culture and nature and the ontological positioning of humans in relation to natural and human-built environments.

One of the key findings that contributes to this area of research has been to show how the transition from an Old Social Paradigm (OSP) to a New Environmental Paradigm (NEP) is not linear. Rather, it is productive of a complex mixture of worldviews, practices and discourse, and these elements are themselves influenced by a range of nonhuman natures, both natural and artefactual. Far from one worldview being rejected in favour of another, my analysis shows how multiple perceptions of the relationships between human and nonhuman natures are entangled in the same discursive and perceptual space and interact with a range of natural and human-built materialities. The following summarises this complexity.

My findings suggest that nature-connection is both a product of and rejects enlightenment thinking about the human/nature relationship. The hierarchical dualistic separation of humans from the rest of nature and its resultant psychology of human exceptionalism was rejected, and humans were affirmed as *of* the natural world and one of many species in a wider ecological network. However, the coherent expressions of this ontology were contradicted by frequent recourse to dualistic language and a perception of humans and modern cultures as responsible for separating the human-built and artefactual from the natural world. This dualism included an emotional component where natural environments provoked positive responses and human-built environments provoked negative ones. This evaluative perception separating the natural from the human-built was not only symbolic but felt as emanating from the respective materialities themselves.

This conflict between humans as immanent to the natural world, yet also the divisors of human-built environments, produced a selective animism. Entities and features of environments considered natural were attributed a liveliness and intrinsic value, and nature-connected humans were perceived as playing a role in the relationality of a more-than-human world. At the same time, human-built and artefactual materialities were considered removed from the natural world and presented barriers to it rather than connections. Accordingly, both immanence in the natural world and disconnection from it were present, depending on whether the nonhuman natures being related to were perceived as natural or artefactual.

This multi-paradigmatic entanglement was further nuanced by a political ecology of localism. Exceptions to the nature-connectedness of artefacts were found when those artefacts were built entirely from materials in the locale of the end user, and where the end user was immediately involved in all aspects of production and maintenance. Where an obvious visibility in the continuation of materialities from raw to transformed modes was engaged with by the individual, the resultant artefacts were seen as nature-connecting and embedding humans in a landscape rather than alienating them. Otherwise, the human-built and artefactual were seen as blocking nature-connection, and unrelatable due to the processes of their development being largely unknown.

The role of culture had an equally complex role in participants' worldviews and material practices. Amongst the participants interviewed in this group, different understandings of culture were discernible. A perception of culture as something uniquely human and distinct from the natural world was present. In this case, culture had an important role to play in nature-connection by taking inspiration from and modelling the characteristics of the natural world, such as seasonality. Other perceptions of culture were non-anthropocentric, seeing culture as a ubiquitous feature of the natural world and shared by human and nonhuman species. In this instance, modern Western culture was seen to have created a meta-level culture that was disconnected from the cultural practices of the natural world. This meta-level culture was perceived as serving only the purpose of furthering capitalist modes of consumption.

Both indigenous peoples and nonhuman species were looked to as exemplars of nature-connected cultures, and inspiration was drawn from these by participants to create deep and meaningful ties to their own places within modern Western societies. What participants often referred to as indigeneity took the form of localised methods of production, as well as ceremony and ritual practices designed to raise awareness of the characteristics of the natural world, encourage human participation in the seasonal practices, and celebrate more-than-human community. However, there were mixed feelings about the role of indigenous peoples in transition toward a more nature-connected way of life, with some participants expressing discomfort at the risks of cultural appropriation, whilst others integrated indigenous practices into their own nature-connection courses without issue. This dynamic produced another tension making up the nature-connection situation in that indigenous peoples were admired for their supposed pre-conscious nature-connection where the term nature-connection would seem oxymoronic to them. By contrast, modern Westerners were seen as living under either a false belief of separation from the natural world, or a material separation. As such, nature-connection was meaningful for participants (who were all modern Westerners) in that it either aimed for psychological liberation from a false belief, or material liberation from the human-built and artefactual that was seen as alienating them from nature.

A sense of alienation from the human-built and artefactual was productive of an inverse hierarchical dualism. The human-built and artefactual, except in some localised cases, was seen as antithetical to nature-connection, and productive of physical, psychological and social malaise. Conversely, natural environments were experienced as healing, restorative, and facilitative of nature-connectedness. This hierarchical dualism seemed to limit any meaning of urban nature-connection to adding more elements of the natural world to urban environments, rather than a practice of relating to human-built and artefactual materialities themselves. There were exceptions to the invisibility of the artefactual from nature-connection practices, but even these were described in terms of a difficulty in recognising them as part of nature and continuous with the natural world.

The final finding of key analytical interest was discernible in participants' understanding of land management. Human management of landscapes was considered an important ecological role. However, a rejection of human domination of landscapes and ecosystems came through the recognition of the management roles of nonhuman species. Contrary to some interpretations of the Anthropocene concept, to see humans as the dominant force of nature was a mistake. Rather, successful land management was seen as dependent on each species playing their role in a complex ecological system that relied on multi-species inputs. These inputs involve checks and balances, symbiosis, and reciprocity, but above all, a respect for the ontological sovereignty and intrinsic value of nonhuman natures. A nature-connected approach to land management was therefore articulated as human participation in a more-than-human world. To participate effectively, knowledge of the needs of nonhuman natures is needed, and a sensitivity to the ecological contributions made by those natures to overall ecosystem health. At the scale of the individual, this was seen as facilitated by a re-wilding of modern-Western people through education and nature-connection practices.

Because of the recognition of a more-than-human collaboration of land management, the concept of natural capital was largely rejected. The reasoning behind this was that transactions between natures in the natural capital approach are brokered in monetary terms, and money only has currency for humans. This was considered to exclude consideration for the acknowledgement that nature is capital for many species other than humans.

Together, these key findings demonstrate how the nature-connection situation as explored through this participant group is produced by a complex paradigmatic entanglement. The OSP and the NEP are shown to co-exist in the same discursive space and play out in the material practices and ways of living described by participants. Despite varied understandings, a strong role in the production of ecological health and flourishing is given to human culture. For this to succeed, however, human culture must be practiced from a more-than-human perspective, assuming a collaborative approach of respectful consideration for the roles of nonhuman natures. Modern Western culture was perceived as antithetical to more-than-human cultural understandings, whilst indigenous peoples were perceived as the embodiment of it.

These key findings will inform my final discussion in chapter 6, where I explore their relevance to my initial research questions, relevant theory, and responses to the challenges of the Anthropocene. Whilst this chapter has emphasised the worldviews and internal logic of nature-connection and how these relate to participants' material practices, chapter 5 will move the lens closer to the vital materialism present in the granular relationships between human and nonhuman natures. Specifically, this is explored through the relationship between humans and trees.

Chapter 5: Bonsai findings.

5.1 Introduction

This chapter presents the findings from my analysis of ten in-depth interviews conducted with bonsai practitioners from modern western nations. Participants comprised males and females and presented a varied range of professions and ages (see table 2 in section 3.4.1 for this group's full demographic details).

As introduced in chapter 2, the research questions guiding my work with this group were as follows:

How does nature-connection function in a context where human culture and nonhuman natures are inseparably entangled?

What are the consequences of a nature-connection where the natural and the artefactual are irreducibly entangled for practitioners' environmental ethics and attitudes toward conservation?

What role do nonhuman natures play in the relationality of the bonsai assemblage?

As was the case with chapter 4, in this chapter I have also resisted where possible relating my findings to extant research until my discussion in chapter 6. Furthermore, the section headings that structure this chapter serve the same purpose as chapter 4 and should not be taken as themes in the sense of generalised abstractions. As before, I simply hope these section headings will aid navigating across the specificities of my findings as far as these can be organised into topics.

In this chapter, I move to a situation where the natural and artefactual are less easily delineated, and where the material elements of the situation play a greater role in my analysis. The situation involves another kind of nature-connection in the form of bonsai cultivation. My motivation for this is to explore the consequences of a practice where the divide between the natural and the artefactual is less easy to discern. One characteristic of Anthropocene discourse is the entanglement of social and natural systems (Arias-Maldonado, 2015). Bonsai allows me to study such an entanglement in the context of a nature-connection practice, and at a much more manageable scale than the earth systems and global scale socioeconomic influences that are normally the topics of Anthropocene discourse, and therefore pursue an Anthropocene psychology (Adams, 2020). I am interested to see how this socionatural practice is expressed through the bonsai practitioners' relationships with their trees, with trees more generally, and whether bonsai informs any other aspects of their attitudes and values around conservation and environmentalism.

By taking Bonsai as my study, I am also able to include the perspectives of the bonsai trees themselves. In line with my vital materialist lens, I seek a non-anthropocentric approach that takes

seriously the agentic capacities of nonhuman natures (Bennett, 2010). The bonsai assemblage offers an ideal situation for a more-than-human analysis that considers the contributions of human and nonhuman conditioning elements and the relationships between them. A bonsai tree is always already both a natural organism *and* a human made artefact. However, unlike the organs of a human body, for example, the parts that make up a bonsai are not dependent on their relations to each other, but rather, they are maintained by relations of exteriority (DeLanda, 2006). Each part that contributes to a bonsai has a certain autonomy and could leave its role as contributor to the bonsai and fulfil another role without losing its identity. For example, the tiny shears that are used to cut a tree's roots play a vital role in the emergence of a bonsai, yet those shears are not dependent on their relation to the tree and could be taken away and used for an entirely different purpose without losing their identity as shears. The relationship between the shears and the tree are loose and contingent. Even the tree could leave the bonsai assemblage and not lose its identity as a tree, but rather join another assemblage and become part of a forest. Thus, an assemblage is comprised of a loose collaboration of independent individuals through specific constellations of relationship that create something that is more than the sum of its parts. The concept of assemblage, explicitly acknowledged as a strong influence on Clarke et al.'s (2018) Situational Analysis, is therefore an appropriate way to explore bonsai as a more-than-human situation.

The word bonsai is Japanese, but the art originates from China, and bonsai simply means a tree in a pot (Pietraszko & Sobata, 2008). Vining (1971, p. 274) describes bonsai as 'a conscious attempt to create a natural scene'. The conscious attempt in this creative process comes from a human practitioner. Thus, a bonsai is a fusion of human intentionality and the natural growth of a living tree pursuing its own life purpose. The result is an aesthetic that is arresting for its resistance to culture/nature dualism. Bonsai are not a specific species, but rather the expression of a collaboration between a human and a tree. The trees used for bonsai are just like any other tree and left to their own devices would resemble a life that anyone would recognise as such. Where bonsai differ most dramatically is in their small size. Bonsai are cultivated through the application of specific horticultural techniques to grow in miniature, where bonsai might be maintained as trees from just a few inches tall, to upwards of several feet.

There is more at work in the bonsai situation than just humans projecting their ideals of beauty onto trees. As the following findings show, the trees entangle with humans materially, purposefully, and meaningfully through modes of growth, decay, transformation, yielding, resistance, and devotion. In this entanglement, I found the trees to be much more than passive entities onto which humans imposed their cultural practices. The trees were at least as influential, shaping the human imagination and material practices to such a degree that the creation of bonsai could accurately be considered a more-than-human collaboration. This collaboration was transformative for both human

and tree, each in their own ways. Both human and tree showed themselves capable of exerting profound and life changing influences on each other, which for the participants even extended to producing a sense of meaning to life, and an understanding of death as part of nature. Something of the complexity of the material and discursive elements making up the bonsai situation are indicated in Figure 13 below, which depicts a mapping of elements in the situation at the early stages of research.

Figure 13 Example of early stage messy map of the bonsai situation.

5.2 The social worlds of bonsai

This section presents the different social worlds that make up the bonsai situation as far as it was mapped with available data. Figure 14 below shows a cartographic representation of these worlds and their intersections.

As with chapter 4, SA's cartographic methods were the engine used for plotting and analysing these worlds, positions, and relationships, and choice maps are included below where I have deemed them likely to be helpful in presenting my findings.

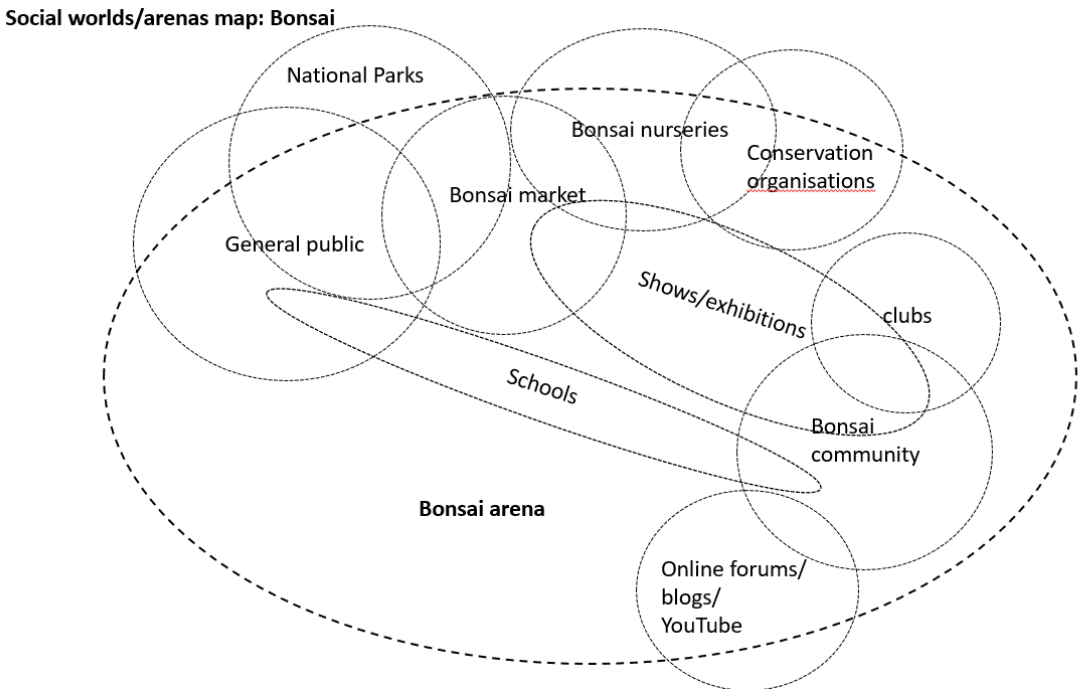

Figure 14 Sociomaterial worlds making the bonsai situation.

The public refers to the population of people who are not members of the bonsai community. They are not bonsai practitioners, and they do not tend to or cultivate bonsai trees. Nevertheless, although the public can be located toward the periphery of the bonsai world, they can and do change the nature of their relations, positions, and contributions in ways that participate in and influence the production of the bonsai situation.

The strongest influence on the public comes through direct contact with bonsai trees. The relationship between an individual member of the public and a bonsai tree results in numerous changes to the dynamic of the situation. For example, the public are often mesmerised by bonsai trees, but the relationship is also capable of producing repulsion, which can lead to confrontation between bonsai practitioners and the public, or simply a movement of the public member away from the situation. This can occur in instances where the techniques of bonsai such as root pruning and wiring are perceived as cruelty to trees.

However, peripheral contact between the public and bonsai trees are more likely to be productive of admiration and wonder. A kind of enchantment can emerge that further strengthens the meaningfulness and satisfaction of bonsai cultivation for practitioners as they see the power of bonsai at work on members of the public who may be seeing the trees for the first time. Where repulsion occurs, however, practitioners may find themselves challenged over the ethical practice of bonsai cultivation.

The dynamics between the public, bonsai trees, and bonsai practitioners typically occur at bonsai shows and exhibitions, but may also occur at bonsai nurseries, schools, and bonsai clubs welcoming potential members. The production of transformative emotions such as wonder, joy, and a sense of aesthetic appreciation can emerge through these relationships to serve the bonsai situation in positive ways. For example, at exhibitions an emotional connection to trees may be forged for people who might not engage with trees with such intensity otherwise. This intensity acts as a desire that can pull those members of the public from the periphery of the bonsai world further toward its core if they are inspired to practice bonsai cultivation themselves, or simply deepen their appreciation of trees.

Another productive mode of relations between the public and bonsai takes place in schools. Bonsai practitioners hold talks, presentations and educational activities in schools. In these situations, children engage both discursively through learning the history, method and artistic lore of bonsai, and materially through engaging in tending cuttings or shoots themselves. Schools may play a particularly productive role for the continuation of the bonsai situation over the long term as living relationships with trees are formed early in life, establishing a connection that even if lost often resurfaces later in life.

Conversely, members of the public can also introduce destructive effects on the bonsai situation. As alluded to above, members of the public may introduce a misanthropic discourse into the situation, expressing pity for the trees and accusing practitioners of mistreating them. The cutting of roots and application of wire to the tree's trunk and branches are sometimes perceived as cruel and acting against ideas of a tree pursuing its true nature as an organism free of human influence or culture. This discourse can be found beyond the shows and exhibitions, reaching into media outlets and platforms, which in turn popularise negative assumptions about the ethics of the bonsai cultivation. As far as any of the participants were aware, and several had made extended or regular visits to Japan, accusations of cruelty to trees through bonsai practices are unique to modern western cultures.

Another world that can produce constructive and destructive influences on the bonsai situation is that of the bonsai market. The bonsai market is a complex and dynamic entity. Its operations can take place within the law, as in the case of bonsai nurseries, or outside the law, as in the case of illegal tree extraction from national parks. The bonsai market operates through material flows along commercial structures that involve the production and sale of tools, pots, nutrition, soil, trees, books, and services.

Illegal extraction from national parks can occur because cultivated bonsai trees are not the only trees that are valued highly in financial terms. Trees found in the landscape may be considered especially desirable for bonsai cultivation. The extraction of such trees is called Yamadori and may take place legally or illegally. The market for Yamadori trees can be a lucrative one. This is due to unique environmental pressures that cause these trees to grow in ways that epitomise the bonsai aesthetic, which seeks to capture the spirit of a place. Seeing the potential financial gain possible through the sale of such trees, bonsai hunters engage in the extraction of trees for sale to practitioners and enthusiasts. This process can cause environmental damage, and threatens the life of the extracted trees, many of whom do not survive the stress incurred by this process. This brings the public, the media, and bonsai practitioners into relation with national parks. National parks may grant permits for bonsai collectors to legally extract trees for bonsai cultivation. However, the national parks also struggle with illegal collection of trees by people who are not bonsai cultivators themselves, but who see a lucrative market in selling trees. Most bonsai trees, however, are procured from bonsai nurseries, grown from seed, bought as young saplings from garden centres, or developed through horticultural techniques such as air layering. Bonsai nurseries vary in size, with some stocking thousands of bonsai trees both grown from seed, known as Misho, or through other horticultural propagation techniques. Courses and workshops are often run at bonsai nurseries, although the primary purpose is the sale of trees and accessories.

Both the problematic aspects of bonsai, such as illegal Yamadori, and the wealth of arboricultural and horticultural knowledge that circulates through the bonsai situation, are discussed on public online forums, blogs, and websites such as YouTube. These online platforms act as sites of education, discussion, and knowledge sharing.

Bonsai societies and their club meetings are especially generative sites of the bonsai situation. Clubs strengthen ties between practitioners and trees, and are places of knowledge exchange, learning, befriending and socialising. Belonging to a club is especially effective at increasing the growing success of those new to bonsai. Clubs are welcoming of newcomers, and many clubs include practitioners with a lifetime of experience to pass on to those just starting out, allowing new practitioners to benefit from cultural transmission.

Conservation organisations are also linked to the bonsai situation, both deep within and at the periphery. For example, one participant who was an arboriculturist by profession had been studying trees not native to the UK in the form of bonsai for over a decade. The rationale behind this was based on the expectation that our changing climate would lead to some established species in the UK struggling, whereas trees from warmer climates would begin to thrive. This participant was trying to learn as much as possible about caring for non-native trees so that when such conditions cross that

threshold the knowledge would be there to effectively introduce new species into the landscape. Working further toward the periphery of the bonsai situation, some conservation organisations are using bonsai as a method of conserving, propagating, distributing, and promoting endangered tree species. An example of this is a scheme encouraging members of the public to cultivate Aspen, which are endangered in Scotland.

Thus, the bonsai community is an international collective embodying a heterogeneity of traditions, outlooks, motivations and understandings of what bonsai is about. Members include hobbyists, enthusiasts, and professionals, and understandings of the relationship between humans and trees are informed by both eastern and western philosophical traditions and cultural outlooks.

Having provided an overview of the social worlds that make up the bonsai situation, the rest of this chapter will focus on the relationships at much smaller scale of analysis. I present findings from the relationships between humans and trees in more granular detail. However, since this granular detail is not a separate level to the social worlds that emerge from it, I will not maintain any absolute separation between my scales of analysis. As I did in chapter 4, I assume the analytical freedom to move with ease through multiple scales where connections across these scales are important or interesting to my questions and research aims.

5.3 The enchantment of bonsai.

What I am calling enchantment is a phenomenon that emerges from the relationality of humans and trees. Enchantment is produced by the entanglement of a tree's living expression and a human's sensitivity and receptivity to that expression. The enchantment of a bonsai includes aesthetic appreciation and ideals of beauty. As such, bonsai embody an environmental aesthetic that cannot be reduced to either the tree or the human imagination. Rather, bonsai are materially and discursively configured as something more-than-human-more-than-tree.

The enchantment of bonsai is perhaps part of their power to arrest the attention of onlookers. Bonsai trees captivate, in part, through their resistance to normative categorisation. The difficulty in locating a bonsai tree along a spectrum of natural to artificial seems to short circuit the usual patterns of mental categorisation, leaving those who are habituated toward perceiving nature/culture dichotomies asking the question 'what is it?'. As David described his first encounter with bonsai, the sense of mystery mingling with aesthetic appreciation was clear.

> I became quite besotted with them, and spent a long time looking at these trees, wondering how on earth they were created, and admiring, well, they were beautiful in my view (David).

Words like ‘besotted’ were not uncommon in the talk of the participants I interviewed. The kind of beauty these practitioners saw in their trees was high in emotional content.

> When I first saw them properly and displayed in the correct setting, I was moved so much, but it was difficult to put into words at the time (Maple).

Participants occasionally brought in a spiritual sense to their descriptions of the power of bonsai, sometimes with a strong animistic quality.

> When you look carefully at the tree, it does seem to sit there with some kind of soul (David).

This endowment of a soul led David to a strong perception of bonsai trees as individuals. Furthermore, the reverence for the individual lives of trees, along with the deep level of involvement in their growth and development led David to a stronger perception of big trees as individuals rather than just a collective woodland or forest.

The human contribution to the enchantment of bonsai could be seen as Lisa talked of creating an artistic picture with the tree. Participants saw something inherently valuable and beautiful in trees. However, for a tree to become a bonsai tree, it must be entangled with the cultural practices of the human practitioner and their imaginary of what aesthetic the tree could come to embody. The bonsai aesthetic, then, is both intrinsic to the tree and coupled with the human imagination. For Lisa, the result is transporting.

> That’s what I would say bonsai is all about, is taking you away from everyday life and just putting you in another scenario (Lisa).

Taxo, a bonsai master who travels the world teaching and demonstrating his art, believed that one of the things connected to a lack of nature-connection is to do with exposure, suggesting that bonsai culture can bring this to places and people who wouldn’t otherwise have an opportunity to be enchanted by trees. For example, it is not unusual for people to enter the world of bonsai through shows and exhibitions, making these situations also sites of recruitment. For humans, encountering bonsai in this context can catalyse pivotal moments of transformation leading to a new way of seeing trees, and perhaps a longer-term path of devotion to them. David recalled observing a member of the public looking at the bonsai trees at an exhibition until the man was moved to tears by them.

> There was a guy stood in front of our display, and he was just staring at these trees, and I was watching him, and he was driven to tears (David).

Thus, bonsai trees exhibit a capacity for enchantment that brings satisfaction to the human practitioners that tend to them. However, this power to enchant often reaches further from the core of the bonsai assemblage to awaken emotions of awe and joy, as well as a sense of fascination and wonder, in people who may not encounter trees in such an intimate way otherwise.

5.4 Understanding the needs of trees.

The nature-connection of the bonsai practitioners involved a deep intertwining of emotion, devotion, and horticultural learning. This entanglement of affective and cognitive components to their relationships with the trees was consistent across all participants. Some of the knowledge base of bonsai practitioners came from their acquisition of horticultural and arboricultural science. However, much of tending to the needs of the trees comprised of a blend of scientific knowledge and a practice of sensitising themselves to what the trees were saying. This required a practice of active listening on the part of the participants.

Far from the participants seeing themselves as the sole agents in the bonsai assemblage, applying their knowledge to trees with predictable results, the practitioner/tree relationship suggested something more like a conversation. Participants' awareness of the agency and self-determination of trees was salient throughout their accounts. Whilst the trees were understood to have certain stable characteristics, such as responding positively to sunlight and regular watering, the unpredictability of an individual tree's behaviour was equally considered. This unpredictability demanded an acute level of attention and sensitivity that went far beyond the routine nature of merely remembering to water the plants. A delicate, time-sensitive array of interactions made up the day to day – even intra-day – interactions. These included wiring, pruning, arranging, and moving trees. Less visible time was also regularly spent simply contemplating a tree and building a step-by-step vision of what direction the tree might take over a certain number of years into the future. This level of involvement required participants to attune to the needs of the tree, often hour by hour of every day. The result of this meticulous devotion was an intensity in the practitioner/tree relationship that was sophisticated and nuanced. Maple introduced the act of listening thus:

> You've got to be able to read the tree and read the situation and understand; you know, have a good idea like if I do this what is going to happen? (Maple).

As the human/tree relationship grows through the practice of bonsai the ability to 'read' the tree was based as much on a feeling of having acquired a certain intimacy with an individual tree's unique nature as it was based on an increase in knowledge of arboriculture.

Lisa epitomised this experiential learning that comes from a maturation of the human/tree relationship over time.

> You can learn so much from them, watching them grow and how to treat them (Lisa).

A tree's responses to what a bonsai practitioner does are tentatively predicted, but never assumed, and learning about the idiosyncrasies of individual trees is an ongoing project.

I thought at first that the bonsai practitioners frequently anthropomorphised when relaying their conversations with the trees. The passage below, taken from my interview with Gareth, initially suggested this to me.

> The tree will show you signs that you need to be a little bit more on it with the watering. The smaller things like pinching candles and old needles start to go yellow, and if you pull off those needles, then it'll let more light into the inner parts of the tree and it will grow better so it's telling you 'I'm done with these needles please can you remove them', and you can either say 'no I'm going to let them fall off naturally, or yeah sure I'll take them off for you.' (Gareth).

It would be easy to assume a certain amount of anthropomorphising is present in the participants' talk, especially when they spoke for the tree in English. However, the mutually responsive relationship between the participants and the trees suggests this assumption would be too hasty. As my analysis continued, I started to see something that was not anthropomorphising, but rather something more like translating for the trees when relaying their actions in the relationship to another human such as myself. I began to see the idea of participant anthropomorphising as an anthropocentric assumption of mine own based on a cultural upbringing in which there was no place for nonhuman natures taking active roles in more-than-human relationships outside of a child's imagination. As I began to focus on what the trees themselves brought to the human-tree relationship, it became clearer that the trees' responses to the bonsai practices of participants, their behavioural adaptations and other behaviours, involved both a communication of needs and an exhibition of purpose and a desire for life.

Participants were not completely subservient to the trees either. Whilst a tree's health is always the priority, the human practitioner also makes demands on the tree in the pursuit of achieving some aspect of the bonsai aesthetic, as explained by Gareth.

> A tree will never say please will you bend me 90 degrees and then another 90 degrees and then saw off half my limbs and let me regrow. It's not going to tell you that. But people will do it because it's what they want the tree to look like (Gareth).

Even when the radical manipulations such as those described by Gareth are employed, it is important to understand the above quote in context. The techniques of bonsai are applied over years and

decades, and a knowledge of what an individual tree is likely to work with and what it would either resist or suffer from constitutes a vital knowledge framework within which bonsai practitioners must work. It is precisely because of the demands that participants make on trees that their attentiveness to the trees' wellbeing is so acute. Maple captured the ongoing process of acting, listening, the tree talking back, and the practitioner responding again, involved in bonsai cultivation.

> It is like a two-way conversation: you let the tree do what it wants, and the tree should let you do what you want. You're kind of that backwards and forwards reciprocal process. If one person becomes too dominant, then it's difficult (Maple).

As with the nature-connection practitioners, the bonsai participants were all from modern European cultures. And yet Maple's description above suggests something very far from the human exceptionalist image of humans exerting their will on a passive, compliant nature. The 'conversation' is more akin to something taking place between peers. Two, albeit very different natures, negotiate from the perspective of their own desires in a spirit of collaboration for the benefit of both species.

During my interview with Taxo, the responsibility and duty of care to the bonsai trees was frequently expressed in terms of the need to understand and respond to the tree's 'needs and moods'. Furthermore, the entanglement of culture and nature that constitutes the bonsai situation does not stop the practitioners understanding the needs of trees in terms of their relationship to optimal environmental conditions. Indeed, cultivating bonsai only heightened participants' awareness of the trees' need for natural conditions. Jack asserted the fundamental incongruence between thriving trees and indoor environments as follows:

> Trees naturally live outside; that shouldn't be news to anybody. The problem is that a lot of the garden centres and the DIY sheds, you don't see it so much now, but they used to sell stuff labelled as indoor Bonsai. What they really meant was that they were trees that weren't hardy, so they wouldn't stand a frost, but that doesn't mean that they want to live indoors. You know, out of the elements or sat on top of a radiator. You know I think people are tempted into Bonsai as a house plant, and they're probably about the most difficult to grow successfully indoors (Jack).

Here, Jack made a meaningful distinction between certain trees and human-built environments by pointing out where the two are incompatible. The above quote is one instance suggesting that a deconstruction of culture/nature dualism need not render invisible a capacity to recognise the needs of specific natures, in this case trees. Nor does this necessarily ignore ways in which specific human-built environments would likely have a detrimental effect on their health and flourishing. This example evidences that a human perception where the natural and artefactual were seen as in

relationship rather than opposing does not necessarily render invisible an appreciation of the needs of specific non-human natures in terms of needing their own habitat.

Jack's knowledge of the specific needs of the trees prompts a question over how necessary a culture/nature dualism is for the protection of natural places. Afterall, a tree does not struggle in a house because of being assigned by humans to an abstract category called *natural*. Rather, a tree will struggle because of the material specificities of its living relationships with other conditioning elements of an environment. Regarding Jack's example above, a tree will struggle because it needs more moisture in the air and less constant higher temperatures than are typical of houses with central heating. Certain human made artefacts are also vulnerable to similar environmental conditions within human-built environments. For example, temperature, humidity, light exposure, air quality and other conditions can all exert detrimental effects on paintings housed in a museum. The fact that a tree is classed as natural as opposed to artefactual, in this situation, adds little to understanding the material specificities of the relationship between a tree and a house, or the needs of the tree within that relationship.

The necessity of understanding the needs of trees for successful bonsai cultivation, and the relational ties that were built over years of daily material practices and emotional bonding with the trees, was productive of an ethic of care and commitment on the part of the participants.

> It's a passion which has now become a way of life (Ash).

To put this 'way of life' into context, Ash adheres to the daily care of between 150 and 170 trees by his own estimate. The conscientiousness needed to successfully cultivate these trees whilst factoring in their health needs meant abstaining from holidays and trips away, suggesting that the expression 'way of life' was not used lightly.

> Last autumn I wired every larch tree I've got. Now they're growing, the wire needs taking off. I spent all day yesterday de-wiring, and I only did two (Ash).

This level of meticulous care, which was common across all participants, suggests an ethical stance toward trees defined not only by a deep appreciation of their aesthetic beauty, but also a recognition of their intrinsic value. This intrinsic value was evidenced by more than just the recognition participants had for the needs of the trees. Embedded in that recognition was a duty of care toward the trees as living natures pursuing their own good.

> I do often think about the sadness when a tree dies, you know thinking about what it could have been, and you've restricted it this high and then through your neglect

> or your misreading of it you've let it die and you've not let it be all it could have been (Gareth).

Participants' descriptions of their relationships with their trees suggested that the imperative to understand the needs of the trees was more than instrumental. They did not merely want to avoid the trees dying because that would end their own artistic project. Recognition of the agency of trees and a perception of them pursing their own good introduced a dimension of ethical engagement to the human/tree relationship. Participants' daily witness to and experience of trees pursuing lives of their own positioned them as much more than just material to be worked on. The human/tree collaboration included factoring in the intrinsic value of the tree into the aesthetic vision of the human.

5.5 The sage tree: bonsai as mentors.

The relationship between the bonsai trees and participants has several dimensions of reciprocity. One of the effects of this tree-human entanglement is the production of wisdom and life lessons. One of the bonsai tree's capacities is found in its role as mentor, teaching by example how to negotiate some of the most difficult life experiences humans face. Maple talked of how the practice of bonsai confronts practitioners with existential themes that are uncomfortable for many people. For Maple, death became a visceral experience that he processed through his relationship and engagement with his trees.

> A big part of bonsai is about life and death, and some of the trees that we have, half of them are dead half of them are alive. And you just, like this dialogue, description of the struggle of life, be it in a tree or be it a human existence. And that's just made physical with these trees (Maple).

Maple relayed a personal story about his mother, who died of brain cancer. Whilst his siblings struggled to talk about what was happening to his mother with her, Maple felt that being immersed in processes of life and death through working with bonsai had given him the strength to face hard conversations with acceptance.

> I was the only person who was able to have that conversation with her, and before doing bonsai I definitely wouldn't have been able to do that (Maple).

Tending bonsai trees gave Maple opportunities to become familiar with death in a more intimate and ongoing way that extended beyond an idea of death as a static occurrence after which nothing is known. The processual nature of life and death, and the indelible relationality of these, is explicit in the interplay of growth and decay exhibited by trees. Across a tree's lifespan, the relationship

between life and death appears as a continuity rather than a binary. Being attentively engaged with this process over years of tending to trees, Maple was provided with a way forward and a way to move through bereavement.

> Three days later I was back working on Bonsai and that was what got me through it. I knew it was the only way that I could get through the grieving process, was just to continue on. You know it was the spring and things needed to be done, and that constant cycle, that definitely came from doing Bonsai and knowing that life continues… even after death (Maple).

Figure 15 A local tree near my home showing the processes of life and death in movement.

5.5.1 Mental health and wellbeing

From the bonsai situation emerges healing effects that benefit the human elements of this assemblage. For example, when talking of his experience during the coronavirus lockdown in the UK,

Ash described how bonsai not only gave him a structure and routine, but also the comfort of knowing future joys await no matter what time of year it is.

> It's helped me because I've had something to do, and I've always had something to look forward to. You know you look forward to the spring coming, and which trees are going to bud out first (Ash).

Thus, the activities of bonsai cultivation, such as pruning, wiring, de-wiring, re-potting, cutting roots and moving bonsai into the most beneficial environments offer a way for humans to participate in the seasonality of trees, and through doing so, maintain an awareness of what is happening in the wider ecology and landscape. It should be remembered that a bonsai oak tree is no different in nature than an oak tree growing in an ancient woodland. As far as one can be attentive to seasonal changes by observing trees in woods and forests, one can make the same observations of bonsai trees.

This physical connection to the trees was an important mode of engagement for Maple and provided a connection that went beyond appreciation of trees' aesthetic appearance. For Maple, part of the meaning of nature-connection was meant literally rather than just psychologically. Connecting with the trees meant meeting them through sensorial engagement. These engagements, particularly through touch, had the effect of anchoring Maple to another life, which he experienced as having a grounding effect.

> Being in contact with nature, not just walking through a park, because there's a difference between walking through the park and getting your hands dirty and touching the leaves, touching things. Like when I first started that really helped me to sort of stabilise a bit. I think there's definitely a big scope for practicing Bonsai to help people there (Maple).

Several participants spoke of the therapeutic benefits of bonsai due to the way they invited contemplation. The bonsai trees exhibited an ability to arrest participants' attention in such a way as to startle them out of their ruminations and allow themselves to be caught up in the appreciation of the moment.

Maple articulated another dimension to the human/tree relationship which he experienced as a powerful healer of depression. According to Maple, the secret lay in the daily acts of service the human bonsai practitioner must offer in caring for their trees. The regular routines of watering, monitoring for pests, re-positioning according to the time of day, these were all for the sake of ensuring the continued health and wellbeing of the tree. Bonsai trees are vulnerable on account of them living in small and often shallow pots. The various acts of caring for trees present a relentless responsibility. This looking outward toward another life on behalf of the human, and the knowledge

that the tree is relying on its human cultivator to maintain optimal conditions for a flourishing life, is brought home to the bonsai practitioner often several times a day. The effect of being part of a greater purpose and need than one's own was experienced by Maple as liberating him from feeling isolated in his own negative thoughts and emotions.

> It makes you realise that you're not that important, and that other things are more important than you. Like when you're looking after trees, like what I was saying earlier about them needing you to give them everything. Having something that is dependent upon you is a big responsibility, and that puts some people off, but having that responsibility, something that you have to do everyday, building up a routine, I think for people who are suffering from depression, that can help, you know okay I have to do this. Like just building a daily routine around plants and things like that I think can… there could be some benefit for people there. I know that it benefits me (Maple).

For Gareth, physical engagement was also key. The human acts of watering, wiring, pruning, re-positioning and re-potting are entangled with the tree's acts of transpiration, growth, adaptation and responsiveness to environmental conditions. By itself, a tree is purposeful in all these regards. However, in the bonsai situation, the tree's purpose is entangled with human actions which are themselves purposeful. Some of that purpose is about taking care of the tree's health, but this cannot be separated from the purpose of moving toward an imaginary of some aesthetic ideal. Furthermore, aesthetic ideals in bonsai cannot be said to exist without trees, since the ideals of beauty striven for by participants were all inspired by the characteristics of trees that have grown in such a way as to embody the spirit of a place. Engagement in bonsai is thus always a more-than-human undertaking and a material-discursive process. It is both a behaviour and a conversation between human and nonhuman natures.

> When I'm working on them it's always nice working with your hands. Doing something and achieving something artistic, because you realise that 3 hours have gone and you haven't made it more than 50% of the way through. It's just a nice way to pass the time that you don't really realise what you're doing. And then you have an artistic goal in mind, and you have to work with that artistic goal alongside what the tree can take (Gareth).

The combination of outward attention toward another living being and the arresting appearance of bonsai as radically out of the ordinary seemed to produce both a transformative and transportive change in the participants' consciousness. The benefit to participants' mental health seemed to come from this combination, which seemed capable of helping participants break out of habitual ways of thinking and emotionality.

Trees live at a different time scale to humans, where the lifespan of a single tree can continue for hundreds of years compared to a human's decades. Participants were aware of this fact and its implications for bonsai practice. Even short-term goals in attaining some element of the bonsai aesthetic would require a year before the first results could be seen, and participants suggested that when grown from seed, a tree will not begin to show anything of the bonsai aesthetic for at least 5 years. Trees' slower journey through a lifespan require participants to adapt to the tree's pace of life, and to realise a bonsai imaginary can take decades to achieve. This difference in the lifetime and processes of living and dying between humans and trees introduces an interesting power imbalance. A tree does not need a human to live. But for a human to cultivate a successful bonsai, the human – or succession of humans – must conform to the dictates of the tree's slower rate of living and dying. Accepting this had the effect of slowing participants down. This slowing down resulted in psychological benefits for the participants and was experienced as something positive and therapeutic. It was also responsible for the development of patience. Attuning to the life of the tree invited the possibility for unhurried contemplation, as described by Lisa.

> It's a very calm hobby because you can just sit there and look at your tree and you don't think about anything else. It stops all the negative thoughts because you just think well how can I… should I take this branch off? Should I lower that one? Should I put it in a different pot? (Lisa).

Some participants alluded to an incongruence between the way of life demanded by bonsai cultivation and living within a capitalist socioeconomic structure. Such political reflections emerged out of the contrast felt between an anthropocentric and individualistic mindset associated with the capitalist West, and the more outward looking concern and engagement of tending to trees.

> And by focusing on their needs, you can kind of forget about all the negative stuff that's happening around you. And you just realise that, yeah, that's just not that important. And all that is important is touching trees I suppose. But it does help you to get out of that me me me mindset, which is I think very important for the Western world because we are programmed to think that we are the most important things in the world. That's what capitalism does to you. Whereas really, we're not. We're part of a bigger ecosystem (Maple).

The quote above shows how the positive impact bonsai had on Maple's mental health also provided a space for a wider appraisal of how wellbeing was adversely affected by the social and economic structures of his society. Maple found the act of 'touching trees' helped pull him out of a self-centred framework of thinking and orientate his attention outward to the needs of his trees. Not only did this benefit his mental health, but also seemed to have pulled him away from the human supremacist attitude that has been associated with modern western understandings of human/nature dualism

(Crist, 2023). Thus, Maple challenged the focus of capitalist individualism and self-serving competition through his relationship with another nonhuman life that he recognised as having great worth. In this case, the human/tree relationship was a powerful catalyst for a re-perceptualisation from human isolation toward a sense of being part of a wider world of human and nonhuman natures. The act of caring for his trees seemed to have help Maple articulate a counter-narrative to what he saw as the selfish anthropocentrism of western capitalism.

5.6 Bonsai and big trees

One of the most analytically important aspects to emerge from participants' engagement with bonsai trees was the transformative influence this had on their perception of big trees. This is important because it suggests the potential for the care and concern participants have with specific trees to spill out to trees generally. The connections between the participants, the bonsai trees, and big trees encountered in gardens, parks and the wider landscape presented a dynamic relationality that connected the bonsai situation to woodlands and forests of larger landscapes.

Since the different species of trees cultivated as bonsai are no different in nature from members of the same species growing in the wider landscape, any knowledge acquired about bonsai is already knowledge about trees generally.

> I understand a lot more about the physiology of trees as a result of working on bonsai (David).

There were several instances across the interviews where participants expressed wonder, fascination, and appreciation of the physiology of their trees and other plants. This knowledge automatically awakened those same experiences in meetings with non-bonsai trees. Bob spoke with palpable wonder at the life processes of plants, and the way cultivating bonsai enabled him to live near the lives of trees.

> It's fascinating I think, and how flowers develop. You think, everything starts from a seed, and you think, how can all that lot, all that information be in that seed? And it's just fascinating and by keeping bonsai you can keep all those things closer to you (Bob).

Another perceptually transformative process was seen in participants' appreciation of the beauty and artistic expression of trees. This appreciation could be seen as co-constituted by the participants, big trees, and bonsai trees. For example, the attentiveness and meticulousness of the practitioner/tree relationship within the bonsai situation seemed to have sharpened a perception of the aesthetic and individuality of trees in the landscape. What this did to participants' ways of relating to and

understanding the environment amounted to a shift in environmental worldview. Bonsai brought the landscape to life such that it was no longer a backdrop to life, but a population of living organisms from which trees stood out.

> Each tree is an individual organism, which grows according to its environment in terms of its size its shape its health. Yeah, so I mean I could stop at any time on a walk, and look at any one tree, and wonder about it, and look at it and understand its structure and why it is the way it is, much more than I would have been able to do 25 years ago (David).

This heightened awareness of individual trees in the landscape was sometimes subtle, sometimes dramatic. For example, when I asked Jack if he perceived big trees differently since doing bonsai, this was his response.

> I perhaps look at trees slightly differently now, looking at shapes and patterns and the way they're behaving. But that's not a real… you know, that's not a real earth-shaking change (Jack).

By contrast, when I asked Maple the same question, his response was immediate and passionate.

> Yeah, yeah, big time. you do look at the trees in a completely different way. I love driving around in the Winter, because you see the structure of all the deciduous trees. You see them in the fields and, ah it's beautiful (Maple).

The heightened fascination with big trees in turn allows participants to be receptive to the artistic characteristics of trees in the landscape and take inspiration from them to bring back to bonsai cultivation. The way a tree has developed can provide participants with ideas on how to approach the styling of their bonsai.

> I've been going on walks with my daughter and walking in the local woods and seeing local trees and taking photos of them because they have the characteristics that I would like to have in Bonsai, so it's kind of like, I don't know, saying I'd like a stag headed oak with dead wood in it because you don't really see that in Bonsai that much, and I see it a lot in nature around here: big majestic oaks in the middle of a field with lots of dead wood (Gareth).

Thus, the relationship works both ways, with bonsai trees sharpening participants' perceptions of trees in the landscape, and trees in the landscape inspiring participants in ways that feed into their bonsai practice.

Traditionally, the most popular species of trees for bonsai are native to Asia. The techniques of bonsai and ideals of aesthetic appearance are also strongly embedded in Japanese culture. However, several of the participants in this study, all of whom were European, found that their relationships with their local landscapes were opening new possibilities for bonsai cultivation. Participants expressed a desire to connect their bonsai practice to the places familiar to them, and celebrate the joy found in native species.

> It's basically a step away from the Japanese side of things from using Junipers, pines and maples. Instead, you use what is at your doorstep: you use beeches, you use elms; UK elms, and then oaks and things like this (Gareth).

A traditional aim in bonsai is to cultivate a tree that embodies the spirit of a place. The participants were continuing this tradition but felt closer to the spirit of the places they walked and were embedded in over the course of their daily lives. This approach to bonsai practice seemed to nurture the kind of ties to a local place like that spoken of by the nature-connection participants.

> Anybody that sits and appreciates the beauty of a Bonsai tree would then surely be looking at how life-sized equivalent of that tree exists, because a lot of Bonsai trees in England are really native species, erm, that you can find in England (Hazel).

One of the most important findings for this study was that the deeply cultural practice of bonsai, with its strong human involvement in the lives of trees, only seemed to have deepened the participants' appreciation of trees and the wider landscape.

> A tree's a tree around the world. So, I think with Bonsai it's heightened my thoughts (Ash).

Several of the participants supported conservation charities because of their deepened appreciation for trees. Participants were also actively involved in educating and inspiring people about trees. Outreach work in schools was also common, where participants would introduce children to trees, and give them opportunities to come into direct relationship with them by having a go at potting or pruning. Commonly, participants would give small saplings to the children to take home and look after, encouraging them to take responsibility for the wellbeing of a nonhuman nature.

5.7 The Dark side of bonsai

This chapter has already documented the capacity of bonsai to enchant humans, arresting their attention, producing feelings of joy and appreciation for the character and aesthetic potential of trees. I have shown how this enchantment can catalyse a lifelong practice of tending to the needs of trees in bonsai form and effecting a wider appreciation and concern for big trees in the landscape.

Whilst the cultivation of bonsai will have an almost insignificant effect on carbon sequestration, this natureculture can nurture an environmental ethic that can act to sustain support for conservation efforts, especially when trees are involved. However, the bonsai situation has porous boundaries, and a range of more distal elements can and do enter the situation and exert their own influence on its makeup and the character of its relationships. One such element explored in this section is the commodification of trees, their financial value in the market for bonsai trees, and the tension this brings to the relationship between bonsai practitioners and both bonsai trees and trees in the landscape.

There are many ways to procure a tree for bonsai. Some practitioners grow trees from seed, others buy saplings from garden centres, and some practitioners buy mature trees that have been worked on by a bonsai master or more experienced practitioner for some years. Other ways of procuring trees for bonsai include techniques such as air layering, which is a horticultural technique whereby a new tree can be cloned from the branch of an existing tree. However, one of the most traditional yet also disputed methods of cultivating bonsai is to extract a tree from the landscape. This practice is called Yamadori.

Yamadori can be used to extract young or old trees from their natural environments. Older trees can be especially desirable when they have grown in harsh conditions. Over time, trees respond to these conditions by growing out twisted branches and trunks or yielding away from their base toward a certain direction. All these responses will have been unique to the environmental conditions of the place where they grew. This, coupled with the expressive appearance of movement and intention in such trees, are what is meant by the tree capturing the spirit of a place. Figure 16 below shows some bonsai trees that have been cultivated to take the form of a tree weathered by environmental conditions.

Figure 16 Bonsai trees at a nursery cultivated to emulate harsh weather conditions.

Opinions on whether and how Yamadori can be ethically practiced can depend on who is undertaking the extraction, the individual tree, and the purpose for extracting the tree. For example, where a tree would otherwise have been cut down, Yamadori can save that tree's life.

> In a lot of cases there are trees which are being cleared anyway, or are nuisances, and so they're just getting dug up and burnt or things like that. And they can be used for bonsai (Maple).

However, there are cases where the considerations involved in decisions to extract trees from the landscape for bonsai are antithetical to the kind of devotion and appreciation of trees expressed by participants. Maple, a professional bonsai master from the UK who undertook a traditional apprenticeship for years under a bonsai master in Japan, was open about the lengths some collectors will go to.

> There are people who are going in illegally to national parks and collecting trees that they shouldn't be. And the big part about it is people go out and clear hillsides of trees, and three or four months later half of them are dead (Maple).

The over exploitation of wooded environments for procuring potential bonsai trees cannot be explained by suggesting western practitioners have failed to grasp the traditional culture of bonsai. Both Maple and Taxo recounted something of the history of Yamadori in Japan over the course of the end of the 19th Century and into the 20th Century. One of the most dramatic cases of over exploitation took place during this time, where the so-called Shimpaku Juniper trees all but vanished from a

particular mountain range. Collectors saw the Shimpaku as expressions of the feel of the mountains. A combination of extreme environmental conditions led these trees to fold in on themselves, causing stunted growth and twisting trunks and branches that mediated a sense of movement and character. Such was the fascination and desire for these trees that some of the bonsai hunters died risking their lives on the mountainsides in their efforts to locate and extract almost impossible to reach trees. Although some of these trees became masterpieces of bonsai, many of them did not survive the process of extraction. The reason for this was because the Shimpaku were found high up in the mountains growing out between crags and rocks. Their roots had grown deep into the mountainside to secure themselves against harsh weather conditions, which made removing a tree without damaging its root system almost impossible. This in turn contributed to their low survival rate when extracted. It is no longer possible to collect Shimpaku in the wild, although the species are still sold for bonsai from nurseries that have propagated Shimpaku from cuttings.

Maple revealed examples where similar instances of exploitation were still happening, albeit on a smaller scale and in infrequent and isolated incidents.

> There have been a couple of occasions where – I mean it's a bit of an exaggeration, but you know – someone will go off and take a whole van full of trees in a short period of time. I mean even then they've had permission and things like that. But it isn't anything kind of, it's not industrial or anything like that. It's perhaps a little bit more than is necessary, and sadly the success rate is quite low. But it's kind of like the not spoken about part of Bonsai (Maple).

It was not easy to tell how much illegal Yamadori is undertaken by bonsai practitioners, or simply people who have recognised a market for such trees and are capitalising on the opportunity for financial gain. Taxo, another European bonsai master who undertook an apprenticeship in Japan, suggested that a certain amount of financial exploitation of trees is inevitable. However, Taxo was adamant that this inevitability was not because of the trees or the tradition of bonsai, but because of the larger system of the exploitation of nature.

> Exploitation is as likely as any other natural resource, when something natural is realised to have financial value for people it becomes a resource, and it should not be surprising that some people have seen a market for selling Yamadori bonsai (Taxo).

Both these bonsai masters saw selling bonsai under certain conditions as necessary for them and other professionals to devote themselves to bonsai as a fulltime occupation. Yet both also seemed to feel that putting a monetary value on a tree changes the perception of that tree from a living nature with whom a relationship of appreciation and reverence can develop, to that of a resource.

> Some of the trees are two hundred years old as Bonsai. So, when the current owners become infirm or get bored of Bonsai, those trees have to go and somebody else has to look after them. And they will change hands for money. So, it is an important part of it, and a necessary part of it; but I do find it a little bit tiresome and a bit dirty (Maple).

Other experienced participants pointed to a tension between the emotional attachment they develop for their trees and putting a price tag on them if need arises to pass a tree on. Marie recognised that for many bonsai practitioners, their trees are simply priceless.

> You can't put a price on 40 years of styling and development because it's more of an emotional price. And a lot of the Bonsai growers who have been doing it for a long time really struggle when they get to an age where they have to give up Bonsai, that they don't know how to put a price on their finished product. Because they've never produced it with an aim to make money from it (Marie).

Throughout my interviews with bonsai practitioners, all of them, from casual hobbyists to internationally respected masters, were of the opinion that the needs of the tree always take priority, even if money is to change hands. Hazel explained that at times in her life she needed to let go of some of her extensive collection of trees after realising she was in danger of taking on more trees that she could properly care for. All the participants undertook some sort of vetting process on potential buyers before judging whether they had the knowledge and love for the tree necessary to qualify them as a trustworthy buyer.

> The main thing for me when I was selling my trees was to make sure that they went to a home where I knew they understood the complexity of looking after those particular trees, because I'd hate to think of my trees just going off and dying then (Hazel).

Maple, despite having been a bonsai professional for many years, consciously minimised the income he derived from selling trees, preferring to make his living through bonsai by teaching and exhibiting. His discomfort with putting a price tag on a tree he had cultivated was connected to a felt incongruence between a financial transaction and a relationship with a tree that was personal and meaningful in ways that had nothing to do with monetary profit.

> As long as I would just hand them straight over it's not too much of a problem. But if they stayed in my garden for a while and I'd worked on them; did any kind of work, I'd always find it very difficult to then pass them on (Maple).

This feeling of conflict can be understood as rooted in the way bonsai can transform the way participants perceived the trees. Through bonsai practice, an intimate knowledge of the

characteristics of a tree led to a sense of relating to a tree as an individual rather than just an instance of a homogenised category of *tree.* It was not just that participants found it hard to estimate the financial worth of their labour in time spent working on a tree. Rather, the influence that introduced a sense of conflict over selling bonsai was more to do with the personal relationship that developed between participant and tree. Once a tree is related to as a person with their own purpose and good, it becomes harder to view that tree as a resource. Furthermore, the relationship comprised of emotional attachments that made the commodification of the trees even harder.

> You should be building up a relationship with them over a long period of time. They're not just objects. You put yourself into them, and they put themselves into you. For me they are individuals; they have their own characters (Maple).

Maple's assertion that the trees 'put themselves' into him suggests a perception of the tree's animacy. The character of the tree is not just an anthropomorphism by Maple but describes the tree's power to influence and shape human thoughts and emotions as much as Maple has the power to shape the tree.

It seemed then, that the incongruence of developing a relationship with trees only then to commodify them by selling them was one of the reasons why some of the participants were so stringent in their vetting process before agreeing to a sale.

The practice of Yamadori for financial gain seemed far from the minds of the participants I interviewed, and the topic only arose in a minority of cases. Taxo was keen to put Yamadori into context, pointing out that many more trees have been created because of bonsai than have been killed by the process of Yamadori. Taxo claimed that in his considerable experience over the years, only a tiny minority of bonsai practitioners are driven by financial greed, suggesting that most bonsai practitioners are involved in bonsai because of a very 'potent love of nature'.

5.8 Bonsai as ambassadors of the natural world.

Bonsai trees play a unique role in creating human relationships with trees, and as such they can be productive of nature-connection for the human practitioners who cultivate and tend them. However, bonsai also serve as powerful ambassadors of the natural world, acting as outreach to people who would not normally have opportunities for personal interactions with trees. This kind of outreach can serve to inspire an appreciation of trees, but also invite people to enter a meaningful relationship with a nonhuman nature that has the potential to awaken a sense of awe for the other-than-human.

The small size of bonsai trees and their portability allows them to function as ambassadors of the natural world, opening opportunities for people to meet trees who might otherwise not have. When

bonsai are taken to shows and exhibitions, they bring the enchantment of trees to a broad range of people, with the potential for them to further deepen a relationship with trees if the art is taken up. This was part of the motivation for several of the bonsai practitioners themselves, as Gareth demonstrates.

> Part of it is I don't have a wood on my doorstep, so being able to have a beech tree in my garden that looks like a beech tree in some respects, and having a wide variety of trees in my garden that look like the trees I love, it's nice (Gareth).

Hazel also pointed to the way bonsai facilitated her engagement with trees in the absence of resources to grow large trees.

> If I had extra land, I'd no doubt be planting it all up with forest trees; but I don't have any (Hazel).

Taxo had already gathered decades of experience introducing people to bonsai around the world through exhibitions and workshops and was enthusiastic about the capacity of bonsai to create nature-connections for people. For Taxo, the key was to predicate nature-connection on exposure and engagement with trees. Taxo claimed that bonsai are the only trees capable of outreach work and saw the power of bonsai for building human relationships with trees as lying in the active, participatory nature of cultivation. Bonsai brings trees into peoples' lives, initially through exposure, but ultimately through a long-term creative partnership. It is through that active partnership that emotional bonds are forged.

> Conservation discourse is not enough. A connection must be made. An emotional connection (Taxo).

The culture of bonsai, despite being described at times as a hobby by participants, had all the hallmarks of a way of life. The distinction is found in how bonsai permeated the lives of participants, shaping their daily routines, their emotions, their perception of the intrinsic value of individual trees, and even their environmental values more broadly. Participants such as Ash recounted in detail the numerous situations throughout the daily routine where contact with trees is made. Unlike a hobby, which tends to occupy a specific slot in a person's life and is compartmentalised outside of that time, the participants' active engagement with trees was ubiquitous through the day, every day. This ubiquitous contact seemed productive of heightening awareness, not just of trees and their natures, but of wider natural processes that interact with trees, and with the social and ecological issues that threaten their well-being. For example, Ash talked of how until recently he met regularly with old

university friends to go for walks together, and how he was always trailing behind as his attention was constantly being caught by interesting trees.

> I'm always at the back because I'm always looking for little trees. But I think it makes you more aware of what's going off in the world, with forests, in the Amazon. The amount of forest they're cutting down in the Amazon. How the hell they can get away with it I don't know (Ash).

Participants like Marie, who was an arboriculturist by profession understood wider ecological connections to trees' behaviours, but other practitioners such as Bob, had acquired an impressive standard of ecological knowledge through amateur growing and bonsai cultivation alone.

> If we have a heat wave then obviously it creates more transpiration for the leaves so the roots need to take up more water and if they can't manage then the leaves would have to do something, so they drop their leaves. The sugars that are in the leaves, through photosynthesis they draw back into the tree again (Bob).

This ecological knowledge was not abstract but lived through daily tending to the tree's needs. The result of this personal learning through lived relationships with trees produced a knowledge that was inseparable from a sense of the ontological sovereignty of trees. Bob expressed this during a description of his observations of the sensitivity and responsive behaviours of trees to fluctuating environmental conditions.

> I just find that fascinating. It's as if they have a simple brain to know what the conditions are like (Bob).

The humans and trees that co-constitute the bonsai assemblage also exhibit powerful educational potential. Several of the participants have been actively engaged in introducing bonsai to children through school workshops, or adults through bonsai courses. Introducing children to bonsai was considered especially worthwhile, as participants all spoke of an experiential approach that encouraged not just an aesthetic appreciation of trees in young people, but also a sense of responsibility for playing a part in their wellbeing. School children were frequently given tiny saplings in a pot to take home and care for.

> I think people have to be taught to appreciate nature; and I think it starts at school level (Ash).

5.8.1 Environmental attitudes and Bonsai

The relationships between participants' involvement in bonsai and their environmental attitudes were heterogeneous, and connections varied in strength. At times, participants' felt confident that Bonsai practice had shaped their perceptions of conservation and environmental issues, as well as motivated pro-environmental behaviours. At other times, the link seemed to be missing. On other occasions, participants saw bonsai as enhancing and magnifying an already existing love for the natural world. Figure 17 below maps something of the complexity of enabling and inhibiting factors involved in the bonsai situation regarding responses to environmental issues, conservation, and sustainability.

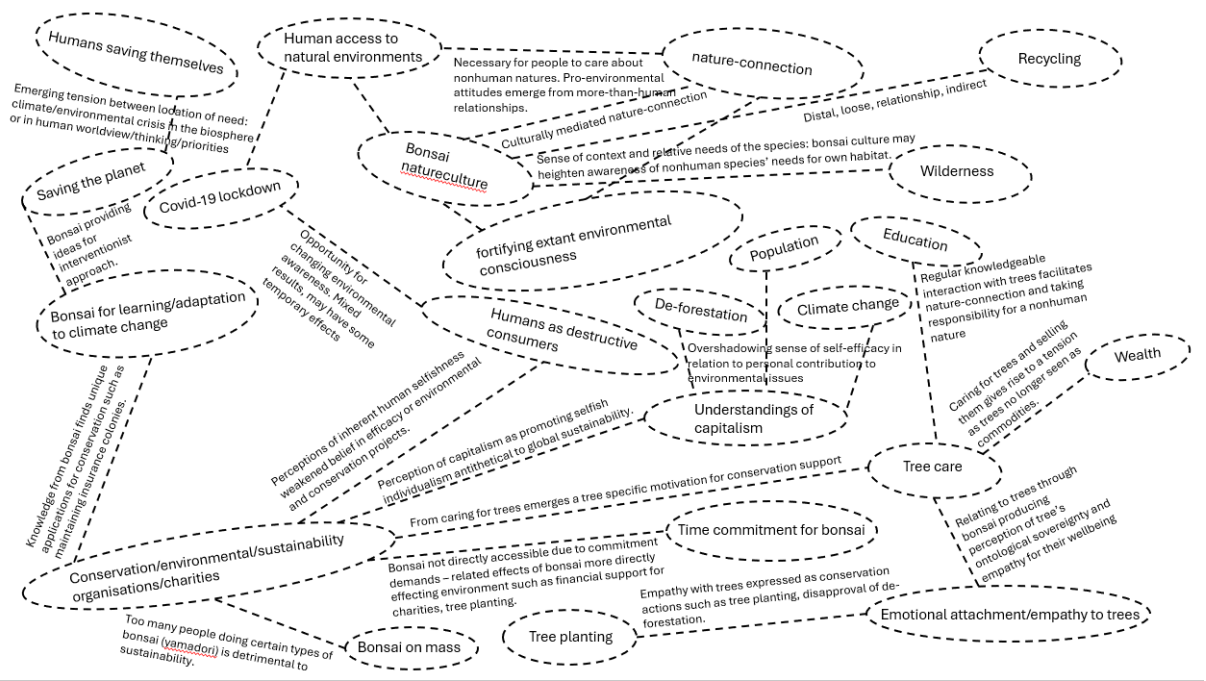

Figure 17 Relational map of elements constituting participants' environmental attitudes.

One discernible pattern pertaining to environmental issues followed the proximity of the issue to the practice of Bonsai. For example, conservation behaviours that linked directly to trees were more actively pursued, with participants motivated by a conscious love and concern for trees in the wider landscape that had grown from their involvement in cultivating bonsai trees. The meticulous attention to the wellbeing of bonsai trees contributed to a concern for trees generally.

> Bonsai, along with all branches of horticulture I think do help people to have more empathy with nature generally, a better understanding and will be quicker to accept initiatives and to support initiatives that come up (David).

Examples of the kind of behaviour powered by a love of trees included offering financial support to organisations with a focus on trees, as well as planting trees where space allowed.

> We're members of the Woodland Trust. We're not particularly active, but we financially support and are completely sympathetic to the aims of the Woodland Trust (David).

For Hazel, planting trees was a key part of resolving the current environmental crisis.

> I know I'm currently planting trees in the Amazon and doing all sorts of stuff. So, I think the trees are the starting point of the world that we need to get right, as well as the oceans. Again, I try and do my bit and have trees within my garden (Lisa).

However, when it came to environmental issues that were perceived as global in nature, optimism was low, and although this did not always stop participants supporting environmental causes, whether through charitable contributions or engaging in environmental education, there was a sense that international cooperation on environmental issues was unrealistic.

> Whilst it's nice to see people planting trees in the UK, if the rest of the world don't stop cutting them down it's not going to make a lot of difference to the climate, is it? (Ash)

As the connection between bonsai practice and environmental issues became more distal, environmental attitudes and behaviours became more varied. An appreciation of the importance of wider ecological systems as representing the numerous influences on a tree's life was salient in participants' consciousness. However, other issues of sustainability that were perhaps more abstract or far from the day-to-day practice of bonsai seemed less influenced by the devotion participants had for their trees.

Ash's life revolved around bonsai trees, and his appreciation for trees extended beyond bonsai to concern for de-forestation worldwide. However, when I asked Ash if he felt his bonsai practice had influenced his day-to-day living in terms of sustainability, he was upfront about prioritising convenience.

> I'm at the stage now where I buy what I want to buy, and I don't tend to look at whether it's got plastic on it or not. If I want some smoked salmon, I'll buy some smoked salmon. I don't look where it's come from or whatever (Ash).

On further prompting, Ash's fatigue with needing to search for sustainable goods and reading small print was linked to his shopping responsibilities over the Covid-19 lockdown. Ash recalled a national message to not shop in pairs, and since his wife was less mobile than him, Ash had taken on the responsibility. At the time of our interview, Ash's priority was to complete his shopping as quickly and easily as possible.

> I don't want to be messing about looking if everything's a sustainable product or whatever (Ash).

Another influence on Ash's relaxed approach to considering sustainability when shopping may have linked to his scepticism about the possibility of international collaboration on environmental issues. Even with his clear support for environmental education and inhibiting de-forestation, Ash was pessimistic about the efficacy of instigating environmental policies in the UK unless other, larger states around the world conformed to similar measures.

> I think whatever we do in the UK isn't going to have an awful lot of impact on the rest of the world to be honest (Ash).

Similarly, despite David's personal commitment to environmentalism, a perception of the global scale of issues such as climate change also introduced a sense of almost despondency against the level of cooperation across nations that he saw as necessary for solutions to be successful.

> I think at the end of the day it's got to be integrated because otherwise we're still going to go down that route to oblivion, aren't we? I don't know really (David).

Bob also reflected on some of the consequences of the Covid-19 lockdown, citing the reduction in the amount of driving he would normally do. As with other participants, Bob would regularly travel to other bonsai clubs, shows, and conventions, all of which he did by car. When I asked Bob if he was likely to continue to drive less with the lockdown no longer limiting him, he responded frankly.

> I'll be going back to 18000 miles a year I think (Bob).

Thus, despite understanding the environmental benefits to a reduction in driving, Bob's desire to share bonsai with others was clearly going to win out over considerations for climate change. In this case, the profound love Bob had for trees and plants of all kinds did not seem find an extension into changing his driving behaviours for the sake of his carbon footprint.

Given the entanglement of nature and culture, organic processes and art, which is produced by the bonsai assemblage, something I was interested to ask participants was how they felt about the place of humans and human culture in relation to the rest of the natural world. All the participants had decades of daily experiences where the natural and the artefactual are less clearly delineable by the usual categories of modern Western cultures. Considering the concern expressed by some conservationists over the entanglement of social and natural systems, I wanted to hear participants'

thoughts around different conservation approaches. I found both similarity and difference in their responses.

Across the group, all participants recognised that nonhuman species, whether trees or other species, needed their own environments where conditions were optimal for their flourishing. Furthermore, there was an assumption that this would require humans to voluntarily abstain from encroaching on certain habitats. The idea of national parks and wilderness where human presence should be kept to the minimum was affirmed on the principle of recognising the different needs of different species.

> Yeah, I think there's definitely areas in the world that shouldn't have any culture or human involvement really; that should just be truly wild (Gareth).

On the question of how far humans should take an interventionist approach to conservation, such as through re-wilding to restore wilderness where it had been lost, attitudes were more diverse. For example, Jack felt that proposals such as assisted species migration risked unpredictable outcomes and could distract from humans taking responsibility for the negative environmental impacts they have caused.

> I think I'd favour letting nature sort itself out, while we try and sort ourselves out and try and stop climate change at the rate its going (Jack).

Other participants, such as Lisa and Marie, were enthusiastic about the potential for human intervention in natural landscapes. For example, Lisa proposed an important role for bonsai in conservation through its potential role in creating insurance colonies of trees under widespread threat of disease. Since bonsai trees are identical in nature to their larger counterparts growing in the landscape, propagating from a bonsai tree and planting the new sapling would result in a normally growing tree. The small size of bonsai would allow colonies of larger numbers to be maintained in a manageable space, and bonsai are also extremely long lived when well cared for.

> I mean the English Elm have all but died out in big trees, and yet the little English Elm Bonsai are, you know, you see a lot of them. I've got a couple of English Elms. It's once they get past two foot is when the beetle attacks. So, keeping them small does make a difference. So, it would be an interesting experiment to see if we could put English Elm back into the countryside without it being attacked again (Lisa).

Participants showed a nuanced understanding of different species' needs for different environments, which led to acceptance of the idea of designated wilderness areas. In tandem with that, however, was a strong sentiment that humans lacked enough opportunities to forge relationships with

nonhuman natures. Human relationships with nonhuman species were considered essential for creating empathy and care for the nonhuman world.

> Yes, you can have some wild areas and that's fine too, because that allows certain animals and other things to grow that we're not trampling on and things like that; but I still think if you don't let people appreciate that sort of thing how are they going to be even bothered to conserve it if they're never allowed near anything. You've really got to try and work the best of both worlds (Lisa).

Therefore, whilst participants' immersion in a natureculture such as bonsai did seem to influence their support for an interventionist conservation in some cases, I found no evidence of bonsai inhibiting participants' perception and acknowledgement of the need for nonhuman species to have their own environments respected. The overall viewpoint was that human and nonhuman natures need contact and interaction for relationships to develop, but in ways that are respectful to the unique needs of different species. Furthermore, it was felt that exactly this sense of connection and appreciation was what would motivate people to want to respect the habitats of nonhuman natures, whether flora or fauna.

The power of bonsai to act as ambassadors of the natural world was visible in my interviews in ways that seemed both effective and ineffective, depending on the nature under question. Bonsai trees could bring humans into positive relationships with trees. These relationships could produce strong emotional attachments that extended to a concern for trees in general. However, once environmental and sustainability issues were less directly connected to trees, the ability for bonsai trees to inspire behaviour change toward more pro-environmental or sustainable practices seemed weaker.

There were several elements constituting the wider bonsai situation that provided some evidence for explaining this disparity. The core of the bonsai assemblage is constituted by the relationship between a human and a tree. This relationship is profoundly transformative of practitioners' day-to-day practices, emotional attachment to trees, and sense of appreciation for the natural world. Yet the bonsai assemblage is also extremely focused on personal interactions and intimate relationships between humans and trees. Part of the power of this assemblage lies in its experiential nature. It may be then, that the less tangible and more abstract concerns over concepts such as carbon footprints fail to connect to the more visceral and directly experienced materiality of caring for trees. Interestingly, where wider environmental concerns were expressed, they were directly connected to trees.

In addition to the separation of proximate material practices such as watering a tree from distal abstract concepts such as climate change, other social factors also complicated the ability for bonsai to reach into wider pro-environmental and sustainable behaviours. This was seen in the sense of

added burden imposed on Ash by Covid-19 lockdown instructions, which seemed to have underpinned a new set of priorities around trying to offset the existing inconveniences of negotiating lockdown protocol. Part of this was disregarding anything that would slow down the already laborious weekly shop. Furthermore, Bob's expectation that he would return to his usual driving miles once restrictions were fully lifted suggested that the rewards of immediate engagement with the culture of bonsai outweighed the less tangible and less personal benefits of behaviour change as a response to wider issues of sustainability.

Finally, a psychological element of scepticism and despondency was present in the face of what participants perceived as the unlikely feat of global collaboration around climate change and ecological challenges. There was a sense that individual or even national action would be futile against issues that were perceived as existing at a global scale; the understanding being that different nations will continue to pursue their own interests in terms of economic growth over transnational environmental and climate challenges.

5.9 Bonsai findings: summary and key research contributions.

This chapter presented the findings from my analysis of ten in-depth interviews with Bonsai practitioners. In this summary I offer a succinct version of my key findings. These findings are key because they represent those aspects of my analysis which, as far as I am aware, make original contributions to this area of research.

Historically, conservation narratives have relied on an idea of wilderness defined by the absence of human presence or influence (Cronon, 1996). These narratives range from the environmental romanticism of the early 20th century (Buell, 1995) to the deep ecology of late 20th century (Sessions, 2014), and more recently the movement of protectionist or fortress approaches to conservation (Wilson, 2016). Anthropocene discourse that asserts the entanglement of natural and social systems have therefore been met with concern that this will weaken support for protected habitats (Caro et al., 2014). By studying the world of bonsai my aim was to access a situation where human culture and nonhuman nature were truly entangled as a more-than-human assemblage. Whilst on a far smaller scale than that of the social and natural systems usually discussed in the Anthropocene literature, this situation allowed me to explore the environmental psychology of people embedded in this situation, as well as the lives of the trees who were part of it. In turn, I was able undertake a qualitative exploration of people who had been steeped in a natureculture entanglement for many years, and how the ongoing production of that natureculture might relate to their environmental attitudes and values, and their perceptions of the natural world.

My findings in this chapter have yielded knowledge that can usefully contribute to these issues and debates. These contributions will be fully explored in chapter 6. To close this chapter, I limit myself to a descriptive summary of those findings that will play strong roles in the discussion to come.

To begin, my findings suggested that participants' nature-connection practices were most efficacious in motivating pro-environmental behaviours when the behaviours related directly to trees. Tending to trees seemed to focus conservation support on issues related to trees. There were exceptions to this finding, and support for other nonhuman natures and environments other than trees was expressed by some participants. Furthermore, the direction of influence between cultivating bonsai to appreciating trees and plants in the landscape was mutually reinforcing rather than presenting a linear progression from loving bonsai trees to loving trees in the landscape. Nevertheless, the focus on trees through the practice of bonsai either produced or reinforced a deeper relationship with trees in ways that did not reach beyond to other nonhuman natures with the same level of personal and emotional attachment.

Bonsai practice extended participants' nature-connection beyond an aesthetic appreciation of trees. The personal nature of these relationships seemed to facilitate animistic perceptions of trees as active agents and communicators. Trees were described as communicating 'moods' and 'needs' as well as a 'soul'. This in turn inspired participants to acts of listening to what the trees were saying. As such, participants conversed with trees in ways that contradicted the trope of modern Western perceptions of nonhuman natures as inert and passive, only existing to be acted on (Merchant, 2005).

The perception of trees' ontological sovereignty directed participants' attention away from themselves and toward the trees in their care. The trees benefited from this attention, but so did participants in terms of the positive effects this brought to mental health. The attribution of intrinsic value to trees by participants was also influential on their critical evaluation of aspects of capitalism seen as focused on the commodification of trees for financial gain. Financial gain and bonsai cultivation were seen as largely incongruent with each other. Once a personal relationship with a tree had been established, an emotional attachment formed, and the ontological sovereignty of the tree perceived, the commodification of that tree produced conflicted feelings.

A key finding was in the integral role that human culture played in the pro-environmental attitudes and values expressed by participants. It was the very entanglement of the cultural and the natural, the human imagination and the desires and purposes expressed by trees, which created a bond between participants and trees capable of motivating the care and protection of trees generally. It was noteworthy that although participants' nature-connections were culturally mediated by the practice of bonsai, the entanglement of the natural and the artefactual did not seem to diminish

participants' ability to discern when nonhuman natures needed space for habitats largely free of human involvement. This suggests that a softening of culture/nature dualism need not necessarily lead to in inability to discern the habitat needs of nonhuman natures, including where those nature require protection from human development. Rather, the opposite may be the case, as my findings suggest that closer cultural ties with nonhuman natures may establish such relationships as felt and real, rather than abstract and distant. This might facilitate the kind of emotional attachment to natures that is needed to motivate pro-environmental behaviours.

The conclusion of this chapter marks the end of my findings for both the nature-connection and bonsai groups. In chapter 6, the key findings from both groups will be discussed in the light of my research questions and previous literature.

Chapter 6: Discussion

In this chapter, I begin with a discussion of my key findings in relation to my initial research questions, relating these to extant literature as I go. After that, I discuss my key findings from both groups in relation to each other. Reading the two groups through each other was productive in building on previous research and stimulating theoretical possibilities. Finally, I use these theoretical possibilities to argue for the promotion of a panpsychist worldview as holding great promise for superseding the old social paradigm (OSP). I argue that panpsychism may facilitate the kind of cultural transition needed in modern western nations for successfully negotiating human relationships with nonhuman natures during the Anthropocene.

6.1 Discussing findings from the nature-connection group.

The first question I aimed to explore through my interviews with nature-connection practitioners was stated as follows:

6.1.1 Q1: How are nature-connection practitioners' relationships with nonhuman natures informed by their underlying worldviews?

Participants discursively positioned themselves as *of* nature, rather than separate from or above nature, and their environmental attitudes were broadly congruent with Dunlap and Van Liere's (2008) New Environmental Paradigm (NEP), and the relational ontologies of indigenous worldviews (Abram, 1996). They felt embedded in the landscapes where their nature-connection practices took place and expressed a sense of kinship with nonhuman natures such as plants and nonhuman animals. This sense of connection to green and blue spaces was facilitative of empathy for the wellbeing and flourishing of the natural world, which is congruent with nature-connection studies that demonstrate an association between metrics of nature-connection and various expressions of positive affect toward natural environments (Carmi et al., 2015; Perkins, 2010; Mackay & Schmitt, 2019). However, it was also facilitative of a sense of responsibility to acquire knowledge about the natural world to be more effective at living an ecologically ethical and less environmentally damaging life. To my knowledge, this imperative has not been picked up by quantitative association studies and could provide fruitful future investigation.

When the nature-connection participants spoke of nature they generally referred to a natural world that was separate from, and felt to be opposed to, the human-built and artefactual. This is historically the mainstream understanding in modern Western cultures, and dictionary definitions still define nature as everything that has not been manipulated by humans (Cambridge Dictionary, n.d.). Thus, participants' worldviews did not exhibit a clean break from the dualisms of their acculturation (Merchant, 2005). Rather, the dualism internalised by participants often created an incongruence between their experiences of connection with non-human natures and the language available to

them to discuss this. Sometimes this was consciously acknowledged. Often it seemed to go unnoticed. These contradictory positions were often woven into the same talk. The dualism separating the natural was lived rather than abstracted, giving a visceral feeling to the differences perceived. Feelings accorded to an evaluative binary where the natural world was experienced as positive in its effects, and the human-built almost always negative, lending support to concerns voiced by Patuano (2020) on the exclusionary tone of nature-connection discourse, which is predisposed to negatively evaluate the urban and the technological. Despite the assertion of humans as *of* nature, they were also identified as causing the separation between the natural and the artefactual. This persistence of human/nature and culture/nature dualisms revealed an internal incoherence in worldview. Even in the rare instances where a connection to nature was sought through the artefactual, this was found to be a strenuous undertaking that went against participants' intuitions around the separation of human made artefacts from a natural world.

The ontological cleaving of the artefactual from the natural is contrary to indigenous perceptions documented by Descola (2013), whose research on multiple indigenous peoples demonstrates how human-made artefacts such as hunting tools are seen as intimately related to the animals which they are used to hunt. Far from being inert objects, such tools are perceived as embodying an ethical dimension and are inextricably bound up with the moral consideration of nonhuman animals. The various types of animism explored by Descola (2013) are not bounded by a construct of green nature separate from human influenced materialities. Rather, artefacts are in relationship to natural entities and embody a spiritual dimension and purpose.

That indigenous worldviews do not follow a nature/culture dualism can also be seen in contemporary indigenous discourse, which includes conversations on making kin with technologies such as artificial intelligence in a way that is inclusive of these nonhumans' place as part of nature (Recio & Hestad, 2022). An example of this is the work of The Indigenous Protocols and Artificial Intelligence Laboratory, which seeks to develop AI technologies according to indigenous ways of ecological and relational thinking rather than modelling AI on an individual human brain (Lewis et al., 2020). From the indigenous perspective, there is nothing that is not part of nature. Rather than seeking escape from a layer two or rejecting advanced technologies as disempowering black boxes, as participants did, the indigenous approach is to advocate for serious consideration of how humans can live in right relationship with nonhuman natures, whether they be trees or robots. Another example of this more inclusive perception of the nonhuman world can be seen in Shedlock and Vos's (2018) paper on aligning the creation of an IT artefact with indigenous worldviews. Shedlock and Vos (2018, p. 1) describe artefacts as 'permeated with the breath of life'. This shows that there are contemporary indigenous communities voicing something quite far from a return to hunter-gatherer lifestyles and a wholesale rejection of the knowledge procured from the industrial and technological revolutions.

Rather, their nature-connections include active engagement with the lives of natures that form rivers, trees, and artificially intelligent technologies alike. This inclusion of the human-built brings an added ethical dimension to addressing the extraction of materials and modes of production involved in the creation of artefacts. Indigenous animacy does not differentiate between a natural world and a human world, and therefore reciprocity needs to be practiced across all material relationships. The similarity between this aspect of indigenous perception and the philosophical propositions of the new materialisms can be seen in Latour's (1993) analysis of the agentic roles of technologies in human/artefact relationships, and Bennet's (2001) discussion of the re-enchantment of modern culture. Bennett's (2010) discourse on *thing power* does not differentiate between natural entities such as trees and artefacts such as a beer can: whilst these can be different in their capacities, they are both attributed a vibrant liveliness on account of matter itself being attributed with the same. Where indigenous understandings of nature may differ with new materialisms, however, is in the attribution of an intrinsic moral significance to nonhumans. I return to this point for a full discussion in section 6.6.2.

In one sense, then, participants' outlooks were congruent with the critiques of hierarchical human/nature dualism associated with modern western cultures (Plumwood, 1998). This was salient through participant's sense of closeness and kinship to various nonhuman natures and features of the natural world, as well as their ethical stance of reciprocity and considering nonhuman natures in the sharing of resources. Yet there was also an inverse culture/nature dualism present, where the human-built and artefactual were seen as disconnected from the natural world. This led to a selective animism where those natures considered to belong to the natural world were perceived as alive, whilst those of the human-built environments were considered lifeless facades of the natural world from which they were ontologically cleaved by human hands. This perception of the ontological primacy of the natural world echoes Wilson's (2016) critique of human manipulated materialities as much as it diverges from Descola's (2013) research on indigenous peoples' animistic and relational ontologies. I suggest that this inverse dualism and selective animism are products of the entanglement of modern cartesian thinking and indigenous worldviews. The incongruence between these perspectives meant participants simultaneously located humans as *of* the natural world, yet also the agents of separating the artefactual from the natural. Due to the radical differences between how these worldviews frame relationships between humans and nonhumans, this entanglement creates a certain internal incoherence to nature-connection discourse. In this sense Fletcher's (2017) accusation of an oxymoronic strain to the logic of nature-connection is valid.

Despite the presence of inverse dualism and selective animism, some artefacts were considered nature-connecting under certain conditions. Mainly, the artefact must come about from a direct relationship between the human maker and the land from which the materials were located.

Therefore, for an artefact to be nature-connecting it cannot have been assembled through a diversity of specialist knowledges spread across different places. Rather, the beneficiary of the artefact must hold all the knowledge required to make the artefact independently of anyone else. This was part of the rejection of advanced technologies, as they are typically the product of numerous specialist knowledge domains and constructed from resources that are spread over multiple geographic locations. In one sense these inclusion/exclusion criteria were tied to a political ecology of bioregionalism that resists an Anthropocene discourse of global domination (Young, 2016). Yet the sense of alienation from artefacts was not just politically framed, but viscerally felt in ways that had the capacity to affect physical and mental health. Despite describing human-built materialities as lifeless, they were experienced as capable of exerting considerable influence on participants' wellbeing.

Indigenous culture featured more strongly in participants' talk than I had expected and was looked to for cultural inspiration and alternative worldviews to that of the modern West. Indeed, certain terms used by participants to describe their relationships with landscapes, such as *participation* and *reciprocity* are shared with indigenous literature (Redvers et al., 2023). However, feelings about looking to indigenous cultures were mixed, with some participants actively drawing from various indigenous cultural practices and ceremonies, whilst others were more reticent, and troubled by concerns over the possibility of cultural exploitation. Other participants aspired to take inspiration from indigenous peoples and use this to restore what some called their own indigeneity to place by studying the seasonal traditions and characters of their own European landscapes. This included an interest in knowledge acquisition of local flora and fauna and how participants might relate to these natures in ways that did not dominate, but rather contributed to the health of their local ecologies.

Ethical consideration for nonhuman natures and an ecological approach to living were clearly present in participants' nature-connection practices. Participants were also strongly supportive of the vital role indigenous people can play in negotiating the present climate and ecological crisis as stewards to some of the most biodiverse lands on earth, and as repositories of traditional ecological knowledge passed on through a living tradition of language and culture (Recio and Hestad, 2022). However, the entanglement of learnt indigenous knowledge with internalised human/nature dualism resulted in an internally conflicted worldview. Working toward a resolution of this conflict can only benefit both the nature-connection community and the efficacy of communicating the contribution of nature-connection practices for cultivating more ecologically sensitive ways of living. This may also strengthen rational arguments for supporting conservation and environmental causes that avoid criticism on account of a perceived misanthropic back to nature outlook (Taylor, 2017).

The second question I aimed to explore through my interviews with nature-connection practitioners is stated below:

6.1.2 Q2: How do nature-connection practitioners understand the role of nature-connection experiences in the Anthropocene?

On the one hand, participants rejected the interpretation of the Anthropocene as heralding an age of man as a dominant force of nature (Steffen et al., 2007). Narratives of human domination and control over the natural world were seen as responsible for the ecological crisis and the unethical treatment of nonhumans. However, the participants' beliefs and practices also asserted a role for humans and human culture as vital for the health and flourishing of bioregions. Nature-connection involves more human participation in the natural world, not less. Therefore, at an abstract level at least, the shift in perspective from treating social and natural worlds as separate to acknowledging them as ubiquitously coupled is an aspect of Anthropocene discourse that would be welcomed (Wright, 2014).

Whether the role of humans was evaluated positively or negatively was measured according to how nature-connected they seen to be, and particularly how nature-connected their culture was. To be nature-connected in this context involved relating to nonhuman natures in ways that respected their ontological sovereignty and negotiated human needs through an approach of gratitude and reciprocity. It also involved the education of modern Western people in how to learn about practicing right relationship with the nonhuman world. This aim was referred to as a process of re-wilding domesticated humans. Until people were re-wilded, it was considered appropriate to keep them separated from natural landscapes for fear of the damage they would do. However, exposure to and engagement with the natural world is also necessary for re-wilding to occur, hence the utility of nature-connection practices, courses, and creating ties to a place. Thus, participants' environmental attitudes could not be neatly classified by a binary model of new conservationism versus neo-protectionism (Büscher and Fletcher, 2020). Participants rejected a fortress approach to conservationism because of its reinforcement of the idea that humans do not belong as part of the natural world (McKibben, 2003). On the other hand, only indigenous peoples and modern western people who had re-wilded themselves were deemed to have the right kind of culture for participation in natural ecologies in ways that could be expected to contribute to overall ecosystem flourishing.

What participants called indigeneity to place extended beyond an emotional attachment to natural environments to include acquiring knowledge of local flora, fauna, and ecological systems. This also formed the basis for beliefs around the need to develop political ecologies and cultural practices that better align with an ecocentric perspective. Modern Western humans acculturated in enlightenment thinking were generally perceived as a danger to harmonious multi-species living due to their mode

of operating in a capitalist framework and their internalisation of a discourse of human supremacy and domination of nature (Crist, 2023; Merchant, 2006). The commodification and trading of nonhuman natures through financial transactions was for the most part seen as antithetical to more-than-human community building based on a gift economy and sense of reciprocity and symbiotic living. Thus, participants parted ways with new conservationists like Peter Kareiva, who take a collaborative approach to working with businesses and multi-national corporations to achieve sustainable goals (Long Now Foundation, 2020). Mostly, participants were sceptical of an alignment between multi-national corporations and conservation aims without a radical shift in the way humans relate to nonhuman natures, and a capitalist system premised on the commodification and trading of nature was seen as irreconcilable with the aims of nature-connected living. The kind of social systems that were seen as nature-connected generally conformed to a form of bioregionalism in which small communities of humans would live self-sufficiently. Global capitalism was perceived as antithetical to this. The mostly negative evaluation of natural capital was tied to this partly because of practices like carbon trading and biodiversity offsetting, which do not recognise the unique value of local places.

Natural capital's mode of valuation is financial (UNEP, 2011). Since humans are the only species for whom this way of valuing makes sense, natural capital is inherently anthropocentric and by principle assesses the cost of nonhuman natures according to their services to humans. Advocates of natural capital are unapologetic about this, as is evidenced in the openly anthropocentric and utilitarian environmental ethic of new conservationists (Collard et al., 2015). This perspective is at odds with participants' perception of nature as capital for a myriad of nonhuman as well as human natures. A value system that only makes sense to humans leaves the perspectives of nonhuman natures unaccounted for in any terms other than their utility as assets and ecosystem services. Thus, natural capital can act as an obstacle to recognising the value and interests that nonhuman natures have for themselves. I argue that this perspective is unethical in its predisposition toward human exceptionalism and its negation of the inherent worth of nonhumans. Thus, I stand with Collard et al. (2015) in their critique of neoliberal conservationism as follows:

Recognizing multispecies entanglement is not a license to intensify human control over other-than human life. Abundant futures include nonhuman animals, not as resources or banks of natural capital that service humans but as beings with their own familial, social, and ecological networks, their own lookouts, agendas, and needs (Collard et al., 2015, p. 328).

Natural capital perpetuates the hierarchical dualism critiqued by ecofeminists as facilitating the commodification and exploitation of nature by stripping it of meaning outside the instrumental value bestowed upon it by humans (Plumwood, 1998; Braidotti, 2023). By contrast, nature-connection is about building relationships with non-human natures that are personal, felt, and unique. Entering a

relationship with the nonhuman is characterised by reciprocity in that the nature-connecting human is open to adapting their own behaviour according to the needs of nonhuman natures. This openness to adaptation is partly to do with a recognition that human life is always dependent on the flourishing of more-than-human life (Naess, 1989). However, it is also to do with the acknowledgment of the uniqueness of a place. The ties built through participating in a place through lived relationships with nonhuman natures is negated through the abstract value given to nonhuman natures, rendering them assets that can be traded, replaced, and offset somewhere else (Scales, 2015). The uniqueness of nonhuman lives and any recognition of those lives existing for their own good and purposes is rendered obsolete through their construction as natural capital. It is because of the way natural capital silences the voices of nonhuman natures that I agree with Monbiot (2013) in calling for a political and social movement that recognises the inherent worth of nonhuman natures.

My findings evidence a nature-connected worldview that facilitates human relationships with nonhuman natures based on participation, acts of reciprocity, and negotiation over material needs that is guided by a respect for the ontological sovereignty of nonhuman and human natures alike. Furthermore, in this worldview, humans are seen as playing a unique role within wider ecologies. This ecocentric perspective is one that de-centres humans rather than loses them, and so need not be seen in opposition to the instrumental value that many nonhuman natures hold for human wellbeing. The ecocentrism of nature-connection does not denigrate the needs of humans below those of any other species as a matter of ecological principle. However, the recognition of a unique role for humans in the functioning of ecosystems should not be conflated with the eco-modernist appraisal of humans controlling the natural world (Ellis, 2015; Marris, 2011). The essential difference is that between participation and domination.

Thus, those aspects of Anthropocene discourse that frame social and natural systems as entangled are congruent with a nature-connection perspective. However, the nature of the social in this entanglement is key, and the nature-connection practitioners would have affirmed extant positions in the literature that express concern about greater integration of capitalist socioeconomic processes with the natural world as risking ever greater exploitation of nonhuman natures (Caro et al., 2014; Corlett, 2016; Lorimer, 2012).

The third question relating to the nature-connection practitioners was as follows:

6.1.3 Q3: How are nature-connection practitioners' experiences materially, psychologically, and discursively configured?

Nature-connection is inseparable from a real, material world since the very heart of nature-connection is found in meetings with the nonhuman others. Participants sought relationships with what they perceived as natural nonhuman natures, such as plants, trees, natural bodies of water, and

nonhuman animals. They experienced these natures as enriching their life by offering a more-than-human community to which a deep sense of belonging ensued. Relationships between participants and nonhuman natures located in the natural world were configured as kin and partners in the project of life.

Participants procured numerous psychological benefits from these relationships. They described bird song and the sound and feeling of the wind as soothing, and the experience of being immersed in water as facilitating a liberation from depression and other mental ill health. These findings support Richardson et al.'s (2022) evidence for the efficacy of active engagement with nature over mere exposure in cultivating felt connections with nonhuman natures. A natural world distinct from urban environments was also experienced as alleviating the stress participants felt from pressures to conform to social norms and succumb to the production of desire stimulated through ubiquitous marketing imagery. The sense of freedom from perceived judgements coming from urban environments, such as beauty standards or social etiquette, echoes the qualitative findings of Birch et al.'s (2020) feedback from urban participants, who highlighted the non-judgemental nature of their relationships with trees.

By contrast, nonhuman features of the environment that had been subjected to substantial transformation by human design, such as concrete or the polymers used to construct computers and phones, were experienced as cutting participants off from the natural world, or at best making a sense of connection harder to feel, echoing the positioning of human-built materialities found in nature-connection literature (Schultz, 2002; Vining et al., 2008). This led to a sense of alienation from urban environments that was often powerful enough as to motivate re-locating to more rural settings. These meetings with natural and artefactual materialities were inextricably bound with psychological experience. Cultural artefacts such as billboard adverts or electric lights were a source of psychic stress, and associated with a lifestyle that placed constant demands on participants in ways they felt were detrimental to their health as well as out of kilter with the rhythms of the natural world. By contrast, engaging with entities seen as natural brought feelings of joy and meaning to daily activities, and a sense of wider purpose to human endeavours that affirmed a sense of belonging to, and harmonious living with, a wider ecology. These perceptions dichotomised natural and built environments along an evaluative dimension that affirms Patuano's (2020) accusation of the blanket negative othering of urban environments within nature-connection discourse. Nevertheless, Patuano's (2020) accusation does not help explain why nature-connection practitioners should experience the human-built and artefactual with such undifferentiated rejection. That many do needs to be acknowledged and better understood. I suggest that my conceptual development of inverse dualism and selective animism contributes to this understanding by explaining how these can shape attitudinal judgements. Furthermore, my research demonstrates that such attitudinal judgements do

not exist in an immaterial realm of abstract beliefs: they are bound to felt experiences that influence interactions with different materialities.

Participants portrayed entities of the natural world as either animate or in some sense subjects that can be related to. This contrasted starkly with their perception of advanced technologies and human-built environments as inert and lifeless. This juxtaposition of the natural and the artefactual discussed in the literature (Descola, 2013; Latour, 1993; Lee, 1999; McKibben, 2003; Plumwood, 2002) is added to through my findings. Discursively, participants portrayed human-built materialities as disconnecting and alienating, and they were perceived as lifeless façades of nature. Yet, when describing their actual interactions with human-built materialities, participants seemed to afford them incredible power. The capacity for human-built materialities and artefacts to influence participants' felt experience was often profound, ranging from constant low levels of stress to feelings of alienation, and even grief. Yet this inverse dualism, where the human-built and artefactual were perceived not just as lifeless and inert, contrasts with their felt experience of these materialities, which were agentic in their capacity to damage mental health and block access to nature-connection. This apparent contradiction between the discursive framing of the natural and the artefactual, and the felt experience of these, can be explored by comparing Plumwood's (2002) treatment of hierarchical dualism with Latour's (1993) claim that we have never been modern.

Plumwood (2002) argues that hierarchical dualism as a distinct modern Western ontology has informed a logic of domination that is the cause of environmental exploitation, as well as other connected social injustices. By contrast, Latour's (1993) claim that we have never been modern suggests that the discursive construct of a culture/nature dualism has not stopped human relationships with nonhuman natures proceeding through modes of hybridity and more-than-human networks. In other words, for Latour (1993) modern dualism is a construct that does not describe human relationships with nonhuman natures so much as masks them with a myth of separation. The main point of difference here is that Plumwood (2002) attributes dualism with a greater level of agency in shaping human thought and behaviour, whereas Latour (1993) describes dualism as obscuring the actual hybridity of humans and nonhumans through more-than-human networks. Both Plumwood (2002) and Latour (1993) share a common critique of human domination and exploitation of nonhumans, albeit in different ways. Whereas Plumwood (2002) asserts the behavioural consequences of hierarchical dualism, Latour (1993) seeks to expose the fictional nature of that dualism. Yet both concur with the evaluation that human/nature dualism, whatever its ontological status, is detrimental for human relationships with nonhumans.

I see a diffraction of Plumwood (2002) and Latour (1993) at work in the discourse, felt experience, and materiality of participants' nature-connections. Inverse dualism is a discursive hybrid of

hierarchical dualism and indigenous relational ontology and is used to frame interactions with natural and artefactual materialities through the lens of a selective animism. I assert that it also informs participant's psychological interpretations of nonhuman forces, which are delineated by inverse dualism. These interpretations influence the felt experience of interactions with nonhuman materialities. Thus, inverse dualism, like Plumwood's (2002) assertions about hierarchical dualism, has real influence on how nature-connection is perceived and sought out. Yet at the same time, due to its feature of selective animism, it also renders invisible the vibrant matter of the human-built and artefactual (Bennett, 2010), which aligns with Latour's (1993) proposal that human/nature dualism masks the actual relationality taking place across human and nonhuman elements of a network that traverses boundaries between the natural and the artefactual. A certain incompatibility between discourse and experience is baked into this explanation. To see this incompatibility is my aim here, and to sit with it long enough to understand its effects on nature-connection and the environmental attitudes that are entangled with those connections. I propose that inverse dualism and selective animism describes this incompatible entanglement, and that one effect of this is a limiting of the possible scope of ecological sensitivity in the meetings between humans and nonhuman natures. Inverse dualism and selective animism suppress the conscious awareness of the lively and dynamic relationships between humans and the human-built and artefactual, and thus likely fail to prompt ethical accountability in those relationships with the intensity that is achieved through nature-connections with entities classed as natural. This inhibiting feature of inverse dualism and selective animism is the basis for my argument that a worldview is needed that can resolve the incompatibilities within the psychology of nature-connection evidenced in this study. I make a full argument for this worldview from a panpsychist perspective in section 6.7.

Participants' nature-connection experiences were also culturally configured. Culture was seen as a natural way for humans to meet the nonhuman world, accumulate wisdom and pass on knowledge to new generations. A nature-connected culture models the characteristics and rhythms of the natural world and can be used to configure human activity such that it proceeds in ecologically harmonious ways. An example of this might be celebrating the start of different seasons, the following of which guides seasonal eating rather than importing foods all year round. Participants also saw cultural participation in landscapes as playing an important role in nature-connected practices, where practices related to hunting and clearing were understood to contribute to the healthy functioning of ecosystems. This embrace of culture as a mode of nature-connection leading to positive ecological outcomes does not seem to share the sense of some conservationists that a nature/culture dualism is necessary to protect nonhuman natures from environmental damage (Corlett, 2016; Crist, 2013). The perception of indigenous peoples as role models of nature-connected humans was influential in

participants' positive evaluation of human culture as a mode of practicing right relationships with nonhuman natures.

6.2 Contributions from the nature-connection group research

In this section I briefly outline the key contributions from my research with the nature-connection group. I have presented the contributions from this in the form of three assertions, grounded in my findings, to be carried forward into a wider, solutions-oriented theorising in section 6.7.

6.2.1 Contribution 1 – evidence that an internally coherent rationale for nature-connection in modern Western cultures is needed.

The discursive contradictions that arise from entangling modern western dualistic understandings of the natural world with indigenous ontologies of immanence and relationality would benefit from theoretical attention. Solutions focused engagement with this issue at a theoretical level could be beneficially impactful in two main ways.

Firstly, a more internally coherent worldview supporting nature-connection practices in modern Western cultures would provide a more robust and persuasive rationale for these practices. This would in turn benefit nature-connection practitioners in developing a consistent and intellectually clear language with which to express their experiences of more-than-human relationality.

Secondly, a more internally coherent ontology to support the aims of nature-connection practice would be useful in the formulation of conservation and environmental messaging.

6.2.2 Contribution 2 – cultural activity is inseparable from nature-connection.

Cultural practices were inseparably embedded in how participants related to nonhuman natures and environments. I assert from this that culture is a pervasive mode of communication between people and the nonhuman world. The debate over the relationship between culture and nature should therefore move beyond an *if* argument and into a *how* argument. Due to the inseparability of culture from human behaviour, to try and protect nature from culture is synonymous with attempting to protect nature from humans. Both these statements inherently alienate people from the nonhuman world and are antithetical to a nature-connection that seeks greater participation in a more-than-human ecology. Therefore, in seeking a nature-connection for the Anthropocene, the starting premise should be what kind cultural connection should humans have with nonhuman natures rather than whether a connection should be had.

6.2.3 Contribution 3 – inverse dualism limits the potential of nature-connection.

The inverse dualism expressed by participants produced a sense of alienation from the human-built and artefactual. This sense of alienation hindered an imperative to better understand the natures of these transformed materialities. Rather, they were simply rejected as antithetical to a way of living in

right relationship with the natural world. The logical conclusion of this evaluation of human-built environments moves toward a back to nature primitivism, or at the least, a lack of engagement with the cultural and technological evolution of modern societies.

Whilst nature-connection has a good evidence base in terms of its efficacy in promoting pro-environmental behaviours and concern for the protection of green and blue spaces (Mackay & Schmitt, 2019; Sheffield et al., 2022), the philosophical underpinning of nature-connection could be improved by including greater attention to human relationships with the artefactual. The imperative for this improvement is simply because it is these human-built artefacts and technologies that often exhibit the kind of unintended consequences that are so damaging to the wider landscape and ecologies. As such, the application of an ecological consciousness to relationships with human transformed materialities is arguably at least as important as its application to relationships with green and blue natures. Some form of extension to the material and discursive parameters of nature-connection is therefore needed. This may not be as difficult as it might sound. Participants' discursive framing of the human-built and artefactual as barriers to nature-connection, or as nature *dis*-connecting, contradicts the ways they described their meetings with these materialities. Participants were profoundly affected by the human-built and artefactual, and whilst their engagement with these materialities was generally negative, it had all the indications of relationships of intensity where the human-built and artefactual acted on participants in ways that contradicted their discursive positioning as lifeless facades of nature.

6.3 Discussing findings from the bonsai group.

The first question I aimed to explore through my interviews with bonsai practitioners is stated below:

6.3.1 Q1: How does nature-connection function in a context where human culture and nonhuman natures are inseparably entangled?

Bonsai constitutes a more-than-human assemblage characterised by an entanglement of the natural and the artefactual. This assemblage expresses itself as a natureculture (Harraway, 2016).

The nature-connection of the bonsai practitioners demonstrated an attitude of multi-species collaboration, rather than domination and manipulation of the nonhuman by humans. This collaboration took place as a dialogue between the human and the tree. Such dialogues facilitated and comprised the human/tree connection and were made up of expressive exchanges that demanded a highly sensitive level of listening and responsiveness on the part of participants.

The success of bonsai relies on the human practitioner putting the needs of the tree first. Participants pursued human goals of aesthetic beauty with care and attentiveness as to how that could be realised in ways that would not be detrimental to the healthy flourishing of the tree. Participation

and reciprocity were central to this nature-connection, with both the human and the tree developing through a dialogue, the aim of which was to allow each nature to fulfil its purpose and desire for its own good, yet also produce something greater than the sum of its parts. What emerges from this natureculture is an expression of human culture and the unfolding life of a tree. The intensity of this entanglement had significant influences on participants' perceptions of the bonsai trees and trees in general.

The relationship between participants and bonsai trees was lived through daily interactions that comprised of tending to the trees' health, artistic activities in the form of pruning and wiring, and periods of contemplation on the tree. These contemplative periods were spent visualising a specific aesthetic that a tree could be led toward, or simply enjoying the sense of wonder at the trees' presence. These emergent experiences from human/tree relationships affirm extant literature exploring the role of contemplation and mindfulness in strengthening nature-connection (Richardson & Hallam, 2013; Richardson et al., 2022).

The frequency and intensity of these interactions led to participants feeling a deeply personal relationship to the trees they cultivated. This facilitated animistic perceptions of bonsai, where participants perceived the trees as having 'moods', 'needs', or a 'soul'. Thus, Participants attributed to trees not just their own ontological sovereignty, but their own subjectivity. This finding echoes Latour's (1993) assertion that modern human/nature dualism is a myth that does not accurately describe the true mode of relating between human relationships with nonhuman natures. Participants were clear that they could not simply act on the trees. Rather, an ability to listen to the trees and understand their language was required to adequately care for them. In return for putting the needs of the tree first, participants then hoped the tree would reciprocate and actualise the aesthetic vision of the participant. Thus, reciprocity and an ecological perspective were integral to bonsai practice.

A culture of tending to trees involved an outward looking mentality that demonstrated frequent benefits to participants' mental health. Whilst attending to the trees, participants found freedom from negative ruminations, and the frequent acts of caring and taking responsibility for another life seemed to be helpful in addressing periods of depression or low mood, aligning with extant research on the psychological benefits for bonsai for human mental health (Pack, 2023).

The cultural aesthetics of bonsai require the application of highly developed techniques. Success in the application of these techniques requires an adequate knowledge base, and participants had clearly acquired substantial horticultural and arboriculture knowledge through the practice of bonsai. This in turn enabled them to better understand the needs of the trees and care for them accordingly.

Here, a connection can be seen between both participant groups in the way that nature-connection proceeds with deepening knowledge of nonhuman natures, and a variety of cultural practices and knowledge applications. At the level of the individual, bonsai practice mirrors Cronon's (1996) documentation of the many ways humans manipulate nonhuman natures, not just for resources, but also to express an aesthetic ideal. Interestingly, this intense, daily engagement with trees did nothing to lessen participants' support for conservation or instil a desire to bonsai all trees. On the contrary, the deeper the engagement between participants and their trees, the more sensitive they were to their needs, and appreciative of what they bring to the world. These positive outcomes for participant's general sense of care and appreciation of trees, I suggest, comes through the mode of relating between human and tree. Participants did not perceive themselves as acting on a tree but collaborating with a tree. Plumwood's (2002) logic of domination was entirely absent here, and the hubris of Anthropocene discourse about humans overwhelming nature was entirely antithetical to bonsai practice (Steffen et al., 2007). Rather, the nature-connection participants' narrative of participation better describes the bonsai relationship. In this situation, the entanglement of nonhuman nature and human culture heightened the humans' perception of the needs of nonhuman natures rather than rendered them invisible (Crist, 2013; Crist, 2023). Why this should be is, I suggest, due in part to a key component of the relationship between human and nonhuman natures. This component was also exemplified by the nature-connection participants, encapsulated in Moss's question 'what needs to happen here?'. In both bonsai and nature-connection practices, the nonhuman natures involved in the relationship are perceived as subjects with their own purpose, needs, and desires. The relationship is not one of a lively human subject to a passive nonhuman object, but one of a human person to a nonhuman person. I suggest that it is the presence or absence of this component that will play the more important role in how humans treat nonhuman natures, rather than whether the boundaries between nature and culture are deconstructed.

6.3.2 Q2: What are the consequences of a nature-connection where the natural and the artefactual are irreducibly entangled for practitioners' environmental ethics and attitudes toward conservation?

The deep cultural involvement that participants brought to their work with trees seemed to facilitate a strengthening of their care and concern for trees more generally. This relationship was not linear though, with some participants clearly affirming the effect that bonsai cultivation had on their awareness and appreciation of trees in the landscape, whilst others saw bonsai as allowing a deeper involvement in an already existing appreciation of trees and flora generally. In both cases, bonsai heightened participants' perception of trees in the wider landscape. This heightened perception was lived through personal encounters with trees on walks, as well as through concern for the well-being of distant trees such as those of the Amazon forests.

Participants sensitisation toward trees supported active engagement with conservationism and environmental education, supporting quantitative literature relating metrics of nature-connection with pro-environmental behaviours (Barrable & Booth, 2022). However, participants' reports about their conservation activities also suggested that the transferability of tree devotion for pro-environmental behaviours was weaker for environmental concerns that were not directly related to forests and woodlands. Bonsai may therefore offer a cultural practice of nature-connection whose effect on environmental attitudes is quite specific to areas where trees are at the heart of the concern. This demonstrates an interesting phenomenon of targeted generalisation, that care for one tree was extrapolated toward entire forests, but not necessarily to other nonhuman natures. The specificity of the nonhuman nature mattered. Love of a tree led to love of trees in clear and actionable ways, but not as clearly to love of a more general category such as *the natural world*. What both bound and magnified participants' environmental attitudes in this instance was the sense of kinship felt to trees. This is reminiscent of Pack's (2023) research with people who cultivated bonsai referring to their trees as members of the family. This also contributes to Ives et al.'s (2017) calls for understanding of the specificities of nature-connection for informing policy. The implications of this are detailed in section 6.4.3.

Through bonsai, participants developed a sense of stewardship that had a strongly ecocentric character to it in that the instrumental value of achieving a mature tree that gave joy to humans was balanced with the recognition of the intrinsic value of the tree as a life with an intense presence – a subjectivity about it. This perception of the intrinsic value of the tree clearly guided the respectful and caring way with which the participants engaged in bonsai. The aesthetic of bonsai aims to capture the spirit or essence of a place. In that sense, bonsai culture aims to celebrate the artistic characteristics of the natural world and bring those characteristics closer to humans. It is both a cultural participation in nature and an attempt by the human imagination to express a sense of beauty and spirit of a natural environment. This is perhaps the most interesting feature of bonsai's relationship to environmental values. Participants expressed an ecocentrism that included, rather than excluded, the human perspective. As such, bonsai cuts across the dualist framing of ecocentrism set against anthropocentrism (Affifi, 2020). The role of the human and the tree in bonsai are equally present, lending a cultural shaping to the tree that is clearly motivated by specific human imaginaries, but which recognises the need to work with a respect for the tree's own life and purpose.

The personal relationship between participants and trees often troubled evaluating them in economic terms. A perception of the intrinsic value of individual trees, coupled with the emotional attachment participants developed to them through bonsai practices, presented genuine dilemmas when it came to selling them. This tension echoes the tension in the literature around valuing nonhuman natures as assets and whether this can be compatible with a perception of the intrinsic value of nonhuman

natures (Eversberg et al., 2022; Jarwar et al., 2024). The attribution of ontological sovereignty and subjectivity to trees was felt to be antithetical to their commodification. This, I suggest, goes some way to answering why there should be a tension between perceiving intrinsic value to nonhuman natures and their commodification and valuation in monetary terms. In Western culture, the objectification and commodification of people is viewed as unethical and contrary to honouring a person's dignity (Satz, 2010). The Western worldview is also human exceptionalist, reserving personhood and the accompanying rights and ethical status that comes with it to humans alone (Jawar et al., 2024). People should not be objectified because they are subjects with their own purpose and desires in life. This is the justification for their intrinsic value: their having a good that is not defined by their instrumental use for others. When nonhuman natures are also attributed personhood, such as participants attributed to the bonsai trees, an ethical dimension enters the relationship that would be absent otherwise. This dimension is protective against their exploitation and commodification. The implications of an attribution of personhood to nonhuman natures for conservation and environmentalism will be further developed in section 6.7.

6.3.3 Q3: What role do nonhuman natures play in the relationality of the bonsai assemblage?

My findings suggest that trees are not passive objects in the bonsai situation. Rather, they are active subjects who have a considerable say in the means and outcomes of the bonsai art. Individual trees' idiosyncrasies, health, seasonality, and responses to the actions of the human practitioner all shape the decision-making process and practice of bonsai. As such, the co-constitution of bonsai from human and nonhuman natures challenges a discourse of human exceptionalism and mastery over nature (Hamilton, 2014). Participants did not see themselves as the sole agents of purposeful living and creativity. Trees were recognised as pursuing their own good, and it was the recognition of this that guided the process of bonsai cultivation in the spirit of a collaboration rather than of domination.

Bonsai practice is in one sense a micro-scale example of that aspect of the Anthropocene which emphasises the close and mutually effecting relationship between human culture and nonhuman natures (Adams, 2020; Arias-Maldonado, 2015; Wright, 2014). The bonsai assemblage is a conglomerate productive of a shared future. However, bonsai departs radically from the eco-modernist reading of the Anthropocene as heralding the age of man coming into his own (Ellis, 2015; Koster, 2020; Marris, 2011). Far from a discourse of mastery, or even management, bonsai tells a story of devotion to, and relationship with, a nonhuman other that is more reminiscent of aspects of indigenous worldviews (Datta, 2015; Descola, 2013; Ingold, 2006).

From the tree's perspective, there exists a tension between vulnerability and power. Bonsai trees are bewitching, enchanting, and highly demanding. Yet, once in a shallow pot, they are also utterly dependant on the human practitioner's care and attention. Nevertheless, even in this place of

vulnerability, the trees seem to call forth a sense of responsibility and a duty of care, perhaps like the way the vulnerability of a human infant prompts a heightened duty of care in a parent. Participants spoke of how their whole lifestyles revolved around the needs of their trees, including missing holiday trips or going away for long periods of time where it could be avoided.

6.4 Contributions from the bonsai group research

As with the nature-connection group previously, in this section I briefly outline the key contributions from my research with the bonsai group. I have presented the contributions from this in the form of three assertions, grounded in my findings, to be carried forward into a wider, solutions-oriented theorising in section 6.7.

6.4.1 Contribution 4 – animistic perceptions are already extant in modern western cultures.

Unlike the nature-connection participants, the bonsai participants were to the best of my knowledge not actively seeking to adopt an alternative worldview to the human/nature dualism of modern Western thinking. Given that, I was surprised at the many animistic expressions that came through in my interviews. The bonsai participants had close relationships with the trees in ways that recognised the trees' ontological sovereignty, subjectivity and individuality. Participants did not see themselves as simply acting on trees but were highly sensitive to the ways in which the trees acted back, or initiated communication of their needs. Participants described the way trees pursued their own purposes and goals – their wants. What this might mean for the assertion of human/nature dualism in modern Western cultures will be explored fully in section 6.5. Suffice to say here that this finding suggests that, in line with Latour's (1993) observations, the promotion of a more animistic and ecological worldview in modern Western cultures may be easier than might be assumed under the presumption that modern Western people view the nonhuman world as inert and passive.

6.4.2 Contribution 5 – natureculture entanglement can heighten sensitivity to needs of nonhuman natures rather than render them invisible.

Elements of Anthropocene discourse asserting the entanglement of social and natural systems such that a natural world separate from human influence no longer exists has concerned some scholars who fear this may weaken support for conservation efforts (Caro et al., 2014; Corlett, 2016; Lorimer, 2012, Sessions, 2014). The bonsai group served as a micro-scale instance of a situation where human culture and nonhuman natures were entangled as a natureculture (Harraway, 2016). Human influence on nonhuman natures – the trees – were a ubiquitous feature of participants daily lives. Yet I found no evidence to suggest that this natureculture entanglement affected participants' perceptions of nonhuman species in ways that blinded them to the habitat needs of those species, or the utility of protecting certain landscapes from human development. Indeed, the closeness

participants felt with trees, which was culturally mediated, only seemed to heighten their sensitivity to the environmental needs of trees and the landscapes they populate.

6.4.3 Contribution 6 – specific nature-connections facilitate wider concern according to perception of kinship.

The practice of bonsai was facilitative of participants building relationships with individual trees. This led to a wider perception of trees in the landscape as individuals rather than homogenised woodland or forest, which strengthened concern for their wellbeing. Whilst relationships between participants and trees were personal, there was also a sense of collective kinship with nonhuman natures of like kind – trees in general. This kinship feeling of identifying nonhuman natures as belonging to a specific category and holding a special affection for members of that category, led to a selective extension of participants' love of bonsai trees to other trees, but not necessarily nonhuman others as such. Therefore, a worthwhile direction for cultivating greater ecological sensitivity may be to focus on relationships with specific natures. For example, building a relationship with a specific local river may be facilitative of greater environmental concern for the health of rivers generally due to a perceived kinship connection.

In figure 18 below my contributions to nature-connection research are presented in succinct diagrammatical form in relation to each other and their implications for environmental attitudes. I will use these contributions as the basis for a solution focused theoretical proposal for how a more nature-connected worldview might support negotiating the challenges of the Anthropocene.

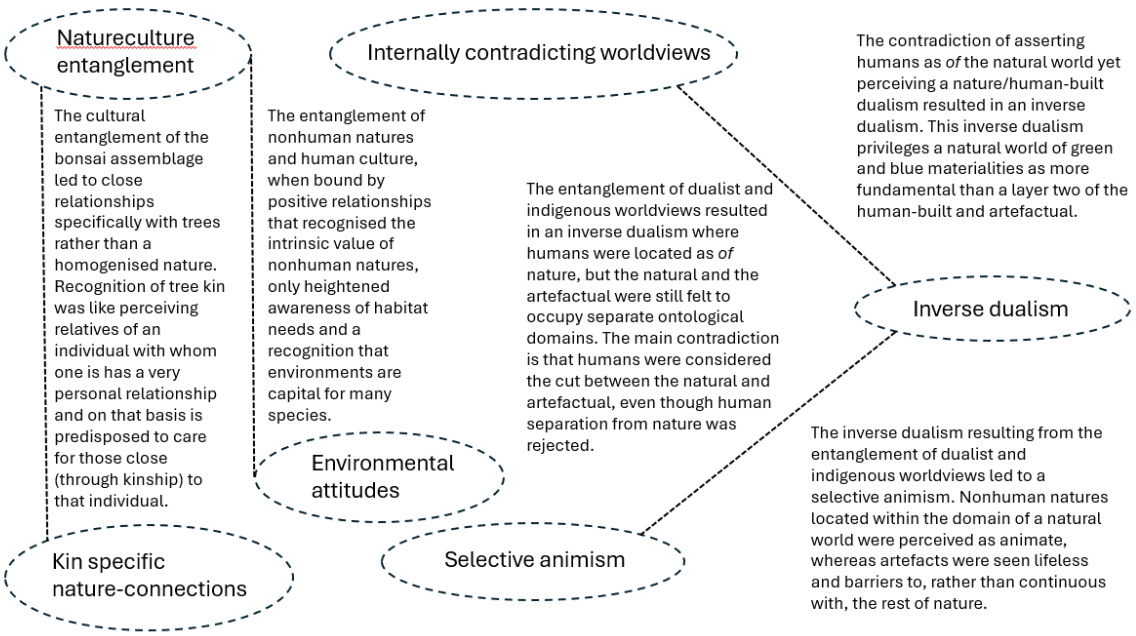

Figure 18 Diagrammatical presentation of contributions to nature-connection research.

6.5 Two main claims from this research.

I make two claims from this research. Firstly, I claim that cultural relationships between humans and nonhuman natures can facilitate greater care and concern for nonhuman natures where they are steered by a perception of the intrinsic value and personhood of those natures. Secondly, I claim that an inverse dualism and selective animism is present in nature-connection discourse and practice that prevents a full actualisation of relational living and ecological consciousness. This is because inverse dualism and selective animism reinforce a perception and felt experience of separateness from the human-built and artefactual.

The importance of cultural knowledge deemed necessary for effective nature-connection, and the emotional ties between participants and nonhuman natures, were bound with learning how to live in right relationship with local ecologies and landscapes. This right relationship was seen as largely contravened by capitalism, which was viewed as incompatible with honouring the personhood of nonhuman natures due to the commodification and exploitation of those natures for a mode of value (monetary) that only humans can recognise. Culture also plays a central role for human communication with nonhuman natures, forming bonds of kinship and tying people to place. Thus, in both the affective and knowledge aspects of nature-connection, far from separating participants from nonhuman natures, culture was the mode of connection. However, for human culture to fulfil this positive role, it must be steered by a respect for the ontological sovereignty of nonhuman natures. Participants rejected their inherited worldview of human exceptionalism and superiority over the nonhuman world (Franz et al., 2005; Jarwar, 2024; Plumwood, 2002, Merchant, 2006), preferring to position humans as part of multi-species collaborative project of life. This re-perceptualisation from a hierarchical outlook to a side-by-side outlook placed nonhuman natures in a position of greater standing through the acknowledgment that they too have a stake in what is happening in an environment. The important role for culture in contributing to the health and flourishing of ecosystems and landscapes, expressed a more positive role for humans than more overtly misanthropic environmental attitudes (Marris, 2011; Wilson, 2016).

However, the material, psychological, and discursive configurations of nature-connection explored here demonstrated an inverse dualism that perpetuates the perception of humans being the ontological cut that separates the natural from the artefactual. This in turn diminishes the wider possibilities of what nature-connection could mean beyond the boundaries of a modern Western construct of nature (Macnaghten & Urry, 1998). Excluding a conscious sense of connection to artefacts, especially advanced technologies, may hinder one of the central aims of nature-connection as promoting participation in ecological living that is guided by the moral consideration of nonhuman natures.

Inverse dualism positions advanced technologies as outside nature and inhibiting nature-connection. This leads to a selective animism, where only nonhuman natures considered of nature are perceived as having intrinsic value, whilst the human-built and artefactual are viewed as inert. Hamilton (2016) suggests that environmental solutions must be rooted in redefining human relationships to nonhuman natures. In agreement with this, I suggest a transition in human perception of nonhuman natures is needed, such that the human-built and artefactual come to be perceived as continuous with the rest of nature rather than distinct from it.

Presently, inverse dualism and selective animism prevent a sense of nature-connection where it is arguably most needed. That is, in the processes by which nonhuman natures are transformed by humans. I suggest that perceiving continuity across the natural and the artefactual would facilitate greater awareness of the relationships between the two, and most importantly, the role of human activity in those relationships. Combined with an attribution of personhood to nonhuman natures, this would make ethical accountability for the material transformations with which humans are implicated harder to ignore.

The exclusion of the human-built and artefactual from nature may also be part of what is perpetuating the link between nature-connection and a back to nature primitivism. Such a perspective not only alienates people tied to urban environments (Patuano, 2020), but also suggests a blanket discounting of the many benefits of modernity and is unlikely to be palatable to most people who do not desire a return to a hunter-gatherer lifestyle or reliance on the most basic technological assistance.

A nature-connection for the Anthropocene practiced by modern Western people needs to radically open a perception of more-than-human relationality to include qualitative relationships between humans and nonhumans to bring an ecologically sensitive and ethical dimension to how those relationships are conducted.

I concur with Bennett's (2010) assumption that a truly inclusive perception of a more-than-human world that includes trees, chairs, and laptops will facilitate greater ecological awareness of the relationality of all these natures. However, in the following sections I also push further than Bennett's (2010) vital materialism in pursuit of a basis for the intrinsic value and moral consideration of nonhuman natures. I argue that vital materialism does not necessitate these ethical dimensions and needs theoretical extension to do so. Therefore, I pursue a solution-focused proposition for a transition in worldview for the modern West. This transition is comprised of a shift away from the dominant Western ontologies of physicalism and substance dualism, but also seeks to avoid the risk of cultural appropriation of indigenous ontologies and the subsequent contradictions that I have

shown to be a consequence of their entanglement with modern Western acculturation. The transition I propose is toward a worldview premised on panpsychism. I argue that this shift may resolve inverse dualism, transform selective animism into inclusive animism, and provide a Western philosophy which can enter a more constructive and respectful dialogue with indigenous perspectives.

6.6 Beyond vibrant matter: establishing a perception of the moral consideration of nonhuman natures.

The concept of vibrant matter is located in Jane Bennett's vital materialism (Bennett, 2010). This concept constituted an important part of my research method, facilitating a perspective that helped me focus on the active contributions of nonhuman natures in the situations I studied. However, at this point it is important to differentiate between vital materialism as a contributing element to the method of situational analysis and its role as an ontological proposition. Bennett's (2010) influential book Vibrant Matter was not a methods book, but a philosophical argument for an ontological flattening of agencies that are seen as distributed across a field of human and nonhuman forces. One of Bennett's (2010) aims with this work was to lay the foundation for an ecological ethic in which she sought to evidence the active participation of nonhuman natures in ecological processes. Bennett (2010) sought to use a recognition of the lively and often unpredictable role of nonhumans in the co-constitution of human endeavours as a basis for elevating their status from inert materialities to agents that can operate independently of human intentions. In so far as this is the case, therefore, Bennett's (2010) vital materialism is congruent with a transition away from the modern Western perception of seeing nonhuman natures as inert and passive (Coates, 2013; Merchant, 2005). However, I need to differentiate here between vibrant matter as a guiding concept used alongside situational analysis and vibrant matter as a philosophical proposition. Whilst I have made effective use of the former as an analytical tool, I will argue here that as a philosophical proposition vital materialism does not reach far enough in establishing the intrinsic value and moral consideration of nonhuman natures.

Bennet's (2010) vibrant matter misses a justification for the movement from acknowledging agentic capacities to affording moral consideration. To present this in terms of my own concepts, vital materialism solves the problem of inverse dualism but stops short of providing an ethical dimension to the consequences of that for human behaviour. I will propose that this missing link can be filled by extending Bennett's (2010) vital materialist perspective with Goff's (2017) panpsychism.

6.6.1 nature-connection and vital materialism

My thesis poses an interesting question regarding the role of nature-connection in the Anthropocene when looked at through the lens of Bennet's (2010) vital materialism, and specifically when guided by

the concept of vibrant matter. Participants' descriptions of their experiences with nonhuman natures had many of the characteristics of an animistic perception (Abram, 1996). Bennet's (2010) liveliness of matter, or thing-power seemed lived out in these instances. Furthermore, the distribution of animacy across other-than-human natures – which was particularly well defined in the bonsai assemblage – shares with vital materialism a rejection of the dualism that separates a spirited and creative human mind in possession of free will from an inert, passive and powerless environment of nonhuman matter (Kureethadam, 2018). In this way, my research has contributed to Bennet's (2010, p. 3) stated intention to 'give voice to a vitality intrinsic to materiality, in the process absolving matter from its long history of attachment to automatism or mechanism'.

The flat ontology of vital materialism – and the new materialisms generally – could also be seen in the relationality between participants and nonhuman natures (Bennett, 2010; Fox & Alldred, 2017). An ecological perception of collaboration across species was salient and characterised by a spirit of participation in a shared world. Although the different roles and specialisms of different species was well-understood, a species hierarchy appeared flattened compared to the human/nature dualism described by critics of enlightenment perceptions of human exceptionalism (Merchant, 2005; Plumwood, 1998; Plumwood, 2002).

However, the nature-connections experienced and consciously pursued by participants also differed from the concept of vibrant matter in important ways. For Bennet (2010), all material objects exhibit thing-power. Bennet (2010, p. 5) describes in detail her perception of the 'energetic vitality' of objects such as a plastic bottle cap and a work glove in ways that deny the natural world any monopoly on vitalism. By contrast, for the participants in this research vitality was bounded by a uniquely Western construct of a natural world from which the human-built and artefactual was felt to be ontologically ejected into a realm of the artificial (Coates, 2013). The selective animism observed in this research is also present in the nature-connection literature, which presents a certain irony due to the assertion that human/nature dualism has contributed to the ease with which humans exploit nonhuman natures (Zylstra et al., 2014). The nature-connection participants were still influenced by the idea that the more matter is modified by human hands, the more of its vitality is lost, until it is perceived in the words of Wilson (1984, p. 115) as a 'lifeless façade'. Whereas Bennet's (2010) vital materialism recognises the liveliness of matter in all its forms, participants reserved the animacy of nonhumans exclusively for those deemed to be natural as opposed to artefactual. Artefacts or built materialities such as concrete, which had undergone significant transformation by human design, were seen as obstacles or barriers to nature-connection. In this aspect of the nature-connection experience the Anthropocene discourse of culture/nature entanglement is missing. I suggest this also demonstrates the challenge of adopting an animistic worldview by humans whose existing

worldviews have already been shaped by longstanding cultural and philosophical human/nature and culture/nature dualisms.

The participants' affective and cognitive engagement with the artefactual as well as the natural suggests a more complex relational dynamic than the term nature-connection is assumed to refer to. Participants' nature-connections showed an entanglement of human-nonhuman relationships that included a sense of belonging, psychic equanimity, empathy, accountability and enchantment, but also resistance, discomfort, and critique. Despite participants' selective animism, their descriptions suggest visceral relationships with human-built materialities such as concrete, plastic or woodwork. This broader range of connections is easily missed when nature-connection is perceived through the lens of inverse dualism; but that does not mean it is absent. Making the vitality of these relationships with the human-built and artefactual conscious opens the possibility for fresh insights and innovative thinking as to how nature-connection practices might contribute to negotiating the socionatural entanglements highlighted by Anthropocene discourse (Adams, 2020).

6.6.2 Troubling vital materialism

It is not my intention to render invisible an analytical distinction between natures such as trees and rivers and human-made artefacts such as laptops, but to advocate the importance of perceiving their relationality. Analytical differentiation is a necessary starting point for understanding the impact of humans within more-than-human ecologies, as well as enabling a basic measure of the degree to which humans are respecting the habitat needs of nonhuman others (Corlett, 2016; Sessions, 2014). Furthermore, without a clear analytical distinction between human and nonhuman natures, and by extension where and how different materialities remain largely untouched or highly modified by human activity, the conditions that have led to the Anthropocene would not have been recognisable. The need for accountability and ethical responses to anthropogenic climate change, environmental degradation, and human caused species loss, would have no clear basis. It is precisely this lack of an ability to attribute accountability when analysing the relationality of a flat ontology that Bennett's (2010) vital materialism has been accused of (Purdy, 2015).

A central contribution of the new materialisms is the recognition of agency in nonhumans (Fox & Alldred, 2017), such as Bennett's (2010) *thing power* or Latour's (2005) description of *actants*. My research lends support to these assertions. However, the agency articulated in these *things* and *actants* is limited to a capacity to affect. Whilst this succeeds in weakening human exceptionalism to a certain extent, it falls short of providing a convincing case for the ethical consideration of nonhuman natures and an attribution of intrinsic value to them. Vetlesen (2019, p. 225) has been particularly critical of Bennett's (2010) vital materialism by accusing her attribution of agency to matter as such of rendering invisible the unique differences between specific materialities:

> How can you describe, in like manner, phenomena as different as "stones, tables, technologies, words, and edibles"? What is gained by doing so? What is the argument to show that what these entities (allegedly) have in common, in terms of agency, is so important as to justify silencing their differences, hence their respective particularity? (Vetlesen, 2019)

Whilst vital materialism succeeds in distributing agency across humans and nonhumans, Vetlesen (2019) highlights a potential smoothing over of the unique characteristics of different beings and their intrinsic value. Bennett's (2010) vital materialism pictures a world where agency extends beyond the human. However, if in doing so this flat ontology is perceived dispassionately as an abstract field of forces, Purdy's (2015) concern over the loss of human accountability in a world constituted by an assemblage of more-than-human actants may not be unfounded. Indeed, this concern is not lost on Vetlesen (2019), who is explicit in his concern at the capability of a world of undifferentiated agencies to result in validating the application of geoengineering. Bennett (2010) and Latour's (1993) flat ontology of distributed agency is closely related to the entanglement of social and natural systems that is characteristic of the Anthropocene concept. As such, concerns that an Anthropocene where social and natural systems are inseparable, combined with accountability being distributed from specific humans to more-than-human networks, justifies concerns about a potential diminishment of conservation support (Caro et al., 2014; Lorimer, 2012). To subsume differences in value between a Carbon Capture Tree (CCT) and an ancient English oak into a network of forces may succeed in distributing agency beyond the human, yet it also weakens the unique characteristics of particular natures and their intrinsic value. In such a case, arguing for the preservation of primordial forest over a new development, for example, would stand on weaker ground.

Vetlesen's (2019) concern is that the distribution of agency described in Bennett's (2010) vital materialism may render invisible the uniqueness of human actions, our ethical capacities, and our moral responsibilities. Indeed, Bennett's (2010) own reflections on the issue of human accountability in a world of distributed more-than-human agency seems to confirm the concern of weakened human accountability, at least at the level of the individual.

> In emphasizing the ensemble nature of action and the interconnections between persons and things, a theory of vibrant matter presents individuals as simply incapable of bearing full responsibility (Bennett, 2010, p. 37).

Bennett's (2010) conclusion, it seems, does not leave us any wiser when seeking to hold individuals, for example of multi-national corporations, to account for mass destruction of natural environments. What Bennett (2010) is implying by italicizing the word 'full' is unclear, although she seems to imply that the wider explanatory network co-constituting any phenomenon releases any individual agent of full responsibility for their actions.

Bennett's (2010, p. 37) interpretation of this implication rests on the suggestion that whilst the 'notion of a confederate agency' reduces blaming individuals for consequences that are always the product of an assemblage of forces, it does support a wider analysis of 'harmful effects'. By her own admission, Bennett's (2010, pp. 37-38) vital materialism prevents her from pointing the finger at 'corporate greed' for environmental harms. Rather, she suggests the ethical implications of her ontology reach only as far as attempting to leave assemblages 'whose trajectory is likely to do harm' and try to associate with assemblages likely to result in 'nobler ends'. If this were to be the limit of vital materialism's capacity to support environmental causes it would be of little use to, say, the ecocide movement, which is predicated on establishing legal rights for nonhuman natures such that individual humans shown to have knowingly caused mass ecological destruction can be prosecuted in the International Criminal Court (ICC) (Stop Ecocide International, n.d.). Ultimately, Bennett (2010, p. 38) offers us a forced choice:

> Should we acknowledge the distributive quality of agency to address the power of human-nonhuman assemblages and to resist a politics of blame? Or should we persist with a strategic understatement of material agency in the hopes of enhancing the accountability of specific humans?

But do we have to accept these options as an either/or binary? By way of a comparable analogy, our legal system has long since considered both broader influences *and* specific individuals for understanding human behaviour and holding individual humans to account for their actions. The circumstances and wider context for an offender's actions may substantially influence that offender's judgement, but it does so by weighing those wider influences against the wrong exacted, not negating it. For example, the local Amazon logger seeking to earn enough to support his or her family rightly shoulders a different level of responsibility for environmental destruction than the top decision makers of the Brazilian mining company Vale (Watts et al., 2023).

Describing the agentic capacities and affordances of nonhumans is not quite enough to reach the attribution of moral consideration to nonhumans, and possibly weakens moral responsibility for human individuals. Afterall, what is really the difference between capacities or affordances and simple description of the ways in which nonhuman materialities can either facilitate or resist certain types of human/nonhuman interactions? Any crafts person or skilled joiner has long since known as much without the imperative to attribute anything beyond an instrumental value to their materials or have any sense of moral accountability toward them.

I have argued that to negotiate the challenges of the Anthropocene we need a worldview that is not vulnerable to hierarchical dualism, whether that be the dualism critiqued by ecofeminism (Braidotti, 2023; Plumwood, 1998) or the inverse dualism I have conceptualised through this study. However, a

blanket negation of any difference between a CCT and an old English oak is also highly undesirable as a foundation for an environmental ethic, as is a moral ambivalence toward locating the sources of exploitation that need to be made accountable for relationships with either of these. Based on the arguments I have made I suggest that a vital materialist perception of vibrant matter may lead to greater ecological awareness by successfully deconstructing inverse dualism. However, as a philosophical proposition it stops short of articulating persuasive grounds for the attribution of moral consideration to nonhuman natures and may even weaken grounds for human accountability for the exploitation of natures that brought about the Anthropocene.

In the next section I will introduce Goff's (2019) constitutive panpsychism as a philosophical proposition capable of extending Bennett's (2010) vital materialism in ways that create the grounds for the intrinsic value and moral consideration of nonhuman natures. Furthermore, this extension can proceed in a way that does not dilute the specific accountability of human natures. For the panpsychist, the universe is perceived as 'a communion of subjects rather than a collection of objects' (Swimme & Berry, 1994, p. 243). Since panpsychism affords experientiality to nonhumans, hitherto mindless features of an environment, such as trees, or a mountain, cease to be inert backgrounds to human sentience, and are instead perceived as subjects occupying their own perspective and positionality. Furthermore, a tree or a mountain is not perceived as merely as an actant with certain affordances and resistances, but rather as an experiencing entity. The way of experiencing between humans and nonhumans might be similar or very different, but that they experience at all means they may be seen as subjects. This is the extra step at which panpsychism leaves vital materialism behind. In the next section I will provide a rational argument to this end.

6.7 Introducing panpsychism.

Panpsychism has been defined as a philosophical position which argues that 'mentality is a fundamental and ubiquitous feature of the universe' (Goff, 2017, p. 206). This argument has a long tradition behind it reaching back to the pre-Socratic, although its popularity has waxed and waned according to the dominant outlooks of the time (Goff, 2022). Present forms of panpsychism have grown to prominence in the last two to three decades largely as an attempt to break through the impasse that both materialism (physicalism) and dualism seem to have met regarding the so-called hard problem of consciousness (Chalmers, 1995). The hard problem of consciousness refers to the problem of explaining the relationship between subjective experience and objective behaviour, or mentality and physicality (Chalmers, 1995). Materialism and dualism, the dominant worldviews of the modern West, are faced with the hard problem of consciousness through the struggle to explain either the emergence of consciousness from material processes or how physical and mental realities can interact if they inhabit distinct ontologies (Chalmers, 1995). Goff (2019) has suggested part of the problem is that the dominance of enlightenment science has created a blind spot in understanding

consciousness through its insistence that reality be described only through mathematical physics. This is a blind spot because physics, asserts Goff (2019), is limited to describing what matter does, but not what matter is. That is, the intrinsic nature of matter. This in turn has led to rendering the nature of consciousness invisible to dominant paradigms of investigation because, according to panpsychism, the intrinsic nature of matter *is* consciousness. Hence the claim that consciousness is a ubiquitous feature of the universe.

It should be noted that panpsychists do not assert that nonhuman entities are conscious in the same way that humans can be conscious. When Chalmers (2015, p. 256) defines panpsychism as 'the thesis that some fundamental physical entities are conscious' this should be contextualised within a specific form of panpsychism called panexperientialism, which states that although nonhuman natures experience something like what it is like to be them, this does not infer the presence of thoughts or complex expressions of consciousness that are familiar to humans. In line with this, some forms of panpsychism posit that fundamental particles experience a rudimentary form of prehension (Du Toit, 2016). Panpsychism, then, seeks to begin addressing the hard problem of consciousness by suggesting that complex forms of consciousness such as those of a human brain might be explained by the aggregation of less complex forms of consciousness such as those of fundamental particles, a theory known as constitutive panpsychism (Goff, 2017).

Goff (2017) admits that panpsychist philosophy has not yet progressed beyond the identification of phenomenal consciousness in nonhumans as being the property of what it is like to be that. In other words, panpsychism has not articulated specific phenomenal properties for specific nonhuman natures, such as stating what it is like to be an electron as opposed to what it is like to be a tree. Furthermore, constitutive panpsychism faces a serious theoretical challenge known as the combination problem, which is the challenge of explaining how small units of experience such as fundamental particles can through their combination produce large units of experience such as a human imagination (Chalmers, 2015). The arguments for and against panpsychism are a complex part of the practice of philosophy and consciousness studies. However, my interest here is in the potential for a panpsychist worldview to facilitate the kind of environmental ethic and perception of nonhuman natures that can meet the challenges posed by the findings of this thesis. Of course, the truth value of panpsychism is ultimately important. However, given its theoretical challenges are arguably less serious than either of its competitors, that the theory is not complete is not a reason to restrain from putting it to good use. As a worldview, panpsychism has great promise in providing an exit from inverse dualism and selective animism, whilst also providing philosophical support for human relationships with nonhuman natures that include moral consideration of those natures.

6.7.1 Panpsychism as an ontology for the new environmental paradigm.

Panpsychist philosopher Freya Matthews is less concerned with a theoretical defence of panpsychism than she is with its transformative potential for human relationships with nonhuman natures (Matthews, 2003). For Matthews (2003), panpsychism is as much a worldview to be lived as it is a theoretical proposition.

Matthews (1991, 2003) sees panpsychism as part of a response to the ecological challenges of the late 20th and early 21st century, particularly for modern Western cultures dominated by materialistic philosophy and cultural scientism. Throughout the enlightenment, a body/mind dualism was developed where the body (and by extension the physical world) was inert, moved through no intrinsic liveliness of its own, but rather through the mechanical laws of classical physics. All qualities were found exclusively in the mind – and not just any mind, for only human bodies housed a mind, nonhuman animals being understood to be void of sentience (Matthews, 1991). The combination of a perception of matter as inert with the insistence that the only valid form of knowledge is that described by mathematical physics allowed the conditions for the release of any moral consideration toward nonhuman natures and the invisibility of those natures' intrinsic qualities. As Matthews (1991, pp. 19-20) points out, 'Bacon's ruthlessly exploitative attitude towards Nature would of course be morally indefensible were matter not viewed as inert, devoid of agency and interests'. It is on this interpretation that Plumwood (1998, p. 397) has argued that the avoidance of further ecological catastrophe might be achieved by promoting a movement into a 'post-Cartesian reconstruction of mind that allows us to emphasise other marks of mind than the on/off concept of consciousness selected by Descartes precisely in order to effect the wholesale exclusion of nonhumans'. Panpsychism offers just such a reconstruction.

Although contemporary panpsychist philosophers such as Phillip Goff are primarily interested in addressing philosophical and scientific problems pertaining to the nature of consciousness, the movement of a panpsychist worldview toward becoming mainstream in modern Western cultures may make an important contribution to addressing the challenges of the Anthropocene. The implications of consciousness as a ubiquitous feature of the universe offer a much-needed shift from the way both the mechanistic materialism and substance dualism have provided the underlying values needed for unrestrained environmental degradation, as well as making the unethical treatment of nonhuman animals permissible (Braidotti, 2013).

Goff (2019, p. 190) briefly touches on the implications of panpsychism for environmental ethics, arguing that that dualism configures an 'unhealthy relationship with nature' on two main counts. One count is due to the separation of an agentic, conscious human mind from a mechanistic, inert environment. As Goff (2019, p. 190) simply states, 'there is no real kinship with nature if dualism is

true'. The other negative consequence for human/nature relationships born of a dualistic worldview follows from the first. If humans inhabit a world where only those who qualify as human (and more recently perhaps some other nonhuman animals) enjoy the experience of what it is to be themselves, wholesale exploitation of nonhuman nature is not even exploitation, at least not in any way that would give rise to ethical questioning or moral discomfort. The kind of dualistic thinking that is coupled with human exceptionalism renders nature as little more than available material for human use, as has been evidenced by the claims of enlightenment philosophers and scientists that the howls of dogs undergoing live vivisection should not elicit concern or empathy since they are the mere sparks and screeches of a soulless machine (Johnson, 1991). In a less visceral way, this environmental attitude could be said to continue in the reduction of nonhuman nature to a portfolio of assets and services (Natural Capital Protocol, 2016; TEEB, 2010).

A purely instrumental valuing of nature is, therefore, the rational consequence of hierarchical human/nature dualism. There is no imperative for affording a nonhuman *object* such as tree with any moral consideration such as that of the tree's needs for itself. By contrast, suggests Goff (2019), a panpsychist worldview would radically reconfigure human/nonhuman relationships. As an experiencing subject, to fell a tree 'becomes an action of immediate moral significance' (Goff, 2019, p. 191). It is important to clarify here that Goff (2019) is not suggesting that all experiencing subjects comprising the universe enjoy moral equivalence. For example, it is extremely unlikely that, without a nervous system, a tree will subjectively experience pain in the same way a human does. The point here is that as an experiencing subject, a tree at least demands recognition as living for itself, and not just as material for the purposes or benefits of others. Goff (2019) imagines a society where children internalise a panpsychist worldview rather than a materialist or dualist one and is worth quoting in full.

> Imagine if children were raised to experience trees and plants in the same way, to see the movement of a plant toward the light as expressing its own desire and conscious drive for life, to accept the tree as an individual locus of sentience. For a child raised in a panpsychist worldview, hugging a conscious tree could be as natural and normal as stroking a cat. It's hard to tell in advance the effects of such a cultural change, but it's reasonable to suppose that children raised in a panpsychist culture would have a much closer relationship with nature and invest a great deal more value in its continued existence (Goff, 2019).

Thus, panpsychism challenges a purely instrumental ecological ethic and provides a rational argument, based on the assumption that consciousness is fundamental to what matter is, for the intrinsic value and moral consideration of the nonhuman world. From a panpsychist perspective, nature is not a set of resources that occasionally exhibits technical problems that need to be fixed. Rather, nature is a community of humans and nonhumans who experience being in the world in

radically different ways, and yet experience they do. Once the notion of experience is accepted, there must follow a recognition of nonhumans' inherent worth as subjects. Not to do so would be ethically inconsistent when so much of our value for human life is based on the assumption that humans are experiencing subjects.

My introduction to panpsychism is by now adequate to point out two ways in which this philosophy extends vital materialism. The first way is that panpsychism posits the subjectivity of individual natures, rather than a mere capacity to affect. This forms the basis for a perception of intrinsic value and moral consideration. The second extension is found in the way constitutive panpsychism assumes different types of consciousness across different individual natures rather than describing an abstract field of agencies. For example, an electron, a plant, and a human are all considered experiencing subjects, but the sophistication of that experientiality will differ across them such that whilst all are deserving of moral consideration, they are not considered equivalent in their moral status.

By Goff's (2017) own admission, panpsychism is not yet developed enough to distinguish between the experience of an electron and the experience of a tree, or a dog. However, at least constitutive panpsychism assumes that there *are* differences in the complexity of experience between different natures, and as such is not trying to smooth out difference so much as it still lacks the data to specify the nature of those differences.

Panpsychism, therefore, offers a solution to the problem of inverse dualism by proposing that consciousness is the ontological identity of matter, regardless of whether that matter comes in the form of a river or a computer's motherboard, or even a fundamental particle. As such, western constructs of the natural world are not ontologically privileged over human-built environments. It is in this way that panpsychism also resolves the problem of selective animism. Since consciousness is understood as a ubiquitous feature of the universe and the nature of what matter is, the possibility of animate subjects is also free to traverse the modern boundaries between materialities considered either natural or artefactual. Furthermore, panpsychism posits many different types of consciousness, depending on how an individual is constituted, and as such Purdy's (2015) concern over the lack of accountability for humans in a world of distributed agency is put at ease. The sophisticated consciousness of a human, with its capacity for foresight and meta-cognition would certainly carry greater responsibility for its actions than a virus.

Apart from the concepts of inverse dualism and selective animism, another contribution I made in this research was to show the personal and specific relationships that the bonsai participants developed with trees, and how that personal relationship was what predisposed them to care for their bonsai trees and the wider world of trees through a recognition of kinship. A constitutive

panpsychist worldview offers ontological support for such relationships, normalising the already extant animism that I and others have demonstrated as being lived out in modern Western cultures despite the dominant discourse of human exceptionalism (Latour, 1993).

If panpsychism were to become the foundation for people's common-sense assumptions about nonhuman natures, it would not offer an oven-ready prescription for moral conduct between humans and nonhumans. However, specifics are not the purview of a worldview. What panpsychism offers as a worldview is the provision of a basis of recognition and respect from which the specific details of a case can be taken into consideration. This basis is missing in our present human exceptionalist paradigm but is much needed to negotiate the entanglement of social and natural systems made explicit by the Anthropocene.

I have attempted to explain the concept of inverse dualism as emerging from the conflicting entanglement of modern Western dualism with indigenous relational ontologies. I propose that if panpsychism were to inform the mainstream Western worldview, this would be productive of a more fruitful dialogue between modern Western cultures and indigenous cultures. The western tradition of panpsychism resonates with indigenous experiences of the animacy of the nonhuman world and the immanence of humans as fully *of* that world (Abram, 1996; Harvey, 2006; Kimmerer, 2013). However, as an ontology with a rich western philosophical tradition, panpsychism avoids the risk of reducing a portrayal of indigenous culture to nature-connection, or worse, mis-interpreting the social goals of indigenous people as focused on a hunter-gatherer lifestyle of limited technological advancement. Rather than appropriating ideas of indigeneity, a western worldview rooted in panpsychism would facilitate collaboration with indigenous peoples on global environmental challenges such as climate change while being less prone to the marginalisation of indigenous epistemologies as lying outside the purview of science.

6.7.2 The implications of a modern western panpsychist culture

Alberro (2021, p. 11) asserts that the Anthropocene is 'particularly ripe for radical resistance and novel imaginaries'. It is in this spirit that my thesis now takes up the challenge of articulating how human perceptions of nonhuman natures could be other than that which is assumed, dominant, and naturalised in modern Western cultures.

In proposing an underlying assumption about the nature of the world, panpsychism does not offer a set of prescriptive ethics, although this may change if panpsychist research reaches the point of distinguishing between the consciousness of individual nonhumans. For now, however, its value lies in its potential to fundamentally alter our perception of nature in a way that naturally orients us toward a sense of nonhuman others existing for themselves, as opposed to only for humans, and

demands respect and moral consideration for the multiplicity of natures that make up our world. As such, it has the potential to function as a coherent worldview capable of further supporting and nurturing the kind of nature-connections I have explored with both nature-connection and bonsai participants, supporting their strengths and resolving what I have interpreted as their inconsistencies.

However, that panpsychism works at the level of the worldview does not mean an absence of practical implications for a myriad of material, psychological and social contexts. The radical shift that panpsychism implies to modern Western societies will necessitate the need for a major restructuring of how we envision legal, economic, and educational systems such that they align with the intrinsic value and moral consideration of multiple natures.

One hugely important area that panpsychism could impact upon is that of policy and legislation. Participants were sceptical about the prospect of mainstream society taking the rights of nonhuman natures seriously outside their financial value to an economy. However, strong evidence exists to suggest otherwise. One recent development congruent with a panpsychist worldview exists already through the legal recognition of certain nonhumans. In 2017, the Whanganui River became the first river to be endowed with the status of a legal person. The move was the result of a 150 year long legal battle between the Whanganui Iwi, who are a Māori tribe, and the New Zealand Government. From a conservation perspective, the legal rights of the Whanganui River as a person are upheld in a way that radically departs from European approaches. Whereas conservationism has typically understood conservation as involving the demarcation of landscapes or ecosystems from human use (McKibben, 2003), for the Whanganui Iwi, the support for conservation issues from the perception of the river as an ancestor with intrinsic value and with the capability for meaningful relationships with humans. Similarly, stewardship for the Whanganui Iwi is not a case of sustainable land management for the regulated use of 'natural resources' or 'ecosystem services' (Kareiva et al., 2011). Rather, stewardship is closer to the obligation of care one feels for the elders in one's family. Kramm (2020, p. 311) articulates this vital difference well:

> The Māori do not merely value ecosystems because of their contribution to the flourishing of human beings or animals. They rather regard them as ancestors (tupuna) who are intrinsically valuable. Hence, ecosystems should not merely form part of the capabilities or functionings of other living beings, but have their own functionings. In that case, functionings are no longer restricted to human agents or non-human animals, but can also be assigned to rivers, hills, and mountains (Kramm, 2020, p. 311).

The next year, in 2018, the Colombian supreme court recognised the Amazon River ecosystem as a 'subject of rights' (Bryner, 2018). An IUCN report by Bryner (2018) describes the Supreme Court's decision as providing a 'thorough, cogent analysis and application of key principles of environmental

law and environmental ethics, including intergenerational equity and the precautionary principle, placing the rights of the Amazon within the context of Colombia's constitution as well as international law'. This demonstrates that a radical shift in the ontological status of nonhumans can extend beyond philosophy and into the world of policy and behaviour change.

A dominant worldview becomes naturalised and assumed rather than critically engaged with (Sheikh, 2018). Indeed, it may be part of the project of dominance over nature to establish a collective perception of human exceptionalism and human/nature dualism being the only plausible paradigm (Moore, 2016). In modern Western societies a blend of mechanistic materialism and dualism still form the naturalised assumptions of many (Goff, 2019). Even in those who consciously reject these assumptions, such as the nature-connection participants I interviewed, closer analysis has revealed the stubborn persistence of acculturation into enlightenment attitudes toward nonhuman natures. On the other hand, the bonsai participants, who were not seeking to reject a worldview through bonsai practice, exhibited strong elements of animism, supporting Latour's (1993) suggestion that the idea of modernity has not in fact truly transformed peoples' daily more-than-human relationships. The nature-connections I have explored in this study suggest both human/nature dualisms and more-than-human animacy are both active in attitudes and felt experiences.

The Anthropocene concept is contested and variously interpreted to the point where Bauer and Ellis (2018, p. 209) go as far as suggesting the concept 'obscures rather than clarifies' the relationship between human and nonhuman natures. There is, however, a golden thread running throughout Anthropocene discourse which is the highlighting of social and natural entanglement (Arias-Maldonado, 2015). Based on my research in this study, I have argued that a perception of humans and human culture as immanent and continuous with the rest of nature is productive of positive environmental attitudes. In this sense, the proliferation of the Anthropocene concept in the public imagination may be beneficial in heightening awareness of the connections and consequences of human behaviour and social life for nonhuman natures. However, socionatural entanglement can be used as a discursive tool in different ways. One such way is to re-affirm the dominance of humans over the rest of nature, asserting the Anthropocene as heralding the age of humans as the dominant influence on the future course of earth systems such as would rival the great forces nature (Steffen et al., 2007). This interpretation is, as McBrien (2016) warns, the narrative of the capitalist Anthropocene – the Capitalocene (Moore, 2016).

I claim that the Anthropocene narrative can be positively influenced by emphasising an entanglement of the social and the natural as a more-than-human community of subjects. An ontologically inclusive nature-connection practice can encourage human relations of kinship with nonhuman others, whose moral consideration is underpinned by worldview framed by constitutive panpsychism.

Affirming previous research establishing positive relationships between nature-connectedness and pro-environmental attitudes, values and behaviours, my research here has added detail to the qualities of nature-connection and its potential for cultivating modern Western peoples' relationships to nonhuman natures in ways that encourage the beauty, ontological sovereignty, and intrinsic worth of those natures (Mackay & Schmitt, 2019; Sheffield et al., 2022). However, my research also suggests that the full transformative potential of nature-connection practices is yet to be harnessed. I claim that for this to happen, a radical expansion of the Western conceptualisation of nature to include humans, human culture, and human-built artefacts is needed. It is these areas for which humans are primarily accountable, and we would benefit from an ethical dimension built into our approaches to transforming nonhuman natures. We are not, as some Anthropocene discourse seems to assert, overwhelming, controlling, or mastering the great forces of nature (Steffen et al., 2007). This much is clear by our inability for foresee or control the proliferation of microplastics throughout nonhuman and human bodies or understand the future consequences of this (Morreale & La Mantia, 2024). We stand powerless in the face of tsunamis, volcanos, mutating viruses, and potential tipping points as the run-away consequences of anthropogenic climate change (Brennan & Lo, 2010; McKay et al., 2022), and least of all can we offer any resistance to the inevitable process of decay and death that is fate of all lifeforms on earth, including ourselves. We are creatures, not gods. We do not stand above nature but are of nature. As such, we have some influence on the continuous unfolding of our world, but we would benefit from remembering that all that we do is always already merely a part of a vastly complex more-than-human set of relationships, full of purposes, desires, and forces. A culture of inclusive nature-connection underpinned by a panpsychist ontology would support an approach to these relationships with a spirit of reverence and respectful participation.

Chapter 7: Conclusion

7.1 Restatement of the topic and its relevance.

Anthropogenic climate change and biodiversity loss present an existential threat to human and nonhuman life at a global scale (Steffen et al., 2015; IPCC, 2023). The impact of human activity on earth systems is pervasive to the extent that a new Anthropocene epoch has been proposed (Crutzen & Stormer, 2002), prompting interdisciplinary reflection and debate over the relationship between social and natural worlds, and human perspectives on nonhuman natures (Adams, 2020; Larson et al., 2022).

Mitigation and adaptation strategies have focused on economic and technology driven solutions (Clayton & Opotow, 2003). However, more recently the importance of psychological research has been highlighted (Kareiva & Marvier, 2012), and the past three decades has seen a growing body of literature attending to the relationship between underlying environmental attitudes and human relationships with nonhuman natures and environments (Franz et al., 2005; Larson et al., 2022; Nisbet et al., 2009; Schultz, 2002).

Extant literature within environmental psychology has explored correlations between specific attitudes and values and measures of pro-environmental behaviours (Barrable & Booth, 2022; Mackay & Schmitt, 2019). This suggests that attention to underlying worldviews and the attitudes and values they shape should be primary to specific technological innovations (Clayton & Opotow, 2003). Furthermore, given that the conditions of the present climate and environmental crisis occurred within a cultural paradigm of human exceptionalism, an imperative to transition to a more ecological perspective for human participation in a more-than-human world is justified (Hamilton, 2016).

In response to the anthropocentric perspectives that have framed extant nature-connection research (Wilson, 1984; Kellert & Wilson, 1993) I have taken a methodologically innovative approach to nature-connection research by seeking to include nonhuman as well as human perspectives in my analysis (Clarke et al., 2018). I have also taken seriously accusations of an oxymoronic weakness to the logic of nature-connection (Fletcher, 2017), and accusation that research in this area may have an alienating impact on urban dwelling people (Patuano, 2020; Vogel, 2014). This thesis has synthesised the various threads outlined above to conduct a qualitative study into how nature-connections are materially, discursively, and psychologically configured. The aim has been to contribute to the articulation of a worldview that holds most promise to negotiating the challenges of the Anthropocene, and to provide practical recommendations as to how such a transition for Western culture can furthered.

7.2 Restatement of the study's aim and response to gaps in extant research.

Nature-connection literature has been dominated by quantitative studies on establishing relationships between metrics of nature-connectedness and pro-environmental attitudes, values and behaviours (Barrable & Booth, 2022). Due to the nature of such research, space is limited for a deeper and more critical exploration into the meaning of nature-connection, even the term nature itself, for those who pursue nature-connection practices. I have responded to this gap in research by undertaking a qualitative and critical study to gain a more detailed understanding of how nature-connections are configured.

Furthermore, nature-connection discourse has been accused of being an oxymoron (Fletcher, 2017), as well as alienating for people living in human-built environments (Patuano, 2020). This accusation warrants serious attention and a detailed exploration of how the relationship between the natural and the human-built or artefactual are discursively positioned and experienced by nature-connection practitioners. My thesis has responded to and addressed these critical considerations.

Conservationists have expressed concern that a deconstruction of culture/nature dualism will render invisible an imperative to protect nonhuman species' habitats from human development (Caro et al., 2014; Crist, 2023). Therefore, I wanted to study at the level of the individual a situation where nature and culture are inextricably entangled to explore how this entanglement relates to participant's environmental attitudes and behaviours. This aim was primary explored through my research with the bonsai practitioner group.

Finally, previous nature-connection literature in environmental psychology has been anthropocentric in its methodology, focused on the perspectives of humans only (Adams, 2020). In response to this, I chose a methodology that would allow me to attend to the nonhuman as well as the human elements involved in nature-connection situations.

7.3 Findings and contributions to knowledge.

My findings found some support for Fletcher's (2017) accusation of an oxymoronic element to the underlying logic of nature-connection. My research indicates an entanglement of incompatible worldviews as Western dualism and indigenous relational ontology are woven together in participant's discourse and environmental attitudes. This led to my assertion that an internally coherent rationale for nature-connection in modern Western cultures needs development.

I provided a depth understanding of the contradictory elements of nature-connection discourse through a conceptual development of inverse dualism and selective animism. Inverse dualism describes how the influence of indigenous ontology facilitated participants' perceptions of humans as of nature, yet a persistent culture/nature dualism also informed their perception of humans as the

divisor between the natural and human-built world, which led to a rejection of modern artefacts and urban environments as entrance points into ecological awareness. This led to the development of a second concept I have called selective animism, which describes how participants expressed animistic perceptions to nonhuman natures considered of the natural world but maintained human-built and artefacts as inert and lifeless and thus separate from rather than continuous with the rest of nature. The development of these two concepts constitutes a unique contribution to the literature in that they explain the detail of conflicting discursive and perceptual elements within the environmental attitudes that underpin nature-connection practices. Further to this, they also point to a need for developing a more internally coherent worldview to support nature-connection and more persuasively communicate it to others.

Across both groups culture was integral to mediating nature-connection. Human influence on natural environments was seen as beneficial if this was informed by an ecological consciousness that respected that the intrinsic value of nonhuman natures and was guided by a participatory rather than a controlling or dominating approach to land stewardship. In the bonsai group, human manipulation of nonhuman nature was especially salient, and yet I found no evidence of this hindering participants' appreciation the trees' needs or their understanding of the need for nonhuman natures to have their own habitats and space. Rather, the intense cultural involvement in the lives of trees heightened a sense of kinship with trees generally and cultivated animistic perceptions and moral consideration toward trees.

In response to concerns from conservationists over the possibility that socionatural entanglement could render invisible the need for protection of nonhuman species' habitats (Caro et al., 2014; Crist, 2023; Lorimer, 2012), this was not supported within my sample groups. I suggest from my findings that the positioning of human culture as an integral part of natural systems and ecologies is not in principle problematic to conservation aims. A more pressing question is the nature of cultural involvement, such as whether it serves to develop relations of kinship with nonhuman natures or orientates an instrumental perception of their existence as assets and resources for commodification.

My research into the role of human activity in wider ecologies suggests that within my sample groups, and at the scale of the individual, cultural contact with nonhuman natures can benefit conservation support and promote ecological sensitivity. This benefit is facilitated through an ecocentric culture that emphasises a participatory approach to multi-species living. As such, my findings challenge the concept of natural capital, suggesting that just because nature has been exploited as a free resource in the past (Hawken et al., 1999) does not mean bringing it into the accounting books won't just allow even more exploitation unless the underlying premise of how we

relate to nonhuman natures shifts toward a much stronger recognition of their ontological sovereignty and moral consideration.

7.4 The structure of this thesis.

This thesis is organised into 7 chapters including the present conclusion.

In Chapter 1 I introduced the concept of the Anthropocene and its development into an interdisciplinary debate (Carrington, 2024; Cruzten & Stormer, 2002; Koster, 2020; Witze, 2024). Contested discourses around the implications of the Anthropocene for how human relationships with nonhuman natures and ecologies were outlined, which led to the introduction of environmental psychology, and specifically nature-connection research, as an area that can contribute to the need for reflection and revision of human perspectives of the nonhuman world (Clayton & Opotow, 2003; Schultz, 2002). I then introduced my ontological assumptions, which were rooted in a vital materialism (Bennett, 2010) This led to my epistemological approach of a non-anthropocentric enquiry, where knowledge production is understood as co-constituted across human and nonhuman agents. I then defined my research groups, which comprised of a sample of nature-connection practitioners and a sample of bonsai practitioners. This was followed by introducing Situational Analysis (SA) as a method that is congruent with my ontological and epistemological assumptions (Clarke et al., 2018). The elements of my procedure were then outlined, including my use of purposive sampling, and ethical considerations such as building in a protocol of informed consent. I acknowledged the methodological limitations of this research before signposting to a researcher reflexivity section in chapter 3. Chapter 1 concluded with an overview of the thesis chapters in order.

In Chapter 2 I outlined the climate and ecological crisis and the threat it poses to human and nonhuman life (MacCraken, 2019; IPCC, 2020). I then provided a discussion of the Anthropocene as a new epoch defined by a ubiquitous influence of human activity on earth systems (Crutzen & Stormer; Steffen et al. 2007) and how this prompts reflection on the role of human relationships with nonhuman natures (Adams, 2020). This leads to the introduction of environmental psychology as a discipline that can contribute understanding how environmental attitudes and values relate to human perceptions of nonhuman natures. Nature-connection research sits within environmental psychology (Schultz, 2002) and has produced evidence supporting correlations between specific environmental attitudes and values and pro-environmental behaviours (Mackay & Schmitt, 2019). I discussed the definitional issues in this area of research and some of the challenges levied at its underlying logic (Fletcher, 2017; Patuano, 2020) and methodological framing (Kellert & Wilson, 1993). This led to my proposal of critical qualitative exploration into how nature-connections are configured across my sample groups and a statement of my research questions.

Chapter 3 built on chapter 2 by beginning with a critical evaluation of the biophilia hypothesis as the dominant theoretical framework in the nature-connection research literature (Richardson & Sheffield, 2017; Wilson, 1984). I rejected use of the biophilia hypothesis in favour of Bennett's (2010) vital materialism on account of its non-anthropocentric lens and consideration of nonhuman contributions to human experiences of nature-connection. I then discussed Clarke et al.'s (2018) situational analysis (SA) as a method that is congruent with my underlying assumptions and theoretical framework and explained the research methods involved. After that, I detailed my sampling strategy and procedure and discussed my use of interview schedules and questioning technique. I discussed my consideration of ethics, both in terms of official permissions and my own reflections on the unique ethical points I felt were important for this study. I discussed my understanding of the potential impact of my research, explaining my position in relation to the idea of generalisability. Finally, I included a research reflexivity section where I discussed how I influenced and was influenced by the research process.

Chapter 4 included my analysis of interview data with eight European nature-connection practitioners. I began my discussing the social worlds that form the larger scale relationships of the nature-connection situation. Then I moved to a relational analysis of the elements involved in nature-connection, exploring how these contributed to participants' experiences, worldviews, and environmental attitudes. Salient features of the analysis were the ontological positioning of humans to nonhuman natures and environments, understandings of and engagements with natural and human-built or artefactual materialities, influences from indigenous cultures, and how participants' perceptions of nonhuman natures influenced their attitudes toward the concept of natural capital. My findings found a strong role for human culture in mediating relationships with nonhuman natures and an affirming perspective on both human involvement in shaping landscapes and respect for nonhuman species. I also identified an entanglement of the Western dualist perspective with indigenous relational ontologies which I conceptually developed as producing an inverse dualism and selective animism.

In chapter 5 I presented my findings from ten interviews with European bonsai practitioners and included consideration of how humans and trees co-constitute the bonsai assemblage. This chapter followed a similar structure to chapter 4, beginning with a discussion of the social worlds that intersect across the bonsai situation, followed by a more granular analysis of individual humans and trees. The enchanting power of bonsai featured strongly in my findings as well as an animistic perception of trees by participants. The commercial side of bonsai also featured, and how this related to participants attribution of intrinsic values to trees. A targeted generalising effect of participants' care for bonsai trees to trees generally was a central finding. Another analytically important finding was the way participants related to the trees, which was more animistic and collaborative than human exceptionalist. As such, my findings challenged assumptions of the strength of influence of

hierarchical human/nature dualism on the actual relationships between participants and trees. I also found that cultural entanglement only increased participants' respect for the needs of nonhuman natures, rather than rendering them invisible.

In chapter 6 I discussed my findings across both groups in relation to literature reviewed in chapter 2. I responded to my initial research questions one by one and clearly articulated the contributions to knowledge developed by this study. A synthesis of 6 contributions was developed into the concepts of inverse dualism and selective animism, and the inextricable role of culture in creating nature-connections that cultivate recognition of the intrinsic values of nonhuman natures and promotes behaviours of partnership with the aim of building ecosystem health and multi-species flourishing. I argued that the concept of natural capital and Anthropocene discourse that positions humans as overwhelming nature are incongruent with the animistic and participatory approach of nature-connected living. The final sections of my discussion used my empirical findings to theorise a worldview for the Anthropocene that draws on constitutive panpsychism (Goff, 2019). I also argued that panpsychism promises to resolve the presence of inverse dualism and sometimes troubling complexity of attempting to adopt aspects of indigenous culture into nature-connection practices. Finally, I looked at the implications of my contributions for building a modern Western culture that includes the kind of revisions to human relationships with nonhuman natures that the literature has claimed must be foundational for anything more than superficial responses to the challenges of the Anthropocene.

The present chapter 7 concludes this study by restating my research aims and the importance of this study, re-articulating the gaps in knowledge I have sought to address and the contributions to knowledge I developed through this. I have summarised the organisation and content of this thesis before discussing the utility of my thesis for practice and policy, as well as my contribution to a clearer rationale to underpin nature-connection theory and practice. I have included how I intend to contribute to the further impact of my thesis moving forward. I have also addressed the limitations of this study, explained and contextualised these, and used them to make recommendations for future research where appropriate.

7.5 Practical and theoretical implications and impact.

My thesis opens several opportunities for promoting a more ecological way of life. These can be implemented in practical and theoretical ways. To begin, my findings concerning the powerful role of culturally mediated nature-connections in promoting living relationships with nonhuman natures may benefit conservation organisations and projects in terms of informing project designs and activities. For example, I have already provided consultation on the content development of a nature-connection app that was productive and positively received.

Similarly, environmental organisations may benefit from dissemination of this research in terms of offering guidance on communication strategies. An example would be exploring ways that the continuity between human-built artefacts and the natural world could be made more conscious in everyday interactions with commodities, resources and other artefacts. Another example would be exploring ways of increasing a sense of participation in modes of production, consumption and waste by which natural and social systems are inextricably related. The knowledge contributions developed in this thesis would be of use for implementing such aims in the form of communication strategies such as how environmental messages are discursively constructed. For example, communications that avoid messaging that implies inverse dualism may find greater success in reaching urban populations.

Other potential stakeholders that stand to benefit from this research are nature-connection course leaders and designers. Invitations for stakeholders to workshop the potential of an inclusive nature-connection approach that avoids the weaknesses of inverse dualism would function as a productive conversation starter in reflecting on the rational underpinnings of what nature-connection means, and work toward addressing some of the criticism levied at it from the literature.

Another avenue for attaining impact outside of academia is the publication of a popular version of my thesis. Given the attention that the climate and environmental crisis now receives in the media, I suggest that a popular guide to inclusive nature-connected living will make an attractive pitch for publishers, potentially allowing the contributions developed from this research to find a wider audience.

I also intend to use this thesis to pursue constructive conversations with disciplines for whom my findings are relevant. Conversations with academics working in environmental education may produce new ideas for developing pedagogy in this area. Further to this, conversations with philosophers specialising in panpsychism may also prove productive in refining the articulation of panpsychism as an environmental worldview.

Finally, in terms of impact on policy, my research may provide productive workshopping and collaboration with organisations such as Stop Ecocide International (Stop Ecocide International, n.d.), whose rationale and arguments are related to ideas of personhood and intrinsic rights of nonhuman natures.

In the context of my job as a lecturer at Plymouth Marjon University, I have recently had my post-doctoral goals for the next year affirmed by my line manager. These consist of taking the lead on setting up a working group for environmental psychology and environmental ethics within the university. The purpose of this working group will be to provide opportunities for staff/student

collaboration on research and writing, as well as reading and discussion groups. Furthermore, the group will create educational materials suitable for delivery to relevant stakeholders, such as conservation and environmental organisations, in the form of presentations, consultation, and written material.

7.6 Limitations and suggestions for future research.

Anthropocene discourse touches on multiple dimensions that intersect because of their relevance to human involvement in a more-than-human world. As my research progressed, I became aware that issues directly pertaining to environmental justice receded from the focus of this study. This did not occur to the point of absence, as can be seen in my analysis of the relationship between environmental attitudes and the concept and application of natural capital. However, an important aspect of Anthropocene discourse and its critique addresses the danger of a homogenised humanity masking the power differentials and unequal distribution of the benefits and costs of the industrial and technological revolutions (Malm & Hornborg, 2015). I touched on this theme in chapter 2 when describing the landscape of Anthropocene discourse, but I did not pursue it deeply in my research. My focus was on the consequences of the Capitalocene for human relationships with nonhuman natures more than relationships between different human societies, economies, capitalists and labour forces (Moore, 2016). I wish to highlight that this focused orientation on human relationships to nonhuman natures was not a reflection on the relevance I attribute to issues of environmental justice. I also appreciate the significant role that environmental justice plays in contesting and contributing toward the meaning of the Anthropocene. There are two justifications for my neglect of this area. Firstly, my research was in environmental psychology, and as such, my focus was on the relationship between individuals and their connections to nonhuman natures and environments. Whilst not wishing to assert too clear a delineation between the disciplines, a study with a stronger sociological framework would have been needed to adequately address issues of environmental justice. Secondly, although social issues are inseparable from Anthropocene discourse, the core meaning of the Anthropocene points to the relationship between social and natural systems (Arias-Maldonado, 2015). It is the proposed entanglement of the social and the natural that was at the root of the concerns around conservation support I highlighted in chapter 2, and which was a major influence on defining my research aims and questions. To adequately address these questions, it was necessary to be selective as which aspects of Anthropocene discourse to focus on.

My previous experience and anecdotal knowledge of the nature-connection community led me to expect indigenous cultures to be relevant to the nature-connection participants. However, I was not expecting the extent to which participants were looking to indigenous worldviews and cultural practices to inform their own nature-connection practice and underlying philosophy. Consequently, a weakness in my analysis was my reliance on participants' interpretations and experiences of

indigenous cultures, and my own reading of indigenous and anthropological literature. This study would have been improved had I been able to recruit a third sample of people from indigenous communities to explore both their perceptions of nonhuman natures and their perspective on European framings and practices of nature-connection.

My findings relating to the animistic perceptions of nature-connection practitioners was not a surprising discovery. The more relevant contribution was my explication of the selective animism that emerged from participants' inverse dualism. Nevertheless, I have implied through my findings that animistic perceptions may be more common throughout modern Western culture than would be expected on account of the West's association with human/nature dualism and human exceptionalism (Merchant, 2005). The theoretical extendibility of this finding has some support through the strong animistic perceptions found through my interviews with bonsai practitioners. Unlike the nature-connection practitioners, the bonsai practitioners I interviewed were not actively exploring alternative worldviews or consciously seeking new ways of perceiving and relating to nonhuman natures. As such, this group suggests that my finding of animistic perceptions of nonhuman natures is not reducible to the fact that a significant portion of my participants were inspired by non-Western cultures for whom animism was integral. The bonsai group suggested that it is the building of intense and personal relationships with nonhuman natures that may also influence a recognition of their ontological sovereignty and personhood. Nevertheless, a sample of bonsai practitioners is still characterised by an existing love of trees, and a level of conscious engagement and dialogue with nonhuman natures that may not be typical for most people in modern Western culture. A next step would be to investigate the possible presence of animistic perception in other cultural groups whose extant nature-connections may be less obvious. Further research in this area would also provide an opportunity to test the degree to which the concepts of inverse dualism and selective animism explain environmental attitudes and values. This could entail both further qualitative exploration of other communities within modern Western cultures, but also quantitative work to begin testing the explanatory power of inverse dualism and selective animism for different communities.

My conceptual development of a selective animism was used to explain why participants tended to exclude the human-built and artefactual from their ecological consciousness. However, it became apparent over the course of my interviews that all the nature-connection participants preferred rural or natural environments over urban and human-built ones. This may have introduced a bias into the development of selective animism. The concept needs to be explored further by researching the relationships between people who favour urban and technology driven environments and human-built artefacts.

Panpsychism presents a philosophical theory capable of resolving the issues of inverse dualism and selective animism, as well as providing a coherent framework for a more inclusive definition of nature-connection. Although I advocate promoting a transition from the dominant physicalist and dualist perspectives underpinning Western worldviews, panpsychism is not an intuitive proposition for people acculturated in the modern West, and its implementation would not be straightforward for people to adopt and integrate into their day-to-day experiences, outlooks and practices. Having said that, I propose that most people without a keen interest or formal training in philosophy would not be conscious of, or understand, how physicalism or dualism may have shaped their ontological intuitions. Therefore, the challenge of disseminating a philosophy for the purposes of informing environmental attitudes, values and behaviours is not unique to panpsychism. The more real setback is its minority status compared to the dominant paradigms. Although I have offered some initial imaginaries of how a panpsychist worldview could be popularised, future research could further explore areas of promise and investigate their potential worth.

Despite the limitations of this study, I have provided empirical evidence supporting the transformative potential of an inclusive nature-connection that nurtures the moral consideration of nonhuman natures. I have demonstrated the value of human culture in making kin with nonhuman natures, and a latent perception of the personhood of nonhumans that troubles the human exceptionalist trope. Finally, I have argued that a fundamental transition toward a panpsychist worldview for the West can only nourish and facilitate a future of multi-species flourishing where moral consideration is distributed across human and nonhuman natures. I propose that were panpsychism to inform the ontological intuitions of Western culture, the hubris of the Anthropocene might be curbed enough to allow for a more reverent and ecologically minded approach to living.

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Appendix A Ethics Form

MEMORANDUM

Application Code: EP138

Date: 30 April 2021

To: Damien Hackney

Cc: Dr Greg Borne, Prof Debby Cotton

From: Dr Kass Gibson, Chair of the Research Ethics Panel

Subject: Ethical Review Decision

Dear Damien

Thank you for your application for ethical review of your project: Nature connection for the Anthropocene: a multi-sited exploration of the relationships between humans, natural and transformed materialities within English cities.

Your application has undergone review and I am pleased to inform you that your project received a favourable opinion.

The review process has four possible outcomes: favourable opinion, minor amendments, major amendments and unfavourable opinion. On the basis described in the application form and supporting documentation, the opinion of the Panel is favourable.

Please note, the University Research Ethics Panel will be undertaking an audit during academic year 2020-21, and your application may be selected for this process. Please ensure you keep a record of your Ethics documentation. You will be informed if your application is selected for audit.

If you have any queries do not hesitate to get in touch with me. We wish you the best with your research.

Yours sincerely,

Dr Kass Gibson,
Chair, University Research Ethics Panel
Plymouth Marjon University
01752 636700 (ext: 8611)
Email kgibson@marjon.ac.uk

Appendix B Example email of initial contact to gatekeepers

Dear [insert name],

my name is Damien Hackney, and I am a doctoral researcher at Plymouth Marjon University. As part of my PhD project, I am seeking interviews with people to talk about their relationships to nature. I am particularly interested in interviewing people who cultivate Bonsai trees as this seems to be a unique and fascinating undertaking.

If you are open to me calling you on the number provided on your website, I would be very happy to explain a bit more about my research and answer any questions. I am hoping you might be open to passing on an invitation on my behalf to your members to see if they might be interested in taking part in this research project. I could provide you with a paragraph introducing myself and explaining what would be involved should you be open to the idea. It would take up an hour of their time.

Thank you for your time and I look forward to hearing from you,

Damien Hackney.

Damien Hackney

PhD Candidate (Plymouth Marjon University)

email: hackney.d@pgr.marjon.ac.uk

tel: 07939121356

Appendix C Recruitment advert published by a gatekeeper in a nature-connection newsletter.

University of St Mark & St John Plymouth

Make a difference! You are invited to contribute to a doctoral research project on environmental identity and nature connectedness.

PhD candidate Damien Hackney is seeking research participants with experience of nature-connection activities. Damien is exploring peoples' material and cultural relationships with various natures, as well as their thoughts on environmental issues.

Your participation in this research project would take about one hour of your time.

This research is intended to help environmental organisations and policy makers think about how best to encourage a more ecologically sensitive approach to daily life. As such, your perspective on these matters would be greatly valued.

If you are interested to hear more about this research, possibly with a view to being interviewed, please contact Damien directly giving consent for him to get in touch with you.

Many thanks for considering taking part in this important project.

Damien Hackney BSc, MSc.

PhD candidate at Plymouth Marjon University

Email: **hackney.d@pgr.marjon.ac.uk**

Tel: 07939121356

Appendix D Email passed to potential participants by gatekeepers.

Dear *[potential participant name]*,

my name is Damien, and I am a PhD student at Plymouth Marjon University.

My research is aimed at exploring peoples' relationships to a range of natural and built features of their urban environments, as well as their thoughts on environmental issues.

I am particularly interested in inviting people who have experience with *[names particular activity/members* to be interviewed, which is why you have been recommended to me by *[name of gatekeeper]*.

Your participation in this research project would take about one hour of your time.

The results of this research is intended to help environmental organisations and policy makers think about how best to encourage a more ecologically sensitive approach to daily life. As such, your perspective on these matters would be greatly valued.

If you are interested to hear more about this research, possibly with a view to being interviewed, please let me know that you are happy for me to contact you by either replying to me directly using the details below, or by giving *[name of gatekeeper]* permission to pass on your contact details on to me. I will then get in touch to talk further about what your taking part would involve.

Many thanks for considering taking part in this important project, and I look forward to hearing from you soon.

Best wishes,

Damien Hackney.

Damien Hackney BSc, MSc.

PhD candidate at Plymouth Marjon University

Email: **hackney.d@pgr.marjon.ac.uk**

Tel: 07939121356

Appendix E Bonsai sample participant information sheet.

Title of Research Project: Nature connections for the Anthropocene: a more-than-human exploration of environmental identity.

Name of Researchers: Damien Hackney, Debby Cotton, Greg Borne.

Main contact details (email): Damien Hackney can be contacted at hackney.d@pgr.marjon.ac.uk

You are invited to take part in a research project. The information below explains what this would involve so you can make an informed decision about whether you would like to take part. Please read all the information carefully. If you have any questions, or would like more information, please use the email address above to contact Damien Hackney.

What is the purpose of the study?

Previous research suggests that how people relate to wild nature may influence how they act on environmental and sustainability issues. However, far less is known about how nature connection is culturally mediated. Therefore, this study aims to explore how people relate to a range of natural and artefactual elements that make up their environmental identity, as well as their thoughts on environmental issues. The results of this research could help environmental organisations and policy makers think about how best to encourage a more ecologically sensitive approach to daily life.

If you are 18yrs or older, you will be eligible to take part in this project. Should you agree to take part in this project, an interview with the researcher will be arranged at your convenience. The interview could take place in a private room at Plymouth Marjon University, or in the form a walk in a park local to you, or via an online platform such as Zoom. These options will be guided by your preferences, practical travel constraints, and any Covid-19 restrictions in place at the time.

Why have I been invited?

You have been invited to take part in this project because of your valuable experience cultivating Bonsai trees. Your perspective would make a valued contribution toward attaining a deeper understanding of the material and cultural relationships between humans and nature.

What will happen if I take part?

If you would like to contribute to this research, you will be invited to an interview with the researcher. Before the interview begins, you will be asked to read and sign an informed consent form (or give verbal consent if the interview takes place online). The interview itself will take between 30 and 60mins. During the interview, the researcher will ask you questions about your experiences

cultivating Bonsai trees, what nature means to you, and your thoughts on issues such as sustainability, conservation, and the current ecological crisis.

What are the advantages of taking part?

Given your previous engagement with Bonsai cultivation, you may find discussing your thoughts and experiences on this topic enjoyable and interesting. Your input will feed into better understanding how to talk about nature, and how to encourage people to engage with environmental issues. Ultimately, your taking part could help contribute to informing environmental policy and approaches to conservation and sustainability.

Do I have to take part?

No, you are under no obligation to take part. Your participation would be entirely voluntary. If you decide to take part, you will be asked to state your consent before the interview begins. This will show that you have understood the information on this sheet. However, even after you have consented, you can still retract your consent at any point (even during the interview) up until your data has been transcribed and anonymised.

Expenses and payments

If you travel to the university to be interviewed, your travel costs can be refunded to you via prior arrangement. Otherwise, you will not receive any financial payment for taking part.

What are the possible disadvantages and risks of taking part?

Taking part in this research will mean you donating up to an hour of your time.

Will my taking part in the study be kept confidential?

The interview will be recorded on a digital recording device. The recording will be stored on a secure network drive at Plymouth Marjon University until September 2030, after which it will be deleted. Once the audio file of the interview has been uploaded to the secure network the original audio file will be deleted. Transcription and anonymisation of interview recordings will be completed as soon as possible, and your data will only be accessed by the researchers and possibly a member of the university who would ensure that research is being conducted appropriately.

Whilst your data will be kept completely confidential and anonymised as soon as possible, there may be a small chance of your participation becoming known given that others in the Bonsai community are also being invited to participate, and so discussions between participants about their involvement

could take place without the researcher's knowledge. To minimise the chance of your identity being discerned through future publications that could include quotes from the interview, only quotes that do not contain references to real names of other people or places will be used. Furthermore, any detailed descriptions of places that could lead to the identification of a location will not be included in any published research.

It is possible that some of your data will be looked at by authorised persons from Plymouth Marjon University to check that the study is being carried out correctly. These persons will have a duty of confidentiality to you.

What will happen to the results of the research study?

Your data will be used as part of an analysis that will contribute to a doctoral thesis and the publication of research papers. The research results may also be presented at conferences and shared with potential funders of future research. If you are quoted in any future publications, every effort will be made to select text that will not compromise your anonymity or the anonymity of others. This will be achieved not just by replacing names with codes (e.g. 'participant A'), but also by replacing place names and other descriptive content that could give information on a particular location.

What will happen if I don't want to carry on with the study?

You can withdraw from taking part in this research up until your interview has been transcribed and anonymised. Once transcription and anonymisation of the interview has taken place, the content will be securely stored until September 2030.

What if there is a problem?

Should you have any concerns at any point during your taking part in this research, you can ask to speak to one of the researchers who will do their best to answer your questions. Contact details for the researchers can be found below. If you have any questions about your rights as a research participant, or wish to make a complaint, you can contact the University Research Ethics Panel at ethicspanel@marjon.ac.uk.

Thank you for taking the time to read the information sheet.

Contact details

Damien Hackney

PhD candidate

Plymouth Marjon University

Derriford Road

PL6 8BH

hackney.d@pgr.marjon.ac.uk

Professor Debby Cotton

Director of Academic Practice

Plymouth Marjon University

Derriford Road

PL6 8BH

dcotton@marjon.ac.uk

Appendix F Nature-connection sample participant information sheet.

Title of Research Project: Nature connection for the Anthropocene: a multi-sited exploration of the relationships between human and nonhuman natures in England.

Name of Researchers: Damien Hackney, Debby Cotton, Greg Borne.

Main contact details (email): Damien Hackney can be contacted at hackney.d@pgr.marjon.ac.uk

You are invited to take part in a research project. The information below explains what this would involve so you can make an informed decision about whether you would like to take part. Please read all the information carefully. If you have any questions, or would like more information, please use the email address above to contact Damien Hackney.

What is the purpose of the study?

Previous research suggests that how people relate to nature may influence how they act on environmental issues. Building on existing findings, this study aims to explore in more detail how people relate to a range of natures, as well as their thoughts on environmental issues. The results of this research could help environmental organisations and policy makers think about how best to encourage a more ecologically sensitive approach to daily life.

If you are 18yrs or older, you will be eligible to take part in this project. Should you agree to take part in this project, an interview with the researcher will be arranged at your convenience. The interview could take place in a private room at Plymouth Marjon University, or in the form a walk in a park or outdoor space local to you, or via an online platform such as Zoom. These options will be guided by your preferences, practical travel constraints, and any Covid-19 restrictions in place at the time.

Why have I been invited?

You have been invited to take part in this project because of your valuable experience with nature-connection activities. Your perspective would make a valued contribution toward attaining a deeper understanding of the material and cultural relationships between humans and nature.

What will happen if I take part?

If you would like to contribute to this research, you will be invited to an interview with the researcher. Before the interview begins, you will be asked to read and sign an informed consent form (or give verbal consent if the interview takes place online). The interview itself will take between 30 and 60mins. During the interview, the researcher will ask you questions about your nature-connection

experiences, what nature means to you, and your thoughts on issues such as sustainability, conservation, and the current ecological crisis.

What are the advantages of taking part?

Given your previous engagement with nature-connection, you may find discussing your thoughts and experiences on this topic enjoyable and interesting. Your input will feed into better understanding how to talk about nature, and how to encourage people to engage with environmental issues. Ultimately, your taking part could help contribute to informing environmental policy and approaches to conservation and sustainability.

Do I have to take part?

No, you are under no obligation to take part. Your participation would be entirely voluntary. If you decide to take part, you will be asked to state your consent before the interview begins. This will show that you have understood the information on this sheet. However, even after you have consented, you can still retract your consent at any point (even during the interview) up until your data has been transcribed and anonymised.

Expenses and payments

If you travel to the university to be interviewed, your travel costs can be refunded to you via prior arrangement. Otherwise, you will not receive any financial payment for taking part.

What are the possible disadvantages and risks of taking part?

Taking part in this research will mean you donating up to an hour of your time.

Will my taking part in the study be kept confidential?

The interview will be recorded on a digital recording device. The recording will be stored on a secure network drive at Plymouth Marjon University until September 2030, after which it will be deleted. Once the audio file of the interview has been uploaded to the secure network the original audio file will be deleted. Transcription and anonymisation of interview recordings will be completed as soon as possible, and your data will only be accessed by the researchers and possibly a member of the university who would ensure that research is being conducted appropriately.

Whilst your data will be kept completely confidential and anonymised as soon as possible, there may be a small chance of your participation becoming known given that others in the nature-connection community are also being invited to participate, and so discussions between participants about their

involvement could take place without the researcher's knowledge. To minimise the chance of your identity being discerned through future publications that could include quotes from the interview, only quotes that do not contain references to real names of other people or places will be used. Furthermore, any detailed descriptions of places that could lead to the identification of a location will not be included in any published research.

It is possible that some of your data will be looked at by authorised persons from Plymouth Marjon University to check that the study is being carried out correctly. These persons will have a duty of confidentiality to you.

What will happen to the results of the research study?

Your data will be used as part of an analysis that will contribute to a doctoral thesis and the publication of research papers. The research results may also be presented at conferences and shared with potential funders of future research. If you are quoted in any future publications, every effort will be made to select text that will not compromise your anonymity or the anonymity of others. This will be achieved not just by replacing names with codes (e.g. 'participant A'), but also by replacing place names and other descriptive content that could give information on a particular location.

What will happen if I don't want to carry on with the study?

You can withdraw from taking part in this research up until your interview has been transcribed and anonymised. Once transcription and anonymisation of the interview has taken place, the content will be securely stored until September 2030.

What if there is a problem?

Should you have any concerns at any point during your taking part in this research, you can ask to speak to one of the researchers who will do their best to answer your questions. Contact details for the researchers can be found below. If you have any questions about your rights as a research participant, or wish to make a complaint, you can contact the University Research Ethics Panel at ethicspanel@marjon.ac.uk.

Thank you for taking the time to read the information sheet.

Contact details

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