

Chapter 3: Embodied Cognition Literature Review

Probably 95 percent of embodied thought is non-cognitive, yet probably 95 percent of academic thought has concentrated on the cognitive dimensions of the conscious 'I'.
(Thrift, 2000: 36).

Although western culture privileges rational self-conscious thought, we intuitively know that our understanding is shaped by feelings that lie beyond the realm of 'objective knowledge' and conscious cognition. Extensive research concludes that these processes are in some sense embodied. Although as yet there is no fully articulated epistemology of embodied cognition, a consistent interdisciplinary model is emerging, as researchers are apparently discussing the same phenomena from disparate but consistent perspectives.

This chapter reviews the literature on embodied situated cognition in order to contextualise my work and establish the grounds for synthesising a coherent theory I can apply to my ethnography of Eco-Paganism. Considering the perspectives of phenomenology, anthropology, sociology, religious studies, cognitive science and ecopsychology reveals an interdisciplinary consensus about embodied situated cognition. Different disciplines repeat key themes: embodied situated cognition is practical, pre-reflective, and blurs conventional understandings of 'self' and 'world'.

Embodiment and The Body

References to 'the body' are common, but the term 'embodied' is generally to be preferred whenever we consider the phenomenological condition of our being:

When we examine the body in everyday life, we might therefore more accurately speak of a sociology of embodiment rather than a sociology of the body (Nettleton and Watson, 1998: 4).

Csordas emphasises the fundamental point that:

If embodiment is an existential condition in which the body is the subjective source or intersubjective ground of experience, then studies under the rubric of embodiment are not 'about' the body *per se*. Instead they are about culture and experience insofar as these can be understood from the standpoint of bodily being-in-the-world (Csordas, 1999: 143).

Although the term is complex, Thrift suggests that embodiment has four fundamental characteristics, all of which are pertinent to this review:

First, it has to be seen through Merleau-Ponty's notion of 'the flesh', as a reversible and reflexive fold between subject and object ... Second, embodiment is *practical* ... it is *involved* in a relation with the world ... Third, embodiment always involves other objects ... fourth, embodiment is *expressive*. That is, the body is not just a passive surface on which society is inscribed (Thrift, 1997: 139-140).

Embodied cognition is an expanding interdisciplinary topic, so the boundaries set on this review must make it both cogent and comprehensive. The pace of research makes any work before Polanyi (1958) redundant, while to stay as current as practically possible I reference *The Cambridge Handbook of Situated Cognition* (Aydede and Robbins, 2009).

Exclusions

Discussions related to embodied cognition or knowing are found across a very wide range of disciplines, several of which I have intentionality excluded from this review because they cannot serve its primary purpose; to provide methodological foundations which can be applied to fieldwork.

Processes of cognition or knowing can be understood at several different levels: At the most fundamental level, quantum mechanics has stimulated several theories of mind, notably Penrose's notion of quantum consciousness (Penrose, 1989) and Zohar's discussion of *The Quantum Self* (1991). However, despite its emergence early in the last century the debate about of how to interpret quantum mechanics "continues to rage" (Clifton, R., 1995: 738), and "no single interpretation has commanded anything like universal agreement" (Stairs, 2000, 732). Notwithstanding questions of interpretation, quantum mechanics may turn out to underpin consciousness but currently provides no phenomenological grounding for ethnographic understanding of embodiment. I have excluded physiology and mind/brain/body biochemistry for similar reasons; they lie beyond the notion of embodiment set out above. Similarly, my focus on embodied cognition in everyday life excludes research into its role in teaching and learning. Finally, I excluded work about non-Western cultures because my thesis concerns Western Eco-Pagans.

PHENOMENOLOGY

While Erricker claims that it is "pointless to search for a strict definition of phenomenology" (Erricker, 1999: 83), and cautions against treating it as a distinct discipline (Erricker, 1999: 75), we can identify certain fundamentals. Phenomenology is essentially the study of *phenomena*, that is things as they appear in our lived experience (Allen, 2005: 188) and Allen lists five characteristics; descriptive nature, antireductionism, intentionality, bracketing and eidetic vision (Allen, 2005: 188). Although phenomenology is not "merely descriptive", and provides an important tool for understanding (Bowman, 1992: 14), Erricker suggests its descriptive emphasis opens phenomenology to accusations of "hermeneutical naivety" that are only deflected by applying a theory of interpretation (Erricker, 1999: 82). Antireductionism emerges from phenomenology's concern with the richness of phenomena as experienced, while intentionality refers to the way that all consciousness is "consciousness of something" (Allen, 2005: 189). If we are to attend to the phenomena itself, we must recognise our assumptions and the "natural attitude" of everyday life (Moran, 2002: 15), so that we can bracket them out of our understanding. Such bracketing enables us to clarify our immediate intuition of a phenomena - our eidetic vision (Moran, 2002: 11-17).

Phenomenologically "[t]he body is primarily a way of being in the world. It is a form of lived experience which is fluid and ever-shifting. And it is also a way of interacting with one's environment, of shaping it and being shaped by it" (Cavallaro, 1998: 88). Cognitive neuroscientists like Varela take the phenomenologists as their philosophical precursors because they demonstrated how "knowledge depends on being in a world that is inseparable from our bodies, our language, and our social history - in short, from our *embodiment*" (Varela et al., 1991: 149; authors emphasis). There is, therefore, a common consensus that to understand embodiment we require "a cultural phenomenology" (Csordas, 1999: 143).

Merleau-Ponty

Merleau-Ponty was fascinated by our '*being-in-the-world*' - the way our consciousness is incarnate *in the world*. Our awareness does not emerge from a disembodied mind located somewhere outside the physical, but is part of an *active relationship* between embodied humans and the world:

The properties of the object and the intentions of the subject ... are not only intermingled; they also constitute a new whole (Merleau-Ponty, 1963: 13).

Merleau-Ponty concluded that the process by which we come to understand the world emerges from a unity between subjects and objects that is the direct result of our embodiment. As he puts it, "[m]y body is the fabric into which all objects are woven" (Merleau-Ponty, 1962: 273). Though his primary concern was with perception as an embodied process, he understood our entire being-in-the-world in the same way:

As I contemplate the blue of the sky ... I abandon myself to it and plunge into this mystery, it 'thinks itself within me,' I am the sky itself as it is drawn together and unified, and as it begins to exist for itself; my consciousness is saturated with this limitless blue ... (Merleau-Ponty, 1962: 249).

This practical, embodied *knowing* is quite different from the more *discursive* knowledge we can talk about. Crucially, it is also an interested knowing that is bound up with practical life. As Merleau-Ponty puts it, this is a "knowledge in the hands, which is forthcoming only when bodily effort is made, and cannot be formulated in detachment from that effort" (Merleau-Ponty, 1962: 144). This upsets the Cartesian world-view, because it is a form of knowing that transcends subject/object dualism: The 'I' that knows is tangled with what is known.

Abram

Abram applies Merleau-Ponty's work to develop an embodied environmental philosophy which understands the body as "a sort of open circuit that completes itself only in things, in others, in the encompassing earth" (Abram, 1996: 62). Abram claims that

[e]ach place has its own mind, its own psyche. Oak, madrone, Douglas fir, red-tailed hawk, serpentine in the sandstone, a certain scale to the topography, drenching rains in the winter, fog off-shore in the winter, salmon surging in the streams - all these together make up a particular state of mind, a place-specific intelligence shared by all the humans that dwell therein ... (Abram, 1996: 262).

Thus our immediate environment influences our thinking:

A large boulder, its surface spreading with crinkly red and grey lichens, is able to influence the events around it, and even to influence the thinking of those folks who lean against it - lending their thoughts a certain gravity, and a kind of stony wisdom (Abram, 2004).

Abram asserts that oral cultures are fully aware that we are "corporeally embedded" in a "living landscape" (Abram, 1996: 65), but anyone can experience this reality under certain circumstances. He explains how his fieldwork experiences shifted his senses so that he began to perceive the world in a new way:

When a magician spoke of a power or "presence" lingering in the corner of his house, I learned to notice the ray of sunlight that was then pouring through a chink in the roof, illuminating a column of drifting dust, and to realize that that column of light was indeed a power ... influencing the whole mood of the room; although I had not consciously seen it before, it had already been structuring my experience (Abram, 1996: 20).

This experience revealed to him that perception is participatory in that it always involves "the experience of an active interplay, or coupling, between the perceiving body and that which it perceives" (Abram, 1996: 57).

Gendlin

Gendlin often expresses the idea that many things are, in a special sense, 'implied' in a situation with five dots, ".....". To make this specific use clear, I shall write this as "." to distinguish it from the more conventional "..." which designates the removal of a section of text.

Gendlin develops Merleau-Ponty's ideas to show how *interaction* is more fundamental than perception: Our perceptions function as part of our interaction with the world and so become part of how we behave in any given situation. The "body senses the whole situation, and it urges, it implicitly shapes our next action. It senses itself living-in its whole context - the situation" (Gendlin, 1992: 345). This bodily interaction opens us to a sense of the world beyond what we conventionally call perception. Gendlin explains this by inviting us to consider an imaginary scenario. Imagine you're alone walking along an unknown street late one night and you become aware of a group following you. Your "body-sense" of the situation is much more than your perceiving them behind you; it includes "your hope that perhaps they aren't following you, also your alarm, and many past experiences - too many to separate out, and surely also the need to do something - walk faster, change your course, escape into a house, get ready to fight, run, shout" (Gendlin, 1992: 346). The "." can encompass "more than we can list" including perceptions and emotions, but also memories of past situations and options of what to do next. There is nothing mysterious about this intricate "body-sense", and in fact it grounds our conscious awareness.

In everyday language we lack a language to name it, but in the therapeutic practice of Focusing it is called the 'felt sense'¹ where it describes an embodied tacit knowing that Gendlin describes as "a special kind of internal bodily awareness ... a body-sense of meaning" (Gendlin, 1981: 10).

The 'knowing' of the felt sense may not be immediately apparent, and may in some way contradict our more 'rational' understanding of a situation. Continuing to explore the scenario outlined above, Gendlin invites us to imagine we are with a friend who has a lot of experience of the district, and who thinks you should turn the next corner and enter the nearest house, but at the same time confides that "the idea makes her body feel intensely uneasy" though she can't think why (Gendlin, 1992: 348). Gendlin suggest that you would be unlikely to ignore your friend's feeling, which is a felt-sense. It is immediately clear from such experiences that "body and cognition are not just split apart" (Gendlin, 1997: 181), and Gendlin echoes Polanyi's famous comment when he writes that "your body knows much that you don't know" (Gendlin, 1981: 39). The conscious mind doesn't usually articulate a felt sense immediately, and indeed, may never do so. How easily people access the felt sense varies considerably, as shown by the Experiencing Scale (Gendlin, 1961: 243) developed by Gendlin and colleagues, but anyone can learn to access and verbalise the embodied knowing of the felt sense using the Focusing technique (Gendlin, 1981).

Although Gendlin describes the felt sense as a "bodily sensed knowledge" (Gendlin, 1981: 25), we need to be clear that his approach requires "a new conception of the living body" as a *process* by which "the body means or implies" (Gendlin 1997: 19) and - in common with other thinkers discussed here - the Gendlian 'body' extends beyond the skin. For Gendlin 'the body' "is a vastly larger system" (Gendlin, 1997: 26) such that the felt sense *is* the entire situation (Gendlin, 1992). Yet the felt sense is "a physical sense of meaning" (Gendlin, 1981: 69) with "a BODILY quality, like heavy, sticky, jumpy, fluttery, tight" (Gendlin, 1986: 53; author's emphasis). Obviously there are bodily sensations that are *not* meaningful (Gendlin, 1981: 69), but in practice it becomes quite clear what Gendlin is referring to.

Although Gendlin doesn't discuss how Focusing might relate to spirituality, Fisher touches on the connection (2002: 101), while Campbell and McMahon established the Institute for Bio-Spiritual Research to explore the relationship (Campbell and McMahon, 1985).

¹ Gendlin usually uses the term 'body-sense' in his philosophy and 'felt-sense' in his psychotherapeutic work. Although these contexts mean they can sometimes be read as subtly different, I treat them as equivalent.

ANTHROPOLOGY

Bateson

Bateson's notion that "the mental world - the mind - the world of information processing - is not limited by the skin" (Bateson, 2000 [1972]: 460), has been highly influential on discussions of embodied cognition, notably in Burkitt, Greenwood and Ingold. Bateson's key insight here was that

[t]he individual mind is immanent but not only in the body. It is also immanent in pathways and messages outside the body; and there is a larger Mind of which the individual mind is only a subsystem (Bateson, 2000 [1972]: 467).

If "Mind" refers to a cybernetic system of patterned information, then it becomes difficult - or even nonsensical - to try to specify where an individual mind begins. Bateson imagines he is a "blind man" using a stick as a guide, and asks:

where do I start? Is my mental system bounded at the handle of the stick? ... Does it start at the tip of the stick? (Bateson, 2000 [1972]: 465).

Bateson concludes that these are "nonsense questions" (Bateson, 2000 [1972]: 465), a prescient understanding confirmed by cognitive science.

Ingold

Ingold perceives a dualism in Bateson (Ingold, 2000: 16) and applies Hallowell's study of the Ojibwa to move beyond dichotomy:

For the Ojibwa, knowledge is grounded in experience, understood as a coupling of the movement of one's awareness to the movement of aspects of the world. Experience, in this sense, does not mediate between mind and nature, since these are not separated in the first place (Ingold, 2000: 11).

This "poetics of dwelling" is grounded in a relational notion of personhood where the self inheres "in the unfolding of the relations set up by virtue of its positioning in an environment" (Ingold, 2000: 11). In this fully embodied ecology the organism integrates with its environment: "'organism plus environment' should denote not a compound of two things, but one indivisible totality" (Ingold, 2000: 9). Body and mind are thus simply different ways of describing the same process, "namely the environmentally situated activity of the human organism-person" (Ingold, 2000: 171). This mode of being-in-

the-world engenders a knowledge Ingold calls 'sentient ecology' (Ingold, 2000: 116-17) that is grounded in "practical application" and "based in feeling, consisting in the skills, sensitivities and orientations that have developed through long experience of conducting one's life in a particular environment". Ingold suggests that this is simply another word for "intuition" (Ingold, 2000: 25), but he clearly refers to the situated, practical and tacit embodied knowing consistently discussed in this review.

Csordas

Csordas defines "somatic modes of attention" as "culturally elaborated ways of attending to and with one's body in surroundings that include the embodied presence of others" (Csordas, 1993: 138). Because we are "always already in the world", we cannot attend to a bodily sensation without simultaneously attending "to the intersubjective milieu that gives rise to that sensation", and thus the sensation "can tell us something about the world and others who surround us" (Csordas, 1993: 138-39). There is a clear parallel with Gendlin's description of how the "body senses the whole situation" (Gendlin, 1992: 345), and Csordas's 'somatic modes of attention' and Gendlin's 'felt sense' describe overlapping phenomena. Gendlin's felt sense is "a special kind of internal bodily awareness ... a body-sense of meaning" (Gendlin, 1981: 10), or what Csordas calls "bodily sensation". Furthermore, because we *learn* to understand its meaning when using Gendlin's Focusing approach, the felt sense is also "culturally elaborated".

The key difference between 'somatic modes of attention' and the 'felt sense' lies in the theoretical development of each term. Csordas is primarily descriptive: He describes the situations where somatic modes of attention occur, but fails to offer the kind of sophisticated theoretical underpinning provided by Gendlin (inter alia, Gendlin 1996). Furthermore, because Csordas is not concerned with the therapeutic potential of bodily ways of knowing, he has no equivalent to Gendlin's Focusing procedure.

Syme

Syme explains that deep cultural "knowings" in Scottish/Irish Gaelic speaking cultures are grounded in "bodily" knowledges, which are:

what one feels in one's body, the psychic mediumship of particular individuals within the community and the oral tradition (Syme, 1997: 206).

There are correlations with theoretical approaches already reviewed, most notably her description of how the body learns. Syme poetically recalls how as a child she came to learn her mother's knowing:

"I know" my heart said. She's speaking to me ... voice of baking bread, voice of heartbeat, voice of early morning gardener, voice of rocking arms, tapping feet, voice of stirring pots of food to the left, to the right, turn the teapot three times, once for your self, once for the culture, once for the world. My body finally knows my mother's voice. No words. Not one word between us (Syme, 1997: 212).

It was her mother's physical activity that taught her a situated, embodied knowing. She compares this experiential mode of knowing with learning Balinese dance:

if you want to learn the dance I, the teacher must physically move your body. I turn your hand up, your foot out, your head to the left until you know. In the Gaelic, tap, tap, tap; stir, stir, stir; beat, beat beat; cake, babies, fishing nets, pounding cloth, think rhythm; think, feel, touch rhythm; repeat ... (Syme, 1997: 214).

As a result of honouring this "alternative epistemic ... we ourselves become more ... We come to know that we are part of, that we belong" (Syme, 1997: 216). This sense of an embodied deep connection to a specific place is particularity relevant to the emerging field of ecopsychology, discussed below.

Tacit and Explicit Knowing

Polanyi

Like Gendlin, Polanyi concluded that "we know more than we can tell" (Polanyi, 1966: 4), referring to a tacit knowledge which is experiential and cannot be made explicit (Polanyi, 1958). This distinction between explicit and tacit knowledge is fundamental to the work of several key researchers (inter alia, Polanyi; Nonaka & Takeuchi). Explicit knowledge is variously called 'propositional knowledge', "embrained knowledge" (Quintas & Ray et al., 2001: 27), "knowledge that" (Ryle, 1949) and "knowledge about" (James, 1950). It is usually abstract and can be expressed formally in "words and numbers, scientific formulae, codified procedures or universal principles" (Quintas & Jones, 2002: 47). Nonaka & Takeuchi describe tacit knowledge as:

not easily visible and expressible. Tacit knowledge is personal, context-specific and hard to formalize and

communicate ... Subjective insights, intuitions and hunches fall into this category (Nonaka & Takeuchi, 1995: 56 and 75).

Tacit knowledge is fundamentally practical, situated and emotionally charged, and skills held as tacit knowledge are taught through observation, imitation, and practice (Nonaka, 1994: 19). Quintas & Ray et al. note that “[t]he mere transfer of information will often make little sense, if it is abstracted from associated emotions and specific contexts in which shared experiences are embedded” (Quintas & Ray et al., 2001: 47 – 48). I therefore conclude that tacit knowledge is embodied and situated.

Several researchers suggest that metaphor and analogy can be used to work with tacit knowledge, which is significant in the light of the work of Lakoff and Johnson (1999), considered below. Nonaka & Takeuchi (1995) propose that metaphor and analogy “might enable colleagues to share, amplify and reinforce explicit representations of what had previously been tacit” (Quintas & Ray et al. 2001:47 after Nonaka & Takeuchi, 1995).

SOCIOLOGICAL PERSPECTIVES

Several sociologists opine that a form of embodied tacit knowledge underpins social interactions. Games are a good example of how this might work. The rules of the game, strategies and complex physical movements combine in ways that mean a footballer often has no time to think thorough how to play: They must feel the game 'in their bones'. The principles of the game are embodied, and the full meaning can only be expressed in actions. Bourdieu, Foucault and Mauss all discuss these ‘techniques of the body’. Although Foucault doesn't explicitly explore notions of embodied knowledge in depth, the concept runs through his work. Given Foucault's belief that power and knowledge “[d]irectly imply one another” (Foucault, 1977: 27), the process by which power inscribes itself onto the body can be described as a form of embodied knowledge (Foucault, 1980).

Bourdieu

Bourdieu describes a form of embodied knowledge called *habitus* (after Mauss, 1979). Habitus is a set of dispositions that the body learns and can use given the right social context. Because our social relationships *create* habitus, it is bound up with relations of power: How a class or group stand and move provides a social understanding of who they are. Bourdieu calls these characteristic ways of holding the body and gesturing the *hexis*, “[a] way of walking, a tilt of the head, facial expressions, ways of sitting and of using implements” (Bourdieu, 1977:

87). The hexis is expressed in activity as habitus. The result is a powerful technique of the body:

Bodily hexis is political mythology realised, *em-bodied*, turned into a permanent disposition, a durable manner of standing, speaking and thereby of *feeling* and *thinking* (Bourdieu, 1977: 93).

Our behaviour is not determined by this system, but rather it provides a practical sense that inclines us towards one behaviour rather than another. It is a way of being-in-the-world rather than a considered reflection, and so it operates at a level that is at least partly unconscious. The beliefs that order our behaviour are not states of mind but rather "states of body", "instilled by the childhood learning that treats the body as a living memory pad". These states, Bourdieu claims, operate through generating "countless practical metaphors" (Bourdieu, 1990: 68-69). The embodied cultural knowledge of habitus only exists in practical activity, so the concept entirely concurs with the consensus understanding emerging from this review of embodied cognition as tacit, practical and rooted in the body.

Bourdieu tends to emphasise the controlling aspect of habitus, but it can be understood as enabling. Jackson claims that changes in "the unitary field of body-mind-habitus" can free "energies bound up in habitual deformations of posture or movement" and thus "produce an altered sense of self" (Jackson, 2006: 328). For Syme the "internal knowledge" of belonging, which is the practical sense of the habitus by another name, is founded in a connection to both human physicality and to the earth - more specifically "to the particular history of the land" (Syme, 1997: 208). Trusting such inner knowledge "provides a platform for staying "connected" or in touch with one's Self" which "contributes to a sense of psychological integrity and wholeness ..." (Syme, 1997: 207).

Burkitt

Burkitt claims that "[a]ll knowledge is embodied and situated, created within that fundamental unity between subjects and objects which is the product of having an active body" (Burkitt, 1999: 74). As we have seen, many others come to similar conclusions, but his key insight is that the development of cultural artifacts enabled new ways of thinking through the emergence of extended thinking bodies (Burkitt, 1999: 26).

Extended thinking is not confined to the body within the skin, but is inseparable from the social and material contexts in which it takes place (Burkitt, 1999: 3). Burkitt references Mauss (Mauss, 1979), and there are clear resonances with the work of Foucault and Bourdieu, all of whom agree that techniques of the body can shift subjectivity. As Burkitt says:

[o]ur way of 'being-in-the-world', of acting, knowing and thinking, is largely dependent on artifacts and how they re-form embodiment (Burkitt, 1999: 36).

Burkitt agrees with Bateson's central insight – echoed by many other thinkers in this review - that we are always and already engaged in the world. Like Bateson, he concludes that “mind is itself immanent in the ecosystem, as a sensitivity to everything with which it is related, and as an ability to orient itself within those relations” (Burkitt, 1999: 69). Although Burkitt notes “the meaningful relationship of humans to the nonhuman world”, (Burkitt 1999: 72), his work remains focused on “artifacts, quasi-objects and mediating tools” (Burkitt, 1999: 73), so fails to consider the potential of intimate engagement with that nonhuman world.

THEOLOGY AND RELIGIOUS STUDIES

Feminist The(a/o)logy

Both feminist theology and the more explicitly Goddess orientated theology stress an " 'embodied thinking' that is rooted in concrete circumstances and orientated towards practical results" (Russell & Clarkson, (eds.) 1997: 32). As Harrison emphasises, "feminists must, [begin] with 'our bodies, ourselves' ", recognizing that "all our knowledge, including our moral knowledge, is body-mediated knowledge". The affective dimensions of knowing is essential if we are to be aware of "our connectedness to the world. When we cannot feel, we basically lose our connectedness to the world" (Harrison, 1981: 48).

The theologian Christ's applies process philosophy to her discussion of "embodied, embedded knowing" (Christ, 2003: 164). Process philosophy recognises that we "think through the body" (Christ, 2003: 158) and we "know by listening to our bodies" that are in turn "embedded in the world" (Christ, 2003: 159). The *embedded* quality of embodied knowing is fundamental and Christ reiterates several times that it emerges from relationship with the community of other beings. Although she acknowledges that other perspectives are useful, Christ can only begin to articulate the divine from an embodied, embedded knowing (Christ, 2003: 164) which reveals how the "deep self" can be a source of spiritual authority (Christ, 2003: 162).

Process philosophy has been influential on feminist the(a/o)logy and Isherwood and McEwan find much to recommend in Whitehead (Isherwood and McEwan, 1993: 67). Frankenberry notes that Whitehead (1979) anticipated the theme of interrelatedness that

feminist philosophy has developed and notes that the "underlying values of the process worldview are organic, relational, dynamic and embodied" (Frankenberry, 2004; 12). We have already heard Christ apply process philosophy, and Frankenberry identifies its influence in the thought of feminist theologians Elizabeth Johnson, Keller and Suchocki (Frankenberry, 2004; 11 and 13).

Ruether notes similarities between the ideas of Christ, Starhawk (see Chapter 2) and Catholic ecofeminist theologian Gebara (Ruether, 2008): "All three share a critique of western epistemology based on the isolated knower outside of and unrelated to the reality that is known" (Ruether, 51: 2008). Gebara, in common with Christ and Starhawk, is concerned with experiential knowing within the context of "the whole body of the cosmos in which we are embedded in our particular location" (Ruether, 2008: 48). Ecofeminist theologian McFague expresses similar themes, emphasising how our embodiment gives us common ground with "everything else on the planet" (McFague, 1993: 48). In common with other thinkers in this review, ecofeminist theologians shift the epistemological ground from a disembodied Platonic focus to embodied relational knowing.

Feminist th(a)eologians concur with the general conclusions of this review that all knowing is embodied, and is therefore shaped by our biology, sensual, situated, relational and emotional (Reid-Bowen, 2007: 30). Many have also recognised how useful process philosophy can be, although it is to be expected that theologians would turn to Whitehead, who explores the nature of God, rather than Gendlin, who does not.

Greenwood

Greenwood's "magical consciousness", which she describes as an "informal way of knowing" (Greenwood, 2005: 15), is reminiscent of the participatory perception which Abram describes (Abram, 1996: 20) in that it is a "participatory and expanded aspect of consciousness" (Greenwood, 2005: viii). Greenwood gives various descriptions of magical consciousness as "a heightened awareness of an expanded connected wholeness" (Greenwood, 2005: 47), an altered or "shamanic" state of consciousness, or a perception of "non-ordinary reality". Magical consciousness is usually induced through a technique like dancing or drumming (Greenwood, 2005: 89), but simple "participation with nature may bring an expanded awareness of the deep connections between elements of nature" (Greenwood, 2005: 46). Greenwood draws mainly on Bateson's notion of an ecology of mind to theorise how magical consciousness operates, and her work remains essentially an anthropology of "magic and consciousness" (Greenwood, 2005: vii) that ignores wider dimensions.

Ritual Studies

Bell claims that ritual is a “bodily strategy that produces an incarnate means of knowing” (Bell, 1992: 163), while Grimes (Grimes, 1995) makes the provocative suggestion that ritual is a bodily way of knowing designed to move consciousness from the head to the body. Though Grimes doesn’t elucidate, Asad applies Mauss’s notion of the habitus to problematize the distinction between religious ritual and more general bodily practices. Asad concludes that the role of ritual is not to express a symbolic meaning but to influence habitus, thereby helping to create distinct subjectivities (Asad, 1993: 131). Crossley makes a similar argument that rituals “are a form of embodied practical reason” (Crossley, 2004: 31). Drawing primarily on the work Mauss, Merleau-Ponty and Bourdieu, he concludes that rituals are “body techniques”, that is to say “forms of practical and pre-reflective knowledge and understanding” (Crossley, 2004: 37). As such they can “effect social transformations” through transforming our “subjective and intersubjective states” (Crossley, 2004: 40).

COGNITIVE SCIENCE²

Peterson provides a valuable study of the significance of cognitive science for theology and concludes that:

Our 'spirit,' however we may define that, emerges out of the activities of the mind/brain, which in turn are intimately connected to the body. A spiritual transformation, therefore, is in some sense also a biological one (Peterson, 2003: 94).

Until recently the dominant scientific model for human cognition was the symbol-processing, cognitivist model of the mind/brain as like a computer processing data (Bredo, 1994: 86 -87). Although in dominance for a quarter of a century, this approach failed to make progress, mainly because it "had moved too far from biological inspirations" (Varela et al., 1991: 86 -87).

Two philosophical assumptions underpin the cognitivist approach: First, it is profoundly dualistic, assuming a split between language and reality, mind and body (Bredo, 1994). Second, it relies on a belief in “representationalism”, a philosophical stance notably critiqued by Rorty (Rorty, 1979). As a result, much of the older material in cognitive science retains a dualistic taint and there is often an assumption that the

² I include two philosophers (Clark and Preston) in this section of my review who, though not cognitive scientists, base their theories largely on work within the field.

mind/brain/body remains somehow separate from the wider environment.

However, 'second-generation' cognitive science "begins with the realization that the body ... grounds and shapes human cognition" (Rohrer, 2006: 21 – 22), and provides "a wealth of converging evidence from various empirical disciplines that shows how our conceptual systems ... are grounded in patterns of bodily activity" (Johnson, 1999: 85). This approach, emboldened by the success of an embodied strategy to artificial intelligence research³, can be usefully described as an "embodied cognitive science". Although I discuss key aspects of the theory in detail below, one conclusion is consistent: "human cognition is fundamentally shaped by embodied experience" (Gibbs, 2006: 3). In their extensive discussion of the evidence for "embodied theories of knowledge", Barsalou et al. draw on evidence from cognitive science, social psychology and cognitive psychology to conclude that if the argument between embodied and symbol-processing (representationalist) theories of cognition "were to be decided on purely empirical grounds at this point in time ... there would be no contest" and the embodied approach would triumph (Barsalou et al., 2005: 25). Niedenthal and colleagues likewise conclude that "[i]n sum, accumulating evidence from cognitive psychology and cognitive science supports embodiment theories of knowledge" (Niedenthal, et al., 2005: 188).

Enactivism

Varela and colleagues build on Merleau-Ponty's work to develop a model of cognition as "embodied action", a process they call "enactive" (Varela et al., 1991: xx). They concur with the principle above that cognition is embodied and factor in the wider "biological, psychological, and cultural context" (Varela et al., 1991: 173). By emphasizing action they highlight that cognition is an aspect of the sensory body (Varela et al., 1991: xx) and that "knower and known, mind and world, stand in relation to each other through mutual specification or dependent coorigination" (Varela et al., 1991: 150). The enactive approach to cognition "is based on situated, embodied agents" (Varela, 2001: 215) and explicitly rejects representationalism, bypassing the "logical geography of inner versus outer" by understanding cognition as embedded in a total "biological/psychological, and cultural context" (Varela et al., 1991: 172-173). They conclude that "organism and environment enfold into each other and unfold from one another in the fundamental circularity that is life itself" (Varela et al., 1991: 217).

³ See, for example the work of Brooks, 1999

Varela presents four "fundamental insights" of enactivism which he claims to be "established results" (Varela, 1999: 71). The first fundamental is that the mind is embodied and therefore "[t]he mind is not in the head" (Varela, 1999: 72; authors emphasis) and what we conventionally think of a 'subject' and 'object' are co-arising. Because the mind is embodied and arises out of "an active handling and coping with the world", then "whatever you call an object ... is entirely dependent on this constant sensory motor handling". As a result an object is not independently 'out there', but "arises because of your activity, so, in fact, you and the object are co-emerging, co-arising" (Varela, 1999: 71-72). The mind "cannot be separated from the *entire* organism" (Varela, 1999: 73; authors emphasis) or the "outside environment" (Varela, 1999: 74). Varela's second point focuses on the emergence of complex cognitive processes from much simpler sub-systems. The global process of cognition emerges from a huge number of simple interactions between "neural components and circuits" (Varela, 1999: 76). The relationship between local and global processes creates a "two-way street"; just as simple systems give rise to the complexity of consciousness, so what we consciously think impacts those local components (Varela, 1999: 76). From this stance it is no surprise that Varela introduces intersubjectivity, though he notes that this area is "not well charted yet". Our everyday assumption - reinforced by older "cognitive and brain science" - is that "a mind belongs inside a brain, and hence that the other's mind is impenetrable and opaque". However, he claims that recent research shows "that individuality and intersubjectivity are not in opposition, but necessarily *complementary*" (Varela, 1999: 79). Varela points to consistent evidence that "all cognitive phenomena are also emotional-affective" and that affect is a "pre-verbal" and "pre-reflective dynamic in self-constitution of the self". Thus our pre-reflective sense of self is "inseparable from the presence of others" (Varela, 1999: 80-81). Varela's final point is "far less consensual than the preceding ones" and concerns issues of the philosophy of a "*neurophenomenology*" that lie beyond the scope of this review (Varela, 1999: 82; authors emphasis).

Johnson's pursuit of the enactivist approach leads him to conclude that the way we conceptualize and reason depends on "the kinds of bodies we have, the kinds of environments we inhabit, and the symbolic systems we inherit, which are themselves grounded in our embodiment" (Johnson, 1987: 99) In short, reason is embodied (Johnson, 1987:100) and grounded in an environment that includes "our history, culture, language, institutions, theories, and so forth" (Johnson, 1987: 207).

Both Csordas and Gendlin suggest that Johnson's cognitive approach fails to engage with our existential being-in-the-world. Csordas claims that Johnson misses the phenomenological dimensions of embodiment,

and comments in a footnote that he is concerned with "the body as existential ground of culture" whereas Johnson (1987) "analyses the body as cognitive ground of culture" (Csordas, 2002: 289, fn#2). Gendlin writes that he and Johnson are engaged in a "friendly discussion" but criticizes Johnson's emphasis on "spatial movements" rather than considering the priority of the body "living-in its *environmental situation*" (Gendlin, 1997c: 169; authors emphasis). Csordas and Gendlin's criticisms are not directed at enactivism per se, but at Johnson's particular approach. In fact the core conclusions of enactivism - that key aspects of cognition are embodied, situated and grounded in practical activity - are widely accepted within cognitive science, and we see correlations with the work of Clark, Damasio, Merleau-Ponty and many others in this review.

Johnson joined cognitive linguistics researcher Lakoff to develop a theory of language and reasoning based on embodied metaphors. They claim that we reason using metaphorical concepts that are based on our embodied experiences. The way we use the metaphor 'more is up' provides a simple example: Because in health we stand up and sickness brings us down, we tend to think metaphorically of 'more' as being 'up' ('price rises') and less as down ('stocks plummeting'). These conceptual metaphors are learnt, and can be expressed in grammar, gesture, art or ritual. Lakoff and Johnson conclude that "[b]ecause our ideas are framed in terms of our unconscious embodied conceptual systems, truth and knowledge depend on embodied understanding" (Lakoff & Johnson, 1999: 555). Their conclusions lead them to propose an ecological, embodied spirituality that recognises that the "[e]nvironment is not an 'other' to us ... it is part of our being" (Lakoff & Johnson, 1999: 566).

Steen (Steen, 2000) is critical of Lakoff and Johnson's approach because they rely so much on linguistic evidence and so, he claims, fail to account for the deeper complexity of thinking. I conclude that Gendlin's work, which correlates with that of Csordas in many ways, currently goes deeper into pre-conceptual and extra-verbal experience, and provides a fuller account of the relationship between language and thought than either Johnson or his joint project with Lakoff. However, embodied metaphor theory is not incompatible with Gendlin's approach, and Gendlin values Johnson's "beautiful work" on metaphor (Gendlin, 1997c: 174), suggesting they could "cooperate in a 'third generation' cognitive science" (Gendlin, 1997c: 169).

Despite these criticisms, Lakoff and Johnson's work has potential and others have already developed it. According to their original model we primarily use embodied metaphors as the source to makes sense of a target domain beyond the body. The process is one-way – the embodied

source to the conceptual target. Other theorists, notably Fauconnier and Turner (1995: 2002), argue for greater feedback between target and source and propose a more sophisticated theory, "conceptual blending". This recognizes the frequent situations where we blend an embodied cognitive metaphor with cultural, emotional and conceptual elements. Imagine, for example, that "you are watching the rain fall, responding emotionally and intellectually to what you see". We cognitively blend different ways of relating to such an experience, "a film version, a sketch of the rain, a verbal description", and these are "all connected by vital relations" (Turner, M, 2006: 17).

Emotion

According to Depraz and Gallagher, the "leading hypothesis" is that emotions are "inextricable from every mental act" (Depraz & Gallagher, 2003: 8), and Damasio presents the most developed theory of the role of emotion in cognition. Damasio claims that most of our decision making needs to be made quickly, so is accomplished by "body-related ... somatic-marker[s]" (Damasio, 2003: 148) which make emotion and feeling "indispensable" to the process of reasoning (Damasio, 2003: 145). Because we retain the knowledge of how previous responses impacted on our lives, we revive the "emotional signals" associated with those circumstances when a new situation arises (Damasio, 2003: 147). We are sometimes aware of this process, as for example when we get a "gut feeling" about something (Damasio, 2003: 147), but somatic markers also operate outside awareness producing "alterations in working memory, attention, and reasoning" (Damasio, 2003: 148). Damasio's theory is supported by "substantial evidence" (Damasio, 2003: 149) and correlates with Gendlin's notion of the felt sense.

Embodied Situated Cognition

Philosopher Clark draws on the insights of cognitive science to answer a question that is central to this review: "Where Does the Mind Stop and the Rest of the World Begin?" (Clark, 1977: 213). He concludes that "extra-bodily resources constitute important parts of extended computational and cognitive processes", and in some cases this "seepage of the mind into the world" challenges western notions of self. Clark follows Bateson in concluding that what we normally accept as "mental processes" extend beyond the "skin bag" into the local environment (Clark, 1977: 214). Clark avoids claims about the self/other boundary and does not suggest that "individual consciousness extends outside the head", but concludes that what we refer to as mind is much more widely extended than the brain, and can "encompass a variety of external props and aids" (Clark, 1977: 215). This process, which Clark calls "robust cognitive extension" only occurs in special cases where "the relationship

between user and artifact is about as close and intimate as that between the spider and the web” (Clark, 1977: 218). However, “beliefs, knowledge, and perhaps other mental states” sometimes depend on “aspects of the local environment” creating “hybrid entities” made up of “brains, bodies, and a wide variety of external structures and processes” (Clark, 1977: 218).

Such conclusions are widespread⁴: In his survey of the field Peterson notes that for a “significant number of researchers ... to understand the mind/brain in isolation from biological and environmental contexts is to understand nothing” (Peterson, 2003: 43). Theories of cognition beyond the ‘skin bag’ have spawned a new approach in cognitive science called “Embodied Situated Cognition” (ESC). Although ESC emerged from artificial intelligence research, it has become an interdisciplinary field enabling advances in psychology, philosophy of mind and social interaction theory (Almeida e Costa and Rocha, 2005). Evidence from neuroethology⁵ supports the ESC approach: MacIver rejects what he calls ‘craniocentrism’ - the idea that what is really important is what goes on inside the skull - and concludes that the complex behaviour of organisms arises out of “a tight interplay of body, brain, and environment” (MacIver, forthcoming, 2008: 25). For these researchers embodiment means “the body-in-space, the body as it interacts with the physical and social environment” and they conclude that it “is not just that the body shapes the embodied mind, but that the experiences of the body-in-the-world also shape the embodied mind” (Rohrer, 2006: 5).

Embodiment and Space

Preston applies ESC to environmental philosophy by claiming that “part of the feeling of attachment to place is quite literally an attachment of a portion of our cognitive architecture to the lands we inhabit” (Preston, 2003: xv). Preston recounts an experience the anthropologist Basso had with a Western Apache cattleman named Dudley Patterson, who explained that particular places on tribal lands held a wisdom that could not “be grasped purely cognitively”. Patterson needed to take Basso on horseback to these places of wisdom for him to “experience the places with his body”, because “[t]he topography of the land had to filter through his limbs, the smell of the vegetation had to permeate his clothes, and the sweat created by the struggle of getting there had to drip from his body onto the ground” (Preston, 2003: 83). Culture is a key factor in this process, but Preston concludes that “[t]he physical

⁴ Brothers usefully describes this approach as “externalism ... the idea that the mind is not “in the head” but in the individual's embodied interactions in the world” (Brothers 2005).

⁵ Neuroethology is a field that describes “animal behavior in terms of how the nervous system works”. International Society for Neuroethology <http://www.neuroethology.org/>

environment is not just a site in which mind operates; it is a characterful place that influences the products of the mind" (Preston, 2003: 88).

Preston illustrates his argument with his own experiences, that echo those of Abram, above. Preston spent one summer volunteering for the National Park service in Alaska and found that the place "played itself out on my body and made its way into my body". As a result his "being-in-the-world ... took on a local character". This change took just two months, and Preston wonders how much greater the change might have been if he had lived there for years (Preston, 2003: 92). Although he adds that such dramatic examples are rare (Preston, 2003: 97), he emphasizes his key point that "people craft some of their very cognitive identity in communion with a landscape" (Preston, 2003: 100).

ECOPSYCHOLOGY

The Wilderness Effect

Ecopsychology is a new and "diverse field committed to placing human psychology into an ecological context", that proposes that the mind is "tangled up with" the natural world. (Fisher, 2005: 557-558). Perhaps the best established theory of ecopsychology is the 'wilderness effect' which Greenway claims is "increasingly accepted as a given" (Greenway, 1995: 128). There are several aspects to the wilderness effect, but fundamentally it involves "feelings of expansion or reconnection" which Greenway unhesitatingly describes as "spiritual" (Greenway, 1995: 128), and current research into the effect concurs: Davis reports that regularly "being and becoming in nature" over a long period of time becomes a form of ritual, "a potent spiritual practice" (Davis, 1998: 95). Baetz opines these kinds of experiences can "bring a spiritual and emotional (even a mystical) component not just to our personal lives, but to the modern environment movement as well" (Baetz, 1998: 3). Key concluded that "[t]here are so many examples" of spiritual experiences catalysed by wilderness "that it is almost ironic to seek to validate these kinds of experience when they are the basis of so many religions, traditions and forms of art" (Key, 2003: 65).

The wilderness effect is most apparent during 'wilderness'⁶ treks lasting for more than a week⁷, but ecopsychologists generally agree that "simply spending meaningful time communing with nature" (Shaw, 2006) is beneficial, and the full effect is a difference of degree rather than a

⁶ Inevitably, I need to refer to 'wilderness' by which I mean open outdoor spaces with (at least) minimal management of flora and fauna.

⁷ Most of those studied by Greenway lasted for two weeks, although some were for three or four weeks long. Greenway, 1995: 124. Later studies have been made of 7 day excursions (Fredrickson, L. and Anderson, D., 1999).

difference in kind. Greenway agrees that there is “a gradient of the ‘wilderness effect’ - ranging from ‘none’ (no effect) to a complete blowout of one’s usual programs for processing reality” (Greenway, 1995: 132).

Greenway (1995: 128-129) provides a list of key aspects of the wilderness effect (cited by 60% of participants or more):

- 90% "described an increased sense of aliveness, well-being, and energy"
- 90% "stated that the experience allowed them break an addiction";
- 77% "described a major life change upon return";
- 60% of the men and 20% of the women "stated that a major goal of the trip was to conquer fear, challenge themselves, and expand limits";
- 60% "stated that they had adopted at least one ritual or contemplative practice learned on the trip";
- 92% "cited 'alone time' as the single most important experience of the trip";
- 73% cited "getting up before dawn and climbing a ridge or peak in order to greet the sun ... as the second most important experience of the trip".
- 80% cited " '[c]ommunity' or the fellowship of the group ... as the third most important experience";
- 76% of all participants reported "dramatic changes in quantity, vividness, and context of dreams".

He concludes that we are witnessing a profoundly shifted consciousness "writ vividly on the psyches of those experiencing extended stays 'away from cultural reinforcement' and 'vulnerable' to the natural dynamics of wilderness" (Greenway, 1995: 130).

Explanations

Various theories have attempted to explain this shift, with some emphasising sensory acuity while others suggest an awakened innate understanding. Roszak postulates a largely dormant “ecological unconscious” (Roszak, 1992) which can be awakened, while Wilson’s 'biophilia hypothesis' claims that we have an inbuilt affiliation for nature (Wilson, 1975). Cohen (Cohen, 1995) estimates that people in western civilisation spend “over 95 percent of their lives indoors, cloistered from nature”, and concludes that this lack of sensory contact results in our common disconnection from ‘nature’⁸. Sewall suggests that for many

⁸ Cohen appears to gloss over two meanings of 'nature': The first reference I take to be equivalent to my term "organic environment". His second use – the 'nature' Westerners are

people perception has been dulled (Sewall, 1995) – a point also made by Harper (Harper, 1995: 189) - and they have thus lost connection with their environment. Research by McDonald and Schreyer (McDonald and Schreyer, 1991) and Beck (Beck 1987) conclude that the wilderness experience enhances sensory acuity, so supports this explanation.

Fredrickson and Anderson's research illustrated the importance of the "social dynamics between group members", which "played a large part in interpreting the wilderness place setting as spiritually inspirational". They emphasize that though their participants experienced the organic environment as "spiritually inspirational per se", most couldn't articulate these feelings without also "addressing the more social aspects of the place" (Fredrickson and Anderson, 1999: 36). They conclude that it is a "unique combination of social interactions and landscape characteristics that render a place as spiritually inspirational" (Fredrickson and Anderson, 1999: 38). Similarly, Stringer, and McAvoy noted "camaraderie" as a "contributing factor" to spiritual experiences in wilderness (Stringer and McAvoy, 1992: 69). This research helps to explain the importance of community to the wilderness effect, and acts as a valuable corrective to the asocial explanations offered above.

Greenway argues that the effect is due to "a shift from culturally reinforced, dualism-producing reality processing to a more nondualistic mode" (Greenway, 1995: 131) which is experienced as "immersion in the reality in which you are swimming - of which you are a dynamic part" (Greenway, pers. comm, 2006). Bateson's influence is again apparent, and Greenway's claim concurs with discussions in this review regarding the relationship between mind and world. Greenway suggests that "self-reflective consciousness" (Greenway, 1995: 130) has "run amok" and led to the dualistic illusion that we are separate from "natural processes" (Greenway, 1995: 131). Key agrees, concluding that "[a]dventure in wild places" can awaken us from the dream of "metaphysical dualism that lies at the root of the current ecological impasse" (Key, 2003: 68).

Childhood Influences

In his introduction to the Japanese edition of Cobb's *The Ecology of Imagination in Childhood*, environmental philosopher Shepard writes approvingly of her theory that:

Children ... are engaged in expanding awareness from body to the organic surroundings, from self to the ecosystem ... In this play of body and earth the landscape becomes a model and method of

disconnected from – is more complex and perhaps romanticised. However, his points remain pertinent to my thesis.

anticipated knowledge, juxtaposing the systems of the body and the structure of the living nature (Shepard in Cobb, 1986).

He claims that Cobb describes "a new meta-physiology, connecting the most prized human faculties with the pungent presence of soil, leaves and butterflies ... a source of metaphors that bond body and planet, thought and place by the seemingly aimless, rhythmic frolic of children" (Shepard in Cobb, 1986). The ecology of mind Cobb describes is confirmed by recent research into childhood play from Cornell University (Wells and Lekies, 2006). Furthermore, ethnographies by Plows (1998b: 136) and Shaw confirm that that "childhood encounters with nature" (Shaw, 2004: 132) have a significant influence on adult environmental activism.

Fisher's 'Radical Ecopsychology'

Fisher powerfully applies Gendlin's work to ecopsychology, suggesting that as the felt sense is "the source of all our inwardly arising symbols", it is "the place where we discover the aims or intentions, the needs or claims, of the soul itself (the soul being the personification of the unconscious)" (Fisher, 2006: 228, endnote #69). He provides an example of one of his conversations with "nonhuman others":

I feel a sudden resonance, where a message unmistakably comes through, as when a Raven flew onto a nearby branch of a hemlock to tell me who is boss and whose world I should be paying attention to. Such experiences need no justification beyond themselves for meaning is transmitted in them, and I feel a clear change in my existence, in the way I sense things following them (Fisher, 2006: 102-103).

This experience can become part of daily life and Fisher notes that "[t]he more I am able to attune myself to the natural world the more I discover that it is correspondingly attuned to me." (Fisher, 2006: 103).

Conclusion

When Merleau-Ponty articulated the phenomenology of the embodied mind, he concluded that in knowing the world we become part of it, and thus the conventional subject-object distinction was illusionary. Gendlin developed Merleau-Ponty's work, showing how an intricate "bodily sensed knowledge" (Gendlin, 1981: 25) emerges from our bodily interaction with the world. This felt-sense accords with anthropologist Csordas's 'somatic modes of attention', which are ways of "attending to and with one's body" (Csordas, 1993: 138). Other anthropologists have theorised aspects of embodied knowing: e.g. Bateson notably concurred

with Merleau-Ponty that mind is immanent in the world. The sociological approach is significant for Mauss's notion the habitus, which was further theorised by Bourdieu. The habitus carries embodied cultural knowledge that is tacit and practical, so is consistent with Merleau-Ponty's theory.

Several religious studies scholars, frequently drawing on Bateson, Bourdieu, Merleau-Ponty or cognitive science, conclude that embodied situated cognition is fundamental to spiritual practice and experience. Second-generation cognitive science is especially influential, and confirms that cognition is embodied, situated and intricately tied in with emotions. Cognitive science also supports the position held by Merleau-Ponty, Gendlin, Burkitt, Bateson and others, that at least some fundamental aspects of the mind-body extend beyond the skin. Preston develops this discussion by claiming that we think with place, and this has a fundamental impact on our being-in-the-world. Enactivism is currently the most developed model of embodied situated cognition, and emphasizes that what we conventionally think of a 'subject' and 'object' are co-arising. Some enactivists (Lakoff and Johnson) emphasize the role of embodied metaphors in cognition. Their work has been criticized, but is influential and is likely to remain as part of an integrated model of enactivism.

Ecopsychologists concur with the consensus of this review that mind and world cannot be separated. Ecopsychology identified the wilderness effect, which demonstrates that spending time in the organic environment can catalyse profound spiritual experiences. The mechanism remains under discussion, but social and spatial factors seem significant. Related research suggests that childhood play in the organic environment has a significant influence on adult environmental activism.

A consensus emerges from this review that embodied cognition is situated and grounded in practical activity. This process is largely non-verbal and pre-reflective, and depends on an affective, sensual mode of being-in-the-world that reveals a fundamental integration between what we conventionally understand as 'self' and 'world'. Because of the intimate relationship between 'self' and 'world', place can have a profound impact on our thinking and our entire being-in-the-world. My next chapter presents a model of embodied situated cognition based on this research that I then apply to my fieldwork.