Australian Journal of Environmental Education (2022), **38**, 345–360
doi:10.1017/aee.2021.18

CrossMark

CAMBRIDGE UNIVERSITY PRESS

ARTICLE

Following lines in the landscape: Playing with a posthuman pedagogy in outdoor environmental education

Scott Jukes[1,*], Alistair Stewart[2] and Marcus Morse[3]

[1]Federation University, Mt Helen, Australia, [2]Independent Researcher, Bendigo, Australia and [3]La Trobe University, Bendigo, Australia
*Corresponding author. E-mail: s.jukes@federation.edu.au

(Received 22 July 2021; accepted 31 August 2021; first published online 04 October 2021)

Abstract
Situated within a series of river journeys, this inquiry considers the role of material landscape in shaping learning possibilities and explores practices of reading landscapes diffractively. We consider ways we might pay attention to the ever-changing flux of places while experimenting with posthuman pedagogical praxis. Methodologically, we embrace the post-qualitative provocation to do research differently by enacting a new empiricism that does not ground the inquiry in a paradigmatic structure. In doing so, we rethink conventional notions of method and data as we create a series of short videos from footage recorded during canoeing journeys with tertiary outdoor environmental education students. These videos, along with a student poem, form the empirical materials in this project. Video allows us to closely analyse more-than-human entanglements, contemplating the diverse ways we can participate with and read landscapes in these contexts. We aim to provoke diffractive thought and elicit affective dimensions of material encounters, rather than offer representational findings. This project intends to open possibilities for post-qualitative research, inspired by posthuman and new materialist orientations.

Keywords: outdoor environmental education; posthuman; landscape; more-than-human; journey; new materialism

Setting the Scene: Starting in the Middle

It's funny the mud,
I find it gross, sloppy slimy
A hindrance, yet
The mud is the river
It's part of this place
It makes this place
A thousand footprints tell the stories
Of roo's, bird's, cattle, brumby,
Human,
It's funny the mud
It was here first, everything has
come from the mud
Rock over millennia comes from
Mud. Eventually these mud banks

© The Author(s), 2021. Published by Cambridge University Press.

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press

Will be towering cliffs, like down
Stream near Murray Bridge (SA)
I don't like mud but I love the river
Then I must love mud
It's funny the mud

By Cam Dickie, from the river, 2-08-2020

This poem, written and shared on the river by Cam, emerges from an outdoor environmental education (OEE) canoe journey. The poem forms part of the empirical materials for this inquiry involving undergraduate OEE students in the course of their studies. This essay, however, is not so much about the students, rather it is about exploring practices of diffractively[1] reading landscapes through material encounters and considering ways we might pay attention to the ever-changing flux of places. We hope to (re)conceptualise and further appreciate the ways that landscapes and material features can shape outdoor learning. This inquiry includes supplemental materials, in the form of audio-visual footage (videos), along with Cam's poem above, that add empirical layers to this investigation. We think with these empirical materials and the events they emerge from, alongside theory (Jackson and Mazzei, 2013), to diffractively discuss these events.

Interlude: a moment to pause

We take this interlude to foreshadow that this project is not laid out in a traditional format. We are asking the reader to approach this work with an openness that loosens the grip of normative research conventions and embraces post-qualitative inspiration to do research differently. First, we include a number of these interludes in what follows that act as temporary diversions from the main text. These interludes allow us to attend to a subtext or perform a divergent conversation—to jump out of the line of discussion before re-entering. They are highlighted by a textbox to signal the interlude and show that there is always another conversation, undertone or direction that inquiry can go in. Second, we take this first interlude as a moment to pause and signal that this essay is trying to move away from a linear approach. And third, while experimenting with structure, we are also attempting to play with writing style. We aim to move away from representational writing and instead wander a little, seeing writing and inquiry as a performance. We also note that this project may not be radical enough for some, and that our attempts to think differently (and think thinking differently) are situated within our contexts and practices as outdoor environmental educators in south-eastern Australia.

Embodied and Embedded Practices: Situating Knowledge on a Journey Through Landscapes

Recently, we have noted an increase in interest among educational researchers to engage with, and undertake inquiry informed by, new materialist (e.g., Sonu and Snaza, 2015; Clarke and Mcphie, 2020), posthumanist (e.g., Ulmer, 2017; Taylor and Hughes, 2016) and post-qualitative theories (e.g., Lenz Taguchi and St. Pierre, 2017; Mcphie and Clarke, 2019). Encouraged by this diversity of theoretical movements and the new avenues for thought they provide, we have been experimenting with some of these 'post' philosophies in our field of outdoor environmental education (OEE) (see, e.g., Jukes, Stewart and Morse, 2019; Jukes and Reeves, 2020; Jukes, 2020a, 2020b, 2021; Stewart, 2018, 2020). Our engagement with these alternate ways of doing inquiry has prompted

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press

us to think differently about our educational practices and the ecological contexts in which we work. The milieu of theoretical ideas has inspired us (to try) creating new ways of thinking and doing (where thinking is also doing [Kuntz and St. Pierre, 2021]), with an orientation towards a different ethic of relating with/in the more-than-human world. Our research intends to create lines of flight for us and our students, where we might see the world, and our place in it, anew, by challenging human exceptionalism. We also hope this research assists in making such shifts possible in practice (however small they may be). We are encouraged by this special issue on post-qualitative inquiry to attempt doing research in OEE a little differently and put theory to work. In this project, we turn to the embodied and embedded material practice of journeying through landscapes in OEE.

Landscape is a concept with diverse meanings. A landscape, for example, can be viewed as a backdrop—a static scene for the play of human activity. Plumwood (2003) refers to such an orientation as hyper-separation—being drastically different, apart from and denying commonality. Yet as we busy ourselves in our lives, we often forget that landscapes and environments engulf us. Ignoring our material relationship with landscapes, and perceiving landscapes as static, however, is increasingly concerning in our current ecological predicament. Plumwood (2003) explains that perceiving humans as hyper-separate and outside of nature/landscapes/the more-than-human world can render such environments as dead, passive and lacking agency. By seeing them as separate (and potentially sub-human), it becomes 'ok' to dominate and appropriate—a product of human exceptionalism.

Humans are impacting the planet and its ecologically diverse landscapes at increasingly rapid rates through a hyper-consumption of 'resources' (with resource being only one way to consider rivers, prehistoric organisms or forests, for example). Human separation from many of the landscapes they influence (subtly reinforced through human-nature dualisms) is coupled with drastic changes to these more-than-human landscapes. Humans do not always perceive themselves as part of this material flow of dynamically changing landscapes, environments and ecosystems. However, people are always already embedded within living landscapes that materially shape their worlds. We (the authors) see a need to (re)think, relate and engage with landscapes we live among in different ways, as we face current ecological and social crises. In other words, we assert a need to challenge human exceptionalism and horizontally explore relations in our teaching/research settings. Our mode of doing this is through the practice of journeying. This practice is always already an embodied performance situated in particular places. The conceptual aim of this project is to consider the specific ways we are entangled, intra-act (Barad, 2007) and live with/in landscapes through OEE journeys.

Robert Macfarlane helps us in the task of thinking landscapes differently. He is a writer that evokes what Lopez (1988) describes as the internal and external landscapes—the landscape of the mind and the physical land—rendering both landscapes in a seamless fashion. Macfarlane's (2013, 2019) writing is expressive, providing accessible yet layered texts. He has a passion for journeying and sleeping in strange places, as well as a fascination with paths—or lines through landscapes—and offers some insights that provoke us to read landscapes diffractively. For example, Macfarlane (2013) writes that 'landscape and nature are not there simply to be gazed upon; no, they press hard upon and into our bodies and minds, complexly affect our moods and sensibilities. They riddle us in two ways—both perplexing and perforating us' (p. 341). Elsewhere, he depicts landscape as projecting into us 'as a kind of sunlight, flickeringly unmappable in its plays, yet often illuminating' (p. 26-27). The simple premise is that landscapes influence us, with Macfarlane offering some poetic yet at times mystical descriptions of the agency of landscapes:

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press

> We are adept, if occasionally embarrassed, at saying what we make of places – but we are far less good at saying what places make of us. For some time now it has seemed to me that the two questions we should ask of any strong landscape are these: firstly, what do I know when I am in this place that I can know nowhere else? And then, vainly, what does this place know of me that I cannot know myself? (p. 27)

It is the first of the questions that Macfarlane poses that attracts our attention. Plumwood (2003) suggests that it is anthropocentric culture that denies the agency of the more-than-human, and the writing of Macfarlane, imbued with agentic more-than-human landscapes, offers a waypoint in framing our inquiry.

Macfarlane explains there is a long history of cognition being both site specific and motion sensitive, and that landscape can be a habitat for particular thoughts (Macfarlane, 2013; Mullins, 2020). A curious notion—landscapes can provide a habitat for particular modes of thinking? Macfarlane explains more specifically that there are thoughts he has had on top of mountains that are seemingly not possible at sea level. Furthermore, there are thoughts that he has had walking, which were provoked from tiredness, movement and the landscape. In agreement with Macfarlane, we suggest there are thoughts we might have while canoeing, born of the river environment, that we could not have skiing in the high country, for example. When paddling, you are often in the lowest point of the landscape, enfolded within a valley, whereas skiing, you might be anywhere from the highest to lowest vantage during your travels. Driving the countryside also might provoke different contemplations to walking the countryside (or grappling with city traffic for that matter). And there is learning we have gained while journeying with our students on rivers that we assert could not be gained in a classroom or zoom session—in short, the onto-epistemological context matters. If there is a characteristic of journeys, it is that they flow. Journeying and movement engage us with material landscapes and enliven different thoughts, providing opportunities for encounters with/in the more-than-human world. Surely there is something pedagogical in this? It is such provocation that inspires this inquiry.

However, we also note that our worldviews and understanding of concepts (such as 'nature' or 'landscape') also shape thinking. These concepts have a multiplicity of meanings and historical baggage (e.g., see, Mcphie and Clarke [2020] and Fletcher [2017] for insights into 'nature', and see Ellison [2013] for insights into 'landscape'). Leaving this point aside for the moment, we briefly turn to process philosophy to help us explore the relationships between thought, journeying and material landscapes.

Gilles Deleuze is one process philosopher often cited in post-qualitative inquiry, which also helps provoke our direction in thought here.[2] Drawing upon Nietzsche, he wrote that 'modes of life inspire ways of thinking; modes of thinking create ways of living. Life *activates* thought, and thought in turn *affirms* life' [original emphasis] (Deleuze, 2001, p. 66). Journeying is more than a straightforward pedagogical practice; it becomes a mode (or way) of life for a group as they travel. Journeying provides an alternative way of living to the normal lives of our students (for a time) that activates their thinking in particular modes while leaving them open to encounters. The altered context and way of life is one way that journeying affords something educational. However, an important caveat is that students would not automatically learn what we hope or intend, just by taking them on a journey and stumbling into things. Where we go, what we program/teach and how we facilitate encounters all matters. Thus, our intention through this inquiry is to provoke some contemplations on an outdoor learning pedagogy of journeying. For us, this is a pedagogy that engages with the more-than-human world, while challenging static and anthropocentric images of thought.

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press

Interlude: words and ontological assumptions

We use a range of words/concepts/phrases in this essay to evoke similar, yet slightly different, images. Note the following words throughout this essay:

Landscapes[3] Places More-than-human world Environments Nature Contexts

We acknowledge that words may provoke different meanings or images for each of us. Words are concepts with baggage; baggage that shapes how we think and use them. It is beyond the scope of this study to unravel all these words or phrases used in depth, but in this interlude, we share some ontological assumptions that resonate with us. We also encourage the reader to not take words for granted—but to question both the authors' and readers' assumptions.

For us, places, landscapes, environments, the more-than-human world, are not static backdrops. They are not free of human influence or a pristine idyllic idea of nature outside the tainted (or nurturing) touch of human hands. Humans do not live isolated or separate from the environments they inhabit. Clarke and Mcphie (2014) highlight this ontological reality through their immanent take on the material turn and suggest that it is not just theorists that gain from tackling such ontological assumptions. Clarke and Mcphie suggest that students and educators can learn by questioning how they see/experience the world around them and employ different philosophical vantage points. Drawing upon Deleuze and Guattari, they offer a vision of environments without 'falsely boundaried entities' (p. 199), where environments enact animistic qualities and are forever in the process of becoming (change, process, movement, relational weaving, flux, always already in-formation). Their take is important, because it eschews a conception of the world that is said to consist of objects, where humans are the main actors performing on a static stage: 'Rather than relations being forged in an already-given space, relations are creative of spaces; they make spaces' (Clarke and Mcphie, 2014, p. 202). Their alternative ontological perspective suggests 'a world of affect where the boundary between objects is dispelled' (Clarke, and Mcphie, 2014, p. 200).

In a similar manner, Alaimo (2010) refers to perceived boundaries between human bodies and the rest of the world as a contact zone, where:

> Potent ethical and political possibilities emerge from the literal contact zone between human corporeality and more-than-human nature. Imagining human corporeality as trans-corporeality, in which the human is always intermeshed with the more-than-human world, underlines the extent to which the substance of the human is ultimately inseparable from "the environment." (p. 2)

The ideas put forward by Clarke and Mcphie (2014) and Alaimo (2010) align in part with Barad's (2007) materialist ontology, which seeks to 'meet the universe halfway', acknowledging how the universe pushes back with agency in the becoming of the world. In this research project, we take some of these ontological assumptions and embed them within our empirical investigation of outdoor learning contexts. This builds upon some of our previous work, where we have sought to acknowledge the agency of the more-than-human world (Jukes et al., 2019; Jukes and Reeves, 2020). Importantly, agency is not a thing but a doing, an enactment, a becoming and acknowledging that events (such as outdoor learning) are co-constituted/shaped by non-humans is crucial if we are to tackle and break free from of the 'metaphysical entrapment' of the western tradition of a 'staticised worldview' (Clarke and Mcphie, 2014, p. 203). Yet we also recognise that places do not speak for themselves, and it is educative to question how we see/read places and challenge our assumptions.

Embracing a New Empiricism for Environmental Education Research

> Why do we acknowledge our textual sources but not the ground we walk, the ever-changing skies, mountains and rivers, rocks and trees, the houses we inhabit and the tools we use, not to mention the innumerable companions, both non-human animals and fellow humans, with

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press

> which and with whom we share our lives? They are constantly inspiring us, challenging us, telling us things. (Ingold, 2011, p. xii)

The research context for this paper involves second and third year students studying the subjects River Environments and Teaching in River Environments as part of their Bachelor of Outdoor and Environmental Education at an Australian University. In short, these subjects aim to develop knowledge of particular river environments, develop technical paddling competence along with learning leadership and teaching skills relevant to journeying in these environments.

Interlude: journeying by canoe as OEE in Australia

We offer this interlude as another important sub-text. Many readers, even if they are outdoor environmental educators from different geographical contexts, may not be familiar with some of the foundational practices that we, as Australian outdoor environmental educators, take for granted. OEE in south-eastern Australia, in the programs in which we work, commonly involves a practice of journeying. Journeying by canoe is a popular mode of travel. In this practice, we can depart from our campuses with a trailer load of canoes, camping equipment and food, and drive to a river. A vehicle shuttle is performed by staff. We then spend a number of days journeying from our start point to an end point. Generally, these journeys may be around 3–5 days, occasionally longer. Groups of around 12–20 people then travel as a mobile community in sections of river often designated as national park. All equipment needed is loaded into the boats. The group camps on the river along the way and engages in a range of educational activities, which differ depending on the curriculum focus and pedagogical practices enacted. The field of outdoor education has historically had a focus on personal development and challenge through such activities. Although the tide has shifted on this over the last few decades, such approaches are still prevalent, with humanist perspectives common. We also note that outdoor education is always a form of environmental education, for better or worse. Thus, we write this piece with a desire to support and extend the environmental education value of journeying practices, beyond anthropocentric conceptions.

The initial approach to the study was to (intra-actively) entangle teaching practice with research inquiry and enact a hybrid form of situational analysis (for recent discussions of situational analysis see, Ruck and Mannion, 2020). In reality, the principal researcher (Scott) would go about teaching students as per the subject's curriculum, but he would also be attentive to the material 'goings on' in the teaching context and see what provocations emerged. As such, there was no traditional data collection neatly planned and defined in advance (Rautio, 2020). This research involved a number of river journeys, and these river journeys would provide the empirical prompts for this study. The journeys were not completely pre-planned, having time and openness where the group could wander, drift and explore paths in the terrain (e.g., the paths of the rivers flow, old river courses, dried creeks, animal tracks, vehicle tracks). We considered this approach a form of educator enacted psychogeography[4] within river environments, as we wanted the terrain and material features of the river-place to produce unexpected encounters. Partly, this was guided by St. Pierre, Jackson and Mazzei's (2016) writings on new empiricism and emergent approaches to research. As they suggest, doing something new means that a pre-given methodology or restrictive set of practices are not to be applied in advance. Despite no real recipe for this sort of inquiry, the following quote has been a refrain in Scott's research practice:

> Put simply, we can't tell someone how to do this new work, *how to think*, how to experiment, how to tip an assemblage toward the plane of immanence. Our best advice is to read and read and read and attend to the encounters in our experiences that demand our attention. [original emphasis] (St. Pierre et al., 2016, p. 106)

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press

There is much in this short quote that we continually return to, both in this paper, but also our other work (see Jukes, 2020b, 2021; Jukes and Reeves, 2020; Jukes et al., 2019; Stewart, 2018). In this way, too, we tend to think of reading as not just an act but also a metaphor. As Ingold, 2011) suggests:

> If our aim is to read the world, as I believe it ought to be, then the purpose of written texts should be to enrich our reading so that we may be better advised by and responsive to what the world is telling us. (p. xii)

Thus, as outdoor environmental educators, we are not merely reading texts, but continually reading the landscapes we work (reading the world—listening to the world) *with* insights from texts. What we read diffracts together, illuminating (and shadowing) each differently. Importantly, part of our pedagogical practice aims to bring our diffractive readings to the attention of our students, so they may also see/experience places differently to how they may otherwise would. Our knowledge of the landscapes we work also informs how we design our learning programs. With this comes experimentation, not in the traditional scientific lab coat variety, but in following trains of thought, following flows of ideas, and following lines in the landscape.

As we have already mentioned, the purpose of this project is to inquire further into the process of travelling within and diffractively reading environments as a pedagogical activity. But to frame this in another way, this inquiry is about the combination of practice and theory (practicing theory—praxis), a thinking with theory in practice (Jackson and Mazzei, 2013). Our inquiry searches for resonances in pedagogical practice: where '*to resonate means to meet. To vibrate with something in some way*' [original emphasis] (Clarke, 2019, p. 2794). These encounters where theory/written texts and pedagogical practice resonate (what we will refer to as events) are the empirical focus of this inquiry.

Postparadigmatic Inquiry, Video as a Method and More-Than-Human Audio-Visual Analysis

Gough (2016) explains that research in outdoor and environmental education has largely been represented via paradigmatic distinctions or categories. Postparadigmatic theorisation, including movements like new empiricisms and new materialisms, encourages research inquiry to be more innovative and not rely on paradigmatic groundings (such as positivist, interpretive or critical inquiry, nor sit on one side of a divide such as social constructionism or essentialism). Others, such as Law (2004), St. Pierre (2011) and Koro-Ljungberg (2015), support a similar openness to more emergent processes of inquiry. Importantly, these 'new' movements (partly influenced by poststructuralist thinking) do not prescribe methods or methodology in advance. And as such, they are not one 'thing' and there is no 'ground'. It is following the encouragement of those cited above that we let go of foundations, pre-given methodological rules and the 'strictures of exhausted paradigms' (Gough, 2016, p. 60). Instead, our process for this inquiry involves responding to the problems posed by the educational/research context and a desire to think pedagogy differently/diffractively. What follows is a description of how we conducted this postparadigmatic inquiry and came to adopt video as a method.

As mentioned earlier, Scott recorded videos (audio-visual footage) on the journeys, with some of this video footage making the empirical materials for this study.[5] Scott recorded footage via an iPhone camera and digital SLR during unexpected encounters and moments of provocation while wandering/drifting through the river-place. At other times, the cameras were left recording to see what occurred by chance. We watched audio-visual materials numerous times and edited into shorter videos, based on the way events resonated with pedagogical and theoretical ideas, helping

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press

us *reorient* our thoughts (St. Pierre, 2021; Kuntz and St. Pierre, 2021). In a sense, the aspects of video footage we have used 'demand[ed] our attention' (St. Pierre et al., 2016, p. 106)—they resonated, or did *something* for/to us, 'making themselves intelligible' in some way (Maclure, 2013, p. 660), prompting us to think further with the events in the videos. In short, it can be said that the footage (and poem) we chose produced an affect that emerged from the world. These short videos now make up the supplementary material of this research project. Why audio-visual footage as a method of creating empirical materials? First, video was our answer to the problem posed by wanting to analyse material encounters, situations or events. For example, when possible, such moments could be filmed by Scott, and the recorded events could be watched again and again (with a particular focus on complex more-than-human entanglements that might easily be missed with traditional anthropocentric analysis). Doing this allowed the events to keep performing, providing the research team with further opportunities to contemplate, think-with and analyse them. The videos elicit access to situated events that otherwise would not be possible, evoking these events in a mode that words alone cannot provide.

Although a relatively novel method for OEE, video has been utilised in other fields of study. For example, the environmental geographer Lorimer (2013) deploys 'more-than-human visual analysis' in Deleuzian-inspired research methodology (p. 61). Lorimer explains that 'more-than-human inclinations do not sit easily within orthodox methodologies' (p. 63). As such, video provides a 'supplement' to field observation, which 'helps generate a rich data set for subsequent analysis' (p. 66) and opens possibilities for creative praxis. There is a dynamic liveliness (or becoming) that video can provoke, which Lorimer describes as more-than-representational. Others, such as Wood and Brown (2011), describe video in their research as a presentational line of flight, contributing a 'new filmic affect that can better open up and articulate an aesthetic appreciation of experiences' (p. 536). For us, video allows researchers (and viewers) to witness embodied practice, while attending to 'material, practical and affective dimensions' (Lorimer, 2013, p. 63). Videos can also be manipulated during analysis in productive ways (e.g., paused, sped up, slowed down, edited). In our project, video allows us to closely analyse particular entanglements, evoking contemplation on how we participate with and might diffractively read landscapes in these educational contexts. In short, video as a method helps analyse and document material specificities that are of significance to the inquiry at hand.

Journey Events: Empirical Encounters

> Qualitative inquiry might stop looking for depth and hoping for height. It might work instead with, and within, the flat topology of events . . . (Maclure, 2013, p. 665)

Below we share some encounters and events from the river journeys. The videos and discussions below focus primarily on one of the journeys that was part of this project. This particular journey was a reconnaissance for third year students that were to lead and teach younger students in the same location later in the year (note, a small amount of the video footage comes from a latter teaching journey on a nearby section of the Murray River). This was one of the students' final facilitated experiences near the end of their studies. Within this context, Scott (as the coordinating staff member) encouraged the students to actively explore the landscape, where they could engage with different aspects of the environment and experiment with different things they could teach with/in that place. Scott prompted students to get out of their canoes and go for walks through old dried-up courses of the river or paddle up backwaters, tributaries and billabongs to see what might be there or what could unfold. The discussions and videos below start with some muddy

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press

circumstances, diverge into different readings of the mud and then consider the broader environmental story of the river-place prompted by posthuman orientations.

Footprints tell the stories

The poem at the beginning of this paper, written and shared on the river by Cam (a student), emerges from a journey through Gaiyila (the Yorta Yorta[6] name for the lower Goulburn River). The journey occurred mid-winter, in-between two COVID-19 lockdowns and during a reduction of water volume. The water is released from a dam upstream, and flow was reduced after a previous spike in water releases. The ebbing flow after an intensification leaves the steep banks muddy. The mixing of earth and water leads to awkward exits, slipping students and mud-spattered canoes. The mud was only half expected, but intensely affected our journey, influencing the way the landscape (or *mud*scape) entered and shaped our thoughts. We rode the ebbing flow during the day, battling the mud on the banks when we stopped for rest or a walk. These patterns of life emerged on the journey, with the place and our activities influencing our ways of thinking, feeling and being (Macfarlane, 2013).

See supplementary material (The mud).

As *the mud* video and Cam's poem suggest, such a journey can be a messy affair. We purposefully chose this less than idyllic scene as it offers a provocative entrance into the conditions and reality of this journey. One reading of the muddy events opens a reality that something as simple as a slight drop in water level can lead to frustrating or annoying circumstances for participants. An alternate reading of the muddy banks, with a lens of safety and worst-case scenario (Brookes, 2018), can make us consider the mud as not just difficult but potentially dangerous—something that impinges on safety and may hinder educational success. Furthermore, the muddy and difficult entries and exits make us consider how such a journey may prove exclusive for participants with physical limitations, disabilities or impairment. Yet, as Cam's poem evokes, thinking about the material connections in places enables a broader image of the river-place to emerge. The water and the mud are part of the affective assemblage, the living process that is that place. Furthermore, the video above is just one segment of a broader journey—a snapshot of that reality (minus experiential aspects such as cool temperatures, breeze through hair, smells of eucalyptus, textures of mud on hands and other sensuous atmospheres)—that had a continuity for the participants beyond a short, edited video.

Analysing empirical events diffractively for educational affordances prompts us to consider some other pedagogical pathways—ways to turn the muddy circumstances into something with educative potentials. One example is that footprints may be observed in the mud. '*Footprints tell the stories*', as Cam wrote in his poem, and we may read footprints to see who/what has visited the river and relies on the water source. Footprints tell us that other-than-human animals also make and shape places. For example, hard hoofed ungulates (such as cattle, horses, pigs) that were introduced by European settlers have played a part in changing landscapes across Australia (for further discussions about these impacts and reading them in OEE contexts, see Jukes, 2021 and Stewart, Jukes, Mikaels, and Mangelsdorf, in press). A range of place specific stories can be opened on such a pedagogical pathway.

Observing and following footprints requires certain pedagogical orientations. Anthony Mangelsdorf, in Stewart *et al.* (in press), discusses his practice of following footprints in the snow during ski-touring journeys. Reading and following footprints in the snow, Anthony explains, involves educators relinquishing some control and considering the landscape as a co-teacher. Such a practice decentres the human educator and acknowledges there is much that can be read in the landscape, if we choose to think *with* it. Footprints might tell stories and offer insight into

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press

more-than-human life, but moreover, countless features in any environment have a story that we may encounter, inquire into and follow. As Macfarlane (2013) writes, 'the imagination cannot help but pursue a line in the land—onwards in space, but also backwards in time to the histories of a route and its previous followers' (p. 15). From animal tracks to a water course or even an old route made and travelled by traditional owners, we can follow the traces of lines in the land to open a posthuman educational praxis. Lines always cross and tangle and following such lines can lead to other more-than-human encounters. We invite the reader when watching the videos/ empirical materials to note some of the encounters and how they could provide further possibilities for environmental education. What do the encounters provoke for you? What stories might you read and what features could you teach with?

See supplementary material (Encounters).

We think that landscape features can act as signs for educators and students. Taylor (2013) explains that 'a sign is something material, perceivable by the senses, which refers to something other than itself, and which is recognised by those who use it as a sign' (p. 47). If features in landscape can be used as signs, something like a tree with a scar can be used to engage with Indigenous history or events of European settlement—this can also flow into contemporary relationships. For example, a scar tree bears witness to Yorta Yorta peoples respectful and sustainable use of bark for canoe (matha) and carrying dishes. Other trees bear witness to ring-barking, a habit by European settler loggers that cut through the cambium killing the tree while leaving it standing. After it dies, the standing tree dries out and is burnt in paddle steamers or used as fence posts. There are, too, a multitude of non-human agential encounters available—such as entanglements of climatic conditions, seasons, insects, mud, pollination and flowering trees. We cross and tangle with these lines of life as we weave our own path through the living landscape. As Gough (2016) notes, walking somewhere like a rainforest can be as information-intensive as searching the Internet. The Lower Goulburn River is no rainforest, but the sentiment remains. In-between the material sign and past events, the educator can act as a diffractive instigator.

In the context of teaching future outdoor environmental educators, we think it is our job to assist students in reading such information-intensive environments. What we may attempt to teach with is an openness, attunement and responsiveness to encounters. In our view, any number of features may connect to other features, or link to past, present and future relationships. Such a pedagogy can be thought of as rhizomatic (Stewart, 2020), where connections can be made to a broad array of place-based environmental education curricula. Throughout the life of the journey, or educational experience, this attunement and connection making can become a habit that we can cultivate. An approach in this project—more-than-human audio-visual analysis—is both a methodological and pedagogical tool that can help orientate us towards an increased awareness and responsiveness to the more-than-human.

Returning again to Cam's poem, he expressed his love for the river, and through that appreciation showed an ability to move beyond the subjective human experience of battling with muddy banks. Through the mud poem, Cam expressed the educative power of de-anthropocentrising events in OEE. The riverscape pierced him, affecting him and prompted him to write the poem that he shared with the group. This is similar to Indi's story about the red gum roots and pump pipes within the *encounter* video. The task of writing a poem and story was not instructed to Cam and Indi but emerged during some solo time where the affective intensity of the mud and the riverscape provoked them to write. But importantly, the poem and story also hinted towards a broader environmental story that we (staff and students) deliberately tangled with throughout the journey as we encountered and read the landscape.

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press

Interlude: Affordances and correspondence

Lynch and Mannion (2021) suggest that the knowledge and dispositions needed by educators to decentre the human, or challenge human exceptionalism in OEE research has been a silence or 'moot point' (p. 4). This provocation provided a prompt for their empirical inquiry which found educators need time and a disposition that attunes with the more-than-human world if educators are to challenge human exceptionalism in educational practices. We agree with Lynch and Mannion and attempted to support such a pedagogical aim throughout the river journeys conducted in this research project. We sought to assist students develop an attunement towards the more-than-human world (or more specifically, the life and 'goings on' of the landscape and river environment). One way that we did this was pay attention to affordances of the river environment and cultivate correspondence with the landscape.

Affordances, as Ingold (2018) explains, are both 'opportunities and hindrances' (p. 39). Drawing upon Gibson (1979), the creator of Affordance Theory, Ingold clarifies that:

> Perception, for humans and nonhumans alike, is about being alive to the world, about moving around in it, attending to it, and discovering, along the way, what it has to offer, whether for good or for ill. These offerings are what Gibson meant by the affordances of the environment. (p. 39)

In our pedagogical planning, we sought educational opportunities and hindrances—simply, we might ask, what does this place or its features offer? However, as we enter the river environment on our journey, we are entering a world of flux—one we are of and moving with. During the journey, we are following the flows of water, the rhythms of night and day and correspond with/in a lively place. The enactment of such a more-than-human pedagogy involves responding to encounters diffractively in a way that respectfully acknowledges more-than-human relations. A more-than-human pedagogy is not pre-made by us as humans, nor is out there to be found. A more-than-human pedagogy is a situated practice that requires thinking with/in the landscape (Jukes, 2021). For as Sonu and Snaza (2015) state, 'pedagogies inspired by posthumanist and new materialist ontologies are situational encounters made up of entanglements and interweavings, conjoint actions and political ecologies, entanglements that are alive, vibrant, and powerful' (p. 274).

Flows: imaging wala (water)

Beyond the city, beyond the classroom, are the forests, rivers and mountains governed by 'forces as yet untrained' (Ingold, 2015, p. 131)—or so Ingold writes. But the rivers we travel are all trained a little, via the dams, locks and weirs that regulate the flow. Most of the rivers in south-eastern Australia are controlled and regulated—there is a political ecology at play. Regulation enforces flipped flow regimes so that agriculture can capitalise on water when it is needed for farming in summer. This feeds the crops which feed the nation. What it also has done is strip the river environments of some of its water, which has led to precarious situations for the health of the river environments and adjacent wetlands and communities. There is a tension here, but also a posthuman educational affordance that we feel ethically compelled to attend to.

Water—wala in Yorta Yorta language—is this fluid commodity that shapes the landscape and shapes our journey, but also shapes the lives of many Australians. On our journey, we followed the flow of the river while conceptualising the fluctuating flows of water through time. What shapes the flow? What conditions do fluctuating flows create? In the river-place, the only constant is flux. For us as paddlers, absences condition the experience we have on the river as much as presences. The words of Gan, Tsing, Swanson and Bubandt (2017) possess a certain ring, resonating here:

> As humans reshape the landscape, we forget what was there before. Ecologists call this forgetting the "shifting baseline syndrome." Our newly shaped and ruined landscapes become the new reality. Admiring one landscape and its biological entanglements often entails forgetting many others. Forgetting, in itself, remakes landscapes, as we privilege some assemblages over others. Yet ghosts remind us. Ghosts point to our forgetting, showing us how living landscapes are imbued with earlier tracks and traces. (p. G6)

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press

Our journey is framed by the river's path we follow. It is entangled within such forces—both human and more-than-human enmeshed together—where we may enter into a trans-corporeal meshwork full of material agencies. When we travel meshwork's like the river environment, we encounter things along the way—both newer bodies and older ghosts. They can easily be passed without notice, or we can slow and start thinking with the landscape. What the meshwork reveals may not always be read, but by attuning to and thinking with relationships we may make connections and receive jolts that disrupt us, spark us, call our attention and bring us into presence with the world that is, including its ghosts.

> What matters is not how fast one moves, in terms of the ratio of distance to elapsed time, but that this movement should be in phase with, or attuned to, the movements of other phenomena of the inhabited world. The question "how long does it take?" only becomes relevant when the duration of a journey is measured out towards a pre-determined destination. (Ingold, 2016, p. 105)

See supplementary material (The rivers many paths).

The rivers many paths video involves paddling Gaiyila (the lower Goulburn river), but also paddling billabongs, walking previous courses of the river and contemplating both the river-place and conceptions of time. Movements in the present are also overlaid with discussions and imaginative musings about how the river used to look, how it may look in the future and how the river's health is always in a state of continual flux. The videos do not share most of the discussions we had or the facilitated teachings. Instead, the videos provide us an opportunity to see and hear the environment we inhabit on the journey (a specific assemblage of material conditions) and contemplate such an environment within a paper such as this. We know that the river's health has declined, is declining, and that the tensions involving rivers, wetlands and regulation in Australia are a highly politicised topic (e.g., see Sinclair, 2001; Weir, 2009). Seeing and experiencing such tensions is the onto-epistemological affordance of the journey. Features of the meshwork, such as a billabong, open discussions about floodplain ecology, river health, water politics, sustainable development, where we get our food from, Australian agricultural practices, climate change, more-than-human life, various histories, the role of Traditional Owners in managing landscapes and much more, which can all be diffractively read together to bring forth a landscape configured by political ecologies.

Learning of the fluctuating flows and the environmental story is a form of posthuman education about that place and its history—a poignant topic for Anthropocene discourse. As educators, we are inspired by Macfarlane (2013) to 'read landscapes into being, and to hold multiple eras of history in plain sight simultaneously' (p. 147). The words of Gan *et al.* (2017) echo again: '*The landscape emerges from ghostly entanglements: the many histories of life and death that have made . . . this place* [original italics]' (p. 5). When we spend time with and attend to a landscape, we participate in a communal history. In this history, there is a continuity between natural, cultural, ancient, recent, human and more-than-human history—the past conveys things into the present (Bergson, 1998), or as Barad (2007) states, 'the past is never finished' (p. ix). Furthermore, we don't just gaze at landscapes, they 'press upon and into our bodies and minds, complexly affect[ing] our moods, our sensibilities' (Macfarlane, 2013, p. 341). Travelling the river affords many educational opportunities, and correspondence between students, educators and features of a river-place open a meshwork of educative experiences.

Provoking Possibilities for Practice

As we draw a close on this essay, we think it is important to knot together the two key threads we have been running with. The first thread involves our desire to think and do our outdoor

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press

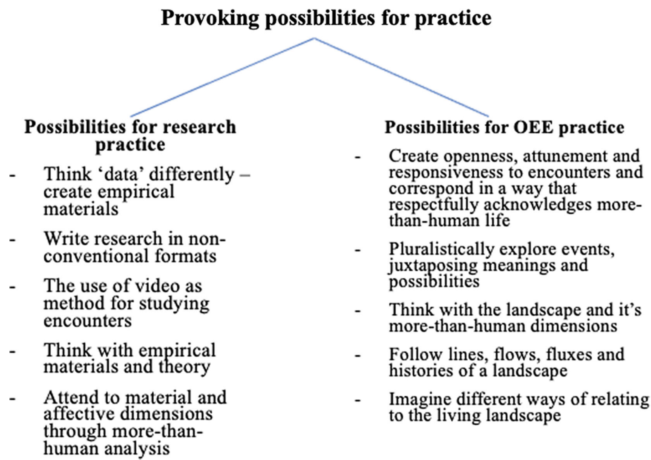

Figure 1. Considering possibilities for practice.

environmental education practice differently. The second thread involves the conceptual shifts that post-qualitative inquiry calls for (or allows). As we tie both focuses together, we must add that theorising and research inquiry are also practices, and to render theory and practice separately can reify a theory/practice divide (Clarke and Mcphie, 2020; Pleasants and Stewart, 2019). And so, we must say we have been practicing our own version of post-qualitative inquiry to rethink our OEE practice. The landscape and mud are involved, just as theory and concepts are, as they perform ecologically (Mcphie and Clarke, 2020). In other words, we have been attempting to provoke possibilities for practice (Figure 1)—both OEE journeying practice (emphasising the environmental education capacities of engaging and attuning with the more-than-human while journeying) and post-qualitative inquiry for OEE.

To dress this knot a little further, we have asked ourselves what becomes available when we engage with places diffractively, when we look beyond the human? What environmental education opportunities exist when we think differently, when we decentre the human, shift focus off our own activities and when we engage process-relational modes of thought (rather than staticised worldviews)? We have edited, written and performed a response to these questions above and (hopefully) prompted attention towards things that might otherwise be easily overlooked—we, at least, saw things we had not noticed before undertaking this project. However, in the (post?) qualitative tradition, we would not foreclose what others may think, do or be provoked by from here. Instead, we leave asking one final question: what other ways could outdoor and environmental educators think and do their practices differently, in a way that opens engagement and response to the agencies of the more-than-human world?

Supplementary material. To view supplementary material for this article, please visit https://doi.org/10.1017/aee.2021.18

Acknowledgements. We acknowledge the Yorta Yorta people as the traditional custodians of the land our fieldwork was conducted on. We acknowledge their elders, past, present and emerging. We also acknowledge that this project would not be possible without the openness and insight from our river environments students. Many ideas in this project have been fleshed out and discussed with students, and their role is greatly appreciated.

Financial Support. This research was partly supported by an Australian Government Research Training Program Scholarship.

Conflicts of Interest. None.

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press

Endnotes

1 As one of us has written elsewhere, here is a brief explanation of how we conceive diffraction (Jukes, 2020b, pp. 1751-1752):

> a diffractive approach … brings various ideas together, so they can be read differently and offer new insights. As a concept, diffraction is inspired by the physical phenomenon, which involves the bending and spreading of waves around an obstacle or through a gap… Waves combine with one another causing patterns of interference, where, in effect, something new is produced. As a concept, I understand diffraction as a strategy for making a difference, a break from 'self-reflection and its epistemological grounding' which can pull researchers into reductionist ways of thinking (Bozalek and Zembylas 2017, 111).

2 As Kuntz and St. Pierre (2021) proclaim, it is the 'old–sometimes very old–' philosophers and philosophies that are provoking the 'new' (p. 476).

3 We can't help but share Macfarlane's (2013) understanding of the word landscape, as it elicits a particularly aesthetic image:

> I prefer to think of the word as a noun containing a hidden verb: landscape scapes, it is dynamic and commotion causing, it sculpts and shapes us not only over the courses of our lives but also instant by instant, incident by incident. I prefer to take 'landscape' as a collective term for the temperature and pressure of the air, the fall of light and its rebounds, the textures and surfaces of rock, soil and building, the sounds (cricket screech, bird cry, wind through trees), the scents (pine resin, hot stone, crushed thyme) and the other transitory phenomena and atmospheres that together comprise the bristling presence of a particular place at a particular moment. (p. 255)

4 Psychogeography was first coined by Guy Debord and is said to be a way of wandering or drifting in a city or urban environment (Lyons, 2017). This wandering or drifting sidelines a specific purpose (such as a destination) and can allow unexpected encounters to emerge. Furthermore, there is an orientation towards integrating and contemplating the history of the place wandered through. One of us came to the idea via Mcphie (2019) and have suggested elsewhere that it may have some usefulness as a loose but emergent form of posthuman inquiry for environmental education research (Jukes, 2020a).

5 This project is part of Scott's PhD studies, under the supervision of Alistair Stewart and Marcus Morse. The empirical materials used in this paper are approved by the La Trobe University Human Ethics Committee under the number HEC20092 and the project title 'Developing more-than-human pedagogies: Posthuman explorations into teaching and learning in outdoor environmental education.' In this project, students were given a choice to partake and whether they wished to use their names or be given pseudonyms. We see this is a crucial ethical process in our research, as it gives students choice and agency and authors the ability to acknowledge student work/ideas/influences. In other words, it is an attempt to flatten the researcher-participant hierarchy (Hart and Hart, 2019). Notably, all students in this project chose to be identified/identifiable. We also acknowledge that knowledge making practices are always in relation to the assemblage from which they emerge, and that knowledge isn't just made (or found) by the researchers but co-created through the assemblage (also see Jukes and Reeves, 2020).

6 The Yorta Yorta people are the traditional owners of Gaiyila/the lower Goulburn River and other surrounding areas.

References

Alaimo, S. (2010). *Bodily natures: Science, environment, and the material self*. Indiana University Press.

Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. Durham: Duke University Press.

Bergson, H. (1998). *Creative Evolution*. New York: Dover.

Bozalek, V., & Zembylas, M. (2017). Diffraction or reflection? Sketching the contours of two methodologies in educational research. *International Journal of Qualitative Studies in Education*, *30*(2), 111–127. doi: 10.1080/09518398.2016.1201166

Brookes, A. (2018). *Preventing fatal incidents in school and youth group camps and excursions: Understanding the unthinkable*. Cham, Switzerland: Springer.

Clarke, D. (2019). Particular Resonances: A Review of Jonathan Wyatt's Therapy, Stand-Up, and the Gesture of Writing: Towards Creative- Relational Inquiry. *The Qualitative Report*, *24*(11), 2794–2798.

Clarke, D., & Mcphie, J. (2014). Becoming animate in education: Immanent materiality and outdoor learning for sustainability. *Journal of Adventure Education and Outdoor Learning*, *14*(3), 198–216. doi: 10.1080/14729679.2014.919866

Clarke, D. A. G., & McPhie, J. (2020). Tensions, knots, and lines of flight: themes and directions of travel for new materialisms and environmental education. *Environmental Education Research*, 1–24. doi: 10.1080/13504622.2020.1825631

Deleuze, G. (2001). *Pure Immanence: Essays on A Life* (A. Boyman, Trans.). New York: Urzone.

Ellison, A. (2013). The suffocating embrace of landscape and the picturesque conditioning of ecology. *Landscape Journal*, *32*(1), 79–94.

Fletcher, R. (2017). Connection with nature is an oxymoron: A political ecology of "nature-deficit disorder". *The Journal of Environmental Education*, *48*(4), 226–233. doi: 10.1080/00958964.2016.1139534

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press

Gan, E., Tsing, A., Swanson, H., & Bubandt, N. (2017). Introduction: Haunted landscapes of the Anthropocene. In A. Tsing, N. Bubandt, E. Gan, & H. Swanson (Eds.), *Arts of living on a damaged planet: Ghosts and monsters of the Anthropocene* (pp. G1–G14): University of Minnesota Press.

Gibson, J. (1979). *The ecological approach to visual perception*. Boston: Houghton Mifflin.

Gough, N. (2016). Postparadigmatic materialisms: A 'new movement of thought' for outdoor environmental education research? *Journal of Outdoor and Environmental Education*, *19*(2), 51–65.

Hart, P., & Hart, C. (2019) Changing mindsets: Becoming planetary. *The Journal of Environmental Education*, *50*(4–6), 270–288. doi: 10.1080/00958964.2019.1687410

Ingold, T. (2011). *Being Alive: Essays on movement, knowledge and description*. New York: Routledge.

Ingold, T. (2015). *The life of lines*. Abingdon: Routledge.

Ingold, T. (2016). *Lines: A brief history* (Routledge classics edition ed.). Abingdon: Routledge.

Ingold, T. (2018). Back to the future with the theory of affordances. *HAU: Journal of Ethnographic Theory*, *8*(1–2), 39–44. doi: 10.1086/698358

Jackson, A. Y., & Mazzei, L. A. (2013). Plugging One Text Into Another: Thinking With Theory in Qualitative Research. *Qualitative Inquiry*, *19*(4), 261–271. doi: 10.1177/1077800412471510

Jukes, S. (2020a). Posthuman insights for environmental education. A review of Mental health and wellbeing in the Anthropocene: A posthuman inquiry, by Jamie Mcphie. 2019, Singapore: Springer Nature. €69.99, ISBN 978-981-13-3326-2. *The Journal of Environmental Education*, *51*(5), 395–398. doi: 10.1080/00958964.2020.1813678

Jukes, S. (2020b). Thinking through making: junk paddles, distant forests and pedagogical possibilities. *Environmental Education Research*, *26*(12), 1746–1763. doi: 10.1080/13504622.2020.1806991

Jukes, S. (2021). Thinking with a landscape: the Australian Alps, horses and pedagogical considerations. *Australian Journal of Environmental Education*, *37*(2), 89–107. doi: 10.1017/aee.2020.26

Jukes, S., & Reeves, Y. (2020). More-than-human stories: Experimental co-productions in outdoor environmental education pedagogy. *Environmental Education Research*, *26*(9–10), 1294–1312. doi:https://doi.org/10.1080/13504622.2019.1699027

Jukes, S., Stewart, A., & Morse, M. (2019). Acknowledging the agency of a more-than-human world: Material relations on a Snowy River journey. *Journal of Outdoor and Environmental Education*, *22*(2), 1–19. doi: 10.1007/s42322-019-00032-8

Koro-Ljungberg, M. (2015). *Reconceptualizing qualitative research: Methodologies without methodology*. Sage publications.

Kuntz, A., & St. Pierre, E. (2021). Proclaiming the new: An introduction. *Qualitative Inquiry*, *27*(5), 475–479.

Law, J. (2004). *After method: Mess in social science research*. London: Routledge.

Lenz Taguchi, H., & St. Pierre, E. (2017). Using Concept as Method in Educational and Social Science Inquiry. *Qualitative Inquiry*, *23*(9), 643–648.

Lopez, B. (1988). *Crossing open ground*. Open road media.

Lorimer, J. (2013). More-than-human visual analysis: Witnessing and evoking affect in human-nonhuman interactions. In R. Coleman, & J. Ringrose (Ed.), *Deleuze and research methodologies* (pp. 61–78): Edinburgh university press.

Lynch, J., & Mannion, G. (2021). Place-responsive Pedagogies in the Anthropocene: attuning with the more-than-human. *Environmental Education Research*, *27*(6), 864–878. doi: 10.1080/13504622.2020.1867710

Lyons, S. (2017). Psychogeography: a way to delve into the soul of a city. *The Conversation: Academic Rigour, Journalistic Flair*. Retrieved from https://theconversation.com/psychogeography-a-way-to-delve-into-the-soul-of-a-city-78032

Macfarlane, R. (2013). *The old ways: A journey on foot*. London: Penguin.

Macfarlane, R. (2019). *Underland: A deep time journey*. UK: Penguin.

Maclure, M. (2013). Researching without representation? Language and materiality in post-qualitative methodology. *International Journal of Qualitative Studies in Education*, *26*(6), 658–667. doi: 10.1080/09518398.2013.788755

Mcphie, J. (2019). *Mental health and wellbeing in the Anthropocene: A posthuman inquiry*. Singapore: Springer Nature.

Mcphie, J., & Clarke, D. (2019). Post-qualitative inquiry in outdoor studies: A radical (non-)methodology. In B. Humberstone & H. Prince (Eds.), *Research Methods in Outdoor Studies* (pp. 186–195): Routledge.

Mcphie, J., & Clarke, D. (2020). Nature matters: Diffracting a keystone concept of environmental education research – just for kicks. *Environmental Education Research*, *26*(9–10), 1509–1526. doi: 10.1080/13504622.2018.1531387

Mullins, A. (2020). Uncommon sense. *A deep time journey into the underland with Robert Macfarlane.* Retrieved from https://www.rrr.org.au/on-demand/segments/uncommon-sense-a-deep-time-journey-into-the-underland-with-robert-macfarlane

Pleasants, K., & Stewart, A. (2019). Entangled philosophical and methodological dimensions of research in outdoor studies? Living with(in) messy theorisation. In B. Humberstone & H. Prince (Eds.), *Research methods in outdoor studies* (pp. 9–20). New York: Routledge.

Plumwood, V. (2003). Decolonizing relationships with nature. In W. B. Adams, & Mulligan, M. (Ed.), *Decolonizing nature: Strategies for conservation in a post-colonial era*. London: Routledge.

Rautio, P. (2020). Post-qualitative inquiry: Four balancing acts in crafting alternative stories to live. *Qualitative Inquiry*, 1–3.

Ruck, A., & Mannion, G. (2020). Fieldnotes and situational analysis in environmental education research: Experiments in new materialism. *Environmental Education Research*, *26*(9–10), 1373–1390. doi: 10.1080/13504622.2019.1594172

Sinclair, P. (2001). *The Murray: A River and its People*. Carlton South, Victoria: Melbourne University Press.

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press

Sonu, D., & Snaza, N. (2015). The fragility of ecological pedagogy: Elementary social studies standards and possibilities of new materialism. *Journal of Curriculum and Pedagogy*, *12*(3), 258–277.

St. Pierre, E. (2011). Post qualitative research: The critique and the coming after. In N. K. Denzin, & Y.S. Lincoln (Ed.), *The Sage handbook of qualitative research* (Vol. *4*, pp. 611–625). Thousand Oaks, CA: Sage.

St. Pierre, E. (2021). The lure of the new and the hold of the dogmatic. *Qualitative Inquiry*, *27*(5), 480–490.

St. Pierre, E., Jackson, A., & Mazzei, L. (2016). New empiricisms and new materialisms: Conditions for new inquiry. *Cultural Studies ↔ Critical Methodologies*, *16*(2), 99–110.

Stewart, A. (2018). A Murray Cod assemblage: Re/considering riverScape pedagogy. *The Journal of Environmental Education*, *49*(2), 130–141.

Stewart, A. (2020). *Developing place-responsive pedagogy in outdoor environmental education: A rhizomatic curriculum autobiography*. Cham, Switzerland: Springer Nature.

Stewart, A., Jukes, S., Mikaels, J., & Mangelsdorf, A. (in press). Reading landscapes: Engaging with places. In G. Thomas, J. Dyment, & H. Prince (Eds.), *Outdoor environmental education in higher education: International perspectives*: Springer.

Taylor, C. (2013). Mobile sections and flowing matter in participant-generated video: Exploring a Deleuzian approach to visual sociology. In R. Coleman, & J. Ringrose (Ed.), *Deleuze and research methodologies* (pp. 42–60). Edinburgh: Edinburgh Umniversity Press.

Taylor, C., & Hughes, C. (Eds.). (2016). *Posthuman Research Practices in Education*. New York: Palgrave.

Ulmer, J. B. (2017). Posthumanism as research methodology: Inquiry in the Anthropocene. *International Journal of Qualitative Studies in Education*, *30*(9), 832–848. doi: 10.1080/09518398.2017.1336806

Weir, J. (2009). *Murray River Country: An ecological dialogue with traditional owners*. Canberra, ACT: Aboriginal Studies Press.

Wood, M., & Brown, S. (2010). Lines of flight: everyday resistance along England's backbone. *Organization*, *xx*(x), 1–23.

Scott Jukes is a lecturer in Outdoor Environmental Education at Federation University, Australia. He has a passion for the river, mountain and coastal environments of south-eastern Australia and enjoys journeying and teaching in these places. His research explores pedagogical development and experimentation for outdoor environmental education, inspired by posthuman and new materialist theories. He is particularly interested in ways we may challenge human exceptionalism and rethink ontological assumptions as a response to our ecological predicament.

Alistair Stewart is an independent researcher and consultant in OEE pedagogy and curriculum. Prior to 2021 he worked for more than two decades at La Trobe University serving as Head of Department and Course Coordinator in OEE. Alistair's educational research interests include the development of curricula and pedagogy, informed by philosophies such as post-structuralism and posthumanism, that are a response to places and culture in which they are performed. When not occupied by research/education you might find Alistair working in the garden or out trail running, walking, canoeing, birdwatching or wondering what next to do about climate change and extinction.

Marcus Morse is Senior Lecturer and Program Convenor for Outdoor Environmental Education at La Trobe University, Australia. He grew up in Tasmania, where time spent on the island's rivers, coastlines and mountains inspired a love of being outdoors. Marcus has a passion for journeys and his research interests are in the areas of environmental education, community engagement projects, place-based education, and wild pedagogies.

Cite this article: Jukes S, Stewart A, and Morse M (2022). Following lines in the landscape: Playing with a posthuman pedagogy in outdoor environmental education. *Australian Journal of Environmental Education* **38**, 345–360. https://doi.org/10.1017/aee.2021.18

https://doi.org/10.1017/aee.2021.18 Published online by Cambridge University Press