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On ecological literacy through implicated participation

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ABSTRACT

Philosopher-activist Heather Menzies advocates for an approach to ecological literacy that goes beyond knowing about the interconnected goings on of the world from afar by foregrounding the import of relating *with* a locale through prolonged periods of *implicated participation*. Here, we offer further insight to these views across three sections. First, following a brief excursus, we show how Menzies' views of implicated participation focus less on the explication of facts *about* the world, more as enabling us to be taught *by* its goings on. It is, in other words, to study *with* and learn *from* the beings and things which surround us. Second, we incorporate Menzies' views with the ecological approach to psychology, drawing specifically on the concept of *affordance*. This helps us take up with the practical challenge of fostering Menzies' views in places tightened by privatisation, commodification and homogenisation: factors over-constraining the ways people can engage with the affordances of a locale. Thus, section three leans on key ideas from Karen Franck and Quentin Stevens to reposition 'leftover spaces' as *arenas for ecological literacy*: thrivingly loose ecologies enriched with affordances determined over varying timescales of implicated participation. To think with these ideas, two cases are presented.

> "Perceiving environment from within, as it were, looking not *at* it but being *in* it, nature becomes something quite different. It is transformed into a realm in which we live as *participants,* not as observers." – Berleant (1992, p. 170, emphasis in original and added)

1. Proem

In chapter 14 of the book *Reclaiming the Commons for the Common Good*, philosopher-activist Heather Menzies (2014) writes:

> "The capacity to learn, to gain knowledge and insights and to care also comes from becoming connected to the realities of a living habitat, *entering a relationship with them*" (emphasis added).

I (first author) discovered this as a child many years ago. Not too far from my family home was a communal garden that I attended, along with family, friends and neighbours. Carefully redesigned from a vacant allotment, this locale slowly grew into a place where diverse plant and microbial life knotted with humans, birds, small mammals, reptiles, insects, fungi and worms. There were no globally-enforced rules or regulations governing how this place was to be sustained, and no one owned or controlled its goings on. Rather, inhabitants came to know of and care for the garden together, educating each other's attention to the unfolding of things from within a nested meshwork of lively relations.

My initial exposure to this place was in accompanying my mother, watching and listening to her and others work through a peripheral involvement: carrying a spade; digging small holes in the soil for seedlings; filling a watering-can from a nearby fountain. Though, by carefully following the ways in which she and others responded to the tasks of the garden, this peripherality progressively became more central. I began to join in and participate in a community, relating with the garden in ways transcendent of it being *just* a site of fruit and vegetable production. This meant I came to pay attention in a more implicated way; *the garden began to matter to me*.[1] Among other things, I became attentive to how plants typically responded to seasonal changes, which birds nested in surrounding trees to feed on various fruits, the parts of the garden better suited to certain seedlings given fluctuations in soil nutrient composition, and that on the first Sunday of every month, people would gather for lunch at a different neighbour's house to share a meal prepared using produce gifted by the garden. Though, the most

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[1] For an overview of this affective engagement, grounded in the context of ecological psychology, see Withagen (2022).

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seminal lesson the garden offered was to appreciate that 'progress' did not have to be about rapidly moving forward. It could be about *dwelling* (Ingold, 2000). Of taking the time to look around, getting to know things as a participant attuned to the nuances of change. The garden's growth, after all, was not rushed or uniform, nor was it not a place to dominate and control by following steps laid in advance. It was a place you learnt to *go along with*, feeling your way toward ends un-defined, echoing what phenomenologist Maurice Merleau-Ponty (1964, p. 160/1) called "the soil of the sensible".

To be clear, I was not a professional horticulturalist, nor did I have any formal training about how to garden. Neither, from memory, did anyone else who attended this place. Our collective knowledge of the garden was grown, quite literally, *from the ground*, through prolonged engagement with the various things that called for our attentive response. We were all amateur gardeners undergoing a kind of apprenticeship, learning *in* practice through the very course of our engagement (Lave, 1990). This was not a complete 'do it yourself' process, however, as experienced others would guide the attention of newcomers to features of concern, encouraging them to experience the coming-into-being of things for themselves (Reed, 1996b; Woods & Davids, 2021). Our capacity to learn came not from the transmission of prior-established secondary information, but from slowly entering a relationship with the garden, coming to know of its ebbs and flows as participants responsible to and for its offerings.

This experience, I think, is what Menzies (2014) had in mind when advocating for the notion of ecological literacy. First coined by David Orr (1989), Menzies moves it away from its postmodern educative roots of knowing *about* the interconnectedness of life on Earth from within the confines of a classroom. The ecological literacy Menzies advocates for is closer to a premodern knowledge *of* the world. It is about dwelling within the places that capture our interest, becoming attentively responsive to unfolding relations by actively engaging with the habitat itself. This is not about mastering or exerting control over a locale, but of progressively learning to correspond with it as an *implicated participant* – feeling, smelling, tasting, hearing and seeing the coming-into-being of things for ourselves (Ingold, 2013; Reed, 1996b).

Opportunities for people to engage with a locale in such an implicated way, however, are becoming increasingly difficult given the privatisation, commodification, mechanisation and homogenisation of 'space' (Beames & Brown, 2016; Franck & Stevens, 2007; Mitchell & Mueller, 2009; Reed, 1996b; Shapiro & McNeish, 2021). I, for example, encountered such things while on a recent trip home. The garden I had attended as a child all those years ago – which I grew to know and responsively care for as an implicated participant – was gone. The land had been purchased by a private corporation who had turned it into a carpark estate. A place that had once been open, communal and welcoming to all – a thrivingly loose ecosystem of which we were a part – had been sterilised of all diverse engagement, overcome by a tightening onto-logic[2] that looked upon it as a space to exploit for economic gain.

Do not misread me here. This is not a nostalgic romanticisation of times gone by. Rather, this small example foregrounds a broader challenge we think-with in the forthcoming sections: *how to foster ecological literacy through implicated participation within landscapes dominated by a tightening onto-logic*. By no means do we proclaim to solve this. Rather, following Reed (1996b), the forthcoming could be considered as a plea to defend primary experience against the governing forces that attempt to undermine it – forces that reduce 'literacy' to a matter of prescribed rule following. Like captured by Berleant (1992) in the quote with which this proem began, thinking with such a challenge may encourage us to pay closer attention to the places we dwell – looking not *at* our surrounds as passive bystanders, but engaging *with* and learning *from* them as responsively implicated participants.

[2] For an overview as to the use of this term, see Woods et al. (2023).

2. Introduction

The aims of this paper extend across three related sections. Following this brief introduction, the first overviews the approach to ecological literacy advocated for by philosopher-activist Heather Menzies (2014). Introduced by David Orr (1989), the notion of ecological literacy was initially conceived in response to the environmental crisis incurred by human behaviour, which Orr attributes to an inability for people (especially children) to 'see' how human action implicates ecological systems. While generally sympathetic to such a view, Menzies (2014) challenges its onto-epistemological foundations, taking a more *relational* turn. The ecological literacy Menzies (2014) advocates for is grown by way of active engagement with a habitat, through which one becomes an *implicated participant* responsible to and for its goings on. Drawing on the seminal work of anthropologist Tim Ingold (2013), we show how Menzies' views encourage people to study *with* and learn *from* the beings and things which surround them. It is, in other words, an ecological literacy aimed less on the explication of facts *about* the world, more as enabling us to be taught *by* its goings on.

Section two aims to provide further theoretical insight to this relationality by incorporating Menzies' views with the ecological approach to psychology initiated by James Gibson (1966, p. 1979/2015), drawing specifically on the concept of *affordance*. This incorporation is important for the third section of this paper, where we take up with the practical challenge of fostering Menzies' views of ecological literacy in landscapes tightened by privatisation, commodification, mechanisation, and homogenisation (Beames & Brown, 2016; Franck & Stevens, 2007; Mitchell & Mueller, 2009; Reed, 1996b; Shapiro & McNeish, 2021). These factors, we contend, limit the discovery of new opportunities for engagement by over-constraining the ways in which people can become implicated participants,[3] thereby dampening possibilities for ecological literacy. Compounding this, the layout of many modern landscapes is rooted in aesthetic imagery, in which environmental features are designed only to be looked *at* (Franck & Stevens, 2007). Indeed, while aestheticism may afford escapist-type activity, it undervalues the ways people are affectively moved by features of the environment in the midst of actively engaging *with* them (Davids, Araújo, & Brymer, 2016; Heft, 2012, p. 29; Withagen, 2022, ch. 3). We address this practical challenge by leaning on key ideas espoused by Karen Franck and Quentin Stevens (2007), showing how 'leftover spaces' in urban landscapes – spaces without any assigned function – could grow into *arenas for ecological literacy*: thrivingly loose ecologies enriched with affordances determined over varying timescales of implicated participation (also see Heft, 2010; Krasny, Russ, Tidball, & Elmqvist, 2013). To think-with these ideas, two cases from the inner suburbs of Melbourne (Naarm[4]) are presented. In the first, we explore how a leftover lawn-bowling green has grown into a thrivingly loose communal garden, and in the second, we explore how a leftover space beneath a bridge has been loosened through the installation of a bouldering wall. While distinct, both arenas invite engagement in ways transcendent of the formally structured, and as such, both support the growth of ecological literacy through implicated participation with their respective affordances. Moreover, as voiced by participants, both arenas appear to become meaningful to people over

[3] Examples of such a tightening onto-logic exist in landscapes designed in ways that actively reduces movement variability (see Lynn van der Schaaf, Caljouw, & Withagen, 2020). To exemplify, the installation of signage acting to *repel* certain activities, including play in public spaces, seek to perturb the *attractors* of some enticing locations for activity: e.g., "NO SKATEBOARDING OR ROLLERBLADING"; "NO BALL GAMES"; "NO LOITERING"; "NO CLIMBING ON"; "DO NOT TOUCH"; "STAY ON PATH".

[4] Note, "Naarm" is the First Nations place name for Melbourne. While we, the authors, do not identify as First Nations people of Australia, we do appreciate the importance of traditional place naming for acknowledging First Nations sovereignty.

prolonged timescales of exploratory engagement, thereby affecting them in the midst of activity.

3. Becoming implicated

The term 'ecological literacy' is oft-credited to environmental philosopher David Orr (1989). Introduced as a way to describe one's ability to understand the interconnectedness of life on Earth, Orr's conception embodies an implicit assumption that if people were more ecologically literate – that is, better informed about ecological systems – then they would be more inclined to respect and care for their surrounds, opening a path toward a more sustainable future. As a corollary, Orr (1990) attributes the environmental crisis gripping Earth to a crisis in education, in which people, especially children, have been under-exposed to opportunities to learn about patterns in ecological systems. In an attempt to remedy this, Orr (1992, p. 109) offered a "Syllabus for Ecological Literacy", including over 130 articles and texts in 17 thematic areas, which could be woven into primary and tertiary educational institutions (also see Martin, 2008).

While generally sympathetic toward this view, philosopher-activist Heather Menzies (2014) challenges its onto-epistemological foundations based on a detached and abstracted view of learning, positioned as a process of factual recording, categorising and accumulation initiated 'at arm's length'. It reflects an ideology that Lave (1990, p. 310) refers to as "the culture of acquisition", where learning is understood as a 'cognitive process' that emphasises internal representation of experience, occurring abstractly and sequentially. Briefly, it follows that one first acquires a general body of knowledge *about* a topic, place or object that is to be stored in the mind following its transmission from a supposedly authoritative source, and then one retrieves such knowledge to construct an action that is to be applied in the 'proper' context (also see Ingold, 2017, ch. 1). As Biesta (2004) suggests, this process of learning by way of transmission implies that in order to act in the world, one must possess some type of 'basic', 'fundamental' or 'rationalised' knowledge about its constituents *prior* to engagement. It is the role of authorised educational institutions to initiate and consolidate the process of 'knowledge acquisition' (Biesta, 2004; Lave, 1990). Thus, learning, in this rationalised ideology of acquisition, can be surmised as the practice of storing and reciting secondary information, programmatically transmitted by others (see Reed, 1996b).

Paradoxically, however, this ideology infers that one can become ecologically literate *without* having stepped foot in a specific locale; ostensibly taking the 'ecological' out of *ecological* literacy. Accordingly, Menzies (2014) critiques this secondhand foundation of experience, suggesting it is one thing to know *about* an ecosystem using the mechanistic tools of a postmodern science, grounded in an objectively interactionist episteme distancing knower from known, and quite another to develop a *feel* for one's habitat from within its to-and-fro:

> "Becoming [ecologically literate] doesn't just mean learning *about* the relationships between living things in an ecosystem from outside them, in textbooks. It means coming alive to them from *within that webwork of relationships* as you yourself become part of them, attentive to them and ever *attuned* to their realities. It means developing a *feel* for the environment from being immersed in it …" (ch. 20, emphasis and text in brackets added).

Drawing on Ingold's (2000) dwelling-perspective – capturing the inseparability of learning-by-doing-in-place – and leaning into relations between distant relatives and the land they farmed in the Scottish Highlands, Menzies (2014) sets out to rekindle an ecological literacy inspired by a premodern knowledge of the world, established through more *participatory* practices. This is to situate the import of primary experience in how one comes to know and relate with a surround (Reed, 1996b). Differing to the conceptions of Orr, Menzies' views of ecological literacy hold that one does not have to possess an accumulated repository of authoritative knowledge *about* the world prior to engagement. Rather, to Menzies (2014, ch. 13), ecological literacy is an ongoing, active and embedded process that unfolds over prolonged timescales of *implicated participation*: feeling, seeing, hearing, smelling and tasting the coming-into-being of a locale from within its goings on. Note, to speak the language of implication – i.e., to be 'ecologically literate' in accord with Menzies' views – is not decode that which has been transmitted at secondhand. It is rather to be "alive to the here and now, being able to dwell in the moment, attuned to the pulse of life and the rhythm of relationships, ready to be accountable" (Menzies, 2014, ch. 10). This renders implicated participation a messy, ongoing and attentively responsive affair, in which knowledge is grown in the midst of a practical engagement with the beings and things that surround and affect us.

3.1. Of-with; about-from

The notion of implicated participation weaves a personal, affective, political, moral and ethical undercurrent to Menzies' views. It is to appreciate that 'we' are part of, and answerable to, the places in which 'we' seek to know; the places that come to matter to 'us'. This deep embeddedness means that ecological literacy cannot be initiated in, nor confined to, a classroom, syllabus or professionalised discipline. It cannot take place from an objectively detached position of supposed authority (also see Haraway, 1988). Rather, the ecological literacy Menzies (2014, ch. 22) advocates for is closer to the homegrown attentive responsiveness one may encounter in amateur gardeners – that is, people who actively engage with a locale *for the love of encounter* (Ingold, 2021). The amateur, in this view, is not a 'hobbyist' or 'dabbler', but one who enthusiastically embodies the goings on of a locale as a way of life, maintaining and valuing the highest standards of knowing by joining *with* what captures their interest (Ingold, 2021; Woods, Araújo, McKeown, & Davids, 2022). It is a view surmised by Menzies (2014) in chapter 14 of her wonderfully active book, *Reclaiming the Commons for the Common Good*:

> "It's [ecological literacy] learning to read not just a text but the land. It's the ability to *relate* to the land, to read it emphatically as one would read the expression on a friend's face. It's the ability to know the soil of your garden or field through the *process of relating to it over time* … [Ecological literacy] emerges not so much from within the walls of a classroom but from *prolonged participation in a habitat as a living classroom* … It's an apprenticeship in the traditional sense of what apprenticeships have historically involved, which is learning by doing, by *attuned attention* … the senses alive to *nuances of change in the living context*" (emphasis added).

These sentiments are profound. Not only do they eloquently overview Menzies' conception of ecological literacy, but when coupled with those of the previous, they foreground an approach that takes a deeply *relational* turn. And it is this relational turn that is of particular interest to us here. In his exceptional book, *Making*, anthropologist Tim Ingold (2013, ch. 1) speaks to this relationality through an approach to inquiry referred to as 'knowing from the inside'. This, according to Ingold, is about letting things grow into you, and you into them, such that they become part of who you are. A horticulturalist, for example, would not just study *about* the plants that captures their attention from within the confines of a classroom. They would study *with* and learn *from* what the plants have to share in the context of their very growth, responding with care and sensitivity as an *observant participant*. Importantly, this observant participation is not a matter of accumulating more factual data about the world, but is a process of learning to resonate with that which is of interest by primarily experiencing its coming-into-being (Ingold, 2013; Reed, 1996b; Woods, Araújo, & Davids, 2023).

Woven with Ingold's notion of observant participation, Menzies' concept of implicated participation imbues a deep responsibility to that with which we seek to know. Not, though, in an authoritative sense of possession, but in an open sense of rendering oneself available for the

response of another. Drawing on Biesta (2004), this is to speak a language that calls for presence and accountability; a language less concerned with what one says or knows, and more about how it is said, and by whom. This holds that the 'literate' individual would not just be the one who can read and then recite that which has been transmitted and consumed at secondhand, but be the one who can *respond* to that which is primarily experienced with care, curiosity and sincerity (Biesta, 2004). Care, in this language of response, is more than abstract well-wishing. It is to become emotionally and ethically entangled with that which is of concern – to get involved in any practical way we can (see van Dooren, 2014).

This practical involvement speaks directly to Ingold's perspectives of observant participation, where study is *with*, not of, and learning is *from*, not about.[5] Accordingly, by weaving Menzies views with those of Ingold, we are able to open an approach to ecological literacy that calls for a profound shift in what it means to study (of-*with*) and to learn (about-*from*). It is a shift best surmised by Ingold (2013) himself, who situates the places in which we dwell as *universities*:

> "… that include not just professional teachers and registered students, dragooned into their academic departments, but people everywhere, along with all the other creatures with which (or whom) we share our lives and the lands in which we – and they – live. In this university, whatever our discipline, we learn *from* those *with* whom (or which) we study" (p. 2, emphasis in original).

We now offer further theoretical grounding to this relationality by incorporating Menzies' views with the ecological approach to psychology initiated by James Gibson (1966, p. 1979/2015). As will be explored later, this incorporation is important for navigating the practical challenge of fostering ecological literacy in landscapes dominated by a tightening onto-logic that over-constrains the ways in which people can study *with* and learn *from* a respective locale.

4. An ecological literacy with an ecological psychology

In the 1960s and 1970s, James Gibson developed an ecological approach to psychology that departed from the (still) dominant mentalist tradition. Gibson's focus, in relation to this departure, oriented the nature of perceiving, which consists of three of its major tenets. First, *perception is a directly active process*; second, *perception is for the guidance of action*; third, *perception is of affordances* (also see E. J. Gibson, 1988; Heft, 2001; Reed, 1996a; Chemero, 2009). While a detailed excursus of Gibson's ecological approach is beyond the scope of this paper (see Chemero, 2009; Heft, 2001), it is within its bounds to touch on these three tenets, given their implication on forthcoming discussion.

First, to say that perception is 'direct', exerts that it does not involve internal representation of a surround; it is not mediated nor computational. Rather, perception is an achievement of an organism keeping-in-touch with the world – it is not a mental act, nor an act of the body, but an act of a living observer making their way through an environment (Gibson, 1979/2015, p. 228). Hence, the descriptor 'active' does not describe an internalised mental process related to encoding, predicting, inferring or representing, but quite literally refers to movement – of the eyes, head, torso and whole body – for the purposes of picking-up invariant information in the surrounding array that specifies an environments layout in relation to a perceiver's point of observation (Gibson, 1979/2015). Movement produces a changing array of sensory stimulation, which makes invariant information specific to environmental features easier for a perceiver to detect (Gibson, 1966, p. 1979/2015; Heft, 2001; Reed, 1996a). As stated by Eleanor J. Gibson (1988):

> "… perceiving is active, a process of *obtaining* information about the world (J. J. Gibson, 1966). We don't simply see, *we look*. The visual system is a motor system as well as a sensory one. When we seek information in an optic array, the head turns, the eyes turn to fixate, the lens accommodates to focus, and spectacles may be applied and even adjusted by head position for far or near looking" (p. 5, emphasis added and in original).

This leads to the second major tenet of the ecological approach: perceiving not only guides action, *but action reciprocally offers the perception of environmental features* (also see Heft, 2012). This means that perception and action are not separable functions. Rather, they jointly operate to constitute a perceptual system (Gibson, 1966). In his last book, *The Ecological Approach to Visual Perception*, Gibson (1979/2015) argues this, stating that action is controlled:

> "… not by the brain, but by information, that is, by seeing oneself in the world. Control lies in the *animal-environment system*. Control is by the animal *in* its world, the animal itself having subsystems for perceiving the environment and concurrently for getting about in it … The rules that govern behaviour are not like laws enforced by an authority or decisions made by a commander; behaviour is regular *without being regulated*" (p. 215, emphasis added and in original).

It is the last section of this excerpt that is of particular relevance here, because like Gibson suggests, it leads to the question of how this can be? For now, we address this through the third major tenet of the ecological approach – Gibson's (1979/2015) concept of *affordance*. An affordance, generally speaking, is a psychological property of the environment taken with reference to the action capabilities of an active perceiver (also see Chemero, 2003; Heft, 2012). As Gibson states:

> "[t]he *affordances* of the environment are what is *offers* the animal, what it *provides* or *furnishes*, either for good or ill. The verb *to afford* is found in the dictionary, but the noun *affordance* is not. I have made it up. I mean by it something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment" (1979/2015, p. 119).

There are two aspects of this last tenet we feel resonate with Menzies' views of ecological literacy. First, as noted in this now seminal passage, the affordance concept holds that animals perceive the environment, not indirectly by way of internal representation, but directly in terms of its functionality. This draws our attention toward its foundational unit of analysis: the *organism-environment relation*. For example, given a child's relative height, current movement capacities, and motivations and desires, a tree may or may not afford climbing, a stream may or may not afford jumping over, and a narrow ledge may or may not afford walking on. Though, some trees, streams and ledges are more *inviting* for engagement than others (Withagen, 2023; Withagen, de Poel, Araújo, & Pepping, 2012). This is because the soliciting potential of an affordance is not just dependent upon a perceiver's action capability, but extends to the totality of a perceiver's historical, affective, and socio-cultural context (Withagen, 2023; Withagen et al., 2012). In climbing a particular tree over a prolonged period, for example, a child may become increasingly adapted to its potential for engagement. That is, they become *attuned* to the information specifying the tree's affordances, such as the texture of the bark, the spacing of the branches as support

[5] There is a wonderful example of such conceptualisation in Wooltorton and Bennell's (2007) short feature titled, *Ecological Literacy: Noongar Way*. In describing their relation with the land, a Noongar speaker mentioned: "[w]hen we saw the spider orchids we knew that donkey orchids were nearby. These two flowers signified spring when the kicking berries could be found. This was also the time that bardie grubs could be found. We would look for grass trees and if we could kick one over we were pretty sure to find a feed" (ibid., p. 30). This excerpt not only speaks to implicated participation, but also of studying *with* and learning *from* the places in which people dwell. Moreover, it highlights the deeply relational worldview germane to many Indigenous philosophies that Menzies' and Ingold's views resonate with (see Donald & Bruineberg, 2022; Kuokkanen, 2007).

surfaces, and so on (Gibson, 1979/2015; Withagen et al., 2012). However, a tree growing in a communal park compared to one growing in the child's backyard may not solicit the same engagement given changes in contexts (including, for example, social, botanical, political and moral), thereby linking the broader context of engagement with the perception of affordances[6] (Chemero, 2009; Rietveld & Kiverstein, 2014; van Dijk & Rietveld, 2017).

While not explicitly referencing Gibson's concept of affordance, Menzies (2014) does lean into the notion of *attunement* when discussing ecological literacy. To paraphrase one of her earlier quotes (see Sect. 3): 'ecological literacy emerges from prolonged participation in a habitat, where learning is forged by doing, by *attuned attention*'. Here, we propose that Menzies' referral to 'attuned attention' is not an indirect claim to some intra-organismic mental process, but speaks to what Gibson (1979/2015) referred to as an 'education of attention' (also see Araújo & Davids, 2011; Ingold, 2000; Jacobs & Michaels, 2007). In the ecological approach, one undergoes an education of attention when learning to 'pick-up' information that specifies affordances in an environment supportive of goal-directed behaviour (Jacobs & Michaels, 2007). This is a progressive process that unfolds over extended periods of practice, experience and exposure, through which individuals become more sensitive (or attuned) to specifying information. To us, this is what Menzies had in mind when referring to ecological literacy as emerging from 'prolonged participation in a habitat, where learning is forged by doing' (see Sect. 3). Read in accord with Gibson's ecological approach, we suggest that as one becomes ecologically literate, they *undergo an education of attention, progressively attuning to information specifying affordances supportive of implicated participation*.

Second, Gibson's concept of affordance offers a unique alternative to the philosophic notions of 'value' and 'meaning' (Lobo, Heras-Escribano, & Travieso, 2018). In the mentalist tradition, psychology assumes that the environment consists of matter in motion, with 'meaning' having to be pinned onto its features (Heft, 2001; also see Withagen, 2022, ch. 1). Though, given that in the ecological approach the environment is perceived directly in terms of affordances, 'meaning' does not have to be attached, but it can be *discovered* through exploration (Gibson, 1979/2015). A vertical surface with cracks and protrusions spaced in relation to an individual's action capabilities, for example, may afford them climbing. But for an individual of differing action capabilities, the same vertical surface may be perceived to afford some other activity, like sheltering, graffitiing or leaning. The value and meaning of the vertical surface for these respective individuals are not universally or abstractly preordained; they are discovered in the midst of engagement, through the perception of what it affords.[7]

Once again, while not explicitly referencing Gibson, Menzies (2014) does highlight the importance of discovering meaning in one's surrounds by actively engaging with its features. The excerpt below, as an example, highlights the criticality of exploration for the establishment of 'meaningful relations' with key 'elements' of an environment:

> "… children these days are being raised in cities or massive subdivisions far from the chance not just to connect with nature but to enter some kind of *meaningful* relationship with the elements of it they find there: shrubs and trees, frogs in a creek [i.e., affordances]. They need to be involved … *exploring* and making themselves familiar with some local bit of forest, meadow or marsh …" (Menzies, 2014, ch. 13; emphasis and text in brackets added).

In other words, as one becomes ecologically literate, *meaning is discovered through prolonged periods of implicated participation with the affordances of a particular surround*. As recent developments in Gibson's ecological program promote (e.g., Withagen, 2022), this would concurrently hold that places would progressively become meaningful to people – and perhaps communities – as they become implicated in the opportunities such places solicit; a sentiment noted in our proem. To briefly revisit, the communal garden I (first author) attended as a child was a meaningful place for many people (myself included). Though, this was not because its value had been attached and transmitted prior to engagement. Rather, its value was personally discovered *through* engagement; through the chance encounters that were sustained by the collectively resonant actions of participants implicated in its unfolding. 'Meaning', in accord with the affordance concept, is thus firmly placed in the ecology of animals, not in the inner mental realm that is pervasive to much of mainstream psychology.

Beyond the alignment with Gibson's concept of affordance, the above excerpt foregrounds a challenge directed toward Menzies' views of ecological literacy. That is, how to foster ecological literacy with-in a surround restrictively tightened by privatisation, commodification, mechanisation, and homogenisation – i.e., in cityscapes or 'massive subdivisions' that constrain the ways in which people can enter some kind of meaningful relationship with its affordances. Accordingly, we next explore ways of facilitating ecological literacy in such places, showing how the spaces cast-aside – through their unique affordances – could grow into diverse sites for implicated participation, in which people study *with* and learn *from* the respective goings on.

5. Loosening the space leftover

The aim of this section is to explore ways of facilitating Menzies' views of ecological literacy in places, such as cityscapes, that are tightened by a vertical onto-logic that oft-imposes formally structured, fixed and static functions to its respective features. This onto-logic, we contend, limits the ways people can actively engage with, and become implicated in, the affordances of a surround, thereby dampening opportunities for ecological literacy in accord with the participatory views espoused here. Associated with this, the design of many 'modern' cityscapes is rooted in an ideology of aestheticism, where environmental features are designed explicitly to be looked *at*, set at a distance from passive observers (Franck & Stevens, 2007). While aestheticism in natural contexts may indeed afford escapist-type activity, such as contemplation (Davids et al., 2016), it considerably limits and even undervalues the importance of affectively relating with one's surrounds through active engagement (Heft, 2012; Withagen, 2022, 2023). The challenge we seek to address in this third section is: *how to foster ecological literacy through implicated participation within landscapes dominated by a tightening onto-logic?*

In searching for a way through this question, we found inspiration in the work of Karen Franck and Quentin Stevens. Specifically, their book *Loose Space: Possibility and Diversity in Urban* Life (2007), directs attention toward the 'hidden spaces' in amongst the regular and homogenised goings on of cityscapes. These spaces are replete with affordances that solicit behaviour residing outside the formalised; e.g., the routinised, prescribed and fixed. They are, according to Franck and Stevens (2007), *loose leftover spaces*:

[6] While it is beyond the scope of this paper to progress this thesis further, we encourage readers to see Withagen (2023) for an interesting discussion surrounding the distinctions between affordances and invitations.

[7] It is worth noting that the various uses the vertical surface affords in this example is not a matter of individuals interpreting or 'making sense of' the same surface differently. Rather, the vertical surface has multiple possibilities for action. This means that in the ecological approach, the environment is *pluralistic*, grounded in the *organism-environment relationship* (Heft, 2010).

> "Cities are composed of a great variety of place types. In between the more constraining ones, the private and enclosed places of the city … lie public spaces, often outdoors, where definitions and expectations are less exclusive and more fluid, where there is greater accessibility and freedom of choice for people to pursue a variety of activities. Here is the breathing space of city life, *offering opportunities for exploration and discovery, for the unexpected, the unregulated, the spontaneous and the risky*" (p. 2–3, emphasis added).

As noted above, loose leftover spaces are those that have no hardened or prescribed function; oft-juxtaposed against those with fixed and delimited functions (Franck & Stevens, 2007). Thus, part of what makes a space 'loose' (as opposed to 'tight') is that it exists beyond the confines of the socially organised and formally structured, thereby lacking conventional features and respective norms. Examples of leftover spaces include those beneath bridges, allotments separating buildings, or the spaces dividing highways and railway yards. Given they follow no convention grounding, leftover spaces can be irregular and variable in shape and surface texture, hidden, polluted, and/or difficult to access (Franck & Stevens. 2007). In Brazil, for example, Uehara et al. (2018) have shown how leftover spaces in-between mass subdivisions solicit outdoor engagement, referred to as 'la pelada', which preferences unique ways of informally engaging with the 'naked environment'. Further, Glenney (2023) shows how skateboarders in the US have reappropriated discarded sites of natural resource extraction, creating opportunities for 'polluted leisure' in the spaces leftover. It is precisely because of their unconventionality that such spaces solicit diverse acts of cultural expression, personal occupation, leisure, and even rebellion and rage. That is, they afford opportunities for people to engage in activities that extend beyond those of the formally structured, normative and explicitly designed[8] (Franck & Stevens. 2007). This means that the activities that go on in leftover spaces are anything but; typically, being neither productive or reproductive (in a formal economic sense), but rather fostering affective acts of leisure, self- or politico-cultural-expression, social interaction, entertainment, and/or rebellion (Franck & Stevens, 2007; Glenney, 2023).

Leftover spaces, though, need not just be those in-between. They can be spaces that once had an assigned function that is no longer of use. Abandoned buildings, piers, activity allotments, tunnels or even discarded natural resource extraction sites represent such spaces, and given their unique affordances, likely solicit activities that reside beyond the routinely prescribed[9]. Lonsdale (2001), for example, discussed how an abandoned mine in England became a place for bird watching and parachuting, while Ferrell (2001) showed how an abandoned railway maintenance building became an unofficial museum of graffiti. The point here is that leftover spaces are those that lie outside the 'rush and flow' of the tightly fixed, rigid and regulated, which in their unconventionality, provide affordances that solicit activities beyond the formally structured. It is for these reasons that we feel leftover spaces could afford unique sites to facilitate Menzies' views of ecological literacy. As such, we next propose the re-conceptualisation of leftover spaces as *arenas for ecological literacy*: thrivingly loose ecologies replete with affordances determined over varying timescales of implicated participation (also see Heft, 2010; Krasny et al., 2013). To help us explore these ideas, we present two cases from the inner suburbs of Melbourne (Naarm). As an aside, while these cases include observational notes, personal photographs, links to websites and excerpts from implicated participants, they are not intended to provide exhaustive empirical analyses. Rather, our aim is to think *with* these cases and learn *from* what they have to share in the hope of opening a direction of travel for works to come.

5.1. Arenas for ecological literacy

To start, Franck and Stevens (2007) note that not all leftover spaces become loose; their looseness depends on:

> "… people's recognition of the potential within the space and … varying degrees of creativity and determination to make use of what is present, possibly modifying exiting elements or bringing in additional ones" (p. 11).

In this sense – unlike the passive consumption of what has been designed *for* in the tightened spaces of the formally structured – people bring forth the looseness of leftover spaces *through* the perception and actualisation of its unique affordances. Moreover, they may even bring forth opportunities for engagement through the expressive addition of new features or through the continued actualisation of affordances already 'there'. This means a central component of what makes leftover spaces 'loose', is not just their location and unconventionality, but the *activities* that such spaces solicit. Further, this is what makes leftover spaces dynamic – they change *with* the activities of those who become implicated in their respective unfolding. To exemplify, for a vacant allotment to grow into communal garden, people would first be required to perceive and actualise the spaces' inviting potential – perhaps considering questions, like: *does the ground and soil afford turning over and seeding? Do the environmental conditions afford sustained plant growth? Are there adequate periods of sunlight and rainfall? Is there access to tools and utilities that afford digging, watering and harvesting?* Following this, the gardens' sustentation would then depend on the ways in which people become implicated in its unfolding; learning to attend and respond to affordances determined over varying timescales of participation. As Withagen (2022) suggests, this would likely foster an affective response; of learning to care for the garden's affordances, perceiving and actualising them in ways that sustains, not their produce *per se*, but their *gifts* (also see Donald & Bruineberg, 2022; Woods et al., 2023).

This affectivity could solicit actions, like: *planting a seedling 'here' to help it grow into a bush that bears fruit; pruning 'this' tree in a way that* supports *seasonal growth; planting 'these' seedlings so that in their blooming, they encourage further pollination*. An important feature of such actions is that they unfold over time. According to Louise Chawla (2023), actions that unfold over prolonged timescales require participants to attune, not just the information specifying affordances 'there', but to those that *slowly* come-into-being, perhaps nested with surrounding constraints operating at different timescales (like seasonal weather fluctuations):

> "The term [affordance] is usually applied to immediately perceptible possibilities. Farming, gardening, and ecological restoration are full of affordances of this kind, such as a shovel that affords digging and soil that can be turned; but they also involve affordances that require learning over time, such as whether a sapling will grow into a tree that bears fruit" (p. 112).

Here, we contend that such a 'slow' process also fosters an affective response – that is, we not only learn to perceive the coming-into-being of things over prolonged timescales of implicated participation, *but we also learn to care in ways that sustains its growth* (see Withagen, 2022; also see our Proem). It is for these reasons that we feel places like communal gardens could become rich arenas for ecological literacy. To help us explore this idea, we next present our first arena: a communal vegetable garden located in the inner south-eastern suburbs of Melbourne (Naarm).

[8] Such a view is eloquently captured by Bishop (1988, p. 96), who describes bridges as having an "underworld" sitting "outside the rush and flow taking place above".

[9] For a unique example of what such activities could entail, see Phil Slater's jazz trumpet playing in tunnels, dams and along the changing topology of roads, vegetation and thickets (https://musictrust.com.au/loudmouth/phil-slater-an-ecological-approach-to-musical-skill-acquisition-and-creative-development/).

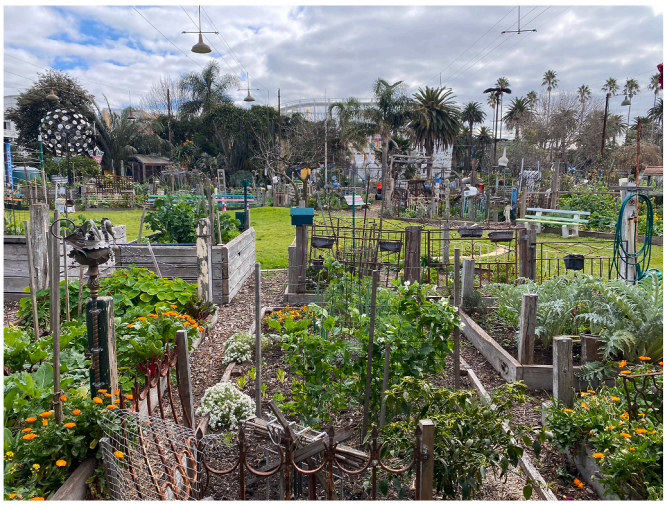

Fig. 1. Overview of arena for ecological literacy, *Veg Out*. Photo by first author.

Fig. 2. 'The Overgrown': Blurring of plot lines and communal space. Photo by first author.

5.1.1. *Arena for ecological literacy: Veg Out*[10]

Shown in Figs. 1 and 2, *Veg Out* is a community garden consisting of over 140 plots. Here, we explore three aspects of this place that help us think with Menzies' views of ecological literacy in places broadly tightened by privatisation. First, part of what makes *Veg Out* unique is that it resides on a what was formerly a lawn-bowling green. This means its 'leftover-ness' has less to do with its location and more to do with its repurposing. Its looseness, in part, has come about by people actively perceiving the lawn-bowling green's inviting potential, turning a place that once had a formally-prescribed and highly structured function into one that is "less exclusive and more fluid, where there is greater accessibility and freedom of choice for people to pursue a variety of activities" (Franck & Stevens, 2007, p. 2; also see Sect. 5). In other words, *Veg Out* has quite literally grown into a thrivingly loose ecology, replete with affordances that solicit diverse acts transcendant of those that had previously been assigned to the space.

Second, its sustenance is dependent on the resonate actions of participants implicated in its unfolding – that is, the *friends and members of the garden*. As written on *Veg Out's* website, many of the participants who attend this place have little to no gardening experience prior to their engagement. This renders their knowledge growth synonymous with primary and participatory views espoused through our earlier blending of Menzies' (2014) and Ingold's (2013) persepctives. Though, this does not appear to be a complete 'figure it out yourself' process. Rather, *Veg Out* fosters a homegrown apprenticeship that unfolds as one starts to participate. The welcoming sign, for example, states that one of the gardens main purposes is to *promote a sense of community, where trust, knowledge and responsibility are shared*. While a communal chalkboard located at the centre of the garden encourages people to *get their hands dirty* through participating in events such as working bees and monthly farmers markets. Echoeing these sentiments, a participant of the garden – when asked if they had gardening experience prior to their engagement with *Veg Out* – mentioned:

> "No, I had no idea what I was doing! Living in a city makes it hard to access a space like this, even at home in your backyard … if you're lucky enough to have one! It [*Veg Out*] provides an opportunity for me to do things that I wouldn't be able to elsewhere. I've learnt heaps from listening to others and from joining in the working bees. There's a genuine communal feel here, not just in the sharing of spades, space and veggies, but in that everyone is friendly and always open for a chat or helping hand" (personal communication).

The third aspect of this arena relates to its embracement of 'looseness', requiring participants to continually attune to its goings on. This is especially noted in a few of its unique design features. First, while each garden plot is distinguishable, there lacks rigid and exclusive barriers, blurring boundaries between plots and common ground (see Fig. 2). This feature likely invites and sustains more chance encounters and diverse engagements, both between participants and the plants grown. Second, the paths traversing the garden do not appear to follow a linear, 'point-to-point' sequence, like a geometrically planned sidewalk. Rather, they curve and loop their way through and around. Such a flow solicits attentive dwelling (Ingold, 2000), encouraging participants to slowly meander through the garden, exploring its various nooks and crannies. Third, flowers, vegetables and artworks all appear to have equal standing in the garden and each present a unique opportunity for engagement and participation. For example, juxtaposing statues located outside the garden, many of the garden's artworks do not appear to serve *just* an aesthetic appeal, but have an exploratory and functional one. This is especially noted by a welded monument that concurrently functions as a gate that is to be opened by manipulating certain features, soliciting exploratory engagement. Fourth, chickens, rabbits, guineapigs, budgies and quails are all present in amongst the goings on of the garden, each adding an additional layer for participants to study *with* and learn *from*. For example, given pesticides are not used in the garden, the chickens play a helpful role in keeping the proliferation of weeds to a manageable level, yet they concurrently offer a threat to the growth of young seedlings. Figuring out ways of mitigating this threat, while supporting its strength, seems to be an interesting challenge for the gardens' participants. In sum, each of these unique design features appear to play an important role in maintaining this arena's looseness; a looseness which calls for continued attunement to the nuances of ongoing change.

[10] For further insight to this arena for ecological literacy, see https://vegout.org.au/.

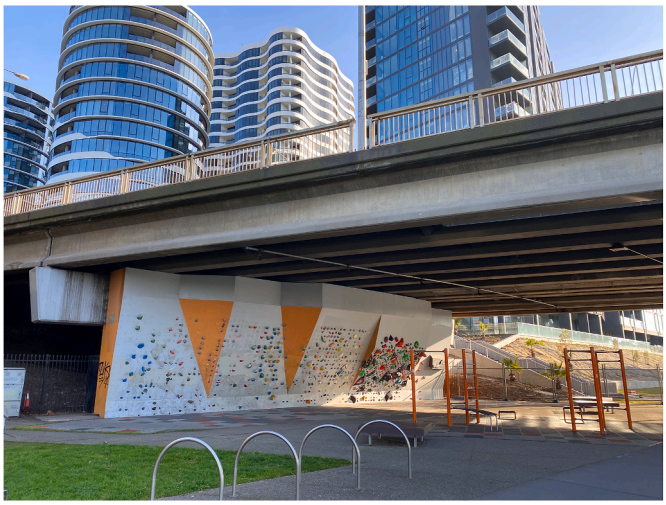

Fig. 3. Overview of arena for ecological literacy, *Hopkins Street Bridge Bouldering Wall*. Photo by first author.

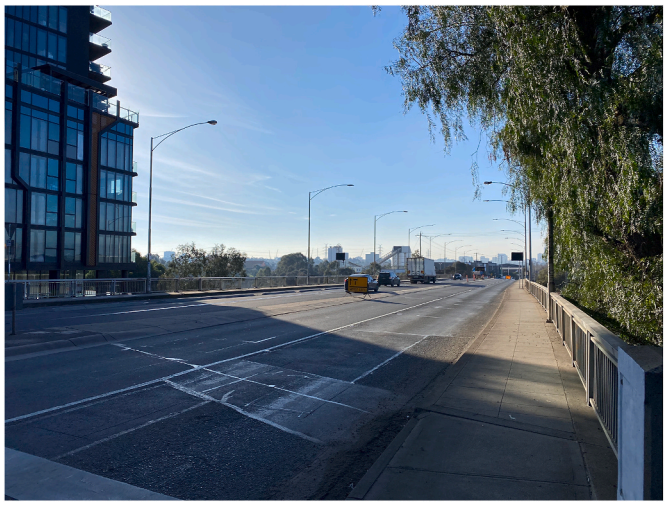

Fig. 4. 'Above; below': A constrast of the homogenised above, with the heterogenous below. Photo by first author.

5.1.2. *Arena for ecological literacy: Hopkins Street Bridge Bouldering Wall*[11]

The second arena for ecological literacy is the *Hopkins Street Bridge Bouldering Wall*, located in the inner western suburns of Melbourne (Naarm). This arena for ecological literacy is of note for a few reasons. First, as shown in Fig. 3, a unique feature of this arena is that it resides beneath a bridge, rendering it 'leftover' in a different sense to that which was explored in *Veg Out*. It quite literally exemplifies Bishop's (1988) suggestion that bridges have an underworld sitting outside the rush and flow taking place above (see Fig. 4). The looseness of this leftover space is supported through the installation of a bouldering wall, which solicits diverse acts of expression and engagement from participants who actively perceive its climb-ability (among other things). Though, what makes this bouldering wall of particular note, is that it consists of a wide variety of 'hold-types', thereby inviting engagement from participants with an array of action capabilities and experiences. Additionally, the ground upon which it is located is purposefully 'spongy', inviting participants to explore regions of the wall that may quite literally extend beyond their reach and grasp. In other words, *Hopkins Street Bridge Bouldering Wall* affords a place for "exploration and discovery, for the unexpected, the unregulated, the spontaneuous *and the risky*" (Franck & Stevens, 2007, p. 3; also see Sect. 5).

The second aspect of note is that some of the participants who attend this place have little to no bouldering experience prior to their engagement. Once again, this renders their knowledge growth synonymous with the primary and participatory views espoused in the earlier blending of Menzies' (2014) and Ingold's (2013) persepctives. For example, when asked if they had bouldering experience prior to engaging with this place, a participant mentioned:

> "Na, never! I was just walking past and saw a heap of people gathered around and wanted to have a go. As soon as I started climbing, people started offering advice and gave me some tips and before I knew it, I was returning the favour, helping out newcomers. I never thought I'd hang out under a bridge, or be into bouldering, but here I am! I guess it's a great place to meet new people and do things you wouldn't elsewhere" (personal communication).

Beyond the sense of community and apprenticeship shared by this participant, the referral to 'hang out' is of note. To us, this reflects the same kind of attentive dwelling that was solicited at *Veg Out*. As Menzies (2014) notes, spending time in places, exploring various features, is critical for the growth of ecological literacy, as it helps people become 'familiar' with unfolding relations; learning to notice and respond to things in ways that others may not. Moreover, 'hang out' suggests that this is a place that affects participants in a unique way. In other words, it seems to *matter*, they want to *be(come)* there. Interestingly, this also speaks to Ingold's (2013) persepctives of knowing from the inside, as it appears that to the participant above, the wall has grown into them and they into it through their ongoing participation. While requiring further elaboration, this affectivity would likely extend beyond *just* the climbing affordances this arena solicits. Think, for example, of the chance encounters, conversations and social engagements that could unfold in the midst of this arena's goings on. Each of these things, in their entanglement, would help grow a place that solicits 'hanging out'. Perhaps, then, a key feature of loosened leftover spaces as arenas for ecological literacy is that they not only solicit activities that reside beyond the formally structured, but they concurrently promote attentive dwelling, encouraging the establishment of meaningful relationships? This would be a fascinating question to follow up with.

6. Concluding remarks

The aims of this paper extended across three main sections. In the first, we explored the approach to ecological literacy advocated for by philosopher-activist Heather Menzies. Blending her ideas with those of Ingold (2013), we sought to progress an approach grounded in more primary and participatory ways of knowing. Following on, we then set out to offer further theorectical insight by incorporating Menzies' views with Gibson's ecologcial approach to psychology. Doing so helped us foreground the concept of affordance with the practical challenge of fostering ecological literacy in landscapes dominated by a tightening onto-logic, over-constraining the ways in which people can become implicated in the goings on of a surround. In thinking with this challenge, we then considered how Franck and Stevens' concept of loose leftover space could be harnessed and re-conceptualised as an arena for ecological literacy, exploring two cases from the inner suburbs of Melbourne (Naarm).

While these cases helped us think *with* and learn *from* what they had to share, they are by no means intended to de-limit what an arena for ecological literacy 'could' be. Indeed, communal gardens and bouldering walls are unique places, and both appear to solicit diverse acts of engagement and implication that transcend the formally structured. To us, though, what binds these arena's is their collective sense of locality,

[11] To explore this arena for ecological literacy further, see https://www.maribyrnong.vic.gov.au/News/Climb-time-Hopkins-Street-Bridge-recreation-plaza-open.

looseness and community; things which encourage people to enter into a meaningful relationship with a place and its respective constituents. That is, they are places that solict opportunities to study *with*, learn *from*, and *care together*. It is this relationship, after all, that is integral to the growth of the ecological literacy advocated for here. So, in the spirit of this advocacy, we leave you, the reader, with the same words of activism that concluded our Proem: pay close attention to the places in which you live, not just to the formally structured features. Look with the nooks and crannies that solicit diverse acts of expression and engagement. These are the places that encourage you to join not as a passive bystander, but as an implicated participant attuned to the ongoing nuances of change.

CRediT authorship contribution statement

Carl T. Woods: Writing – review & editing, Writing – original draft, Conceptualization. **Keith Davids:** Writing – review & editing, Writing – original draft. **Duarte Araújo:** Writing – review & editing, Writing – original draft.

Data availability

No data was used for the research described in the article.

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