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Pathways from Environmental Ethics to Pro-Environmental Behaviours? Insights from Psychology

CHELSEA BATAVIA*

*College of Forestry
Oregon State University
Corvallis, OR 97331-5704, USA
Email: chelsea.batavia@oregonstate.edu
ORCID: 0000-0002-7323-9149
* Corresponding author*

JEREMY T. BRUSKOTTER

*Ohio State University
Email: bruskotter.9@osu.edu
ORCID: 0000-0002-1782-7835*

MICHAEL PAUL NELSON

*Oregon State University
Email: mpnelson@oregonstate.edu
ORCID: 0000-0001-6917-4752*

ABSTRACT

Though largely a theoretical endeavour, environmental ethics also has a practical agenda to help humans achieve environmental sustainability. Environmental ethicists have extensively debated the grounds, contents and implications of our moral obligations to nonhuman nature, offering up different notions of an ‘environmental ethic’ with the presumption that, if humans adopt such an environmental ethic, they will then engage in less environmentally damaging behaviours. We assess this presumption, drawing on psychological research to discuss whether or under what conditions an environmental ethic might engender pro-environmental behaviour. We focus discussion on three lines of scholarship in the environmental ethics literature, on 1) intrinsic value, 2) care ethics, and 3) the land ethic. We conclude by commenting generally on both the limits and transformative potential of an environmental ethic in its larger sociocultural context.

KEYWORDS

Environmental ethics, psychology, intrinsic value, care ethics, land ethic

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1. INTRODUCTION

A recent report by the Intergovernmental Panel on Climate Change (2018: 21) urges that ‘rapid and far-reaching transitions’ across all major socioeconomic sectors of human activity are required to avoid catastrophic outcomes associated with global climate change. Arguably such a radical transition necessitates a fundamental shift in our human relationship with nonhuman nature (hereafter ‘nature’). Indeed, it was in a similar context of growing – now immanent – threat of global environmental crisis that the sub-sector of moral philosophy known as environmental ethics emerged (Callicott, 1984). In the past several decades, numerous scholars of the field have suggested that 1) Western society’s flawed ethical foundations are a root cause of humanity’s historic and ongoing damages to the environment; and 2) new ethical foundations are a necessary cornerstone of meaningful change (e.g., Jonas, 1984; Routley, 1973; White, 1967). Many scholars, in turn, have worked to defend the philosophical grounds for a new ‘environmental ethic’. Their largely theoretical agenda is to understand how humans should interact with nature, and also to explain why humans should not interact with nature in certain ways (e.g., pollution or deforestation). But the field of environmental ethics has practical aspirations as well, in that scholars pursue their theoretical agendas with the hope and expectation that the theories they develop will exert a positive influence in society (Callicott, 1994; Light, 2002; Rolston, 2012). It is presumed that if an environmental ethic were to become normalised – i.e., were it accepted and endorsed as people currently accept and endorse principles of justice and human rights – there would be a commensurate human behavioural shift in the direction of sustainability.

Philosophers do not naively assume that ethics translate directly into human conduct (see e.g., Care, 2000), but there is a general sense, as succinctly stated by Callicott (1994: 5), that, ‘ethics exert a palpable influence on behaviour’. And yet, environmental ethicists have scarcely considered how (or whether) an environmental ethic might actually influence human behaviour, instead focusing primarily on the theoretical aspects of their agenda. Empirical characterisation of the behavioural influence of an environmental ethic is beyond the purview of philosophical inquiry, strictly speaking, but this task does fall within the scope of psychology, a discipline with an extensive scientific literature on human behaviour, including sustainable or ‘pro-environmental’ behaviours.¹ In this essay, therefore, we adopt a psychological lens to assess

1. We use the word ‘sustainable’ synonymously with ‘pro-environmental’, referring to behaviours that slow, reverse or lessen humanity’s contribution to global environmental crisis, including pollution, land degradation, climate change and biodiversity loss. Although behaviours in different domains have been theoretically and empirically differentiated from one another (e.g., Larson et al., 2015; Stern, 2000), it is beyond our scope to consider behavioural types independently. We preface our discussion with the caveat that results of empirical studies reported below do not necessarily generalise across domains of pro-environmental behaviour.

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the plausibility of presumed pathways from an environmental ethic to sustainable behaviour. By ‘ethic’ we mean a moral code, i.e., a web of values, norms and beliefs that governs a person’s operative notions of right and wrong. In this sense an ethic represents an ideal of appropriate human conduct (Callicott, 1994). Understanding where our conduct does or does not reflect the ideal appraises us of our capacities and limitations as moral agents; and, over the long term, may also help us determine how to reduce discrepancies between actual and ethically ideal behaviour.

Our objective, therefore, is to assess the influence an environmental ethic is likely to exert over individual human behaviour. To meet this objective, we begin with the hypothetical case in which members of society at large have adopted an environmental ethic.² By ‘adopt’ we mean individual members of society accept and affirm the tenets of an environmental ethic, having values, beliefs and/or emotions that are consistent with that ethic, and endorsing those values, beliefs and/or emotions as part of their moral codes. Drawing on relevant psychological research, we discuss whether and under what conditions an environmental ethic, if so adopted, might also be enacted, i.e., manifest in the form of pro-environmental behaviours. To focus our discussion we highlight three prominent but distinctive threads of scholarship in the environmental ethics literature, on 1) the intrinsic value of nature, 2) care ethics, and 3) Aldo Leopold’s land ethic. Our intent is not to comprehensively review the literature in environmental ethics or psychology, but to synthesise key contributions from each.

To clarify, our hypothetical case posits that an environmental ethic has been adopted by individuals of a society, but does *not* assume it has become institutionalised (i.e., adopted formally or informally in the policies of governments, corporations, and other social organisations). We draw this distinction in efforts to understand the potential for an environmental ethic in itself to influence behaviour, even (and particularly) when it is at odds with its larger sociocultural context. Research discussed below suggests many individuals do subscribe to at least some tenets of an environmental ethic. Over time these tenets may become integrated into society’s political, economic, legal and larger social systems, but at present Western societies continue to be underwritten by a traditional ethic defined by anthropocentric, utilitarian norms and values (Bandura, 2007; Purser et al., 1995; Spahn, 2018). As such, isolating an environmental ethic from its broader social context is not only useful as an

We also at times report behavioural intentions, rather than behaviours, since the former is a commonly used and usually more accessible metric. Meta-analyses of both correlational and experimental work suggest a reliable if not always strong relationship between these two behavioural variables (Armitage and Connor, 2001; Webb and Sheeran, 2006).

2. Although an interesting and important question, discussing how an ethic comes to be adopted by society at large is beyond the scope of the present essay. Interested readers are directed to consult sociological work on values and value change (e.g., Dunlap, 2008; Inglehart and Baker, 2000).

analytical exercise, in line with our stated objective, but also in some ways an accurate characterisation of current social and moral reality.

2. INTRINSIC VALUE

Environmental ethicists have generated a vast literature on value in nature, and particularly the intrinsic value it possesses for its own sake, beyond any good it may serve for others (Vucetich et al., 2015).³ Entities attributed with intrinsic value are not properly regarded (or treated) as mere means to other ends; rather, they must be treated as worthy ends in themselves. Modern Western ethical theory largely presumed human beings as the sole bearers of intrinsic value (Callicott, 1989) until the latter half of the twentieth century, when environmental ethicists began arguing that there is also intrinsic value in nature, or some part(s) of it (see Des Jardins, 2001). Once we acknowledge an entity (or its wellbeing) as a bearer of intrinsic value, we should also, arguably, acknowledge at least a basic obligation to respect that entity, and perhaps actively protect its interests (e.g., Rolston, 2012; Singer, 2011; Taylor, 1981; also Batavia and Nelson, 2017). In this way, an environmental ethic predicated on intrinsic value entails a ‘transition from *is* to *good* and thence to *ought*’ (Rolston, 1991: 95).

To understand how such an ethic might influence behaviour, we begin by consulting the psychological research on human values. Schwartz (1994: 21) defines values as, ‘transsituational goals, varying in importance, that serve as guiding principles in the life of a person or other social entity’. Values are often classified into clusters of similar types according to the motivations they express (Schwartz, 1994). For instance, the values ‘wealth’ and ‘authority’ express a motivation for power, whereas ‘equality’ and ‘peace’ express a motivation to achieve universal welfare. Values that express a motivation to honour and protect nature are sometimes referred to as ‘biospheric values’ (Stern and Dietz, 1994; Stern et al., 1999), which are distinguished from social-altruistic values, i.e., goals related to human wellbeing; and egoistic values, i.e., goals related to one’s own wellbeing (de Groot and Steg, 2008; Stern and Dietz, 1994). Of these three value types, biospheric values are of greatest interest to the present discussion, as they appear to be a relatively close psychological analogue to the philosophical concept of intrinsic value in nature (de Groot and Steg, 2008).

3. Intrinsic value is distinct from intrinsic motivations, which are motivations to act for the inherent interest or enjoyment of the activity; as contrasted with extrinsic motivations to act in order to achieve some other goal (Ryan and Deci, 2000). The distinction is important, since the intrinsic value of nature is likely to function as an extrinsic motivation for pro-environmental behaviour.

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Many studies have reported direct, positive correlations between biospheric values and pro-environmental behaviours or intentions (e.g., de Groot and Steg, 2010; Katz-Gerro et al., 2017; Thomas and Walker, 2016). Others investigate values as one link in a chain of cognitions (i.e., thoughts) leading to behaviour or behavioural intentions. One such chain of cognitions is articulated in the value-belief-norm (VBN) theory of pro-environmental behaviour (Stern et al., 1999). VBN theory can be interpreted as a psychological specification of the relationship outlined by Rolston (1991), whereby ethical duties or obligations are grounded in notions of value. According to the theory, values underpin generalised beliefs, i.e., worldviews organised around ideas about humans and nature. Generalised beliefs in turn underpin two more specific beliefs: 1) awareness of consequences, the belief that some valued object faces harm, and 2) ascription of responsibility, the belief that one is personally responsible for alleviating the situation. These specific beliefs theoretically 'activate' personal moral norms (i.e., duties or obligations), leading one to engage in helping behaviour (Stern et al., 1999). A large body of empirical work has tested VBN in the context of pro-environmental behaviours (see Turaga et al., 2010), and researchers generally find that biospheric values predict a range of pro-environmental behaviours or intentions along the pathways proposed by the theory (e.g., Steg et al., 2005; van Riper and Kyle, 2014).

Yet, while the 'value' terminology is shared between ethics and psychology, we should not assume scholars' conceptions of biospheric values and intrinsic value are interchangeable. Philosophically, value is conceptualised as a property of objects or states of affairs, which elicits a particular (usually favourable) disposition (see Batavia and Nelson, 2017). Psychologically, values are conceptualised as goals or abstract end states that humans aspire to reach or achieve (Schwartz, 1994). At first glance it may appear these two notions of value are readily reconciled if we can assume people who hold biospheric values (i.e., desire the wellbeing of nature) also ascribe intrinsic value to nature (i.e., believe nature is valuable regardless of its utility to people). However, philosophers have pointed out that the intrinsic value of nature cannot be deduced solely on the basis of the fact that a person wants or chooses to protect it (Peterson and Sandin, 2013; Weber, 2017), an observation corroborated by careful examination of the survey items used to measure biospheric values. These items ask people to rate the importance of five values (unity with nature, a world of beauty, protecting the environment, preventing pollution, and respecting the Earth) as 'guiding principles' in their lives (Stern and Dietz, 1994). One might attach strong importance to any of these without believing nature has value beyond what it provides humans. For instance, a person might consider unity with nature important if she believes the long-term survival and welfare of human beings require people to live in unity with nature. Although endorsement of biospheric values is certainly consistent with the ascription of intrinsic value to nature, the former does not necessarily indicate the latter.

More direct evidence linking an ethic predicated on intrinsic value to pro-environmental behaviour may emerge from a growing body of psychological research that explicitly measures ascriptions of intrinsic value to nature (e.g., Lute and Attari, 2017; Lute et al., 2016; Vucetich et al., 2015). Vucetich et al. (2015), for example, asked people affiliated with five wildlife stakeholder groups (local residents, hunters, anglers, trappers, and wildlife watchers) to indicate their agreement or disagreement with the statement, ‘Wildlife have inherent value, above and beyond their utility to people’. Unlike the items listed above, which operationalise biospheric ‘values’ in the psychological sense, this item is clearly commensurate with the philosophical understanding of ‘value’ as a property of an object or entity.⁴ Only limited research has related direct measures of intrinsic value with environmentally relevant behaviours, producing mixed results. In an online survey of Michigan (USA) residents, the ascription of intrinsic value to wolves (or not) predicted five specific conservation behaviours (Lute et al., 2016). On the other hand, Vucetich et al. (2015) found that the five aforementioned stakeholder groups could not be strongly differentiated by whether they ascribed intrinsic value to wildlife, as majorities in all five groups did. The direct measure of intrinsic value also only weakly predicted attitudes toward the use of lethal management (i.e., killing a bear) in two hypothetical human–wildlife conflict scenarios.

Exemplifying the significance attached to intrinsic value in the philosophical literature, environmental ethicist Holmes Rolston, III (1991: 92) wrote, ‘In practice the ultimate challenge of environmental ethics is the conservation of life on Earth. In principle the ultimate challenge is a value theory profound enough to support that ethics’. Results reported by Vucetich et al. (2015) suggest ascribing intrinsic value to wildlife, and perhaps other parts of nature as well, may exert some influence over an individual’s behaviour; but perhaps to a far lesser degree than is presumed in the environmental ethics literature.⁵ Indeed, research generally demonstrates that the influence values exert over behaviour is constrained by a suite of factors.

For example, people hold multiple values aligned with multiple motivational domains, some of which directly pertain to the environment, and some which do not (Schwartz, 1994; Steg, 2016). In general, values that are activated in context are most likely to influence behaviour, particularly when they are central to one’s sense of self (Steg, 2016; Verplanken and Holland,

4. There is some debate in the environmental ethics literature as to whether intrinsic value is an objective property of an entity, or an attribution of a subjective human valuer (see Batavia and Nelson, 2017). The direct measure of intrinsic value used by Vucetich et al. (2015) does not favour either interpretation.

5. But conceivably a statutory declaration of wildlife’s intrinsic value, with associated policies, would exert stronger influence. For instance, Callicott (2006) argues that the US Endangered Species Act implicitly acknowledges the intrinsic value of species. This law has been used to effectively halt or reverse the decline of threatened and endangered species for over 40 years (see, e.g., Taylor et al., 2005).

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2002). A person may generally desire the protection of nature, but this goal may be relatively unimportant, and therefore relatively non-influential, when the person is deciding whether to drive across the country to visit family over the holidays. Even though resulting gas emissions would counteract the goal of nature protection, other, perhaps more important goals such as respect for tradition, belonging, and meaning in life are more likely to influence the person's decision in this case (Schwartz, 1994).

Values also potentially compete in importance with social and situational factors (Steg, 2016), which may facilitate or inhibit linkages between notions of value and pro-environmental behaviours. For example, a person may have an overall positive attitude toward polar bear habitat conservation, based in part on the ascription of intrinsic value to polar bears (Ajzen, 2012). However, this attitude may exert relatively little influence over specific commuting behaviours, for example, if the individual does not feel she has viable transportation options other than her personal vehicle; or if important others (e.g., family or friends) disparage the use of public transit. Along with attitudes, these two variables – one's perceived ability to act ('perceived behavioural control') and social influence (a.k.a. 'social norms') – are key predictors of behavioural intentions according to the theory of planned behaviour (TPB), another psychological theory often used to explain pro-environmental behaviour (Ajzen, 2012).

In a recent meta-analysis, Klöckner (2013) quantified the relative influence of a range of predictors of pro-environmental behaviours, integrating variables from VBN and TPB, as well as habit (i.e., routine, non-deliberative actions). Although he found that values were antecedents to personal norms, as specified by VBN, personal norms had only an indirect relationship with behaviour via intentions, which were also predicted by perceived behavioural control, social norms, and attitudes. Apropos to the present discussion, Klöckner's (2013: 1035) results led him to conclude, 'It is obvious that the path from values to behaviour is long and can be interrupted by many variables'.

Both according to direct measures of intrinsic value and, perhaps, as implied by broad endorsement of biospheric values, there is some evidence to support a linkage between an environmental ethic predicated on nature's intrinsic value and pro-environmental behaviours.⁶ By the same measures, research suggests nature's intrinsic value is generally a non-controversial proposition, at least in Western contexts (e.g., Schultz and Zelezny, 1999; Steg, 2016; Teel and Manfredi, 2009; Vucetich et al., 2015). However, these observations should not lead us to conclude humans are overall more likely to engage in sustainable behaviours than not. Although the basic ascription of intrinsic value to nature may under some circumstances underpin sustainable behaviour, we should not

6. We strongly recommend future research testing the discriminant and convergent properties of biospheric values and direct measures of intrinsic value, in efforts to determine the extent to which inferences can be drawn from one line of research to the other.

expect individuals to unfailingly engage in behaviours that are congruent with values professed at an abstract level.

3. CARE ETHICS

In the environmental ethics literature, normative theories centred on intrinsic value suggest people should appropriately value nature by acknowledging its direct moral standing and honouring concomitant moral obligations. An ethic predicated on nature's intrinsic value, in this sense, primarily involves proper thoughts, or cognitions, regarding nature. A separate thread of literature offers a somewhat different account. Scholars in the ecofeminist tradition emphasise emotions such as compassion, love, and empathy as the foundation of morality. Mathews (1991: 160), for example, recommends:

teaching our hearts to practice affirmation, and ... awakening our faculty of active, outreaching, world-directed love. Though a tendency to 'tread lightly' on the earth, and to take practical steps to safeguard the particular manifestations of Nature, will flow inevitably from such an attitude, the crucial contribution will be the attitude itself, a contribution of the heart and spirit.

Ecofeminists argue that morally appropriate conduct entails not only or even primarily acting in accord with some abstract set of beliefs or principles. Instead, our moral obligations and responsibilities stem directly from our relationships with specific others, and the care we feel for them (Cheney, 1989; Plumwood, 1993; Warren, 1990).

Because an environmental ethic of care is at core an emotional response, in this section we consider some of the psychological research linking certain caring emotions, *viz.*, empathy and compassion, with pro-environmental behaviours. Empathy involves sharing another's emotional state, and generally fosters concern for the other's wellbeing (Eisenberg and Fabes, 1990). Researchers have persuasively demonstrated that empathy can altruistically motivate humans to help other humans (e.g., Batson, 1997; Eisenberg and Fabes, 1990), and an increasing body of work suggests it may also motivate people to 'help' nature, *i.e.*, by engaging in pro-environmental behaviours. Tam (2013b), for example, found that a dispositional tendency to empathise with nature (specifically 'animals and plants') is associated with pro-environmental behaviours. Berenguer (2007) found that people who were induced to empathise with a tree donated more money to an environmental cause than respondents who were not in a heightened empathic condition (also Swim and Bloodhart, 2015; Walker and Chapman, 2003). Closely related to empathy is compassion, a distinct rather than shared caring emotion experienced in response to another's suffering, which also often generates a desire to help (Goetz et al., 2010). Compassion has received comparatively less research attention than empathy in the context of pro-environmental behaviour. Pfattheicher et

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al. (2016) found that compassion for other humans predicts pro-environmental behavioural intentions (Pfattheicher et al., 2016), but to our knowledge researchers have not investigated whether compassion for nature itself (or some part of nature) is associated with similar outcomes. To the extent that empathy and compassion are analogous constructs (Goetz et al., 2010), the research on empathy referenced above suggests compassion may also engender sustainable behaviours. But some researchers suggest empathy and compassion are discrete emotions, even reporting evidence that compassion may more effectively motivate inter-human helping than empathy (Singer and Klimecki, 2014). We therefore suggest compassion merits explicit research attention as an antecedent to pro-environmental behaviour, especially given recent calls to integrate compassion for individual wildlife into the science and practice of conservation (Wallach et al., 2018).

Overall, research provides evidence to link care for certain elements of nature with sustainable behaviours. However, as King (1991: 80) observed, ‘if ‘nature’ is not a single thing, then we must ask what ‘nature’ ecofeminism cares about’. To reiterate, environmental ethics of care are grounded in our specific relationships with nonhuman entities (e.g., Plumwood, 1993; Warren, 1990). Adopting an ethic of care, as such, does not involve caring for ‘nature’ writ large, but rather caring for nature in its diverse particularities. Although this liberates us from impersonal and absolutist moral rules (Plumwood, 1993), it also means our ethics extend only as far as our relationships and our capacities for care. Research suggests these capacities may be inherently constrained by an overarching human tendency to favour others who are perceived as close, familiar or similar to ourselves (e.g., Bastian et al., 2012a; Montoya et al., 2008). Hollar (2017), for example, developed an Empathy Gradient Questionnaire, hypothesising that empathy would generally decline as the perceived social distance between self and other increases. Supporting his hypothesis, he found a decrease in empathy for targets ranging from friend to peer to distant other to nonhuman entity. Other research corroborates these results, showing that people empathise less with nonhuman animals that are phylogenetically dissimilar from humans (Harrison and Hall, 2010).⁷ While humans can certainly empathise with select, apparently humanlike nonhuman beings, such as mammals (Harrison and Hall, 2010; Westbury and Neumann, 2008), it seems other elements of biodiversity such as invertebrates, plants, species or ecosystems are less likely to elicit the same emotional – and behavioural – responses.

Macro-scale social and structural influences may also enable or actively encourage people *not* to care for nature, in part or in whole. ‘Moral disengagement’ refers to the phenomenon whereby humans selectively suspend (i.e., ‘disengage’) the internal controls that serve to self-regulate conduct, and lead us to act in accord with our moral standards. By so disengaging, we can avert or avoid the self-sanctions (e.g., feelings of guilt or shame) that would otherwise

7. Interestingly, the same has been found of robots (e.g., Kuchenbrandt et al., 2013).

accompany the violation of these standards (Bandura, 1991; Bandura et al., 1996). Moral disengagement takes various forms, which include dehumanising the victims of one's actions, displacing personal responsibility onto others and using euphemistic language (Bandura et al., 1996). Western society may facilitate such processes of moral disengagement, often in ways that prevent or stifle care for nature (Bandura, 2007). For example, the environmental impacts of energy use, consumer choices and waste removal (among other things) are generally concealed in post-industrialised societies, allowing people to remain comfortably oblivious to nonhuman (and human) victims of their actions, and thereby avoid associated dissonance (Dauvergne, 2010). Euphemistic or sanitised language masks the harms (and victims) associated with certain practices, e.g., when we refer to clearcutting as 'even-aged management' or killing animals as 'wildlife control' (Houck, 2001; see also Bastian et al., 2012b; Piazza and Loughnan, 2016; Plous, 1993; Serpell, 2004). In these and other ways, society creates physical and/or psychological distance between humans and nature, or certain parts of it, precluding connections or relationships that might otherwise foster caring emotions such as empathy or compassion.

Researchers have found that people who are less empathetic are more likely to morally disengage (Detert et al., 2008; Niemyjska et al., 2018). It remains unclear whether social practices and institutions promoting moral disengagement, as discussed above, can actually inhibit empathy or other caring emotions (see Zaki, 2014 for discussion about how the experience of empathy – or not – can be motivated by social or situational factors). We highlight this as an important direction for future research. For now we offer the observation that an ethic of care cannot influence human behaviour if humans do not experience caring emotions; and we hypothesise that caring emotions are unlikely to arise where the social context discourages, de-incentivises, or even actively suppresses them.

4. THE LAND ETHIC

The land ethic, as advanced in the seminal work of Aldo Leopold (1966: 262), embraces as a fundamental ethical principle that, 'A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise'. Leopold viewed an ethic as a cornerstone of human society, regulating interpersonal conduct within a network of cooperative relationships. Whereas conventional ethics governed conduct exclusively within the human social realm, he suggested, 'the land ethic simply enlarges the boundaries of the community to include soils, waters, plants and animals, or collectively the land' (Leopold 1966: 239).

Leopold's ideas were developed by environmental ethicist J. Baird Callicott (1989), who brought scholarly rigour to Leopold's prescient if philosophically

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underspecified writings. Integrating cognitive and emotional elements of the two ethics examined above (intrinsic value and care), Callicott (1989) argued the land ethic is in part a reasoned belief, but also an expression of the social sentiments such as care, love and attachment, which bind communities together. In this sense, Leopold's land ethic involves,

not only the moral sentiments, but also an expansive cognitive representation of nature... this is the biotic community of which we are a part, these are our companions in the odyssey of evolution, and it is to them, not to any future complement, that our loyalties properly extend (Callicott, 1989: 152).

Based on Leopold's own writings and Callicott's later interpretations of his work, the land ethic can be understood to entail two core components. First, a land ethic is grounded in the ecology of a specific place, 'the land', which includes the biota and the abiotic environment. To understand how such a place-based ethic might influence behaviour, we consult the psychological research on sense of place.

Masterson et al. (2017) define 'sense of place' as a pairing of place meaning, which is a cognitive representation of place and its significance, and place attachment, which is an emotional bond with place. In some cases place attachment, *per se*, has been found to predict pro-environmental behaviour (Halpenny, 2010; Raymond et al., 2011; Scannell and Gifford, 2010). More precisely, though, people become attached to salient place meanings (Wynveen et al., 2012), and it is these specific meanings they seek to protect (Anderson et al., 2017; Brehm et al., 2013). The psychological research on place suggests people whose sense of place involves an emotional attachment (the 'moral sentiments') to a particular geographic place ('the land') imbued with a certain meaning ('integrity, stability, and beauty') would likely act to protect those valued meanings, e.g., by engaging in environmental stewardship behaviours.

However, literature on place provides few insights into the second core component of Leopold's land ethic, *viz.*, its inherently non-anthropocentric vision of humans as 'plain members and citizens' of the biotic moral community (Leopold, 1966: 240).⁸ To understand how such a sense of integration or kinship with nature might influence behaviour, we consult the variegated body of research on connectedness to nature. Mayer and Frantz (2004), for instance, developed a 'connectedness to nature' (CNS) scale to operationalise the biotic community sentiment underpinning Leopold's land ethic. Using this and similar measurement instruments (see Tam, 2013a for a review), researchers have found that individuals who feel related to or connected with nature often report pro-environmental behaviours or behavioural intentions (e.g., Obery

8. The psychological construct 'community attachment', which is closely related to place attachment, may seem relevant. However, 'community' in this line of research refers specifically to the social (human) community (see Trentelman, 2009). To our knowledge, community attachment has not been used as a framework for understanding human-nature relationships.

and Bangert, 2017; Yang et al., 2018). This research, again, provides some evidence to support a linkage between Leopold's land ethic and sustainable behaviour. But most measures of connectedness refer abstractly to 'nature', or some part(s) thereof. Items from the CNS scale, for example, ask respondents to indicate their level with agreement with statements such as, 'I think of the natural world as a community to which I belong', or 'I often feel a kinship with animals and plants' (Mayer and Frantz, 2004; see also Tam 2013a). If the psychological research on place does not capture the quintessential community element of the land ethic, research on nature connectedness lacks sense of place altogether. We therefore recommend future work integrating elements of both sense of place and nature connectedness, allowing researchers to understand Leopold's land ethic more holistically, and especially as it may relate to sustainable behaviour.

The literatures on place and nature connectedness provide indirect and suggestive evidence to link a land ethic with pro-environmental behaviour, but some researchers have more directly investigated people's 'land ethics' as well. For example, in a recent study by Vaske et al. (2018), a sample of Illinois (USA) farmers felt their relationship with land could be characterised as caring, cooperative and harmonious. This 'mutualistic' orientation to land predicted agreement with a set of statements expressing land stewardship obligations, drawn directly from Leopold's writings. Although Vaske et al. (2018) did not measure actual stewardship behaviour, other studies suggest a land ethic rooted in the value of ecological health and/or integrity may be associated with sustainable land use practices. For example, Turner et al. (2014) found that farmers and ranchers who professed a land ethic rooted in the importance of an ecosystem's long-term health, rather than its productivity, *per se*, favoured land use decisions promoting conservation over intensive commodity production (see also Brown and Harris, 1998; Lien et al., 2017; Schneider and Francis, 2006).

Research on land ethics has generally been conducted in rural settings among farmers, ranchers or foresters, but a current and growing majority of the world's human population lives in urban areas (United Nations, 2018), where the ecology and natural history of local environments remain largely foreign to city residents (Miller, 2005). Environmental education in urban settings may be able to cultivate an 'ecological place meaning' that is perhaps akin to a land ethic (Kudryavtsev et al., 2012; Russ et al., 2015), but it has not been demonstrated that urban residents who have such an 'ecological' sense of place are more likely to engage in pro-environmental behaviours. In fact, research generally suggests only a weak relationship between professed environmental beliefs and pro-environmental behaviours in cities. For example, Berenguer et al. (2005) found that urban residents reported strong generalised environmental concern, which nonetheless did not translate into pro-environmental behavioural intentions (see also Echeagaray and Hansstein, 2017; Walton and

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Austin, 2011). Urban residents may lack the financial means or sense of empowerment to practice pro-environmental behaviours, while administrative and resource constraints may limit sustainable initiatives at the municipal level (Kronenberg, 2015; Lee et al., 2013). Similar barriers may impede rural residents from enacting land ethics (e.g., Constance and Choi, 2010; Van Noordwijk et al., 2008). However, city residents also face an additional barrier, which Kabisch et al. (2016) call a 'paradigm of growth'; an urban lifestyle that promotes consumption and economic development over environmental stewardship and conservation. Even if a person endorses the core tenets of a land ethic, believing humans have an obligation to act as responsible stewards and members of their biotic communities, the norms and mores associated with this urban paradigm are likely to constrain and even counteract any influence such beliefs exert over her behaviour.

5. DISCUSSION AND CONCLUSIONS

We set out to understand whether it is plausible that an environmental ethic, in itself, could influence human behaviour in the direction of sustainability. The most general response we can offer is a qualified, 'perhaps, under some circumstances'. Psychological research provides suggestive evidence that an ethic predicated on the intrinsic value of nature may underpin sustainable behaviours, but also shows that the linkages between value and behaviour are indirect and prone to deviation. An ethic of care can lead to pro-environmental behaviours, but our psychological inclinations and social institutions may limit its influence. And a land ethic predicated on the value of ecosystem health and integrity may engender stewardship behaviours, but prevailing social mores, institutions and infrastructure may bound the influence of such an ethic, particularly in urban areas.

A recurring theme of the discussions above is the enabling and often inhibiting role of the larger context. Ethics are embedded within a complex sociocultural sphere, which both conditions and constrains patterns of thought, feeling, and behaviour (Haidt, 2012; Manfredi et al., 2017; Pisano and Lubell, 2017). Individual or personal norms are not entirely without influence, but if the decision space within which we move does not facilitate sustainable action, even robust ethical commitments may have limited behavioural influence.

Still, by laying out a vision for appropriate values, beliefs, emotions and meanings, an ethic describes a positive aspiration for appropriate human behaviour. Thus conceived, an environmental ethic may be an integral component of a progressive social discourse re-defining Western social norms and cultural identities (Manfredi et al., 2017). Throughout the discussion above we maintained a distinction between an ethic, understood as a moral code adopted by individuals or even endorsed by members of society at large, and the broader

social context, which necessarily constrains specific instances of behaviour. Psychological research suggests we should temper expectations concerning how an ethic thus understood (i.e., as a moral code) influences individual behaviour. However, an environmental ethic that supports and is supported by larger institutional structures (e.g., systems of governance, economic systems and statutory law) could potentially transform how we relate to the world, and even how we view basic goals in life (Manfredo et al., 2009). Indeed, the word ‘ethic’ shares a root with *ethos*, meaning ‘custom’. It is in this broader sense of ‘ethic’ not just as an individual moral code but as a shared, habituated, and institutionalised set of social practices that an environmental ethic becomes a critical cornerstone of sustainability.

As a philosophical discipline, environmental ethics may have a key role to play in developing and disseminating appropriate moral narratives about humans, nature and the relationship between them. In this role it is essential that environmental ethicists communicate effectively with diverse publics using accessible language and compelling rhetoric. Psychologists can support these efforts by identifying key constraints that inhibit either comprehension of or receptivity to ethical argumentation. The discussion herein has hopefully established common ground to foster dialogue between these disciplines. By engaging in interdisciplinary collaboration, environmental ethicists and psychologists may be able to develop ethically and empirically sound recommendations for managers, policymakers and other cultural leaders seeking to support and encourage sustainable human behaviour.

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