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# Ecologising education beyond angels and villains

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## ABSTRACT

Many educational approaches to the ecological crisis posit fundamental causes that we can conceptually isolate and address. For instance, it is often claimed that a certain kind of manipulative or mechanistic way of thinking is responsible for the destruction underway. However, to say 'mechanistic' thinking caused the crisis itself risks thinking mechanistically about the relationship between thought, action and world, whereas trying to manipulate educational systems to not be manipulative seems incongruent. Can we take such warnings seriously without reproducing what they call out, or are we trapped in the echoes of their influence? Do we need to rethink the very framing of problem and solution? In response to this issue, I develop an understanding of 'ecologising education' by attempting to engage 'ecologically' with Michael Bonnett's recent thinking. The nonfoundational, pluralistic and redemptive nature of ecologies transform destruction into resource, so ecologising education could look for collaborative transformation immanent within the turmoil, and consider how humans can support such self-healing processes. In that vein, I also explore a nonfoundational, pluralistic and redemptive approach to dialoguing with Bonnett's identified core causes (scientism and the metaphysics of mastery), and core solution (retrieving experience of nature as self-arising, transcendent and whole), as a means to ecologising the educational space we both share.

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## Introduction

I was invited by the *EER* editors to write a response to Bonnett's (2021a) article and by extension, the book it summarises (Bonnett 2021b). I believe this is because I have been using the term *ecologising education* (e.g. Affifi 2012, 2015, 2017a), a phrase that also occupies a central place in Bonnett's two texts. In taking up the offer, I hope to further ecologise my engagement with this (re)generative phrase, some of my understanding of Bonnett's contribution and hopefully the readers' too.

I align broadly with many intuitions and premises constellating in Bonnett's work. I am grateful he foregrounds the importance of experiencing nature as self-arising, transcendent and whole (or at least relational) for social, spiritual and ecological flourishing, and that such experiences are threatened. I am also motivated by the idea of a reciprocal revealing of world and self, that nature and human consciousness are both worth celebrating, of the need to bring aesthetic, sensory and embodied engagement with/in the world into education, and a general

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concern about how scientific knowledge affects humans and nature through worldviews, technologies, artefacts and habits. I am less sure of how he brings these together.

Bonnett asks '*what is the real catastrophe?*' (Bonnett 2021b, 16) and arrives at what I understand as his central thesis. Environmental destruction is the symptom of a deeper problem, which is that *scientism* and the *metaphysics of mastery* collude, generating hubris and destructive anthropocentrism, while threatening our phenomenological encounter with those primordial aspects of self and nature necessary for ecologising education. His strategy is foundationalist as it identifies key causes underlying both the problem and its solution. This approach is repeated in his treatment of a series of dualisms, which I will explore shortly.

The sense of *ecologising education* I explore approaches education itself as an ecology, organising itself through reciprocal relationships between ways of seeing, thoughts, emotions, habits, material structures and other beings and processes. Recognising our immersion in these complex webs, and in both the destructive and healing ecologies underway, we can humbly and open-mindedly *attend* to what these ecologies do. Ecologies transform destruction into resource, so ecologising education looks for transformation immanent within the turmoil, and considers how humans can support these self-healing processes.

## The meanings of 'ecologising education'

My use of the term *ecologising education* has three broad and interconnected meanings. The first two are (1) we can ecologise our conception of education, and (2) we can contribute to conditions that make educational dimensions of our ecologies more healthful. These two meanings are in interplay because effort in one alters the other, connecting to (3): the process is ongoing, fallible, experimental and evolutionary ('ecologising' rather than 'ecological'). All ecologies are ecologising.

An ecology involving humans is a dynamic web of more-than-human beings and processes, but also thoughts, emotions, habits, built structures and socioeconomic patterns, which corroborate in sustaining certain conditions through altering others. Participants in an ecology collaborate in these conditions, but how they participate is itself relational and outside of any one participant's control. Effects are not intrinsic to the posited entities but emergent in the interplay between participants in an ecology<sup>1</sup>.

Education is already 'ecological' because it cannot *not* be part of such a web of relations. Education is ecologising itself through and within us, whether or how we acknowledge it. We are alive in a world that affects us and we affect in turn. We may have linear beliefs about what we do in ecosystems, and these may lead us to think we are not relationally embedded, but these beliefs themselves still interact ecologically, feeding our actions in the world and returning back, for better or worse. *Attending* this contributes to healthy ecologies. Waiting with openness, paying attention, but also caring for the ecologies, 'attending' is active and passive.

'For better or worse' means we can distinguish *healthy ecologies* from *dysecologies*. A healthy ecology supports a diverse and thriving range of entities (inside and out). A dysecology gets caught up in mutually re-enforcing spirals of degradation. Sometimes an ecology will appear healthy at one spatial or temporal scale, and unhealthy at another. This seems to introduce unwanted relativism, but gestalt switching turns out to be a blessing, as we shall see.

A second aspect of attending to the educational dimension of our ecologies is recognising that other species around us are also in varied ways, educational. Creatures responding to creatures, responding to humans and humans responding to them: far from blind networks of automata, webs of learning and being learned from are fundamental dimension of Earth's ecologies (Affifi 2015, 2017a). This is why ecologising education interplays with *educationalising ecology* (Affifi 2012, 2015, 2017a). This second aspect will reappear when I consider Bonnett's discussion of more-than-human sentience in these two publications.

Bonnett might view my attempt to see education as an ecology as an imposition of systems theory, and the idea that the more-than-human world is sentient as speculation overly dependent on current biological research. Is my framing of ecologising education smuggling in science, and by extension scientism, threatening the kind of aesthetic encounter that he believes must ground our approach to the ecological crisis? In what follows, I advocate pluralism over foundationalism, and will need to show a different answer to a different question, but first let's explore more deeply Bonnett's twin villains in the catastrophe.

## Ecologising scientism, mastery and nature

For Bonnett, *scientism* describes a belief that science provides 'privileged access to the nature of reality; reveal[ing] what is "really" real and ... assume[s] the mantle of arbiter for thinking in general' (Bonnett 2021a, 1, see also Bonnett 2021b, 15). The *metaphysics of mastery* refers to how 'dominant strands of Western culture increasingly frame all issues in terms that are deeply anthropocentric and manipulative, ... understand[ing] ... flourishing ... in terms of the assertion and satisfaction of the human will ... [with] an accelerating preference for the artefactual [over] the reality and authority of nature' (2). For Bonnett, both collude against the experience of nature as *transcendent, self-arising* and *whole*. By these, Bonnett means nature is experienced as mysterious and other, as coming into being and becoming by itself, and as possessing integrity. Such experiences of nature are diminished by concepts, technologies and ways of perceiving that present nature as mechanical, understood, bitty, devoid of intrinsic value and exploitable. The problems Bonnett associates with scientism and metaphysics of mastery concern me. How we should handle these twin villains and their association with such problems is a stepping-off point for considering my conception of ecologising education vis-à-vis Bonnett's work.

If Bonnett's experiences of nature as self-arising, holistic and transcendent are important 'dimension[s] of experienced reality' (Bonnett 2021b, 44), we might take his invitation further and look for how they pervade across *all* experience, even those apparently most anthropocentric, and how we can attend to their further arising. In the next two subsections, I explore how mastery of nature and scientism both harbour conditions for their own downfall. Dialectically considered, we can imagine them as fiery upheavals, birthing new experiences of self-arising nature from their ashes. The ecological question is how to work with the transformative self-arising within these experiences.

### Scientism

For all its swagger, even scientism's science exposes us to experiences of nature Bonnett considers important. For example, Bonnett's scientism sees science as better at 'accessing' natural processes, which suggests already nature is beyond us. However seemingly grey and abstract, science is committed to encountering something 'more-than-human' unlike, say, kinds of social constructivism and the 'subjectivist turn' with its epistemological echo-chambers (which also concern Bonnett [e.g. discussion of Giddens (Bonnett 2021b, 42)]. Whatever one's views of science, it clearly leads humans to experiences that update old ways of thinking and perceiving nature, sometimes radically and surprisingly.

In the definition of scientism quoted earlier, I omitted Bonnett's claim that scientism presumes 'classical experimental science' (1) for its privileged access to reality. I wonder if Bonnett's critique is actually confined to beliefs about classical and experimental science, or whether his concern is ultimately about foundationalism generally. In any case, I would like to extend it this way, and think about what this means for ecologising Bonnett's diagnoses and prescriptions. Considering scientism and classical experimental science now will help pinpoint some deeper issues and questions.

Assuming the label 'scientism' is not a reification, why should it be classical or experimental? Experiment has other aspects beyond popular environmental tropes (e.g. Merchant 2020) reducing scientific experiment to pinning down, exposing and dissecting nature. Even when contentious, experiment still implies an ongoing dialogue with the more-than-human world. You do something, see what happens, change how you think or act, and so on, in reciprocal interaction. Experiment could be seen as what safeguards against hubris. In any case, aggressive scientific assertions are often based on non-falsifiable and non-experimental extensions of scientific theory, such as cosmology and evolution, often as historical reconstructions. One might argue these show an uncritical arrogance towards speculative narrative rather than experimental explanations.

The term 'classical' is usually used to contrast Newtonian and modern physics, but nothing commits modern physics to post-scientism. Proponents of modern physics might assert what is really real is probability distributions of particles not definitely located particles, and spacetime curvature not laws of gravity. Whether these revolutions are interpreted as evidence of science's privileged capacity to make really real statements depends on one's epistemological attitude towards such theory.

Because Bonnett identifies scientism with classical science, he also connects it to reductionism (Bonnett 2021a, 2). I think reductionist scientism would assert a set of causal relationships between entities operating at some 'basement' in the universe is really real, and everything above that level is merely an epiphenomenal effect of these causes. I do not think many scientists working today, nor most lay people, subscribe to *that* kind of scientism. There is vigorous commentary about how levels emerge in the universe and what kind of causal contributions they can make (e.g. Carroll 2016). Many scientists are mechanists who *oppose* this kind of nothing-but-x reductionism, because mechanisms arise from relationship between parts (Glennan 2017). Others take a pragmatic, whatever level 'works best' approach according to various criteria or purposes (e.g. Bongard and Levin 2021). How would Bonnett respond to a scientist who accepts that scientific knowledge cannot map onto reality perfectly and does not try to do so, but is rather about fallibly uncovering harnessable patterns? This would be manipulative, perhaps anthropocentric mastery (see below), but not perhaps adherence to scientism. In my view, many 21st Century scientists fit this description (see Godfrey-Smith 2003).

Finally, perhaps Bonnett is more concerned with the 'really' than the 'real'. The bigger issue might not be undercutting but the certainty one has with what is kept. If so, I still wonder whether his version of science or scientism is a particular target. Many scientists seek answers to open up new questions, and a universe of stable explanations would be depressing if achieved (Firestein 2012). They might aspire for mystery and believe science has the best methods for achieving it. Would this be a kind of scientism? A 'privileged access' to *questions*?

It is not commitments to the epistemological superiority of classical science, experimental science, or even to science itself that is at issue. There are varied physical, chemical, biological, ecological, sociological, spiritual and philosophical ways of undercutting the richness of lived experience by asserting the superiority of a particular way of accessing the world. One might even assert the really real is the phenomenological experience of nature in direct experience, and all other realms abstraction. If this means our diverse direct experiences of nature, as well as how they interplay with one another in experience, is really real, then I agree with Bonnett. If it means a subset of direct experience is more primordial and fundamental than other modes of access, then I wonder if phenomenology is susceptible to its own versions of scientism.

One last point before moving on to discuss mastery. If it is the public and not scientists who are scientism-ic, better showing scientists' epistemological diversity would be important. I think this is important, but not 'the' answer either. One can engage mechanistically in any domain, if looking for a general structure of relations to explain a situation, diagnose a problem or to invent a solution. One can even be a mechanist about what is needed to subvert mechanism, and prescribe educational solutions accordingly. Ecologising does not seek foundational

approaches for questions or answers, but aims for pluralism. The greater one holds to a particular kind of really real, the more other such claims seem threatening. One solution is to fight harder, but another is to widen one's perception. Perhaps the really real really is in flux, its own self-arising a multiperspectival interplay, as our views interact with one another and the world, evolving while ever eludes our grasp.

## **Mastery**

Although obsession with mastery veils nature behind a flurry of technical schemes and artefacts, it also re-presences self-arising, and by extension nature's transcendence and wholeness. Nature reasserts itself in technology's side effects, unintended consequences or what Bonnett calls 'externalising collateral effects' (3)<sup>2</sup>. Side effects remind humans that nature has hidden relations, scientific knowledge is a simplification and engaging in the world on its basis exposes its limitations. The ecological crisis has within it this emerging lesson in humility.

Because side effects are so pervasive, the debate we need to attend is not about whether mastery is possible, but to what extent unintendedness *matters*. Many industries argue for limited testing or impact assessment. For example, the biotech industry opposes more thorough study of genomic activity (such as 'omic' studies) in the approval of genetically modified or edited organisms. One claim is that such approaches only provide a misleading snapshot and cannot represent the complex, contingent development of an organism. Another is that while off-target changes to protein or metabolite production occur, unexpected genomic changes are largely benign (and occur in non-modified organisms too) (e.g. Chassy 2010; Schnell et al 2015). Obviously neither response assumes mastery nor scientism, yet both are still problematic. Education could respond by providing increased understanding of the nature of side effects and reasons certain interests deny looking for them (Affifi 2016a). However, increasingly scientists *intend* to generate unintended side effects. For example, the aim of creating evolutionary technologies, synthetic life or AI would only be achieved if the entities created were manifestly *not* masterable. And yet, I doubt Bonnett would be satisfied with the kind of wildness in their self-arising, a wildness with which education will need to contend.

Bonnett distinguishes *epistemological anthropocentrism* from *ethical anthropocentrism*. The former refers to how consciousness emerges from our species' situated embodiment, is inevitably human-centered and to be celebrated. The latter is a destructive focus on humans as the sole locus of normative concern, a cause and effect of metaphysics of mastery (and by extension, scientism). Assuming this distinction exists, it is not clear that metaphysics of mastery is necessarily implicated in ethical anthropocentrism. For instance, conservation science often focuses on manipulating the population of one species 'for' the survival of another, regardless of whether the beneficiary is conceived of as important for humans. Consider culling one species to help another whose numbers are dwindling. This might be arrogantly instrumental, misguided and yet still be ethically non-anthropocentric. Or not. On the other hand, ethical anthropocentrism arises elsewhere than just science and technology's undeserved hubris. I shall shortly explore how I think Bonnett's rejection of multispecies subjectivity in phenomenal encounter with nature risks cutting us off from one caring and compassionate ways we might more-than-humanise our ethical engagement.

Bonnett is suspicious of science's seeming role in undermining the epistemological anthropocentrism he celebrates. Instead of seeing ethical anthropocentrism as fixed and ethical anthropocentrism as expandable, an ecologising approach might instead look to see how each change persist and interconnect, and to what effect, over time. Western science is engaged in a very convoluted project when it comes to epistemological anthropocentrism. The Copernican revolution, the theory of evolution, the realisation that the solar system is a speck of dust orbiting the Milky Way, itself just a speck of dust: the broad sweep of science seems an ongoing revelation of human insignificance. But it is contrasted in lockstep motion by two opposing

developments. Such knowledge implicitly foregrounds the human mind as something exceptionally capable of perceiving the furthest and deepest reaches of the universe, while scientific applications smog the skies and conceal its depthlessness, and often obliterate nonhuman organisms and relationality. We are shown that humans are exceptionally powerful, exceptionally destructive and totally insignificant. These different (non)anthropocentrism, and many others too, are interacting within mental and cultural ecologies *right now*, and may compel ways for our species to renew its significance – for better or worse.

I appreciate Bonnett's effort to bring to importance the experience of self-arising, the humility such experiences can engender, and the aesthetic quality of such experiences. I agree that the emplacement of such experiences has a particularity and embeddedness that feels different from the kinds of interdependence I've described earlier. But do we need to draw sharp distinctions, such as science's merely causal versus the (better) *ontological interdependence* (3)? Are these distinctions themselves causal or ontological? What next, after the dualising? Even the most aesthetically attuned person slides into categorical or causal engagement, even the most abstract thoughts reside in emplacement, in context, in wholeness. To write this article, I treat my computer with a metaphysics of mastery, even though the material inside it is surely doing things that defy its imposed teleological constraints (if only its slow decay through use) which is the source of a nascent self-arising experience inherent within it. There are dialectical and relational dimensions between our various worldviews and attitudes, leading to different questions, to *differentiating* questions, such as how do these modalities interpenetrate and give rise to one another? How can we pay attention to and participate in this ecology?

### Threats to the experience of uniqueness

Another dualism for Bonnett is the distinction between what he calls a 'metaphysics of objects,' which frames merely according to category membership, and a 'metaphysics of things,' which witnesses the unique thisness and becoming of particular beings (Bonnett 2021a, 4). Bonnett also suggests that scientism prevents experiencing the singularity of things through seeing the things only as categorised objects (3). There is nothing in scientific practice or metaphysics of mastery that is *prima facie* against the possibility of unique things arising in the world, or opposed to a world being in a state of continuous becoming. Many sciences are devoted to the study and revelation of the unique. Again, evolution and cosmology could be cited, but also geology, clinical psychology and indeed ecology. Bonnett seems to be critiquing nomothetic science, but many sciences are idiographic or a dynamic combination of both (Affifi 2020a). Conversely, he emphasises the phenomenology of lived experience as foregrounding the unique, but experience is neutral in this sense. Direct experience is no more about particularity than generality, or about becoming than being. There is a phenomenology of how things appear to consciousness as known and static, as knowable, as ready to be used, as defying attempts to know, and perhaps too as unknowable. Scientific concepts derive from aspects of embodied experience (Johnson 2007), but feedback into them (more on this below). The split between lived experience and abstract knowledge is fuzzy and interpenetrating.

To contrast phenomenological experience with scientific approaches that treat uniqueness and context-dependence as subordinate to our will to categorise, Bonnett discusses how moving a beech tree to a shopping mall significantly alters the nature of the tree in our experience. However, the aesthetic experience of it being different actually resonates with developmental and ecological sciences, which emphasise the contingent and contextual becoming of individual phenotypes. Evolutionary theorists also shy away from the sufficiency of generic and acontextual description because uniqueness emerges and provides the starting point for evolutionary novelty. Even Dawkins (surely a strawman for scientism if ever there was one) would argue against the idea that evolutionary biologists conceive of their 'lumbering robots' at the mercy of genetic programmes (as per Dawkins' famously ugly phrase (Dawkins 1976)), merely through category



membership. This is because ‘subsuming under species descriptions’ (4) *prevents* the evolutionary biologist from seeing new features, new interactions or new selection pressures. There may be an issue as to whether evolutionary biologists *in practice* pay sufficient attention to this, perhaps a product of to what extent a biologist treats evolution as something that has already happened (Affifi 2020b), but progress in evolutionary science seems sufficient evidence that movement between these alleged ‘metaphysics’ is rather fluid. We can be sensitive to the serendipity and interplay of self-arising nature in the beech tree as much as in the dendritic ecology of the mind.

Bonnett also suggests that experiencing something’s uniqueness and mutual sustaining presence leads it to ‘befall us’ with ineluctable otherness and mystery that prevents utilitarian totalisation. It *might* be easier to instrumentalise something that can be treated merely categorically, but we routinely use and exploit things seen as unique things, and aesthetically appreciate the being and presence of processes, even if they appear in consciousness as identical with prior instances of their occurring (e.g. listening to a favourite piece of music). It *might* sometimes be easier to instrumentalise something that appears with ineluctable otherness, rather than, say as having a shared sense of ineluctable commonality or kinship. In any case, instrumentalist and categorical ways of attending emerged from the primordial idiographic ground Bonnett wants to return us to, which means there is nothing inherent such states to safeguard against their seeding once again conditions for their own overthrow. Ultimately, identity and uniqueness are both capable of being implicated in many different experiences and normative activities. Attending to what they do within particular mental ecologies, and what our attending does too, is a more ecological approach than attempting to pin particular patterns abstractly and atemporally to particular stances.

### Ecologising our concept of nature

Bonnett acknowledges with Heidegger that all experiences are ‘forestructured’ prior to meaning making (Bonnett 2021b, 34), by the understanding circulating in our mental ecologies. While this is inevitable, pushing such concepts against one another is an additional way of seeing how nature reveals itself. For example, Bonnett wants to focus on a nature that is spontaneous and fluid, but also describes nature in ‘delicate natural equilibria’ (Bonnett 2021a, 3)<sup>3</sup>. How can spontaneity maintain equilibrium? If delicate, how does the new emerge from within without cascading into chaos? If the equilibrium is changing, in what sense is it really an equilibrium? What is being equilibrated and what is changing? Does his description of nature as an equilibrium arise from primordial phenomenal experience, and if not, why is Bonnett suspicious of others’ attempts to bring similarly mediated concepts into their work? Is the idea that an ecological equilibrium exists contributing to the scientism Bonnett rejects? And how to answer these questions without arguing for another really real? I do not propose Bonnett cleans his conception of such residues. I question whether a primordial phenomenological ground is accessible and translatable into language. Ecologising education would mean attending to the interaction between such descriptions and our experiences. Phenomenologies are ecologising too.

On the other hand, quite without the help of science or technology, direct sensory perception often has little mystery in it. Habits (not just conceptual, but embodied and aesthetic as well) enable us to get by in the world without treating every event as completely new, which would obviously lead to a meandering death. To use an earlier word, we ‘mechanise’ our interactions. But habits also provide comfort. A yearning for stability in a precarious world might underpin the reluctance to encourage otherness, not only in science and technology, but also in immediate perception. How we experience and attend to our finitude would then be the question, and Bonnett’s two causes merely proximate rather than ultimate. I would hesitate to stop there. Ecologically considered, psychological dimensions probably interweave with various other contributing factors, such as socioeconomic process that further feed insecurity. Each has its place relationally, and it is only with certain epistemological or practical commitments that we can

presume analysis can establish fixed causes underlying symptoms. The search for root causes may be never ending, as we go round and around our webs of interactions. Here too is a place where the rhythms and interplays of nature carry consciousness 'into an infinitely extending and mysterious universe where the known constantly rubs shoulders with the ineffable' (Bonnett 2021b, 29). It is another encounter with nature.

Phenomenal experience presents qualitative experience of self-arising nature through the interplay of the senses. But it also provides us the desire and ability to manipulate things for purposes. If we want to claim that lived experience has inherent aspects that provide a way of relating to nature intrinsically as opposed to instrumentally, we cannot pick and choose 'self arising' and ignore (say) Heideggerian 'readiness-at-hand', which seems equally like a fundamental way of relating aesthetically. Readiness-at-hand refers to the way things recede from awareness when being used. It is the perennial source of much beauty and much tragedy.

Conversely, science itself obviously opens to the unknown because it revises itself. In both cases, theory and daily habits can constrain perception, but they can also open us to new forms of the ineffable otherwise inaccessible. We have reached out past immediate experience because we have followed questions marks, our more immediate experience generates. The aesthetic structure of direct experience is ecstatic not only in the sense of being open to otherness, but in opening new otherness. Often this is less direct, more mediated, sometimes it requires instruments, and even 'calculation', but always we re-enter the same situation: a space, a horizon, co-created by answers and questions. I will explore this below in the section called 'hermeneutic pluralism'.

Just as science cannot protect itself against experiences of nature that Bonnett foregrounds, neither can phenomenal experience protect against a world of possible conceptualisations of nature beyond itself. This interpenetration is inevitable, and relationships beyond rearguard defense are possible. The sensual and the scientific each produce ways of knowing and unknowing that can be corrupted, silenced or encouraged in similar and different ways. (And there are many other modes besides these). Mystery and revelation can co-occur dynamically in any domain, each undermining the other (Affifi 2020a).

Mystery and revelation also co-occur in ecological relations across domains. For example, suppose someone is the 'bad' kind of reductionist who believes that bottom-level laws of physics in principle are the only causal forces in the universe. To believe this and yet to experience a world where we feel we have choice, and where we negotiate and create meaning to which we respond, offers the possibility to entertain a new mystery. The relationship *between* these two experiences of nature is itself an experience of nature. It introduces a paradox, which enters into the ecology of thought, and perhaps humility at the fact nature is working in ways that defy our understanding, appearing at once both spontaneous and rigidly lawlike. This is also a possible way of engaging with Bonnett's paradox of the delicate equilibrium that is ever spontaneously changing.

### ***Ecologising science and educationalising ecology***

Nevertheless, it is difficult to understand why we should accept or even want to reduce nature to three phenomenological qualities. Why three? Why these three? Does certainty about our conceptual framework undercut other possibilities? What else might be implicitly forestructuring such allegiances? As Bonnett knows, there are many ways nature 'shows up' in our experience. Bonnett advocates for nature experienced aesthetically as self-arising, transcendent and whole, and contrasts this with attempts to order the world conceptually or technologically. More quietly, it contrasts with many other experiences of nature. Do we need to defend a really real way we ought to experience nature? Another holy trinity? We might instead ecologise our experience nature, trusting and working with nature's myriad existing, emerging and interacting appearances without the urge to hierarchise. Diverse conceptions of nature are inevitable in the ecology of our mind unless we devise ways of effectively policing thought. For example, we also experience humans as a part of nature. This may mean the experience of feeling that the self-arising world

has also given rise to our purposiveness, or that our purposiveness is itself self-arising rather than coming from us (such as is often experienced in meditation). A species in an ecosystem, or a microbe in the gut, is neither 'good' nor 'bad'. It is the quality of the relationships rather than the particular beings relating that is at issue. In the same way, what we need is neither a metaphysics of mastery nor a metaphysics of mystery, but an ecological engagement with metaphysics itself, in all its serendipity and fluidities, its order and generalities and the dialectics of metaphysical thinking itself across time.

If education attended to the philosophical and emotional valences of this and many other intersections, as well as a deeper exploration of the particular lenses themselves, we would be facing reality clearly and with openness to its lessons, rather than deciding for ourselves where and when it is most properly able to teach us and guarding our boundaries accordingly.

In such a vein, nature also appears sometimes as a field of subjectivities. While science probably never convinced most people that dogs and cats are 'just' complex biochemical machines, for decades, 'science' shrouded Westerners from the possibility that plants had any intelligence, a notion that contrasted prevalent wisdom of some Indigenous ways of knowing. More recently, some plant biologists have uncovered in plants forms of communication, interpretation and behaviour (e.g. Trewavas 2015) that has people of the now globalising epistemology again asking questions like 'what is it like to be a plant?' (e.g. Calvo 2017) without such questions being dismissed *a priori* as absurd.

Of course, we do not 'need' science to validate Indigenous knowledge. But such science is here in our ecology, and Calvo's question shows that science can provide the ground for new mysteries, mysteries inherently not answerable, as we can never answer what it is 'like' to be anything else. Bonnett's scientism should not be able to do that. However, instead of considering this important asymptote, Bonnett asserts that plants are not sentient (Bonnett 2021b, 92), and that it is dangerous, incoherent and reductionistic to consider consciousness in any other creatures. '[I]t is better to leave our fundamental ideas of consciousness alone, to stop relying on arguments that purport ... to demonstrate a continuum of consciousness between humankind and the rest of nature ... Rather, let us focus on the otherness of nature, and what phenomenology can reveal' (94). If the phenomenal world is *the* ground for mystery and otherness, and apparently not the experience of plant sentience, imaginatively engaging in the possibility of the latter is a flight from this primordial ground, and an implicit valuing of abstract knowledge over the richness of our lived experience. But must things be conceived this way?

In his treatment of the beech tree (Bonnett 2021a,b), Bonnett focuses on the human experience of the interplay of beings, which he distinguishes from the interplay of scientific causes. He is clearly suspicious of causal language in this context. Again, causality is a basic concept in science – not scientism, though it is not necessary for either (e.g. Norton 2009). Causality, it must be added is certainly not an anesthetic concept. Binding events across time into a unity of felt relationship is a form of gestalt perception. It would be hard to imagine sculpting something without a sense that consequences follow from events.

Although Bonnett wishes to distinguish scientism from scientific research (Bonnett 2021a, 15), it is not clear whether practices and beliefs about each can be easily separated, especially when they are purportedly about 'knowing'. Bonnett points his attack sometimes at one, sometimes at the other. For example, he delineates an acceptable realm for scientific application from another of which he is highly suspicious, but on the basis of science not scientism. He asserts the scientific method has been useful in practical applications, such as curing diseases, providing clean water, and diagnosing global warming. He accepts its value in instrumental understanding aimed at problem solving, even though it seems new problems spilling from epistemo-chauvinistic scientism and mastery could conceivably grow in this domain. Conversely, he is suspicious of attempts to engage science when thinking about issues touching on philosophy, such as consciousness, ethics, the delivery of mystery and much else. Despite his call to abandon critiques of the naturalistic fallacy, he relies on it in to keep one version

of phenomenological experience clean of certain influences. Scientific knowledge can be one among many interacting resources that expand our imaginative understanding of the world.

### ***Hermeneutic pluralism***

For Bonnett, phenomenology suggests that nature reveals itself as other, and that we need to return to this otherness rather than gloss it under human understandings. However, even if nature does start as an experience of otherness, similarities between plants and animals and us emerge as we continue to engage them, and within those similarities, differences in turn. Relationship develops beyond, and qualifies, otherness. This is a hermeneutic process that can be participated in through different modalities, aesthetic, philosophical, observational, scientific on their own or interconnected. I think of this as the hermeneutics of self and world, and it follows also from Bonnett's description of human consciousness and nature as mutually revealing and sustaining one another: 'there is an intimate relationship between enlargement of self and openness to the otherness of things' (Bonnett 2021b, 79). Indeed. But the otherness of things is a continued revelation of similarity and difference, not pure encounter with otherness. If science can render plant sentience more plausible or thinkable, it does not do this by dissolving plants into certainty or mere identification with our species, but by revealing new questions. Here too, the known rubs against the ineffable.

Entertaining plant subjectivity, however would be to admit the important role science's mechanistic and abstractive methodologies can play in rendering mystery to subjective experience. My guess is Bonnett sees scientific knowledge as another distraction. Like the built environment and all our devices, it too is the 'glorification of the artefactual, along with a disdain for the (naturally) given' (Bonnett 2021b, 98). However, in not entertaining plant subjectivity, do we escape scientific presumptions or fall back on earlier scientific attitudes dismissing considerability of other sentiences as 'anthropomorphic'? It is not clear that aesthetic experience of the world is primordially devoid of other organism's subjectivities. Indigenous people who consider plants as sentient may well have an intersubjective grounding for their being-in-the-world. Sometimes, when I am so graced, I feel such a grounding too.

Policing this boundary foregrounds human consciousness against a world otherwise without interiority, or a very alienated one (Bonnett 2021b, 53), and the risk is a surface of mere inter-playing becomingness. Beautiful and enchanting perhaps, but perhaps also callous. By asserting certain foundational qualities of nature to which we should continuously return, and upon which we should base our ecologising, Bonnett ends up with an attitude towards nature that sometimes feels absent of care, love, empathy and compassion. The mechanism of 20<sup>th</sup> century is giving way to the nonreductive, nonmechanistic subject-oriented biology of the 21<sup>st</sup> century all on its own. The seeds of its own transformation arose and developed from within, and have now opened up a new terrain of considerability with respect to otherness and self-arising. And out of this, perhaps lived experience can saturate with new sensitivities, responsiveness, emerged from but not reducing to scientific insight. Success is hardly assured, and much danger persists. But how we attend to the ecology of this evolving situation matters. There is also a risk that we take down diverse ways people might be inspired by nature and existence. I hope for a pluralism that seeks to honour and acknowledge different people's experiences.

### ***Healthy ecologies and their gifts***

To work with the conditions that lead to healthy ecologies, it is helpful to notice how such ecologies deal with threats to integrity. An ecologically resilient system is one able to absorb or even benefit from disturbance (Holling 1973). A *healthy* ecology (as opposed to a healthy dysecology) would have the resilience to maintain and develop its capacity to sustain diverse

thriving life despite, and eventually through, disturbance. For example, time and again, 'invasive species' enter into an ecosystem, cause great destruction but eventually find themselves part of the habitat and food chain of their neighbours and get folded into the interdependence of the biological community. Forest fires too unleash incredible havoc, scorching miles of animals and plants into dust. And yet, on different time scales, they show themselves essential for maintaining biological systems.

Restoration ecology focused on eradicating problematic species is often wasteful and warlike, with more similarities to concerning worldviews than we should like to admit. What practices might not control but make use of, transform, even 'yes, and'-ify the currently toxic ways of engaging? This is the kind of question we could ask of education. An ecological approach might seek to go beyond seeing certain approaches as 'inherently' bad or good, to evaluate and respond to the quality of relationships actually happening in time.

Supposing scientism and mastery of nature are not reifications, but 'exist'. Suppose further they are primary causes of the eco/spiritual destruction underway. Does it follow that the solution is to villainise them? Or might we better explore thinking, feeling and behaviour that could support the resilience of the systems currently threatened, aiming towards a pluralistic reconciliation where even misguided ways have their place within a broader thriving ecology? Can we work through 'redemptive goodwill', as Martin Luther King (Carson 2000) put it, to love one's enemies and compost their shit into soil for fruit?

In that vein, I think we can approach Bonnett's suggestion that the 'point is one of relative emphasis and seeking a balance between alternative approaches' (Bonnett 2021b, 132) dialectically. Instead of 'balance' we can pay attention to the quality of the actual interplay we are immersed in, be open to integrity and integration, and concerned with relationships less than ratios.

Planting native species and culling invasive ones may make short-term sense, but ultimately healing comes when existing species find ways to make use of the newcomer, of finding their gift, as Anishnaabe scholar Reo and Ogden (2018) explain. Radical acceptance of what is offering itself is also the approach taken by many wisdom traditions, and is *not* the antithesis of radical activism. For example, courage is not the rejection of fear, even though fear is dangerous. Courage involves facing fear and giving it space to grow beyond itself (Affifi and Bertoldo, forthcoming). Redeeming scientific knowledge and our will to mastery would neither deny the harm they are implicated in, nor the hidden opportunities they may bring. An ecological approach looks to turn them into resources to feed our deeper values, helping them along and transforming their darkness into light. And receiving these gifts is a step towards humility. Just as a beautiful piece of art can integrate and sublimate ugliness within it, we can shift our gestalt and come to see the current age of destruction has seeds of healing within it, and gifts it can provide to the story of what the earth becomes (Affifi 2020c). Kimmerer's (2013) celebrated work is an example of how scientific knowledge about plants can be sweetly braided into new redemptive ecologies with other ways of knowing.

## **Ecologising the mind's nonfoundationalism**

By setting out a worldview where 'we' are the arbiter in deciding the degree to which an idea deserves to be part of the ecology, we assert a managerial attitude onto the system. The alternative is to use thinking to reveal and honour nature's naturing within the ecology of ideas itself: let the self-arising be and pay attention to what is happening. Then, perhaps, as we acquaint with its manner, we gradually sense when to intervene and when not too, and as both the complexity and ambiguity of the ecology makes itself known, care and circumspection follow. This is a light, flexible form of philosophy, able to dance on its feet and readjust itself, concerned less with consistency than quality of relations, and not after a grand view from which to pull specific educational recommendations. It works with the world rather than asserting its vision onto it.

If we care about self-arising, transcendence or holism, we can open to how nature's wild interplay brings these forth in unexpected ways, even within the unfolding destruction that calls us to respond. We can pay attention to how nature shows itself in diverse, even contradictory ways. Nature is not an endangered species that needs protecting. It is too awesome for that, and we can work with its ongoing presencing.

In mental ecologies, not only our attitudes, but our attitudes towards our attitudes, and our attitudes towards them, matter. Policing and judging one another for policing or judging cannot work. I want to look for ways to embracing immanent possibilities and growth in my own ideas, in those of others, and in culture more broadly. Here another realm of experiencing nature can be attended. I want to imagine a new form of academic discourse that goes beyond such positioning, and invite Bonnett to work with me on an alternative collaborative dialogue. Ecology is not a zero sum game. It is zetetic and unfinished, making offerings through openness, and in turn offering opening, and everything we do is part of this aesthetic aperture.

And yet, it *could* still be that focusing on mastery and scientism 'works'. Recalling Spivak's 'strategic essentialism', if we believe these constructs are root causes, we *might* act to redress the imbalance. (Tellingly, Spivak (2008) has dropped the term). As I have suggested throughout this article, ecologising rejects no particular idea, not even non-ecological ones or those rejecting ecologisation, as ideas are viewed less for accuracy than for what quality of relations they participate in. It could be that once the ecstatic nature of perceptual experience is foregrounded, we will have resources to better handle our desire for certainty and stability, and be able to keep our instincts towards mastery and scientism at bay. Can they sustain the kind of experience he wants to foreground? If not, what happens? How does Bonnett's framework interact with others? Does it actually lead, or participate ecologically, in better relations? How? If not, what opportunities does it nevertheless create, what is its gift?

Perhaps mastery and scientism really are 'keystone species' in the dysecology underway, and culling them is needed, while seeding conditions for the new. It would be hard to differentiate this from the strategic case mentioned, and dangerous perhaps to try. Given our ecologies are more complicated than consciousness can conceive, diagnosing root causes in a relational web is obviously a fallible undertaking. Persuasive arguments and evidence have been used to forward countless keystone causes in the past, and it is an academic pastime to expose each's partiality or provinciality. If Bonnett turns out right, for the sake of self-arising nature, we ought to acknowledge a high degree of luck. To advocate for specific solutions, is to proclaim more epistemological authority than is warranted given our arising in and finitude within, webs too complex to be held in our grasp. We can sense wholeness, and orient towards supporting conditions that give rise it, but to use a famous line from Bateson (2000), we are not captains steering the vessel. Consciousness does not have access to a stable conceptual description of the interplay of thoughts, feelings, practices, etc. that constitute the ecology within which it participates. Ecologising education is therefore more likely circumspect, open to the ineffable not just in external nature, but in the nature of knowing itself.

Bonnett treats the ecological crisis as having articulable and intrinsic foundational causes, and provides an argument establishing scientism and metaphysics of mastery as those causes. He also proposes a particular but threatened experiential ground that is the necessary starting point for a solution. I think scientism and mastery are problematic but can be understood and approached in diverse ways, and wonder how to attend them more than contain them. Similarly, while Bonnett's aesthetic perception is important, I consider it a part of a suite of approaches. I lean to thinking that understanding and addressing the ecological crisis requires experimenting and evolving an ecological approach. While in favour of trying out Bonnett's way of thinking, I think ecologising education requires ongoing participation in the world, not specific recommendations. It is agnostic about how to frame what we are doing – for all I know, it could turn out that considering education as an ecology is best done rarely, even if it is 'true' on a metalevel that it is an ecology. This is an empirical question, not in the sense of sorting out

specific ratios once and for all, but in the delicate attention to moments, interactions, relationships, effects, attention – itself the practical and situated wisdom towards which education should strive.

## Notes

1. This does not imply reducing the self and our sense of subjectivity to a series of relations, which Bonnett is also concerned about (Bonnett 2021b, 63), which many aspects of ecologies explored in this paper
2. which is one reason I think terms like the Anthropocene and 'genetic engineering' are bad metaphors (Affifi 2016b; Affifi 2017b). They define causality in simplistic terms that background the more-than-human responses to our actions.
3. Levins and Lewontin (1985) argue that equilibrium models of nature rose to ascendancy and trumped the more dynamic views of the 19th century once capitalism gained sufficient foothold, and it again benefited the ruling class to have people believe a stable order must be kept (as they did during feudal times).

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