“You Look at an Ocean; I See the Rips, Hear the Waves, and Feel the Currents”: Dwelling and the Growth of Enskiled Inhabitant Knowledge

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"You look at an ocean; I see the rips, hear the waves, and feel the currents": Dwelling and the growth of enskiled inhabitant knowledge

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Abstract

This inquiry explores a theoretical question, of applied practical relevance in fields like sport science, relating to how people come to know the performance landscapes they inhabit, and the dynamic opportunities for action they present. *How does a child 'know' the best trees to climb in their garden? How does the local angler 'know' the best areas to catch fish? How does a surfer 'know' where the best swells are and when they might roll in?* Here, we propose that how people come to know their performance landscapes, and how they learn to interact with available affordances in them, is through dwelling. More specifically, through dwelling, people learn to resonate with the rhythms of information and affordances of a performance landscape, entangling with them to successfully find their way through the tasks, problems and challenges taken up with. To theoretically support our analysis, we draw on James Gibson's different conceptualisations of knowledge, and Tim Ingold's perspectives of enskilment – bringing practical applicability to our discussion by weaving in various ethnographic accounts of the growth of *enskiled inhabitant knowledge*. Through these transdisciplinary insights, we show that it is by asking questions, sharing stories, and following up lines of inquiry that people grow into their enskiled knowledge of places they inhabit.

Key words: Social anthropology; Learning to learn; Knowledge of/about; Enskilment; Wayfinding; Storytelling

Introduction

In chapter 26 of his book, *The Life of Lines*, Tim Ingold (2015) poses a series of rather profound questions:

> "Does knowledge actually lead to wisdom? Does it open our eyes and ears to the truth of what is there? Or does it rather hold us captive within a compendium of our own making, like a hall of mirrors that blinds us to its beyond? Might we see more, experience more, and understand more, by *knowing* less? […] Which of them is wiser, the ornithologist or the poet – the one who *knows* the name of every kind of bird but has them ready sorted in his head; the other who *knows* no names but looks with wonder, astonishment and perplexity on everything he sees?" (p. 134, our emphasis)

To us, the profundity of these questions sits within their evocation of different conceptualisations of knowledge, capturing what it actually means *to know* in a performance environment. For example, perhaps to an ornithologist, botanist or an academic, knowledge may be considered as procedural, abstract, symbolically coded and documentational; viewed as data and information which is important for cataloguing and recording, relative to other things so they can be *known about*. While perhaps to a poet, hiking guide or developing elite athlete, knowledge may not be something to be 'known about' but something to be primarily *experienced* (Reed, 1996b); something transformational that leads to further personal growth and self-guided discovery (Ingold, 2013).

Both types of knowledge are important in supporting humans doing the things they do (Gibson, 1979; Reed, 1996b; Araújo et al., 2009), and *knowledge experienced of* the environment captures how people come to intimately know the places (e.g. communities, organisations, surrounds, and performance contexts) they inhabit. Simply, there is a need to differentiate between knowing a landscape by reading information *about* it, presented in a guidebook or by following prescribed routes *across* it informed by the instructions of a companion, and knowing a landscape by directly and continuously experiencing its sights, sounds, tastes, smells and feelings – learning to attend to things as they are, where they emerge. The former points toward static non-changing surroundings – viewing the landscape in a more conventional connotation of 'scopic' – land-looked-at. The latter, by contrast, views the land*scape* through an etymology of *landshaft* (Olwig, 1996) – land-being-shaped – suggesting dynamic, ever-

changing surroundings with which one needs to engage through interactions. This distinction is crucial for our position in understanding how individuals become skilled in negotiating complex, dynamic environments, as the latter captures the temporality of the landscape (Ingold, 1993, 2000), implying its continued becoming with the activities of inhabitants. This differentiation implies that the process of 'knowing', for expert botanists, poets or athletes, requires ongoing, direct, and primarily active first-hand experiences rooted in deep engagement and involvement in practical, everyday tasks and activities.

To elaborate on these ideas, we explore the concept of inhabitant knowledge, which we discuss by aligning with James Gibson's (1966, 1979) conceptualisations of knowledge within his theory of direct perception. In considering these ecological insights on knowledge, we lean on the social anthropological work of Tim Ingold (e.g. 2000, 2013, 2015), threading through the notion of *enskilment* – a concept which proposes that learning is inseparable from doing in place. The novelty of this article is in binding a theme pertinent to skill acquisition through these discussions on the integration of various ethnographic accounts of human behaviour. Specifically, through these accounts, we consider how the growth of *enskiled inhabitant knowledge* emerges as people *dwell* in their environments, guided by experienced others (i.e., sports trainers, teachers and coaches) who shape how they learn to perceptually learn (Ingold, 2013; Reed 1996b). The conceptualisation of human behaviours explored here are, thus, transdisciplinary in nature, demonstrating the scope of the ecological approach in accounting for skilful coping, experiencing, and knowing of a 'rich landscape of affordances' (Rietveld & Kiverstein, 2014). Further, our position statement advocates the value of adopting an ecological perspective, seeking to encourage fellow behavioural sport scientists to venture beyond their disciplinary walls (such as exercise physiology, biomechanics, performance analytics), past the fringes, growing knowledge of the various landscapes they dwell in through this process of exploration.

You know about a game; I know *of* it

The epigraph with which we opened our paper presents a series of questions, rooted in historical discussions of what knowledge may be, and how different types may play a role at different times in supporting various human endeavours. Indeed, over 2000 years ago, Plato's dialogue, *The Meno*, sought

to explain 'knowledge acquisition' in human learning with reference to the internalization of universals and templates. In such traditional Western epistemology, many would argue in favour of the ornithologist, botanist and academic as being the knowledgeable ones. After all, they have a structured body of data and information enabling them to identify and label things as universals, and can tell people about them, categorise, and situate them, relative to other things they may know. This rhetoric, however, would be to conflate knowledge as a commodity to be symbolically coded, acquired and memorised, stored and catalogued, available to be bought and sold; ultimately being recited by an individual (or device) when the situation is 'right' (Reed, 1996b). From this viewpoint, knowledge would be instilled or transmitted into the minds of individuals who almost detach or remove themselves from what is being 'known' in order to 'know' it[1] (Ingold, 2018; Reed, 1996b). Comparatively, the poet, guide or elite athlete may simply see things directly as they are, not necessarily to know about them, but to know *of* them – learning to carefully attend to things in a performance context or an environment that they too inhabit. These distinctions were surmised by Ingold (2013) who viewed knowledge about the environment as documentary – manifest through the collection of information, curated and underwritten by an intent to learn *about* something – established by looking back. In performance contexts like sport science, for example, this type of inquiry is common (for a critique, see Vaughan et al., 2019), with typically quantitative disciplinary paradigms conflating the hypothetico-deductive theory of scientific method as 'the' way of gaining knowledge *about* a topic (Woods et al., 2020a). This approach sees the sport science researcher often try to remove themselves from what they are studying (in the quest to maintain objectivity), to retrospectively fit and explain observations (which typically manifest through abstracted data) relative to a disciplinary framework.

Knowledge *of* the environment, by contrast, is understood as transformational – growing into what one knows, and letting it grow into them, through continued exposure and reflection in practice – established by moving forward along a path of self-discovery (Ingold, 2010, 2013). This ecological perspective would see the sport performance researcher situated deep in the inquiry, studying *with* and learning

[1] As an aside, we nudge interested readers toward the comics of Nick Sousanis (2015) in his book, *Unflattening*, which offer wonderful insight to this sentiment – particularly the comics in chapter one, *Flatness*.

115 *from* coaches, athletes and other stakeholders. The differences between these knowledge types are
116 exemplified in sport practice by performance analysts collecting and coding data about the number of
117 hours a golfer spends practicing, related to the speed and distance a ball is struck with a club, to be
118 retrospectively correlated with the level of mastery attained (perhaps to establish criteria that others
119 should follow to purportedly reach 'this' level of mastery). Performance failures and development can
120 then be explained with reference to 'evidence' gained from observing, analysing and studying the
121 experts themselves. This approach is contrasted to the process of actively feeling one's way forward
122 while performing, developing and learning from, and with, other inhabitants – listening to, carefully
123 observing, moving with, and co-adapting to the various experiences that golfers have on their
124 developmental trajectory. To support this differentiation, we now explore ecological conceptualisations
125 of knowledge by Gibson (1966, 1979) in his theory of direct perception[2]. Through these
126 conceptualisations, we progress toward understanding the distinction between knowing *in* practice, as
127 opposed to *knowing out of* it.

128 *Ecological conceptualisations of knowledge (about / of)*

129 A key idea of ecological psychology for behavioural scientists interested in performance, learning and
130 development is that, through movement, individuals become more acutely aware of their surrounding
131 environment, continually adjusting their perceptual systems to detect information in the structure of
132 ambient energy arrays (Gibson, 1979). It is well known that surrounding information specifies
133 *affordances* (Gibson, 1979), a theory which couples things of the world (e.g. surfaces, objects, other
134 organisms, events) to an animal's behaviour (Turvey, 1992). For Gibson (1979), affordances are neither
135 objective or subjective, but both – being a property of the animal-environment system that do not cause
136 behaviour, but constrain it. Affordances can be understood, then, as animal-relative properties of the

[2] As stated by Heft (2013), it is important to acknowledge the roots of an ecological approach to psychology from William James (1890). Indeed, E.B. Holt, James Gibson's mentor, was a student of William James (Heft, 2001). As with many other advances in philosophy and science, innovators need to 'stand on the shoulders of giants'.

environment (Chemero, 2003; Gibson, 1979), with their perception being implicated by an animal's action capabilities[3] (e.g. Warren, 1984, 2006).

Clarifying the nature of cognition and perception, Gibson (1966) distinguished between perception (of affordances) specified by informational structure in ambient energy arrays, and perception based on words, language, pictures and symbols – abstract information experienced at second-hand:

> "[…] a distinction will be made between perceptual cognition, or knowledge of the environment, and symbolic cognition, or knowledge *about* the environment. The former is a direct response to things based on stimulus information; the latter is an indirect response to things based on stimulus sources produced by another human individual. The information in the latter is *coded*; in the former case it cannot properly be called that." (p. 91, emphasis in original)

This distinction is of note, because Gibson (Gibson, J.J. & Gibson, E.J., 1955, p. 32) posed an important question for behavioural scientists interested in learning from an ecological perspective: "Does all knowledge (information is the contemporary term) come through the sense organs or is some knowledge 'contributed' by the mind itself?". Gibson (1966) used the term 'associative learning' to refer to people learning symbols for interpreting the meaning of things. He argued, well before us, that this type of referential meaning is not the only kind available for learners and associative learning is not the only kind available for skill performance, development and learning. Yet despite Gibson's (1966) insight, associative learning remains the dominant approach in most formalized education and training programmes in contemporary Western organizations and societies – manifest through the commodification of second-hand, documented information (Reed, 1996).

Gibson's conceptualisation emphasises that it is learning to perceive affordances, and acting upon them, that captures the relevance of knowledge *of* the environment (Gibson, 1966). It is a type of knowledge that is not abstracted and accumulated, but attuned, meaning that animals come to perceive an

[3] While beyond the scope of this position statement, it is important to acknowledge the debate in the literature regarding the selectionist (e.g. Reed, 1996a) or dispositional (e.g. Turvey, 1992) account of affordances. Further, there is disagreement on their animal-relevant properties – viewed as effectivities (an animal's ability to actualise an affordance – e.g. Shaw, Turvey, & Mace, 1982) or body-scale (e.g. Heft, 1989; Warren, 1984). For further critique and a unique perspective, see Chemero (2003).

environment's affordances – its opportunities for action – by directly experiencing them (Reed, 1996b); progressively establishing a fit between their action capabilities and the places they inhabit (Heft, 2013). Thus, it is through continuous, (inter)active exchanges with a performance environment that an individual's knowledge grows:

> "Knowledge *of* the environment, surely, develops as perception develops, extends as the observers travel, gets finer as they learn to scrutinize, gets longer as they apprehend more events, gets fuller as they see more objects, and gets richer as they notice more affordances. Knowledge of this sort does not "come from" anywhere; it is got by looking, along with listening, feeling, smelling, and tasting." (Gibson, 1979, p. 242, our emphasis)

To support the emergence of this type of knowledge growth, scientists and practitioners in service industries including education, healthcare, industry, management and administration, architecture, and sport can design tasks to develop and enskil the next generation. Such tasks should be replete with contextual information specifying affordances, closely matched to the action capabilities of inhabitants to solicit relevant, functional, intentional behaviours (e.g. Araújo & Davids, 2011; Rietveld & Kiverstein, 2014; Withagen et al., 2012). In sport, for example, this could manifest in a coach scaling properties of a developing performer's environment relative to their action capabilities to preserve key information-movement couplings (e.g., (i) modifying the practice space or lowering the net height for a tennis player in childhood, altering the compression or size of a tennis ball to facilitate stroke play; (ii) changing properties of a golf ball, club head, putting hole for a developing golfer, (iii) decreasing the run-up distance of a long jumper's approach to the take off board; and (iv), using balls that have surface properties to support an accentuated grip with the hands in junior rugby league – for other empirical support here, see Buszard et al. (2016) and Button et al. (2020)).

On the growth of inhabitant knowledge

The last sentence in his quote above emphasises that knowledge, to Gibson (1979), is not necessarily something to be acquired and stored as a universal or template, but is to be experienced through direct, unmediated engagement with an environment replete with affordances available for animals to use. It is exemplified by a hunter *knowing* that the branches of 'this' tree *afford* favourable pliability when

187 making a spear; a hiker knowing that 'this' region does not afford hike-ability during heavy snowfall;
188 a footballer knowing that 'this' gap between defenders affords pass-ability during a game; a farmer
189 knowing that 'this' fruit affords pick-ability when it omits 'this' smell; a yachtsman knowing that 'this'
190 wind does not afford tacking in 'that' direction. These examples reflect a particular type of implicit,
191 deep and embedded local understanding that facilitates direct interactions with events, objects, surfaces
192 and others. It is based on an inhabitant knowledge that grows with individuals as they *dwell* within their
193 landscape; undertaking practical, everyday tasks that shape both them and their surrounds (Ingold, 2000,
194 2013, 2017). This is knowledge that, according to Reed (1996b), Western philosophers and scientists
195 rarely consider, but without which, people would be unable to function.

196 Comparatively, knowledge *about* the environment is what Gibson (1979, p. 42) refers to as a "special
197 kind of knowledge", one which is *abstract, mediated* and *indirect*, manifest in "images, pictures, and
198 written-on surfaces". This type of knowledge about one's environment provides information at second-
199 hand, which allows it to be shared between people to help them know about certain states of affair
200 (Gibson, 1966, 1979; Reed, 1996b). The value of this type of mediated information resides within what
201 it *represents* – its 'referential meaning' (Reed, 1991) – as it is not the 'thing' itself (Araújo et al., 2009).
202 The symbolic meaning of such mediated information, then, depends on the cultural, traditional and
203 conventional aspects of the community in which it is located, experienced, and perceived during
204 learning and development (Gibson, 1966). The fundamental issue faced in the challenge of training the
205 next generation of service industry professionals was captured by the Gibson's (Gibson, J.J. & Gibson,
206 E.J., 1955, p. 32) in noting that: "the role of learning in perception has to do with perception and the
207 effect of past experience or practice on it." In contrast, "[t]he problem of the role of perception in
208 learning has to do with behavior and the question of whether we can learn to do something by
209 perceiving, or whether we can only learn by doing it".

210 Exemplified in sport science support for athlete performance, instructions provided by a basketball
211 coach – manifest via a game model or playbook – can provide insight to a player about an opponent's
212 common offensive ball movement strategy. Indeed, this second-hand information documented by the
213 coach – typically gained by analysing performance data about an opponent's offensive strategies and

tactical variations – is important for the athlete. Its is particularly relevant for those unfamiliar with the opposition, as it can narrow the field of performance during practice preparation, limiting the scope of behavioural possibilities while defending. These instructions, though, are still only representations of what *could* happen, second-hand information produced by another individual, a sport science practitioner for example. Its limitation, then, is that it selects information *for* the performer, risking an externally-imposed limit to what a player can detect for themselves during their interactions in practice and performance. Captured eloquently by Reed (199b, p. 94):

> "When one is examining the world for oneself there is no limit to the scrutiny – one can look as carefully as one wishes, and one can always discover new information. But this is emphatically not the case with second hand information."

Moreover, the player can only make use of this second-hand information through their perceptual skills, orienting themselves to both immediate and distant features of the game by using the optic flow such that the patterns of progressive (diss)occlusion specify the game in its unfolding. In other words, documented instructions given by a coach housed in a game model or playbook, cannot tell of the *haptic information* a player may detect while defending an opponent in close proximity, the sights a player may *see* while dribbling in open court, or the sounds a player may *hear* or the vibrations they may *feel* from an approaching opponent on a congested court. Such knowledge grows in and with players through direct exposure and continued experience to the rhythms of the game, supported by others (i.e., coaches, applied sport scientists and other teammates) who guide them toward the perception and actualisation of shared affordances (Silva et al., 2016). Our main point here is not to query the relevance of knowledge about the environment when occasion demands, like for a sports coach or game analyst, but to highlight that knowing *of* is a fundamentally relevant and different source of information – the former is limited and documentary; the latter, unlimited and transformational (Ingold, 2013; Reed, 1996b).

So, in returning to questions posed by Ingold at the start of this paper, it is clear that the ornithologist (botanist or academic) seems to know *about* the environment – documenting and recording the presence of birds to label and catalogue the species observed. The poet (musician or athlete), by contrast, seems

to know *of* the environment – engaging deeply with it – seeing, hearing and feeling the many things within the performance environment, growing their knowledge in a transformational way by learning from and with primary experiences as they move forward. These propositions, however, raise an interesting inquiry that we now follow up – how does knowledge *of* one's environment grow? More directly, how is it that when an experienced ice climber looks upon an icefall, they *see* a way to climb up it (that is, they perceive its affordances for climbing relative to their action capabilities); whereas when I, an inexperienced ice climber, look upon it, I merely see a beautiful icefall (its color, shades, glacial structure)? To seek a better understanding of this issue, we thread Ingold's (2000) perspectives of enskilment; showing the inseparability of knowing *in* doing through the integration of various ethnographies that seek to understand how people come to know of the tasks they take up in the places they inhabit. Doing so should concurrently emphasise the value of first-hand experience for Westernised educational systems.

Enskilment into the environment

Gaining one's sea legs

In his wonderful ethnography of Icelandic fisherman, Gisli Pálsson (1994) highlights that learning to fish is akin to recovering from seasickness – it is to 'get one's sea legs' (p. 905). For Icelanders, seasickness – that is nausea caused by the unexpected rocking of a boat – can be associated with a lack of inhabitant knowledge (Pálsson, 1994), emphasising an individual's *in*exposure to the constraints of working on a vessel at sea. Simply, seasick individuals may not yet have learned to resonate with the dynamic oceanic rhythms as they interact with the surfaces of the boat. To learn to fish then (i.e., to get one's sea legs), is a deeply embedded process that can only occur *at* sea by doing and through prolonged exposure (Pálsson, 1994), coupled with support and guidance from an experienced crew and skipper:

> "For skippers, however, enskilment in fishing is not a matter of formal schooling and the internalization of a stock of knowledge; rather, it is achieved through active engagement *with* the environment, in the broadest sense of the term […] 'Real' schooling is supposed to take place in *actual* fishing." (p. 916, our emphasis)

This description of what it means to become a skilful Icelandic fisherman is very much captured within Ingold's (2000) conceptualisations of enskilment – a notion framed through Lave's (1990) referral of understanding in practice. Enskilment reflects a type of local and implicit 'know how' or 'knack' (Ingold, 2000; Lave, 1990; Myers & Davids, 1993), grown through prolonged exposure and practical engagement with one's environment, inclusive of its other inhabitants (e.g. Harris, 2005; Hsu & Han Lim, 2016; Lave, 1990; Tyrrell, 2006). The 'know how' that is grown as one enskils into their environment, though, should not be viewed procedurally through the symbolic storage of universal knowledge that attempts to automate an individual's movements. Rather, an enskilment approach views knowledge:

> "not in the propositions *about* the world but in the skills of perception and capacities of judgement that develop in the course of direct, practical and sensuous engagements with the beings and things who, and with which, we share our lives." (Ingold, 2015, p. 157, our emphasis)

In other words, enskiled knowledge is understood as a progressive attunement of one's entire perceptual system – what they see, hear, touch, feel, taste and smell – to the affordances of an environment that they dwell in with others (Davids & Myers, 1990). To enskil into one's environment, then, is to learn to carefully attend to things as they are, where they exist – a progressive *education of attention* (Gibson, 1979) toward the most relevant sources of regulatory information. These ideas clearly align to Gibson's conceptualisations of knowledge *of* one's environment, along with those of the behavioural framework of ecological dynamics (e.g. Button et al., 2021); a framework common to sport science which views movement as functionally-adaptable body-environment interactions through which individuals learn to self-regulate by perceiving opportunities for action toward the achievement of intended task goals.

A key contention of enskilment is that knowing cannot occur separate to context or experience, as it emerges in the dynamic messiness of the landscape – to re-iterate, "[r]eal schooling is supposed to take place in actual fishing" (Pálsson, 1994, p. 916). This dynamicity and messiness, however, makes it difficult for individuals to plan out in advance specific routes to intended destinations or to prescribe movement solutions to yet-to-be-encountered problems. This is the very reason why in many sports, game models documented prior to game-play, can be overly constraining on player behaviours, seeking

to organise team components from a 'global-to-local' direction (see Ribeiro et al., 2019). Enskiled individuals, then, must be perceptually attuned, and adaptively responsive to the emergent rhythms of their open world; submitting to its unpredictability and uncertainty to progressively know as they go (Ingold, 2010, 2013, 2015; Woods et al., 2020a).

What people perceive is the utility of the "furniture of the world" (Reed, 1993, p. 48): events, surfaces, places, objects, features, and other inhabitants. This utility is perceived as primary objects of perception as affordances. Indeed, perceiving and actualising some affordances then opens up opportunities to use other affordances because of their nested relations. It is of note, though, that an open, inhabited world is not ready-furnished, littered with affordances simply waiting to be picked up by a perceiver who may seek to actualise them (Ingold, 2010, 2013). It is, rather, an emerging world stretched somewhere between 'the happened' and 'the not yet'; a world continually in-becoming around the perceiver, just as the perceiver continually comes into being in the world (Ingold, 2010, 2015). Stated differently, the world not only waits for the perceiver, but the perceiver waits upon the world:

> "Thus the walker, a *master* of the terrain, must *wait* for signs that reveal the path ahead, with no surety of where it will lead; the hunter, a *master* of the chase, must *wait* for the animal to appear, only to put himself at risk in its pursuit; the mariner, a *master* of his ship, must *wait* for a fair wind, only to submit to the elements." (Ingold, 2015, p. 138, our emphasis)

These Ingoldian perspectives of an open, risky and inhabited world are at slight odds to those of Gibson (1979). To exemplify, Gibson (1979) argued that the ground offers the *basis* of the environment; "the reference for all other surfaces" (p. 33) that is seemingly intrinsic to its constituents. In contrast, Ingold (2010) argues that the ground, along with its inhabitants, continually *becomes*; that is, it is "*infinitely variegated*", "*composite*" and undergoing "*continuous generation*" (p. S125, emphasis in original). This differentiation is important, as it implicates how we may understand enskiled inhabitant knowledge. For example, an enskiled inhabitant would indeed know *of* a place's most subtle rhythms, manifest in their perceptual mastery or acuity grown through primary experience and exposure. However, given that to Ingold the world is continually becoming with an infinitely variegated and re-generating ground surface, inhabitants (who are also in-becoming) are compelled to *wait on* the world for emergent

opportunities to progress forward (Masschelein, 2010). This is why to Ingold (e.g. 2000, 2010, 2015), and to behavioural sport scientists (e.g. Woods et al., 2020a), enskiled inhabitants grow their knowledge of the landscape *as they go*. In sport, this idea exemplifies a tennis player attuning to an opponent's stance, ball toss, and racquet head position before and during the serving action, waiting on information about the type of serve to *know* what shot may be needed to play in its return, or a cyclist in a peloton acutely attuned to the positioning and movements of other cyclists, waiting on information about a gap to *know* when to exploit it and challenge for the lead. This continually developing relationship between certainty and uncertainty during learning is akin to the dynamic stability that emerges in *metastable regions* of a landscape of dynamical patterns of behaviour (attractors) (e.g. Kelso, 1995; Pinder et al., 2012).

Practically, this is manifest in the differences between a surfer who looks at the waves but is unable to (en)skilfully read the swell, and a surfer who masterfully attunes to the rips, sets, winds and lulls, waiting on them to catch the right wave relative to their action capabilities and the specific design features of their surfboard. Enskilment, then, would not be gained by looking upon or commentating about the swell from afar, but would be grown by spending time with the swell – dwelling with and learning from it, along with other, more experienced inhabitants (other local surfers) in "an ongoing process of coordination with the world" (van Dijk, 2021, p. 4). There is an important point to briefly raise here, which relates to the entanglement of mastery (certainty) and submission (uncertainty). To Ingold (2018), as indeed to us (Woods et al., 2020a), in a world becoming, an enskiled inhabitant does not necessarily exert mastery onto its surface, but rather adaptively moves *with* its opportunities to carry on, regulated by a masterful perceptual attunement. Mastery, in this sense, *follows on* from submission (Ingold, 2015). This conceptualisation of enskiled knowledge leads us to understand how one could support a less experienced companion in growing such inhabitant knowledge – a path that requires us to re-conceptualise what it means to 'educate'.

Guidance without specification

Leading out

346 To this point in our position statement, readers could be excused in thinking that the growth of enskiled
347 inhabitant knowledge comes about from situating people in place to let them simply 'find their own
348 way' through a task they take up with. This, however, would be a misinterpretation that disregards the
349 important role that experienced inhabitants have in helping their less experienced companions
350 progressively come to know of a landscape. Indeed, part of coming to know of a landscape is to dwell
351 in it. The other part is to be supported in one's active perceptual attunement to an unfamiliar
352 environment by an experienced companion who guides on where to look, but does not instruct on what
353 to see, feel and hear (Woods et al., 2020b). This distinction is important, as it emphasises that part of
354 coming to know one's landscape is in guided self-discovery of its affordances for action – to learn of
355 and to resonate with its rhythms – *knowing for oneself* (Ingold, 2000, 2013). This extensive process of
356 enrichment results in perceptual differentiation and guided refinement of skills to progressively know
357 the taste of 'this' fruit; to know the feeling of 'this' water current or wind draft; to know the sound of
358 'this' animal; to see the potential climbing route up 'this' icefall. The role of the experienced other,
359 then, requires patience, inspiration, support, and guidance, coupled with a deep appreciation of their
360 inexperienced companion's action capabilities to keep them placed in safe, but still uncertain
361 environments. It is through this zone of safe uncertainty where individuals can be encouraged to learn
362 to attend to things as they directly are, but in a way that does not negatively implicate their wellbeing
363 (Renshaw et al., 2019).

364 Espoused through the framework of ecological dynamics, we have argued that these ideas require a
365 reconceptualization of the process of 'education' (e.g. Rudd et al., 2021; Woods et al., 2021).
366 Specifically, helping one enskil into their environment requires the word education to be understood
367 through an etymology of *e-ducere,* which roughly means 'to lead out' or 'to reach out' (Ingold, 2015,
368 2018; Masschelein, 2010). It is through *leading* inexperienced individuals *out* into their landscapes that
369 experienced others can progressively guide their companion's attention toward the perception of its
370 affordances for action – attending[4] to rhythms which may have otherwise remained hidden to them

[4] In an open, inhabited and risky world, 'attend' can be understood through an etymology of *ad-tendere*; roughly meaning 'to stretch toward', and a French interpretation of *attendre*; roughly meaning 'to wait' (see Ingold, 2018; Masscehelein, 2010).

(Ingold, 2000, 2018). This guidance can help individuals to actively self-regulate, discover and explore things, which progressively become meaningful to them (Reed, 1996b). The sound of a ball hitting an opponent's racquet or bat, for example, may not mean anything to me, an inexperienced observer, but to a progressively enskiled player being supported by an experienced other (i.e., a coach or teammate), it is a sound to *wait on* and *stretch toward*, as it could inform them about the type of spin or slice an opponent has created on the ball, inviting an opportunity for exploitation in its return. To support an individual in perceiving this sound, an experienced other (i.e., coach) must then expose them to it, an approach which demands a softer[5] (i.e., less prescriptive and instruction-based) pedagogy that encourages individuals to discover and attune to information about events, objects or surfaces. In contrast to the dominant forms of associative learning that exist, from an ecological dynamics perspective, performance preparation and development could be advanced through the design of practice environments that accentuate or amplify key affordances – aligning deeply to the Brunswikian notion of *representative design* (Brunswik, 1956). The emphasis in an ecological perspective on practice task design is to guide an individual's attention toward the perception and actualisation of key affordances, used to support them in wayfinding through dynamic sporting environments (e.g. Woods et al., 2020b).

In sum, 'educating', from an enskilment perspective, is not concerned with instilling declarative and explicit instructions that specify *for* an inexperienced companion *about* how something should be done. Rather, it is more concerned with nudging or guiding inexperienced individuals toward the self-discovery of key affordances within their performance environment. It is through a progressive education of attention (Gibson, 1979) where previously looked upon landscapes can become replete with opportunities for interaction, as individuals progress from being un-inhabitants to inhabitants[6]. As

[5] For a deeper insight into what a softer pedagogy may be, interested readers could consult the work of Rudd et al. (2021) and Woods et al. (2021).

[6] In her book, *Wayfinding: The science and mystery of how humans navigate the world*, M.R. O'Connor offers a brilliant account of this. While with Indigenous people of Northern Australia, she recalls looking upon a landscape, and seeing "trees, grass, and dirt bleached by heat and sun". Conversely, the indigenous elder she was with at the time saw the same landscape "teeming with history, food, medicine, shelter, tools, and stories." (p. 192). Note the concurrent subtle interpretation of 'landscape' – the former, land-looked-at; the latter, land-being-shaped.

discussed next, the growth of enskilment can be supported by the sharing of stories, asking of questions and following up of inquiries.

Inhabitant storytelling

Before elaborating on the important role storytelling plays in the growth of enskiled inhabitant knowledge, we wish to briefly anchor our perspectives of it from our ecological worldview. In an ecological approach, storytelling is not a means of instilling representations into the minds of inexperienced individuals but is a way of drawing or leading them out into a world; that is, to help guide their attention toward its important features to support exploration. In this vein, we follow Ingold's (2000, p. 56) perspectives of storytelling and the role it plays in the growth of enskiled inhabitant knowledge:

> "Telling a story is not like weaving a tapestry to *cover up* the world or, as in an over worn anthropological metaphor, to 'clothe it with meaning'. […] Far from dressing up a plain reality with layers of metaphor, or representing it, map like, in the imagination, songs, stories and designs serve to conduct the attention of performers *into* the world, deeper and deeper, as one proceeds from outward appearances to an ever more intense poetic involvement." (emphasis in original)

What this means is that stories can invite others into a landscape that they may be unfamiliar with (Raffan, 1992), educating their attention toward information about its critical features to support and regulate behaviour. From this perspective, stories act as a way of deepening one's knowledge *of* their landscape and its many emergent and decaying opportunities for action. For example:

- While walking *with* an inexperienced companion, an experienced hiker of 'this' region may elaborate on the time they slipped down 'this' hillside, as they did not notice the moss growing on the rock at 'this' time of the year – using subtle gestures to nudge or guide their companion's attention toward the perception of such affordances during the story; or
- While heading out to bat *with* an inexperienced teammate, an experienced international cricketer may elaborate on the time they were 'run out' at 'this' ground, since its surrounds amplified the background crowd noise, making it difficult for them to verbally communicate

with their non-striker at the time – encouraging their inexperienced teammate to attend to bodily gestures when seeking to run between wickets.

These performance examples highlight an important part of storytelling when used to grow one's enskiled inhabitant knowledge, which is that they are deeply embedded. For the indigenous Pintupi people of Western Australia, for example, stories and songs are meaningless unless people have directly experienced the landscape (Ingold, 2000; Myers, 1986) – so much so, that they lead people unfamiliar with the landscape out into it *before* sharing stories with them (note the deep alignment with earlier descriptions of education). Further, in her ethnography of how Inuit people come to intimately know the sea, Tyrrell (2006) emphasised the importance of a story's embeddedness in supporting the guidance of one's attention, stating that the "stories children hear about the marine environment as they grow up only become truly meaningful when they venture to sea for themselves" (p. 234). Stories, then, function as a kind of guidance – not in an explicating sense about, but in a supported sense *of* – bringing features of the world out for others to then follow up with in a process of self-discovery.

To us, these embedded sentiments highlight that people grow into the stories they hear, progressively threading through their own narratives as they grow into their knowledge *of* the landscapes they come to inhabit. They also highlight the important role the recipient has in listening to the stories being shared. For example, Prins and Wattchow (2020) note that listening to stories of place with the intent of interrogating or seeking to extract meaningful facts about the landscape is to miss the point of storytelling all together. Rather, listeners need to be empathetic toward what is being said (Wattchow, 2008), appreciating that a story's usefulness in educating their attention toward key features of the landscape may continue to evolve as their knowledge *of* a landscape continues to change. Exemplified in a physical education setting, Woods and colleagues (2020b) discussed how stories could be used as a way to support a child's exploration while learning to move through various landscapes. Specifically, they proposed that stories could act as a way of nudging or guiding a child's attention toward key sources of regulatory information that could support ongoing movement (ibid.). In this sense, stories are never complete, but continually in-becoming given that perceivers and landscapes are also in-becoming – to re-iterate, stories Inuit children hear about the seascape change as they, and the sea,

continue to become (Tyrell, 2006). Stories, then, forever draw people further into an entanglement with their landscape as they come to progressively resonate with its rhythms (Ingold, 2000; Iseke, 2013).

The questioning wayfinder

Given that storytelling is a critical feature of enskiling people into the environment, it has an essential role in supporting individuals learning to wayfind (Ingold, 2000; Iseke, 2013; Prins & Wattchow, 2020). A brief distinction should be made here, however; in that wayfinding through one's landscape is not the same as navigating across a landscape. Navigating across a landscape is akin to transport, where passengers are merely concerned with an intended outcome, such as reaching terminus destinations (Ingold, 2000, 2010). During this type of mediated transport, little attention is directed toward a landscape's features – instead, passengers attend to the graphic presentation of coordinates provided by a global positioning satellite (GPS), or the routes imprinted onto a map (for a detailed description of this detached transport, see Leshed et al., (2008)). Comparatively, wayfinders have little interest in attending to a GPS or a map, as it is the journey which is of interest to them. From this perspective, wayfinding is far more than just navigation, extending to how people come to know of the things they do within the places they inhabit[7] (Aporta & Higgs, 2005).

How wayfinders learn to orient themselves within their landscapes is through a progressively deepened embodied attentiveness, captured in our earlier Gibsonian descriptions of knowledge *of* the environment (see Woods et al., 2020b). It is the sounds of other inhabitants going about events; the smells of various flora and fauna; the feelings of seasonal wind changes; the tastes of (un)ripe fruit; the sights of celestial bodies and of previously submerged objects at low tide, for example, that support a wayfinder in their journey – things incredibly difficult to directly experience while attending to knowledge *about* the locale represented in the coordinates of a GPS device[8], a route inscribed on a map, or the instructions of a game model. This deep attunement to such an environment's rhythms to support wayfinding is

[7] For a detailed conceptualisation of wayfinding beyond navigational connotations, we nudge readers toward the work of Woods et al. (2020b).

[8] This sentiment was echoed by Aporta and Higgs (2005) in their exceptional ethnography of Inuit wayfinding: "This was evident in our observations of GPS use in the Igloolik region. Some inexperienced hunters and travellers who depended heavily on the technology suffered from the fallibility of all sophisticated technology in unforgiving environments […] Knowledge *of* the land- and seascape remained a crucial survival skill." (p. 745, our emphasis)

highlighted by Tyrrell (2006), who observed that Inuit "knowledge *of* the physical features of the seascape and of weather and sea or ice conditions" was critical to support "safe and successful way-finding" (p. 223, our emphasis). Thus, varied and dynamic environmental conditions are important in supporting wayfinding, as they offer inhabitants diverse opportunities to learn to carefully attend to key environmental features – wayfinding aids – to regulate their adaptive behaviours as they learn to move through their landscape.

While stories play a critical role in the growth of enskiled inhabitant knowledge, questions asked by experienced others also contribute in guiding the attention of inexperienced companions toward the perception of affordances that support wayfinding (Ingold, 2000; Woods et al., 2020b). For example, in their ethnography of Inuit wayfinding, Aporta and Higgs (2005) highlighted that a key component in helping inexperienced hunters learn to detect important features of their landscape, such as the tracks of prey or the location of certain hunting regions, was for experienced hunters to regularly ask questions of them *while* hunting:

> "Hunters learn from their *own experience* while travelling *with* knowledgeable elders and through conversations with experienced relatives and friends […] A common training method consists of asking younger boys where such-and-such a place is located. These questions are asked during tea breaks while travelling with snowmobiles, in a pause after a hunt, during conversations at camping spots, or after pursuing a caribou or a walrus." (p. 731-2, our emphasis)

Tyrrell (2006) experienced something similar in her ethnography, noting that experienced Inuit hunters would regularly ask her questions *while* at sea in an attempt to help orient herself by detecting wind directions, oceanic currents or distant landmasses. The point of such questions is not to explicitly tell less experienced companions what to see, but to act as a conduit that guides their attention toward the surrounding information sources of relevance. Stated differently, such questions are intended to support inexperienced individuals in self-discovering key affordances of their environment while under the careful guidance and support of an experienced other (Woods et al., 2020b). In sport, a coach may use questioning as a form of guidance for the performers' exploratory activities *without direct specification* to support an individual in wayfinding through various problems and challenges encountered during

performance. For example, a cricket coach could ask a developing young batter questions during a practice task, such as: *"Where are the fielders located? What shot(s) could you play to avoid them? Where might the ball be bowled based on the fielders current position?"*. Or, an athletics coach may create various performance scenarios in a race or a jumping competition to simulate the uncertainty that may be faced in competitive events, to guide learners to resolve tactical performance challenges and problems through wayfinding. As demonstrated in these questions, their purpose is not so much to specify *for* the developing athlete (i.e., telling them what to see, to feel, to hear – what shot to play or move to make in an event), but to act as a way of supporting them in where they may wish to search in order to run and jump successfully and score runs and avoid being caught or run out. Such situated questioning need not necessarily be answered through verbalised responses (prioritising documented knowledge *about* (Gibson, 1966, 1979)). Rather, they are intended to actively support the self-guided search for key affordances to support wayfinding – meaning, responses may be mediated through movements, gestures and active exploration, as opposed to verbalised descriptions. It is through this supported self-discovery – learning to perceptually learn – where people grow into their knowledge, while letting it grow into them (Ingold, 2013).

Concluding remarks

Guided by ecological conceptualisations of knowledge (Gibson, 1966, 1979) and social anthropological descriptions of enskilment (Ingold, 2000, 2013, 2015), this paper sought to discuss the concept of enskiled inhabitant knowledge. Its novelty sat within the weaving together of the main propositions of Gibson and Ingold to explore the practical utility of their intuitions, bringing them to life through various ethnographic accounts of human behaviour. These accounts demonstrated that the growth of enskiled inhabitant knowledge emerges from people dwelling in an environment, guided by others that shape how they learn to learn (Ingold, 2013). As such, this work demonstrates the scope of an ecological approach in explaining perception, learning, development, and performance to applied scientists and professionals working in performance contexts. Moreover, it should be seen to encourage fellow behavioural scientists working in various performance contexts, like sport, to continue to explore

beyond disciplinary boundaries to draw links between seemingly disparate areas to gain a richer appreciation of human behaviours.

Prologue – *You look at a landscape; I see home*

In the spirit of this paper, we conclude by sharing a brief story that captures the essence of its messages. While the sharing of this story is intended to elaborate on a personal account of enskiled inhabitant knowledge growth, we do encourage readers to reflect on their own, perhaps similar youthful experiences while reading, demonstrating its entanglement in shaping who we are.

I (the first author) spent the first 20 years of my life living with my parents in their property in regional South Australia. Theirs was a variegated property, surrounded by diverse and seasonally changing flora and fauna, of which my sibling and I spent many years exploring and progressively coming to know. Among the diverse trees, plants, grasses, and shrubs that grew on the property were several blackberry bushes, which on the surface, appeared the same; growing in similar areas and to similar seasonal variations. They were, however, not the same – certain bushes produced richer fruit than others, some grew larger thorns than others, and some offered better shelter from the weather than others – rhythms that my sibling and I learned to resonate with and entangle to through prolonged exposure and a continually deepening attunement and attentiveness. Our attentiveness, however, was not instilled into us from our parents telling us *about* which bushes would produce the best fruit or which were to be avoided, nor was it *documented* by us by studying about the bushes from afar. Rather, we grew into our knowledge along paths of self-discovery – that is, our engagements with the bushes transformed as we came to *know* them as things of food when hungry (season permitting), things of shelter when escaping inclement weather, and at times, things of discomfort when getting too close to the thorns! That is, their affordances were furnished for "good or ill" (Gibson, 1979, p. 127), which were forever in-becoming with us through our active and continued engagement with them.

Now, some 12 years later as an inquisitive behavioural sport scientist, I have come to reflect and appreciate that it was by dwelling in this place that my sibling and I came to know of its many affordances for action, guided by each other's practical engagements. That is, we learned from and with

the landscape, of which we, and the bushes, were apart. Indeed, to an outsider – an *un-inhabitant* – while perhaps serene, my parent's property presented a contemplative, yet meaningless landscape to be looked at. But to us – *inhabitants* – it was a place continuously shaped by opportunity, meaning, history, story and emotion – it was more than a landscape; it was home.

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