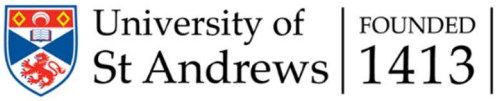
Beyond Holism and Otherness:
On the Metaphysical Basis for Environmentalism

Kas Bernays



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As part of the Laidlaw Scholarship Programme for Leadership and Research.

"the prophecy inside him, like a grimace,

was I WILL MEASURE IT ALL AND OWN IT ALL"

– Ted Hughes

"Bios is intrinsically symbiosis"

– Holmes Rolston III

"In vain we force the living into this or that one of our molds. All the molds crack"

– Henri Bergson

Introduction

Anthropocentrism– the view that human beings are separate from and above Nature – has failed. This is not because it has been misapplied - a failure to *manage* Nature effectively in our interests - but because it *does not correspond to reality*. We need a new account of humanity's relation to Nature which allows us to adjudicate the questions of value and trade-offs which hallucinations of perpetually expanding human dominion fatefully overlook. Any serious attempt to respond to the ecological crises will require a change in consciousness, and a reassessment of the way Nature is excluded from value calculations directing climate action. As John Broome[1] notes, costings of emissions treat damage to non-human Nature as an 'externality' – discarding the strong intuition that something is inherently wrong with wilfully damaging the living world. Philosophy must ground this intuition in an underlying metaphysics of value in Nature, embedding the notion that weight should be given to Nature's interests.

There are two (not necessarily incompatible) directions this can take. One is *holism* – dissolving distinctions between humanity and non-human Nature, leading us to further the interests of Nature as a whole which we are inseparably part of. Conversely, *otherness* derives respect for Nature from its autonomy. I will survey these approaches and sketch a synthesis which resituates humanity within a natural world suffused with other morally significant beings.

[1] John Broome, "Philosophy, economics and harnessing self-interest." (Lecture, Energy Ethics 2023, St Andrews, June 8th).

Anthropocentrism

The roots of anthropocentrism – seeing Nature as existing *for* humanity - can be traced to two Enlightenment ideas. These are the Cartesian account of minds as discretely internal and exclusively human, and the atomic, mechanistic ontology of separate objects reducible to the arrangement of their parts. An environmentalist account of Nature will have to offer an alternative to these views, if Nature is to be afforded value beyond its instrumental utility for humanity.

Two elements of Descartes' account of mind corrode attempts to make sense of Nature's value. First, minds being exclusively human, furnished by an incorporeal soul. The non-human world, being purely material, is passive – Nature is a lifeless "clock"[2]. Humanity is the world's mind, Nature merely its body. Nature in-and-of-itself is excluded (as modern economists largely continue to) from any calculations of value. Locke's account of property tells us: "Land that is left wholly to Nature" is "Waste"[3] and that an environment's potential to enlarge the enduring value-store of money overwhelms any claim to preserve it.

Arguably as damaging, but more widely accepted, is the 'internalism' of thought – that the mind is discretely contained within individual bodies. This implies, Mark Rowlands[4] argues, a dualism between thinking subject and unthinking object which renders non-anthropocentric value in Nature inconceivable. What is outside humans possesses only subjective value, in virtue humans' valuing cognition projected outwards.

The mechanistic account of the world holds that the world is made up of discrete objects and any macroscopic entity is "ontologically reducible to its simple constituents"[5]. The mechanical description has a normative element. Where pre-modern notions of Nature as alive and sensitive (continuing in many animistic traditions) constrained the permissibility of exploiting it, Nature's reduction to passive mechanism permits seeing it as an inert, master-

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[2] Descartes, *Discourse on Method and The Meditations*, p. 75.

[3] John Locke, *Second Treatise of Government and A Letter Concerning Toleration*, (Oxford: Oxford University Press, 2016), p. 23. This is also explicitly part of Locke's claim that indigenous people have no right to the land they inhabit – the expulsion and eradication of indigenous people being a frequent feature of early Enlightenment thinking about Nature.

[4] Mark Rowlands, *The Environmental Crisis: Understanding the Value of Nature* (London: Macmillan, 2000), p. 6-8.

[5] J. Baird Callicott, "The metaphysical implications of ecology" *Environmental Ethics* 8 (4), (1986), p. 303.

able resource to be shaped toward human ends. The mechanical account can be understood as a "conceptual power structure"[6] which shapes thinking about Nature. In Heidegger's sense, it 'reveals' Nature in a particular way: as a "standing reserve" of energy, resources and tools, to be tapped into[7]. Humanity then reduces Nature to a "web of instrumental relations,"[8] - since humans are the only end to which things exist. Hence, there can only be an ethic of *managing* Nature – opposing overexploitation where it conflicts with our long-term interests, preserving 'natural capital' - rather than recognising Nature's value in itself.

Holism

Holism dismantles anthropocentrism by emphasising humanity's *indiscernibility* from Nature. The 'biotic community'[9] of humanity with the rest of the living world is taken to imply *moral community*. When the division between human and non-human is abandoned, an environmentalist ethic should follow from enlightened self-interest – we value Nature from the same impetus that we value ourselves, since we are inseparable from it. Hence, metaphysical indiscernibility entails a variation of Aldo Leopold's 'Land Ethic': "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise"[10].

The argument for indiscernibility is buttressed by ecology, which perceives organisms as deeply co-evolved - fundamentally shaped by each other. Zebra's stripes are thought to be a deterrent response to tsetse flies – hence, "the point of view of the flies [is] entered into the body of the zebra"[11]. No organism's form can be abstracted from the environmental

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[6] Carolyn Merchant, *The Death of Nature*, (New York: Harper Collins, 1983), p. 216.

[7]Martin Heidegger, *The Question Concerning Technology and Other Essays*, trans. William Levitt, (New York: Harper Torchbooks, 1977), p.14.

[8] W. S. K. Cameron, "Heidegger's Concept of the Environment in Being and Time." *Environmental Philosophy*, vol. 1, no. 1, (2004), pp. 34–46. JSTOR, http://www.jstor.org/stable/26167884. Accessed Aug. 9th 2023, p. 36.

[9] Aldo Leopold, *A Sand County Almanac*, *Oxford: Oxford University Press, 1949), p. 204.

[10] Leopold, *A Sand County* Almanac, p. 225.

[11] Thibault De Meyer, "A Leibnizian Framework: Zebra Stripes and Monadology" in *Field Philosophy and Other Experiments*, (London: Routledge, 2021) p. 472.

interactions which shape it – there is an ineliminable *blurriness* to the perceived boundaries between living beings. Following Arthur Tansley, ecology understands ecosystems as "rotations of energy" [12]. The energy-transferring interactions within ecosystems are taken to be *internal relations* within a wider, systematic whole. Since human beings are part of this indivisible web of life, our selfhood is properly identified with the whole of Nature – the line between self and Other disappears. If axiological egoism is assumed – that we all, fundamentally, value ourselves – then properly perceiving what we are (through 'ecological consciousness') entails moral concern for all of Nature, whose interests are our own.

A significant criticism concerns the vague ethical implications of holism. Even if one accepts their indiscernibility from Nature, this may not imply environmentalism. I could consistently identify myself with Nature *and* see Nature as merely the extended life-support system which exists to sustain me. Stoic thinkers saw Nature, similarly, as a unified system of interdependent parts, while believing the whole existed *for the rational parts*, i.e. men[13]. This holism collapses any distinction between human and non-human interests, without actually illuminating *what those interests are* – it does not imply the land ethic's imperative to preserve and enhance environmental richness. Oneness is not enough.

Externalism

Mark Rowlands argues we can acknowledge the value in Nature only by replacing the *internalist* account of mind with an *externalist* one[14]. The 'environmental model of mind' proposes that cognition occurs not just through internal representations, but also through manipulating external, information-bearing structures[15] Consider the way we think by accessing environmental memory-cues (e.g. the organisation of a bookshelf) and visuographic representation (including written language).Cognition, this suggest, can take place outside the body.

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[12] Arthur Tansley in Callicott, "The Metaphysical Implications of Ecology", p. 307.

[13] Merchant, *The Death of Nature*, p. 23.

[14] This is the overall thesis of Rowlands, *The Environmental Crisis*.

[15] Rowlands, *The Environmental Crisis*, p. 128-9.

A natural environment contains the encoded information of 'affordances' – potential that it offers to particular complementary organisms[16] – e.g., the canopy affords a platform for locomotion to primates. The information that an environment has valuable affordances to that organism is objective – depending not on any particular disposition but rather the organism's needs and an environment's capacities to fulfil them[17]. This does not even require the organism to exist, only to be *possible* – if humans did not exist, there would still be affordances in the environment that humans would value if they did. Hence, affordances exist within Nature, not the valuer's mind.

Thus, valuing Nature actually means recognising value always-already embodied within it. Value has an *objective basis* which, crucially, is normatively evaluable – we can *fail* to recognise it[18]. As Emily Brady argues, we can learn to value parts of Nature which are not traditionally scenic – like swamps - by deepening our attention. A "sensuous appreciation anchored in scientific understanding which provides a background ecological story"[19] can reveal overlooked sources of value– the normative element to Rowlands' account suggests such attention could be morally obliged.

Rowlands' account of *what* we should value, however, is problematic. Human beings are inclined to value are indicators of environmental affordances conducive to survival – we value features which appear to offer us utility. Rowlands suggests this does not mean we can only value Nature instrumentally, since these indicators include general features of an environment like richness, integrity, and stability, which are closely correlated with an environment offering us many affordances[20]. It would be a 'genetic fallacy' – mistaking origin for content – to suppose that the instrumental origins of the way we value preclude valuing Nature for itself[21]. Yet this this still values only what *humans* are inclined to value. Nature may be intrinsically predisposed to be valued by humans, but *what* this leads us to value is still shaped by our species' interests - which cannot represent Nature's wider

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[16]James J. Gibson, *The Ecological Approach to Visual Perception*, New York: Psychology Press, 1986, p. 127.

[17] Rowlands, *The Environmental Crisis*, 145-146.

[18] Rowlands, *The Environmental Crisis*, 158.

[19] Brady, Emily, "Aesthetics in Practice: Valuing the Natural World." *Environmental Values* 15, no. 3 (2006): 277–91. http://www.jstor.org/stable/30302153, p. 281.

[20] Rowlands, *The Environmental Crisis*, p. 155.

[21] Rowlands, *The Environmental Crisis*, p. 142.

interests. What prior accounts have lacked, which I will attempt to sketch below, is a metaphysics of *Nature valuing itself* – that Nature contains not just sources of value, but *interests* with moral significance.

Towards a Complexity-Based Account

To conceive of Nature valuing itself depends on two paradigm-shifts: a panpsychist theory of mind replacing Cartesianism, and a process metaphysics dismantling atomism.

Panpsychism contends that 'mind' is *fundamental*, rather than emergent, and varies in *degree*, not in kind. A full argument for panpsychism is beyond the present scope, but in brief: it seems arbitrary that minds (a basic level of awareness, including the ability to value, not the advanced self-awareness implied by 'sentience') should emerge only from some physical systems (some mammal and cephalopod brains) and not others. Rather, mind is conceived as fundamental – anything which exists has a corresponding mind. The degree of mind which a being possesses is determined by its *complexity* – following Spinoza: "all [individuals], though in different degrees, are necessarily nevertheless animate"[22]. An individuals' physical complexity determines their mind's complexity– "its aptitude increases in proportion to the number of ways in which its body can be disposed"[23]. Assuming, as much moral philosophy does, that part of having a mind is valuing oneself[24], all entities are then self-valuing ends-in-themselves, capable of instrumentally valuing things conducive to their survival and flourishing. Crucially, this entails that *power to value* corresponds to degree of mind possessed – a more complex entity confers greater moral weight upon its interests.

Process metaphysics allows us to understand the kind of entity an 'ecosystem' is, which cannot be captured by mechanical atomism. Within atomism, reality contains strictly separated objects, and every entity and phenomena can be reduced to its constituent parts. In processism, the world is composed of processes, not things: "things simply are what they

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[22]Spinoza, Benedict, *Ethics Demonstrated in Geometrical Order* (Ware: Wordsworth Editions, 2001), E2p13s.

[23]Spinoza, *Ethics*, E2p14.

[24] See Christine M. Korsgaard's claim in *Fellow Creatures: Our Obligations to the Other Animals* (Oxford: Oxford University Press, 2018), that part of what it is to have a mind is to have a "centre of self" around which a being is organised, such that even absent rationality, something with a mind can value things since it "perceives the world in such a way that imbues it with practical significance determined by her own interests, as those are embodied in her instinctive responses" (p. 50). This entails that entities without self-reflective sentience can be meaningfully said to confer value, and what they value is indicated by their instinctive actions.

do"[25]. Some support this with quantum mechanics, which has "dematerialised matter"– it appears that ordinary, macro-scale objects are in fact composed of quantum-physical *processes*, not substances[26]. The science of "ecological interdependence" – the complex symbiosis displayed in living systems – has challenged the idea that organisms are discrete, independent things. The recent revelation that forest floors are threaded by coordinating networks of mycelium offers a profound example. Organisms may be "fundamentally relational entities"[27] – processes inseparable from the nexus of other processes constituting them. Dissolving the account of Nature as a hierarchy of separate organisms – seen more accurately as a web of interrelated processes – permits us to perceive a wider array of entities.

An implication of processism is that systems cannot always be reduced to their parts, as atomism assumes. Processism endorses the idea of "macroprocesses that organize microprocesses into systematic wholes"[28] – a self-organising system can exercise *downward causation* on its parts, rather than the parts always determining the behaviour of the whole. Seeing ecosystems as entities of this kind, not reducible to their constituent biotic and abiotic components, allows us to recognise its distinctive interests. An ecosystem organises itself around a "centre of homeostasis"[29] rather than an organismic survival interest – their interest is in maintaining equilibrium. Like any other living being it is a "process which hangs together"[30] in that it acts, as one system, to preserve its own viability. Nor can an ecosystem's interests be reduced to an aggregation of its constituent organisms' interests - the interests of the whole and the parts sometimes conflict. Some ecosystems require, for long-term integrity and stability, periodic fires or freezes, against the interests of the many organisms that these kill. Ecosystems, as wholes, produce particular outcomes – the Amazon creating favourable

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[25] Nicholas Rescher, *Process Metaphysics: An Introduction to Process Philosophy*, New York: State University of New York Press, 1996, p. 47.

[26] Johanna Seibt, "Process Philosophy", *The Stanford Encyclopedia of Philosophy* (Summer 2023 Edition), Edward N. Zalta & Uri Nodelman (eds.), URL = https://plato.stanford.edu/archives/sum2023/entries/process-philosophy/, p. 4.

[27] Nicholson, Daniel J., and John Dupré (eds), *Everything Flows: Towards a Processual Philosophy of Biology* (Oxford, 2018; online edn, Oxford Academic, 19 July 2018), https://doi.org/10.1093/oso/9780198779636.001.0001, accessed 23 Aug. 2023.

[28] Rescher, *Process Metaphysics*, p. 37.

[29] Lawrence E. Johnson "Toward the Moral Considerability of Species and Ecosystems", *Environmental Ethics*, Vol. 14, Iss. 2, (Summer 1992), p. 155.

[30] Johnson, "Toward the Moral Considerability", p. 150.

conditions by seeding rainclouds[31]. Since it acts together to produce a certain affect[32], ecosystems constitute the kind of cohesive 'individuals' with self-valuing minds.

An ecosystem's power to value itself corresponds to its *complexity* in this account of mind – complexity, in ecological terms, being the richness and variety of "networks of interactions" within it[33]. Hence, a more complex ecosystem values itself more, conferring greater moral weight onto its interests, than a simpler ecosystem – a rainforest, richer in ecological interactions than a plantation, makes a stronger claim for its preservation.

This resituates human beings within an egalitarian world of competing value claims and interests not inherently different from our own and provides a basis to adjudicate between these interests. It grounds intuitions that 'richness' Nature is valuable – since richness directly corresponds to the value an ecosystem confers upon itself. Human beings would be agents within wider ecosystems, with a negative duty not to infringe on interests in Nature when they are stronger than ours. In a stronger interpretation, this entails a positive duty to enrich the overall complexity of Nature – providing a basis for active 'wilding' in addition to protecting existing ecosystems from harm.

This might not capture the harm of invasive species supplanting existing ecosystems – indeed, were the new ecosystem more complex, this might, perversely, be favoured[34]. Yet invasive species typically reduce ecological complexity- see invasive lionfish in the Caribbean outcompeting native predators, disrupting the balance sustaining the reefs' diversity. Even if similar conflicts with environmentalist imperatives pose a problem, I hope to have demonstrated the potential explanatory power of grounding an environmental ethics in a metaphysical recognition of Nature's capacity to value itself, and that merely extending humans mind into Nature is insufficient.

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[31] Ilima Loomis, "Trees in the Amazon make their own rain", *Science* (2017), URL: https://www-science-org.ezproxy.st-andrews.ac.uk/content/article/trees-amazon-make-their-own-rain, accessed 16th Aug. 2023.

[32] Francesca di Poppa, "Spinoza and Process Ontology", *The Southern Journal of Philosophy*, Vol. 48. Iss. 3, (September 2010), p. 287.

[33]David G. Green, Nicholas I. Klomp, Glyn Rimmington, Suzanne Sadedin, *Complexity in Landscape Ecology*, Cham: Springer Cham, 2020, p. 4.

[34] This adapts a criticism of appeals to "the larger scheme of things" made by Lily-Marlene Russow, "Why do species matter?" in *Environmental Ethics* 3 (2) (1981), p. 140.

Otherness

The 'otherness' tradition holds that Nature possesses an ineradicable ontological autonomy – affirming, rather than dissolving, the conceptual distinction between humanity and Nature. Where holism looks to Nature to guide action, otherness understands Nature as a boundary[35] . While otherness cannot be an environmentalist ethic's sole basis, some elements can be synthesised with the complexity-based account.

Otherness holds that the ineradicable separation between humanity and Nature entails that there is "no moral community"[36] between them. The basis of value in Nature is not our identification with it, but the opposite: its metaphysical distinctness should lead us to respect its autonomy. Nature is autonomous in that it exists and organises itself independently of human causation. The interconnection identified by holism does not preclude that Nature can be autonomous insofar as it pre-exists humanity and maintains its own integrity[37]. Keekok Lee[38] proposes that whatever is autonomous from humanity in its genesis and continuing existence *exists for itself*, not for us, and so is valuable in itself. Recognising Nature as having this kind of internal teleology implies that it *counts*, ethically, by the same token we do. This usefully secures the value of non-living Nature, including beyond Earth. Lee argues there is a strong intuition that it would be wrong for human beings to destroy or fundamentally alter even a lifeless planet - even if they lacked descendants who would be deprived. This concern could not be rooted in ecological interconnection between humanity and a distant exoplanet, nor in ecological complexity – since the interest of increasing complexity might favour e.g., terraforming Mars. Against Hume's recommendation not to derive 'ought' from 'is', otherness asserts the intrinsic value of natural artefacts and processes proceeding uninhibited whether or not they are alive or have living dependents.

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[35] Bernard Williams, "Must a Concern for the Environment be Centred on Human Beings?", *Making Sense of Humanity,* Cambridge: Cambridge University Press, 1995, p. 238.

[36] Simon A. Hailwood, "The Value of Nature's Otherness" *Environmental Values* 9 (3), (2000), p. 354.

[37] Thomas Heyd, *Recognizing the Autonomy of Nature*, (New York: Columbia University Press, 2006), p. 5-6.

[38] Keekok Lee, "Awe and Humility: Intrinsic Value in Nature: Beyond an Earthbound Environmental Ethics" *Royal Institute of Philosophy Supplement* 36 (1994), p. 99.

The otherness-based theory of value is also relatively 'objective'[39]. This draws from Thomas Nagel's value theory, wherein objectivity is a matter of degree scaling with *impersonality*: "a view… is more objective than another if it relies less on the specifics of the individual's makeup and position in the world, or on the character of the particular type of creature he is" [40]. That autonomy confers value could be especially objective, because it draws back from human perspectives – the claim 'Nature exists for its own sake' would be unaffected had humanity never existed. This theory avoids weaknesses of more subjective accounts – wherein the value of Nature depends upon the extent to which normal observers value it[41]. The greater objectivity of otherness entails that if most people did not value Nature, there would be a meaningful ground to argue they are mistaken.

Limiting the qualification of Nature's otherness, does, then, present a basis for environmentalism. However, it may not accommodate a duty of contemporary environmentalism: active intervention in Nature, e.g., managing ecosystems and re-introducing species, where exclusive policies of protection can no longer reverse the desolation. Additionally, foreclosing the possibility of human integration within Nature is ahistorical and unacceptably alienating – producing the absurd injustice of indigenous peoples being evicted from land they lived inseparable from since time immemorial, in the name of an illusory, Western ideal of untouched 'Wilderness'[42].

While otherness alone cannot therefore be the basis for environmentalism, it is not incompatible with the complexity-based view, which offers a synthesis of holism and otherness. Complexity can be one source of value, while the (compatible) value of otherness provides a basis to refrain from replacing natural ecosystems with artificial ones even when the latter is more complex. Together, they makes sense of the idea that Nature can at once be interconnected and contain distinct sub-systems with opposing interests – accommodating the value of autonomous, 'wild' Nature without excluding humanity from the natural world they belong to.

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[39] This is a substantially altered adaption of the argument made in Hailwood, "*The Value of Nature's Otherness".*

[40] Thomas Nagel, *The View from Nowhere* (Oxford: Oxford University Press, 1986), p. 4.

[41] Karen Green, "Two Distinctions in Environmental Goodness" *Environmental Values* 5 (1) (1996), p. 19.

[42] Guha, R. cited in Barbara Muraca, "Relational Values: A Whiteheadian Alternative for Environmental Philosophy and Global Environmental Justice" *Environmental Ethics,* 8 (1), (2016), p. 33.

Conclusion

The anthropocentric attitude to Nature is rooted in the Cartesian model of discrete, internal human minds, and mechanical atomism. Neither traditional holism nor the environmental model of mind offers a sufficient response. Rather than extending human self-interest or cognition out into Nature, an environmentalist metaphysics should show that *Nature values itself*. I have suggested a complexity-based theory of environmental value based upon panpsychism and process metaphysics as a direction towards this. While otherness cannot offer an adequate alternative, some features (the maintenance of internal distinctions, respect for autonomy) are accommodated by the complexity-based account. This moves beyond dichotomies of Nature as 'One' or 'Other', towards recognising an ecological fabric containing other, valuing beings with interests we ought to respect, whose existence and fate are inextricably entangled with ours.

Acknowledgements

I would like to thank the Laidlaw Foundation and Lord Laidlaw for the funding I received to conduct this research. I am deeply grateful to Dr Ben Sachs-Cobbe, for agreeing to supervise this project and for the advice and interlocution that brought it to fruition. I also want to express my gratitude to Dr Mara van der Lugt without whom I could not have brought together a proposal in this field, Dr Alexander Douglas for helping me draw together the connections between Spinoza and ecology, Dr Judith Wolfe for introducing me to Heidegger, Dr Jade Fletcher for suggesting readings on genealogy and the normativity of concepts, Dr Matyáš Moravec for discussing Bergson, and Joost Pietschmann for volunteering to explain quantum theory. I would also like to thank everyone who organised and spoke at the Climate Ethics panel of the Energy Ethics 2023 conference. Finally, I would like to thank Dr Cassice Last for her diligence and kindness in running the program.

Words: 3000 (excluding cover, epigraphs, footnotes, acknowledgements, and bibliography)

Bibliography

Albins, M.A. "Effects of invasive Pacific red lionfish Pterois volitans versus a native predator on Bahamian coral-reef fish communities" Biol Invasions 15, pp. 29–43 (2013). https://doi.org/10.1007/s10530-012-0266-1

Brady, Emily, "Aesthetics in Practice: Valuing the Natural World." *Environmental Values* 15, no. 3 (2006): 277–91. http://www.jstor.org/stable/30302153.

Broome, John, "Philosophy, economics and harnessing self-interest." Lecture, Energy Ethics 2023, St Andrews, June 8th.

Callicott, J. Baird, "Intrinsic value, quantum theory, and environmental ethics." *Environmental Ethics* 7 (3) (1985): pp. 257-275.

Callicott, J. Baird, "The metaphysical implications of ecology" *Environmental Ethics* 8 (4), (1986): pp. 301-316.

Cameron, W. S. K. "Heidegger's Concept of the Environment in Being and Time." *Environmental Philosophy*, vol. 1, no. 1, (2004), pp. 34–46. JSTOR, http://www.jstor.org/stable/26167884. Accessed 9 Aug. 2023.

De Meyer, Thibault, “A Leibnizian Framework: Zebra Stripes and Monadology” in *Field Philosophy and Other Experiments*, London: Routledge, 2021

Descartes, René, *Discourse on Method and The Meditations*, trans. F. Sutcliffe, London: Penguin, 1968.

di Poppa, Francesca, “Spinoza and Process Ontology”, *The Southern Journal of Philosophy*, Vol. 48. Iss. 3, (September 2010), pp. 272-294.

Gibson, James J. *The Ecological Approach to Visual Perception*, New York: Psychology Press, 1986.

Green, David G.; Klomp, Nicholas I.; Rimmington, Glyn; Sadedin, Suzanne, *Complexity in Landscape Ecology*, Cham: Springer Cham, 2020.

Green, Karen, “Two Distinctions in Environmental Goodness” *Environmental Values* 5 (1) (1996):pp. 31 - 46.

Hailwood, S. A., The Value of Nature's Otherness. *Environmental Values* 9 (3), (2000): pp. 353-372.

Heidegger, Martin, *The Question Concerning Technology and Other Essays*, trans. William Levitt, New York: Harper Torchbooks, 1977.

Heyd, Thomas, *Recognizing the Autonomy of Nature*, New York: Columbia University Press, 2006.

Johnson, Lawrence E. “Toward the Moral Considerability of Species and Ecosystems”, *Environmental Ethics*, Vol. 14, Iss. 2, (Summer 1992), pp. 145-157.

Korsgaard, Christine M., *Fellow Creatures: Our Obligations to the Other Animals*, Oxford: Oxford University Press, 2018.

Lee, Keekok, “Awe and Humility: Intrinsic Value in Nature: Beyond an Earthbound Environmental Ethics” *Royal Institute of Philosophy Supplement* 36 (1994): pp. 89-101.

Leopold, Aldo, *A Sand County Almanac*, Oxford: Oxford University Press, 1949.

Locke, John, *Second Treatise of Government and A Letter Concerning Toleration*, Oxford: Oxford University Press, 2016.

Loomis, Ilima, “Trees in the Amazon make their own rain”, *Science* (2017), URL: https://www-science-org.ezproxy.st-andrews.ac.uk/content/article/trees-amazon-make-their-own-rain, accessed 16th Aug. 2023.

Merchant, Carolyn, *The Death of Nature*, New York: Harper Collins, 1983.

Muraca, Barbara, “Relational Values: A Whiteheadian Alternative for Environmental Philosophy and Global Environmental Justice”, *Environmental Ethics* 8 (1), (2016), pp. 18-38.

Nagel, Thomas, *The View from Nowhere*, Oxford: Oxford University Press, 1986.

Nicholson, Daniel J., and John Dupré (eds), *Everything Flows: Towards a Processual Philosophy of Biology*, Oxford: Oxford University Press, 2018; online edn, Oxford Academic, 19 July 2018), https://doi.org/10.1093/oso/9780198779636.001.0001, accessed 15 Aug. 2023.

Rescher, Nicholas, *Process Metaphysics: An Introduction to Process Philosophy*, New York: State University of New York Press, 1996.

Rolston III, Holmes, “Lake Solitude: The Individual in Wilderness”, *Main Currents in Modern Thought*, No. 31 (1975), pp. 121-126.

Rowlands, Mark, *The Environmental Crisis: Understanding the Value of Nature*, London: Macmillan, 2000.

Russow, Lily-Marlene, “Why do species matter?”, *Environmental Ethics* 3(2) (1981), pp. 101-112.

Seibt, Johanna, "Process Philosophy", *The Stanford Encyclopedia of Philosophy* (Summer 2023 Edition), Edward N. Zalta & Uri Nodelman (eds.), URL = <https://plato.stanford.edu/archives/sum2023/entries/process-philosophy/>.

Spinoza, Benedict, *Ethics Demonstrated in Geometrical Order*, Ware: Wordsworth Editions, 2001.

Williams, Bernard, “Must a Concern for the Environment be Centred on Human Beings?”, *Making Sense of Humanity,* Cambridge: Cambridge University Press, 1995, pp. 233–240.