# Restoring realism

**Restoring realism: Themes and variations**

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**Abstract**

In the critical tradition, environmental education discourse interrogates how knowledge constructs experience. But environmental education also emphasises perceiving, understanding and responding to "more-than-human" beings and processes. These two motivations are in tension. One problem is that the epistemological orientation driving the critique of knowledge seems to render access to something more-than-human *a priori* impossible. But environmental education squanders its promise and its dream if only ever permitted to talk about the natural world with scarequotes. Our field urgently needs to develop a realism robust against epistemologies that construct impassable barriers between humans and the rest of creation. I propose that this starts with radically reconceiving the nature and relationship between similarity and difference, interpreted in this article as the dynamic between theme and variations. Reworking Windelband's distinction between idiographic and nomothetic research, I suggest that the relationship between theme and variation manifests a fundamental ontological pattern that pervades all things. "Theme and variation" proposes a unifying metaphysical duality in which the more-than-human reveals itself in how things suggest, conform to, modulate, and violate generalisation. Acknowledging and investigating this is part of restoring to other beings and processes their metaphysical, aesthetic, and ethical status, from the skies to the psyche.

**Keywords:** idiographic; nomothetic; realism; environmental philosophy; new materialism

## Introduction: Light after eclipse

Many environmental educators are motivated by two aspirations in tension with one another. On the one hand, we seek to understand, defend, connect with, relate, listen, and give voice to the myriad beings and processes that make up the natural world and help us become who we are (a random sample: Fawcett 2000, Bonnett 2004, Russell 2005, Blenkinsop and Piersol 2013, Affifi 2015, Barrett et al. 2017, Gannon 2017). As a shorthand here, I call this an aspiration for the "more-than-human" (Abram, 1996). On the other, we seek to uncover and address the ways human knowing corrupts, controls and denies us access to the world itself (Soper 1995, McKenzie 2005a). Experiences engaging the "more-than-human" are easily overshadowed by this latter way of thinking. This tension has been recognised and discussed for some time (Soper 1995, Stables and Scott 1999, McKenzie 2005b).

For example, it is easy to frame "more-than-human" as itself a category imposed on/by/through experience. This looming shadow is a persisting consequence of the epistemological revolution brought about in Kant's first Critique (2007). Kant argued that when we discover necessary and universal aspects of phenomena, we are really only acquainting ourselves with how humans inevitably pre-format their experience. We are equipped, he tells us, with "faculties" that impose space, time, causality, being, becoming, universality, and the like, onto a world that does not necessarily possess these attributes. Although few now believe in such faculties, his style of argument has been incorporated widely, from pedagogical theory and ethnography to critical theory and postmodernism. For instance, since his time, human reason, culture, language, perception, technology, grand narratives, and power have all been said to

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have just this constitutive role, each allegedly revealing the world only by cloaking it. The spread of his self-proclaimed “Copernican revolution” through such varied domains introduced a much needed epistemological criticality, ripe with ethical and political consequences. Unfortunately however, the overall effect has been disastrous for how we might take seriously our understanding of, and relationship with, the nature we ought to cherish, understand, fear, and defend. At a historical moment when we need to be paying utmost attention to those beings and processes modern globalising culture relentlessly destroys, we are sleepwalking our way into the 21st century. How tired we have become of Kant’s isolating trance, the echo chamber, the dull anaesthetic! Might we be waking? After the eclipse, might the sun be touching us again, and we touching it?

The first central claim explored in this article is that we cannot escape access to the more-than-human. It is within us, providing the conditions for, and continually redirecting, all our engagements with phenomena. Just as we come to appreciate that the organisation suffusing our mental life owes its existence to our continuous contact with otherness, our allegedly human modes of knowing and understanding are themselves just versions of relationships and processes that suffuse the natural world. My second claim is that environmental education can benefit from these interlocking ideas by explicitly adopting a realist conception of *theme and variation*. My use of the word “realism” is influenced by C.S. Peirce (1935), who drew on arguments from the Medieval scholastics such as Duns Scotus. With this tradition, realism asserts that *universals*, that is to say propositions which unify a set of unique particulars by identifying common qualities, are not merely the product of a cognising mind. Peirce sought to understand haeccity, which consisted in the specific “thisness” of a thing or event. However, unlike some influenced by Deleuze, Peirce’s conception does not equate haeccity with some raw difference or becoming, contrasted against what can be asserted generally and propositionally (e.g. Clarke 2018). Instead, similarity and difference are equally real aspects of the presencing of haeccity. I explore their co-presence through a discussion of themes and variations, and offer this dialectic as a basis for a restorative realism that can ground and support environmental education.

A restorative realism is consonant with the trend to re-assert the existence and power of nonhuman things and processes, constellating under the term “new materialisms” (e.g. DeLanda 2002; Barad 2007; Bennett 2009). I argue such a realism offers a better ontological foundation for materialism by adding theoretical insight into the relationship between knowing and being. While new materialisms sometimes reproduce a Kantian split by favouring unique becomings against the human imposition of categorical thinking, I hope to present a realism that replaces the dichotomy of humans and world with the unity-through-duality of themes and variations, an ontological dialectic that pervades all things. Repetition and difference are co-present in how themes develop through variations, and equally through variation organising thematically. Categorical thinking silences one side of the complementarity, but the solution is not to simply rally around the heirs of Heraclitus.

Such a realism wrests categories from the observer and gives them back to the world. It shows that we can track these categories because we emerged through and persist within that world. One way of stating this is that matter produces the capacity to track and then respond to itself, and one manifestation of this process is in human perception, knowing and activity. The Kantian formula, that epistemology logically precedes ontology (expressed most often in the

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crowds I run with through the vague but world-suffocating phrase “social construction”), is flipped, the more-than-human (re)asserted as a force that makes our knowing possible and directs the forms it takes (see Affifi 2016a)[1]. A restorative realism draws humans back into continuity and kinship with the world, denying the radical alienation burdened by all who dwell in Kant’s shadow. It sees human knowing in any mode (propositional, embodied, aesthetic, etc.), as manifesting the same unifying duality in both its form and content because, after all, knowing itself is just one set of variations of and within the world’s unfolding theme. Such integrations are not new. They have preceded the styles of argument characteristic of “new materialism,” even informing “evolutionary psychology” which while crude and politically unsatisfying (e.g. Rose and Rose 2001), nevertheless intuits the deep unity between nature and people, between matter and mind, and the ontological priority of the former over the latter. “The eternal mystery of the world is its comprehensibility,” famously said Einstein (1970), but it is not mysterious once we (re)recognise that we are born of the world and ever remade in its images.

This paper unfolds as follows. I unearth and then rework the relationship between nomothetic and idiographic research. I then show that although the thematic element of development, sometimes known as generalisation, can dangerous when considered abstractly, it is nevertheless essential to the human experience of feeling of connection, kinship and home. Its power depends on it not being divorced from the ways in which repetition differentiates itself across time and space. I argue that their dynamic unity appears as variations upon themes. In subsequent sections, I explore how theme and variation can be interrogated scientifically, aesthetically, and pedagogically in an environmental education practice that makes concrete, though nonreductive steps to overcome the split between humans and nature.

**The nomothetic and the idiographic**

German philosopher Wilhelm Windelband (1894) is responsible for distinguishing between two poles of empirical research, which he described as “idiographic” and “nomothetic.” His dualism entered Anglo-American psychology by way of a review by J.H. Tufts (1895), and was later popularised -and misinterpreted- by Allport (1937). To this day, the terms are usually seen as caricatures pitted in sibling rivalry. Against this trend, I argue they are better thought of as dialectically interpenetrating, leading to a processual approach that unifies differences across space and time, seen clearly through a pair of concepts borrowed from music: theme and variation. This has pedagogical significance for environmental education, methodological importance for the “post qualitative” inquiry (St Pierre, 2013) growth of knowledge, and ontological and ethical value for people and the earth.

Windelband’s primary aim was to describe the nature of psychology as a science. Opposed to the conceptual split between “natural sciences” and “humanities,” he believed research is better distinguished on the basis of approach rather than subject of inquiry. Windelband noted that when engaging in chemistry, physics, or biology, people often aim at “understanding the general lawfulness” (12) to which particular facts conform. He also observed that in the study of the origin of language, a legal system, or products of literature or art,

[1] For Kant, human faculties provided the conditions for the possibility of knowledge. Philosophical arguments that seek the conditions for the possibility for something are known as transcendental arguments. The realist reversal is also a transcendental argument, maintaining that the more-than-human is the condition for the possibility of even Kantian forms of constructivist knowing.

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scholars are more interested in a "complete and exhaustive portrayal of a particular … a unique, temporally circumscribed reality" (ibid). Idiographic research seeks knowledge and understanding particular phenomena or events, which in the context of psychology meant particular people with particular conditions. Nomothetic research strives to identify general characteristics shared across particulars within a sample or a group. Clearly these two approaches differed, Winderbrand maintained, but the significant contrast between them lay in each's sharply variant logical assumptions about what constituted "understanding" and "knowledge[2]". Windelband saw these as two scientific approaches that can fruitfully be considered as complementary to one another (Salvatore and Valsiner, 2010). Methods of psychiatric intervention attest to the power of such an integration.

Windelband's populariser Allport's intention was to establish the power of, and need for, idiographic research, and the ultimate complementarity between it and nomothetic research, Unfortunately, his misidentification of nomothetic research with probabilistic quantification conspired with the climate of psychological research at that period. By contrast, in Winderband's original formulation, the statistical average across a sample is *irrelevant* to nomothetic thinking[3]. This is important, not merely because it implied the particular should not cut from regard when considering the universal, but because probabilistic thinking makes the notion that categories exist in the world seem less palpable. A statistical generalisation seems like a mental construct[4], especially in the nominalistic epistemological climate inherited from Kant and his predecessors. For a nominalist, recurrent properties or qualities that enable us to form categories (for example, the universal "dog") are thought not to exist independently of the human mind. Only unique and particular beings or events are seen to actually exist[5].

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[2] Transforming Aristotle's (and then Kant's (1918)) language, he insisted that the logical difference was that one is seeking "apodictic" claims while the other is seeking singular "assertoric" claims. The major difference between Windelband and Kant is that Kant used the word apodictic primarily to refer to necessary and universal nonempirical knowledge, such as that in mathematics. Winderband's aim is to describe universally and generally repeatable patterns inducted from sets of experience, which is more akin to Kant's (1918) synthetic *a priori* knowledge.

[3] Windelband is therefore *not* a precursor to the subsequent distinction in research methods between quantitative and qualitative studies. Quantitative studies are not necessarily nomothetic because they usually involve ascertaining what is statistically common or significant across a population. This leads one to ignore that which does not conform to the general pattern. But nomothetic science is the study of what is necessary and universal across *all* particulars within a population. It is not a science of probability. For this reason, qualitative inquiry can be nomothetic, not merely in the case of something like grounded theory (e.g. Glaser 1992), but in the common approach to data analysis that codes for themes at the expense of paying attention to what is unique across instances. Conversely, there seems no necessary reason why numbers or mathematics could not be used in some branches of idiographic study (for example, examining a gene mutation's effects on cellular development might involve considerable modelling even if not transferable to other contexts). Quantitative approaches might also be used to identify an interesting outlier which can then be explored idiographically.

[4] And often is, though increasingly probability seen as a facet of the world and not merely a tool to identify generality.

[5] A *metaphysical universal* refers to common aspects that persists across specific entities independently of humans. A *logical universal* is a universal constructed by knowing. Beings construct logical universals in attempts to understand and interact with metaphysical universals. In so doing, variations on metaphysical themes emerge. Metaphysical universals are temporally unfolding, and each new instant

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Nomothetic approaches acquaint us to necessary and universal, but always implicitly or explicitly *within a certain span of space or time*. Temporally, that span might be microseconds or billions of years. The point is only that it aims to grasp something that does not change over time for the duration under consideration. Idiographic approaches, on the other hand, acquaint us with process, development, and evolution. Spatially, repetition diverges when themes emerge in increasingly different contexts, like how bird phenotypes diverge progressively from a norm as they approach the limits of their range. If one approach articulates the structure of *being*, the other illuminates the process of *becoming*.

All objects of natural science and all human phenomena (e.g. art, relationships, thoughts, feelings, understanding) appear regular at one scale but evolve those regularities at another. Both aspects are real and unified: becoming births being, while being begets becoming. Windelband uses the example of language to make this point, but he might equally well have been discussing speciation or some other nonhuman process: at a given moment, necessary and universal rules of grammar might be observed for a given dialect of a language. But the language also changes over time. If one wants to understand why it changes as it does, an historical examination of the many effective contingent factors interacting with one another is needed (and only one of these factors is the structure of grammar at a particular moment of a language's evolution).[6]

Atoms, molecules, cells, people, trees, thoughts, feelings, planets and galaxies: the universe appears categorically, and does so on every scale up to the universe itself, which is (by definition) the only singular entity. Classifiable types of things are ubiquitous, intermediates between them often lacking. There are no birdcats[7] let alone snowflakecats. There are infinite possibilities but not all possibilities are possible. The space of possibilities is not a continuous field; it is more like Swiss cheese (Dennett 1995) because there are large unexplored or unexplorable regions. To assert this is to pushback against constructivisms that elevate the ordering power of language (or cognition, or society, or power, etc.) at the expense of allowing matter itself the capacity to organise with any degree of inherent complexity. And yet, it is also

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gives rise to a new version of the type. But the type is a dynamic process. The act of constructing logical universals is also a dynamic process. Once constructed, logical universals may appear abstract and timeless. This happens when universals are presented as propositions considered in isolation from the events that led to them and the ways the proposition might be subsequently altered or overthrown. When considered in isolation, a universal appears as a mental construct divorced from the world it emerged from and is in ongoing intercourse with. In both the process of generating metaphysical and logical universals, the universe is generating themes through each of its variations. For as long as they persist, universals can be experienced as themes, in the form of habits, rhythm, relations, and rationality. But these themes are themselves susceptible to modification or annihilation, so no universal is truly universal outside of specific timescales. The formation of logical universals is itself an ongoing interaction with the world. It can take on various characters, from their getting progressively calibrated and reconstructed by the resistance of the metaphysical universals, to more transactional encounters, where acting on the basis of logical universals changes the very metaphysical universals one is attempting to engage. In any case, the outcome is a collaboration, a dynamically performed fusion where the metaphysical and the logical home in on one another.

[6] If some set of languages were found to be evolving in some similar way, this would be a nomothetic approach to thinking about evolution (the mode of change would not itself change across particulars. But one is still able to study each's unique evolution despite being subjected to whatever common factor).

[7] Of course, there may well be a set of " bird-cat" relations -the way cats and birds tend to co-evolve relationships together.

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equally clear no two things are the same, whether cells, galaxies, snowflakes, or cats[8]. Even things that appear most similar, like factory made replicants of consumer goods, expose their differences when examined closely. There is a continuous copresence of differences and repetitions;[9] themes varying upon recurrence and variation collecting itself into theme. In heart, body, and mind, in particle, and in wave: convention interlaces with queerness; and somewhere in the queer, some convention.

**The generativity of the general: At home in kinship**

I have suggested that it is metaphysically unhelpful to erect a split between humans and the world along epistemological/ontological or general/particular grounds. In this section, I explore some existential reasons why repairing these splits under the dynamic unity of theme and variation makes sense. I focus on the experience of *kinship* and *home* that our experience with the general provides.

Generalization can establish kinship; "all true classification is genealogical" (Darwin, 1859, p. 420). It shows how things are related, historically and structurally. The similarities that enable generalisation owe to common "lineage", be it conceptual or emotional, phylogenetic or physical. Even structural convergences evoke a kind of kinship, one that represents shared problems, opportunities and constraints across both the minute and the vast fields of mind, of space, and of time. In a Batesonian spirit, we could call these kinships "metapatterns" (Volk & Bloom, 2007). We could also call them "themes."

Generalisation establishes connection and kinship in several senses. The fact that we are able to perceive similarities across instances implies the universe is sufficiently similar to us that we can see or feel pattern. It therefore establishes kinship between us -our ways of thinking or being.- and the 'external' world. Generalisation often *works*, a sobering point against the anthropocentric lavishes of postmodernism. Going further, it is time to acknowledge that all organisms categorise, so calling categorisation anthropomorphic is decidedly anthropocentric (Affifi 2014a, 2015). Apple trees make the category apple tree through their selective sexual engagement with one another. Bacteria treat non-nutritive artificial sweetener "as" sugar and mistakenly swim towards it (Stjernfelt 2007). We can participate in the great semiotic process of the "world in itself" through paying attention to and honouring classifications that evoke ontological interconnection instead of epistemological dissociation. We foster our own and our students' capacities for empathy through helping them identify with others. Even the nonorganic world develops habitual patterns and regularities. A very abstracted sort of reasoning might lead us to conclude that because any two objects have an infinite number of similar and dissimilar qualities, categorisation is therefore indicative more of epistemic limitations or human purposes than the things themselves (e.g. Goodman, 1972). This sort of reasoning detaches the human intellect from any resonance with the rest of the world, even though it itself emerged through the world and in organismic intercourse with it. As such, it withholds our communion and community with the cosmos. Peirce observed that nominalism led to a "dreary outlook upon a world in

[8] in fact, there is currently no evidence that any two atoms of an element are identical. The concept of an "equivalence relation" is a useful abstraction, it has never been empirically verified.

[9] In cheeky defiance to trends in new materialism, I am deliberately putting these two words into unison without employing them in the way (or through the suite of terms) now becoming doctrinaire (and therefore in contradiction to the very evolutionary motivations of the Wizard who first coupled them).

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which all that can be loved, or admired, or understood, is figment" (Peirce, p. 118, 1909). It is against this fracture that we must be emphatic.

The general also evokes a sense of *home*, and it is no existential triviality that we desire to domesticate (see Affifi 2019). Repetition: the coming back again and again, the stitching of the past and the present, the making available again what is now distant, the recurring of memories, the stability of friendships and families and places. We have strong psychological needs to exist in and cultivate repetition, as the generalizable across space and time establishes a sense we are in a world that is our own. In environmental education, whenever we call upon tropes such as ecological stability, invasive species, symbiosis, and the nitrogen cycle, we are directly appealing to not only a possible nomothetic truth but also to the emotional dimension humans experience in the face of nomotheticity. Concepts that work are comforting. A terrified child rocks himself to sleep. We feel safe in repetition and often threatened by the possibility of losing it. This desire for stability is shared by many in our more-than-human world, manifest from nest building to niche construction (Odling-Smee, Laland, and Feldman 2003), and from internal to planetary homeostasis (Lovelock 1979).

Further still, our being at home with ourselves is also born of recognising our own patterns. We continue to repeat something of ourselves, that which is in our past self rebirths in our current one, it is "who we are" and the nomothetic interpretation of our own nature is something we need to establish to feel comfortable and confident as people. As our habits become our character (in Dewey's (1922) terminology) --and one of these habits is indeed an acknowledgement and appreciation of the very character that we have become-- we come to accept the grammar of our being, the way it houses our experience and makes its own unique affordances and possibilities in life's ongoing development. An epistemological orientation that dismisses self-understanding as mere social construction will undercut environmental educators' important work in helping learners contemplate their own complex and contradictory habits and responses in the face of the ecological turbulence around us.

Finally, there is an additional relationship between *habits* and patterns in the world writ large, which is important to bring out in environmental education. Indeed, the habit-forming tendency inherent in the world is itself the potential of the world to form nests of stability, *domesticating itself* into contexts that can thereafter offer new contexts for creative variation. For example, the settling of our solar system generated a thematic order out of which local forms of diversity -such as the storm waves on Jupiter or the methane lakes of Titan- became possible. The repetition of day and night provided a generative context that catalysed the blossoming of myriad biological forms and behaviours. Our creating *habitats* in an important sense is just one manifestation of the home-making tendency of the changing universe.

Some of these habits are handed down to us by evolution (e.g. the tendency towards instincts and aspects of morphogenetic forms), which demonstrates a coherence between organism and environment[10]. The way an organism predictably depends upon, and contributes to, an ecological niche indicates how it is thrown into a regularity generating process (ie a theme) that ties it irrevocably to its environment. Gregory Bateson observed (using different

[10] I do not claim these are preset programmes encoded genetically, which is a homuncular explanation of the genesis of information. See Oyama (2000) for a materialist conception of how predictable or common "instincts" are repeatedly generated through webs of causal interactions between genes, cells, and environments.

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language than that of this article) that habits (in which “an animal regularly responds to certain events with certain actions” 1972, p. 416) track and respond to, but also create regularities in the world. In fact, the regularities in the world that life tracks are something like a Moiré pattern, as they include the interactional effects of its own behaviour and its environment. This is the intimate co-generation of nomothetic stability, where the organism’s ongoing response to pattern co-evolves new pattern to which it can in turn respond. Where such habits include the capacity of forming new habit (i.e. learning), life continues to reconstruct new dynamics and stabilities within the biosphere. This is a startlingly more beautiful and integrated conception of the relationship between knowledge and the world than on offer by various anti-realist positions. It invites us to actually pay attention to and respectfully engage with those in the world around us.

A ubiquitous co-occurrence of difference and repetition extends to the basic structure of the temporal world. For any object to exist, it endures in time -however fleetingly (Hartmann 1926). But all enduring beings change over time as well. Something in me persists from moment to moment, even as my atoms gather together or flee, as cells turn over, even as I learn or forget, and slowly age. The tenement building in which I write remains my home (and the spiders’ too) while gradually transforming itself through processes of decay. If considered as a series of moments, one could easily find a number of characteristics common at various intervals of some duration, but also some elements of change. In this sense, all objects exist through a continuous variation on a theme. The theme itself may obviously itself transform as well, as this paper elsewhere points out. On a foundational level then, the fact of repetition is not merely about creating kinships, connections, and stabilities. The possibility of entities and identities that can participate in unfolding kinship is *being*, the repetition of existence itself in time. It will be easier to work towards a more prosperous earth once we move beyond our various “original sins” and guilt ridden supremacies, and see that even within the very perpetuation of a single person’s existence we are carried into each new moment by the same dialectic between difference and repetition as all other phenomena. This is a humbling and grounding notion, and one that can assist in the personal development needed in tangent and dialogue with the broader construction of an ecological society.

**Theme and variation: Empirically investigating dynamic unity**

Categorisation *calibrates* to pattern. Just as a species’ form and behaviour befits its environment, so does its knowledge develop (Plotkin 1994). We “home in” on our home. This does not mean that we cannot be vastly wrong about the nature, scope, or value of what we gear into, nor that there are not problematic ways of categorising that can do great damage. Indeed excessive generalisation often violently erases difference. It becomes sterile, monotonous and destructive, suppressing and stifling the wildness within the order it seeks to track. Instead of using a category to develop increased intimacy with the world, the category is treated as ‘true.’ No longer open to re-examination and leaned upon senselessly, it generates hubristic beliefs with humbling consequences. That the modern globalising culture keeps making this mistake is evolving into personal, social and planetary tragedy.

Luckily, it is a metaphysical fact that difference and repetition co-occur. There is wildness within every loop. The appropriate response to destructive forms of categorical thinking and generalisation is not to vilify these tendencies *per se*. Generalisations about generalisation

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can also be violent when they sever intercourse and communion with the thematic tendency of the world. Rather than rejecting it, we need to put it in continued dialogue with its perpetual dynamical counterpart: contingency, history, complexity, and spontaneity. In doing so, it becomes fertile, respectful, and grounding. Life is breathed into the machine. The general is generative. In union, we encounter haeccity.

Idiographic studies, for their part, give humans a more nuanced and complex understanding of the many ways the universe at all its different scales is growing through changing. The more we engage in idiographic study, the less we expect things, even clocks, to be clocklike. But all idiographic studies require nomothetic knowledge as their ground.

How is this bullfinch, because of -and now despite- your species-wide predictions? How does this person defy your expectations of who she "is"? What does this particular version of this theory imply? Asking such questions is relevant and interacts with our capacity to explore nomothetic and idiographic questions for several reasons. A more detailed observation sameness and difference reveals a fuller scope to variation. A new series of patterns and variations unveils.

For example, examining how a particular wolf in a pack varies from others, might uncover many dimensions of her personality. We might begin to see patterns in the way she acts, and then how she sometimes varies or violates her own habits. Or, we might zoom out and consider her from a broader developmental view, now seeing her patterns as merely temporary stabilities. This development may have its own regularities (long sought by developmental ethologists) and unique variations as well. Or we might instead focus our eye on the pack itself and attend to regularities established and modulated within the social circle at different levels of analysis. Considering plants in the field, we witness the fecund interaction between theme and variation once again. We can see how different species are similar to one another in a family, but also how they vary. We can see how different organisms within a species are similar to one another and yet vary as well. Finally, we can investigate themes and variations in the component parts of an individual plant, as when we look closely at the progression of leaf growth or parts the patterns of leaf venation. Goethean studies (minus the mystical search for the *Urphenomenon*) aim specifically at showing how plant development proceeds, manifesting through its variations an unfolding theme (e.g. see Seamon and Zajonc, 1998), seeking to make visual the ongoing temporal transformation of leaves. At each stage of the sequence, we see how new leaves (and eventually flower parts) are morphological variations of one another, showing nomothetic continuity and idiographic novelty uniting sequentially in development. On the other hand, D'arcy Wentworth Thompson's (1942) geometrical transformations of organismic form reveal continuities across organisms, illuminating nomothetic kinships between organisms within the broader idiographic history of evolution. Such an interplay is again observable through interactions between organisms in ecosystems, as they develop and break stable expectations of relevant actors in their niches, and on a broader evolutionary scale in how variation and change feed into the relational dynamics of interacting organisms through the long term genotypic constraints placed on the various organisms' bodies and behaviours. On the other hand, genetics too can be studied in a way that combines the nomothetic and the idiographic (e.g. Affifi 2016b). Bateson's (1979) term "pattern that connects" was meant to highlight how myriad manifestations of difference in the biological world offer surprising nomothetic dimensions at various "levels" (which he called "logical types"). Themes reappear in

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varied form at different scales, like a fractal. There are copious possibilities for exploring the relationship between idiographic and nomothetic in the lab, forest and field, and math, biology, and art can all serve complementary roles in this shared project. Environmental educators have countless resources at hand to explore and develop a more intimate and empathetic relationship with the more-than-human world.

I feel a certain empathy develops when I consider how many delightfully entwined factors collaborate to bring any being into the world, a feeling which multiplies with the additional idiographic insight that each too will perish. Differentiation is inspiring but it also sometimes makes us feel vulnerable and precarious (Affifi 2019). A generosity and appreciation of difference can also emerge. The birth of all stability and security that we cherish came about through the spontaneous generation of novelty as things interact with one another and slowly bring the unexpected into form. The evolution of life, like the evolution of the universe as a whole, has always depended on difference emerging from within the crucible of regularity.

This dialectic is present in all evolving process, including the historical development of knowledge. For example, nomothetic laws were themselves discovered through unique historical idiographic processes (the scientific context of the time, access to funding, the researcher's temperament, etc.), a point that has only become increasingly emphasised since Kuhn (1962) injected historicity (in his own lawlike way) into Popper's (1934; 1963) description of the development of science (Feyerband (1975) finished it off with his lawless lawlikeness). It is important for students to know that discovery is a contingent and messy, and residues of idiosyncrasy persist in any nomothetic framing. This point has been made in science studies but can be illustrated through Bateson's (1979) observation that natural selection was discovered independently by both Darwin and Wallace. While 'the same' in some sense, the emphasis of each varied. Instead of Darwin's use of Victorian capitalism for his stock of analogies, Wallace had a much more cybernetic conception which might have led to different research trajectory in biology had he first published his own *On the Origin of Species*. In other words, each nomothetic law will have its own idiographic dimension owing to the particular conditions that brought it forth. Recognising Darwin and Wallace as variations of the evolutionary theme is a far cry from claiming their ideas are merely socially constructed impositions. Because similar discoveries are made repeatedly within and/or between cultures, the differences in their inflections can be compared critically without throwing the baby out with the bathwater.

**More than human, less than human**

A fruitful approach for inviting the more-than-human back into relation is to consider the dynamic between idiographic and nomothetic thinking, unveiling how one leads to deeper possibilities of realizing the other. For example, there are certain unique traits only experienced once we have already seen the "unique" pattern that binds it with another trait into a generalised type. This uniqueness in turn enables us to perceive levels of generality too nuanced for an eye not sensitised to the unique dimension afforded by the even earlier generalisation.

In other words, without acquainting ourselves with the theme, we cannot experience or understand its various manifestations. But witnessing the uniqueness thus revealed opens up our minds to other more subtle regularities. This is the developmental unity of theme and variation, a unity that pervades all phenomena inside and out, and that is the condition for the possibility of knowing in the first place. If nomothetic and idiographic approaches take the form

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of focusing on general and the particular respectively, it is only because both aspects exist in the more-than-human. Once recognising all snowflakes have six sides, we are perceptually honed to each flake's freewheeling upon this rule. In other words, categorising, classifying, and generalising need not insulate us in epistemological bubbles. Nor need they be hitched to a "metaphysics of mastery" out of which a poetic orientation towards otherness is the only escape, as often seems explicitly or implicitly suggested (e.g. Bonnett 2004, Mcphie and Clarke 2015). Categories can -and should- create the conditions for their own elaboration or overthrow. As Dewey might put it: objects *object* to our schemes. Conversely, idiographic studies invite, indeed depend on, consideration of universals and repetitions. Even when we engage a *single* entity, let's say my Uncle John, seeking to understand, describe, or relate with "who" he is, we will inevitably come upon patterns and regularities in his character. (Some colleagues keep disagreeing with me on this point). Likewise, an autobiographical study will not focus on ceaseless change and historical becoming *per se*. It will recognise that human development settles into stabilities which persist over time, and that change is only significant when considered in reference to these stabilities. Idiographic inquiry will not get very far if it does not establish or rely on categories.

It is somewhat sublime to consider that all across the universe idiographic processes give rise to repeatable patterns, just as surely as these patterns in turn originate differences. The emergence of repeatable mass-based interaction (let's call it "gravity") somewhere around the 10^ -36 seconds after the big bang, gave rise to the phenomenon of galaxies. The evolution of our species, our cultures, and our individual lives cooperate in dazzling ways to bring about the elaboration, disruption, and description of regularities. The more-than-human world is made up of repeating differences and differentiating repetitions across space and time. When we speak of epistemological constructions placed upon the world (and thereby veiling it), in the Kantian (through to postmodern) tradition, I suggest such epistemologies result from splitting the primordial dynamic unity of these terms. *On their own, both are abstractions: less-than-natural, less-than-human*. The nomothetic abstraction, for its part, is dangerously platonic. It considers the common trait as more real (or at least more "valuable") than the particularities of individual instances. If we only look for or see the lawlike and eternal, we indeed impose a version of the world onto it. Conversely, pure idiographic abstraction ignores internal order, genealogy, and the ways the world domesticates itself, setting upon the world a version of things liquidated of the depths it intends to plumb. In solitude, neither can adequately respond to nor engage with how the world produces and destroys its themes and variations at various spatiotemporal scales. But this is the challenge we face.

**The aesthetic experience of theme and variation**

While mass production inadvertently teaches that variation is defect, (a lesson magnified in reach as we increasingly live in a technologised world), the variation of rocks and trees, of people and artisanal handicrafts, is needed more than ever as its (de)stabilising agent. Humans are nourished by examples of where the differences among repetitions are fruitful, soulful and healthy, and not the undesired breakdown of precise engineering gone wrong. We are nourished when freedom and spontaneity seem to work --something in us feels these as deep ongoing murmurations of a living universe. As educators, we need to introduce the regularity of

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irregularity back into experience. A continued practice of acquainting with the living world provides the antidote.

Idiographic knowledge is not just a set of specific historical propositions in the sense described above by Windelband. It does not necessarily, include an examination of the relevant factors that contributed to the genesis of a thing. There is also an “aesthetic” encounter with uniqueness. This is the event of experiencing a thing in immediate encounter as it arises. It is an important moment in the way humans can engage with phenomena and important for environmental educators to seek ways of provoking such experiences. But it is not necessary to create a hierarchical scheme that values this as in some way authentic against other moments when humans compare and relate the self-arising being with other things (as Bonnett (2004) seeks to do). Part of its self-arising is its manifesting similarity and relationality with what is beyond it. That a focus on regularity has been capitalised on by the desire for mastery does not imply the regularity is any less a real or important part of a being’s haeecity than its immediate, singular presence. In fact, perception itself is categorical prior to thinking (Merleau-Ponty 2012). The sensory is not the antidote to the allegedly detached generality of the rational (as Abram 1996 would have it). They interpenetrate profoundly in the developmental genesis of perception itself. Moreover each is aesthetically imbued with both themes and variations.

And indeed, the aesthetic experience of such self-arising depends on the dialectic between theme and variation. Whether silk woven in Laos, African masks, pentatonic Chinese melodies, Mayan ceramics, or coloured glass windows in Gothic churches, art across the world’s varied cultures interplays symmetries and modulations, as well as transformations of those symmetries. In so doing, each bears a structural resonance deeper than any mimicry with how one spinal cord bone is related to the next, and all in turn with the trees in a forest which vary stochastically in height and yet not without discernible pattern.

Unfortunately, as with the split between knowing and world, modern perspectives have also rendered aesthetic experience “subjective.” Not only have aesthetically important beings and processes suffered as a result (beauty merely in the eye of the beholder can’t be mobilised for in defense), but a potent and visceral way of experiencing the more-than-human is driven into irrelevance. While I do not suggest that there is only one valid type of aesthetic experience, I maintain that aesthetic encounters can connect us affectively with the sorts of difference and repetition we have so far considered only from a “cognitive” point of view. And I suggest humans cannot flourish in anesthetic conditions where contexts repeat with variations hidden, or within randomness bereft of regularity. The precisely laid out stonework of modern city floors is unsatisfying because it minimises and thereby buries the “variations on a theme” that is the ongoing consummation of all phenomena, and that which cobblestones of former days made so manifest. Conversely, a non-musician randomly banging at a piano produces insufficient recurrences for their spontaneity to plumb the heart. Neither enigma nor profoundity are sacrificed by restoring unity to the general and the specific. By providing a context and a horizon, such a unity is the ground for experiencing both meaning and mystery.

A language accumulates new vocabulary and idioms when it is responsive to immediacy, its codes and conventions contorted by local people and place. By its very evocative power a novel turn of phrase spreads, integrating into the code itself, and eventually devolves into cliché; the anarchist ascends to the authority (notice what has happened to many Deleuzian terms). When the variation becomes the theme, however, it sets the conditions for its own

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rupture. Becoming is scarcely steady uniform change. It has its own differences and repetitions, and we are aesthetically attuned to it for the simple reason that it is also part of our very own learning, growth, and transformation. It is felt in bones before brains.

Once recovered from anthropocentric subjectivity, an aesthetic elicitation is revealed as a valuable and essential dimension of research, pedagogy and environmental practice. By severing ourselves from the world we also sever different parts of ourselves from each another. We aesthetically experience the unification of difference and repetition before we isolate either, and yet examining each in turn, and how they participate in the unification, we can bring about new aesthetic experiences.

Why do the particularities of a great story or painting touch many people? We do theories and observations about one aspect of the world serve as insightful analogies to understand other parts? This laterality, how the specific transcends itself and points to the general, makes growth possible. Lateral analogies play a major part in explanation and discovery (Hofstadter and Sander, 2013), local ecological knowledge, and art. They are crucial in hypothesis formation (e.g. Peircean 'abduction' (1935)), active observation and experimentation, and educators should directly encourage analogic transdisciplinarity. It is ultimately more worthwhile to develop one's capacity to see possible lateral kinships and to investigate them than to passively accept as dogma received laws concocted by others, which kidnap our sensory engagement with the evolving world. In other words, pedagogies that teach generalisation as a reified entity divorce the student from the necessary developmental unity of theme and variation. But lateralisation also offers the important existential dividend of stitching our identity back into relationship with other people and nature. Everything is therefore full of secret lessons. I could study a single stalk of thyme for the rest of my days and it would surely show me insights into the most unexpected things. Analogies ultimately get tweaked by the contexts they describe or engage, as any variation must (Affifi 2014b). The generalisation gets regeneralised through the specific. We are of a great intertwining fractal, with similarities, kinships and homologies abounding. So it is that humans participate and can identify in this grand process of generating and varying themes, our knowledge projects flowing from and wrapping back into the world from which they birthed and forever abide.

**Restoring realism in environmental education**

We can provoke students when their nomothetic frames deaden their experience of the world. General categories that explicitly deny a role to freedom, randomness, spontaneity, or creativity, are dangerous, especially when they are self-validating (Weston 1996). For example, the mutually buttressing beliefs that other organisms are merely repeating their genetic tunes and that their songs are not worth listening to anyway, can hardly promise experiences for students that could undermine these premises. Teachers need to be on the lookout. When humans excessively value the nomothetic, an important ethical shift occurs. The dominance of nomothetic thinking leads inexorably to the dominance of people and of nature. Disproportionate focus on nomothetic knowledge sabotages the power and beauty it promises to reveal, squandering the kinship and connection it gifts us. When used to discriminate, to ignore, and to create scales of value, generalisation divides rather than unites (Plumwood 1993). But it is a dangerous error to equate generalisation with such tendencies, severing generalisation's connective capacities. Instead we must heal the nomothetic by bringing it back into ongoing

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intercourse with the nomothetic. Rather than erecting absolute barriers (in a too common Sapir-Whorfian vein) or dissolving otherness through some colonial unity, a person versed in understanding and exploring the ongoing collaboration of difference and repetition might work through a more responsive and attentive ongoing process. For example, American bird experts and Itza'Maya ways of classifying birds converge (Bailenson et al. 2002). The differences *and* similarities between them matter. For anyone in sustained, meaningful engagement with birds, certain ways of conceiving suggest themselves. Both ways of conceptualising are thematic variations of bird diversity itself. Their similarities show we live in a common world, their differences show that this world reveals itself in varied ways depending on the particular practices we sustain. Bird classification is only arbitrary for rookies without any robust care or involvement.

As mentioned, for Peirce (1935), the term "realism" hinges on the idea that generalisations are not merely structures imposed on the world in the sense we have come to think about knowing ever since Kant (1918). Peirce took aim at an attitude that persists in environmental education. The "nominalists" of his time argued that the universe is made up solely of particulars and any categorisation or classification but a construct. Many environmental educators distrust classification today and with van Matre's (1990) book in hand, have their students focus on the unique organisms (aka. "Beings", "Others", "Voices") they encounter on field trips. The entities encountered are thought so delicate that any move to classify them immediately and irreparably bludgeons intimacy or relationship (e.g. Bonnett, 2004). While I do not discount the need to focus on particularity, the prejudice against universals is counterproductive. It prevents some of the very intimacy it seeks to nurture. As my discussion of idiographic and nomothetic inquiry has shown, either can be engaged for diverse purposes, conventionally scientific or propositional, aesthetic, participatory or embodied. But when the idiographic and nomothetic are combined in earnest, the distinction between seemingly embodied and disembodied forms of knowing begins to dissolve. Rather than paradigms existing worlds apart, they are seen as moments in an ongoing process. We fall in and out of experiencing thisness and whatness, haeccity and quiddity. This is not only unavoidable, it is desirable. Environmental education will restore "the environment" into pedagogy only once it reconciles the epistemological, ontological, aesthetic, and ethical rifts that split the human from the world. This calls for new realisms perhaps even before any new materialisms. *Tacking* the dialectic between sameness and difference is one way we can encounter and engage with the world itself, in song and in love, within and without. The more than human and the human alike reveal themselves through dialectical process.

And how we engage our students too. If I were to repeat the phrase "variations on a theme" over and over again in this paper, or the same idea but simply change the words, I would not keep true to the organic development of thought or the world. I would also quickly lose your attention. That we are aesthetically affected by the fertility of the universe implies that our writing and our lessons should also be developmental, exposing and embracing convention stirred by circumstance. In educational contexts, when teachers focus on pedagogies that are "evidence based," this often means that they "work" for some statistically significant number of students. Those on the edges of the bell curve are sacrificed for expediency. Sometimes, violence is not against certain students but against *certain aspects* of individual students. A child's most common features are considered and engaged while her less common variations

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are ignored. This is a violation of the whole child. At best, these examples mimic that form of democracy known as “as tyranny by the majority,” at worst, well, you can imagine.

One article reviewer pointed out that this dialectic is “self-evident” in any competent environmental education programme. In some sense, this is true –even in the most incompetent ones. Humans cannot help but think in nomothetic or idiographic ways. However, as far as learning intentions that explicitly inform practice, I am afraid I cannot agree that their harmony has been pedagogically satisfying. Instead, I find a haphazard and unreflected-upon melee of both modes. Adding to the confusion is the implicit denial of a necessary complementarity, with practitioners often dividing rather sharply along a line. One camp provides learning that focuses on categories, naming and identifying species, behaviour, and ecological processes. Adherents usually consider contemplating an individual’s uniqueness as having limited value (“accidents” or “noise”). By contrast, the other camp distrusts the categorical impulse, arguing that it is distancing, perhaps patriarchal and colonial, and detracts from our capacity to really listen and to sensitively respond to the particular others all around us (e.g. Bonnett 2004, Blenkinsop and Piersol 2013, Mcphie and Clarke 2015). Underlying philosophical commitments funnel practice in one way or another. The space between Kant’s constructivist shadow and the light of the more-than-human is vast, but we do not yet have the wings for it.

**An evening sea**

Consider waves in the sea, gathering through the transfer of energy from wind to water. While the waves are separated in space and time, they have a consistency of form which owes to shared conditions that brought them forth. But look more closely at the surface of the waves. You will see differences on each of them. Perhaps you notice new patterns maintained on the skin of the water, the calligraphy of local gusts. But these “capillary waves” also fluctuate one from another, in even more shortly lived variations than those undulations that they tickle and smudge. In each case, we see that what repeats has a momentum carried into the current interaction from distant places and times. Indeed, a “community of descent is the hidden bond” (Darwin, 1859, p. 420), but at each moment, that which modifies without eliminating the repeated rule is always the causal effect of things happening at a more local spatiotemporal scale. We can guide students in experiencing and interpreting the overlapping fossils of different time scales present in the Moiré patterns all around us. The “sameness” of two maple trees owes to their shared phylogeny, their differences to more recent genetic or ontogenetic conditions. A river wears out a canyon but varies moment to moment in how it tumbles through its ridges and banks. The long developing character of my personality has a strong habituating influence on my capacity to reinvent myself now, though local conditions elicit flexibility. Finally, the ideas taking shape in this article, confined to increasingly narrow domains of creativity as what comes before lays out demands for coherence and consistency, slow but never stop the alphabetic recombination, funnelling twists and turns into novelty.

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