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NATURE, ECOLOGY AND EARLY YEARS EDUCATION

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Introduction

As someone who trained and worked as an ecologist and now works as an early years' lecturer I have often pondered how children and adults (including myself) have become disconnected from the natural cycles of the environments on which we depend. In recent discussions with colleagues interested in Harmony principles and the consequences for the wider sustainability crisis, I am increasingly drawn to consider the implications of this where supporting early childhood education and care are concerned.[1]

The focus provided by the notion of 'Harmony' on holism, interdisciplinary approaches, wellbeing and love has several parallels with the aims of early years' policy and practice in Wales, as well as the wider international context.[2] Recent new curriculum developments in Wales within the formally-maintained education sector also provide evidence of a focus on a more holistic approach to education and a central place for wellbeing, ethics and citizenship.[3] Harmony as outlined by HRH The Prince of Wales, Tony Juniper and Ian Skelly suggests '"right action" cannot happen without "right thinking"'.[4] In this chapter I want to consider the implications of 'right thinking' in the context of young children and the adults that support them in terms of encouraging learning from the non-human environment, a sense of place and connectedness to the world.

Context

I spent many happy springs in my early childhood searching for frog spawn and watching tadpoles in the ponds and ditches of Ceredigion in mid Wales. Like many children of my generation in the 1970s and 1980s, playing and exploring outdoors was a natural part of childhood experiences. However, these fond memories have a parallel counterpoint with the memory of returning to these ponds not long after to find them drained and destroyed. The feeling of intense sadness that the frogs would no longer be able to return have overtaken

my earlier, happier memories, even 40 years later. Louise Chawla has discussed 'significant life experiences' in nature as being formative to why adults in later life become involved in roles linked to environmentalism or conservation.[5] For me, this moment of loss has stayed as a significant memory and may explain my own fascination with ecology and sharing this interest with others. The same feelings of loss have often returned in adulthood when listening to people talk about the current climate change crisis or plastic pollution panic. Bob Jickling retells accounts of different people's experiences of anger, loss and sadness when faced with first hand experiences of the damage or destruction of other parts of the natural world.[6] These experiences are highlighted as transformative in terms of changing these people's subsequent behaviours towards the non-human world. In his account, Jickling suggests transformational moments are experiential in that they are experienced first-hand by the person who is transformed and cannot be measured by conventional educational assessments, but involve instead listening to, and learning from more than the human world.[7] This resonates with my own childhood memories where the loss of the frogspawn and tadpoles was a part of my real lived experience. As a child brought up in a small Welsh-speaking rural community, the demise of the frog ponds also ran in parallel with the decline of the same community, with the local school closing, rural depopulation and the decline in the Welsh language, all close to my personal cultural context.

However, there is a danger that these melancholic memories are isolated from wider complexities. I was also part of the community who economically benefited from the agricultural intensification driving the draining of the land in Ceredigion during the 1980s. Despite my growing sadness at the changes in my local and global environment, I was also a member of the generation who embraced single-use plastics, became increasingly dependent on car travel, provided my own children much less freedom to play outdoors, and consumed products that have in some part sustained global inequalities and environmental injustice. Therefore, my discussion in this chapter, which ponders learning from the non-human environment as one way of engendering a sense of place, is not intended as a nostalgic and romanticised view of a better past childhood. In a rapidly changing Euro-American context our opportunities to engage with the non-human world have also changed. I searched for frog spawn, built dens, and made mud pies in a world where mobile digital devices, 24-hour TV and social media were not yet part of my world. Digital media, however, is for many of today's children in Wales the lens from which they interact with their environment and construct their own sense of place. I would argue my early years experiences were through a different lens, one not dominated by the human world.

The pond, the water, the boggy field and soil also changed me and my own interactions with the world. As noted by Robert Michael Pyle in *The Thunder Tree* (p. xvii) '… most people I speak with seem to have a ditch somewhere – or a creek, meadow, woodlot, or marsh… These are places of initiation, where the borders between ourselves and other creatures break down, where the earth gets under our nails and a sense of place gets under our skin'.[8] Could a move away from these first hand experiences– such as that of the frog spawn and pond integral to my own childhood – have implications for young children's development and learning, where their first hand interactions are increasingly technological and are removed from the direct and visceral interactions with the living and non-living parts of the non-human world? As noted by Barad and discussed later in the context of the new materialism, '"We" are not outside observers of the world. Nor are we simply located at particular places in the world; rather, we are part of the world in its ongoing intra-activity'.[9]

Current early childhood education and care context

Early years' education, care literature and practice places an emphasis on learning through play which is reflective of Froebel's view that 'play at this stage is not trivial; it is highly serious and of deep significance'.[10] In its inception, the Welsh early years' curriculum Foundation Phase for 3–7 years old was also based on philosophies and theory which underpin the significance of learning through play.[11] However, recent reports point to a lack of consistency and understanding of learning through play, especially the open-ended, free play which (as in my own childhood experiences) was child-led and I believe, in my own context, supported transformative moments[16] in relation to empathising and learning with the non-human parts of my world. Derby, cited in Jickling, suggests that formal education is '… characterised by fragmentation, emotionlessness and [is] exacerbated by privileging of epistemic foundations such as anthropocentrism, reductionism, linear causality and dualism'.[12] This resonates with the discourse in Wales, with criticism of an overly assessed, didactic curriculum with negative implications for children's wellbeing and rights.[13]

Furthermore, in terms of outdoor learning, data suggests that in the UK children in the 21st century are spending less time outdoors than previous generations.[14] Richard Louv pointed towards 'nature deficit disorder' in relation to the negative health and emotional consequences of children's lack of experiences outdoors in nature, while Peter Gray provided a strong argument for the central importance of free, child-led play for children's learning, with this including independent play outdoors.[15] Gray also argued that the opportunities for independent freely chosen play have been limited in the Euro-American

context to the detriment of a child's education.[16] In terms of a sense of place, the ponds, woodlands and fields that were my own play areas have been replaced by digital experiences, with outdoor experiences taking place in more structured play environments such as playgrounds, where free play is increasingly limited.[17]

In the literature there is a consensus that outdoor experiences and engaging with the non-human world offer benefits for children cognitively, physically, emotionally, socially and linguistically.[18] This is underpinned by the work of the earliest pedagogues Johann Heinrich Pestalozzi and Friedrich Froebel in terms of the significant benefits of children learning outdoors.[19] They described an outdoor environment which provided the opportunities for children to explore, discover and be curious, as opposed to structured adult-led activities which happen to take place outside. There is also a focus in early years' sustainability literature that engaging with the non-human environment is significant in supporting an understanding and empathy for the world, which could support better sustainability practice in the future.[20] In Wales, the Foundation Phase curriculum for young children (3–7 years) afforded outdoor learning the same status as indoor learning; however, this aim was not always observed in practice, as outdoor experiences were often adult led and structured, thereby preventing children the opportunity to also interact with the environment independently and according to their own interests and curiosity.[21] Transformative experiences which could change behaviour in terms of using resources more sustainability or respecting the value of the non-human world, according to Jickling , are dependent on hands on, personal experiences and thus I would argue that young children need a diversity of different experiences which allow for transformation, and this includes child-led engagement with the non-human environment.[22]

It is pertinent to note here that I have chosen to refer in this chapter to the non-human world/environment as opposed to 'nature'. Nature is a contested concept.[23] As an ecologist I would have considered nature to represent ecosystems which include the non-living and living environment. Inherent in this representation was a debate whether the human species was separate or simply another constituent part of the ecosystem. Authors such as Bruno Latour argue that separating 'nature' and society, or human and non-human, is a modern phenomenon that ignores the mutual interconnectedness of both.[24] In Wales and the UK, as globally, many areas referred to as natural, wild or wilderness are national parks or areas of outstanding beauty which are the product of and maintained by human interactions.[25]

However, much early years' literature refers to 'nature' when considering children's experiences playing outdoors, which in my view is a useful catchall for the non-human environment. Moss and lichen growing on a wall, a small

patch of trees, a grassy lawn, a puddle, falling rain, sunlight on the school yard –all are part of the non-human world. They are the everyday opportunities children in Euro-American cultures have to interact with the non-human world and to understand our interconnectedness with it. Even landscapes perceived as 'wild' or 'wilderness' are, in the context of the UK, a product of centuries of human-environment interactions. Understanding these 'fuzzy borders' and interconnections come from children having a diversity of opportunities to interact with the non-human world in all its contexts.[26]

However, despite the acknowledgment of outdoor learning and play within early years' literature this does not necessarily correlate with respecting or empathising with the non-human world. Hillevi Lenz-Taguchi discusses that early years' theory and practice takes an anthropocentric view of the world.[27] The emphasis is on the child in terms her wellbeing, learning and rights, whether supporting the constructivist approaches to early years pedagogy with an emphasis on learning in real environments, 'young scientists' experimenting in and learning from their environment, or exploring socio-constructivist or socio-cultural approaches which consider the role of a child's peers and adult community in supporting learning.[28]

The discourse in early years is often a dualism around the role of the adult-child relationship, with debates around the view of children as independent and competent learners on one hand as opposed to being dependent or led by the adult on the other hand. As Lenz-Taguchi notes, until recently early years' discourse reflects that '… only humans are granted agency and power to act, to learn, to transform'.[29] On the other hand, the Reggio Emilia approach recognises, 'the environment as the child's third teacher' alongside the parent and educational community.[30] However, the Reggio Emilia philosophy does not specifically highlight the outdoor environment and the focus remains human-centric in terms of a focus on the benefits for the child rather than acknowledging the child-environment interaction and how they can influence each other. Sustainable development discourse also takes a very anthropocentric, technocentric and accommodationist view.[31] Humans recycle, lower carbon emissions, develop walk to school schemes to save themselves as a species into the future, as opposed to valuing the non-human world intrinsically. However, ecocentric philosophies and deep ecology champion a much more nature-centred stance.[32] According to these philosophies, non-human entities have an intrinsic value and the human species is part of this as opposed to being of a higher value or more significant. Authors such as Gray suggest that traditional hunter-gatherer or indigenous communities appear to understand this interconnection and thus their cultural behaviours and lifestyles are more in tune with the interactions of their ecosystem.[33]

In comparison, industrialised cultures have damaged and significantly altered much of their own ecosystem and that of ecosystems far beyond their own homes due to their separation from the non-human world. However, Milton suggests that this is not wholly accurate as any indigenous 'oneness' with nature is an environmentalist myth.[34] Nevertheless, significantly, Euro-American communities were hunter-gathers at some point in history and have embraced an increasingly anthropocentric stance during the course of their development. Practicing a deep ecology in the reality of an industrial society would be difficult without revolutionary changes to social, political and economic systems. In such a context it may be pertinent to consider if, for young children reengaging with daisy, dandelion, acorn, spider, pebble, stick as significant 'non-human others '– equivalent to Vygotsky's 'more knowledgeable others' – can practically support the valuing of the non-human parts of the world.[35] This of course is difficult to qualify. Anecdotally, the publication of books such as the *The Lost Words* and updates to children's dictionaries that omit the names of historically more familiar plants and animals suggest children could be losing this direct connection with aspects of the non-human world that comes from exploring it directly in their play.[36] There is also an acknowledgment in early years' philosophy that learning first-hand may provide insights that for young children cannot be gained from books and other media. However, whether this learning would lead to an understanding that could support the sustainability discourse into the future and engagement in the patterns and flows significant within the principles of Harmony is unclear. Much of my own early play experiences were with the non-human world, as was the case for many of my contemporaries, and despite this, my generation has contributed much to the sustainability crisis.

In terms of experiences for young children, one area that is gathering momentum in the outdoor play literature, especially in relation to physical development, is affordance.[37] James Gibson suggested that 'The world is perceived not only in terms of object shapes and spatial relationships but also in terms of object possibilities for action (affordances) — perception drives action'.[38] In the context of early childhood, children in any environment will use different objects in different ways. For example, in manufactured play parks children may use slides to slide, swings to swing, monkey bars to hang from. They may also choose to use these objects in creative ways, if they are allowed or encouraged to do so by adults and practitioners, such as climbing up slides, making dens under climbing frames, or playing superhero games between playground structures. However, such affordance is often not observed where specific rules are enforced on how the environment should be used. In environments devoid of manufactured toys, children may see a slope as somewhere to roll, slide, or

run down, and they may perceive trees as climbable, huggable, or a resource for bark rubbings among other things. Daisies can be picked, smelled, mixed in potions, drawn or made into daisy chains. In their play, children will therefore have interactions with the non-human that depend on their perceptions of those particular environments and the boundaries provided by adults.

However, affordance is only one part of the complexities of our behaviour and may have no influence beyond the present activity. It is instead long-term opportunities for free play with the non-human world that allows children time for trial and error individually or with peers and adults which can develop initial perceptions of objects into deeper learning. To illustrate, for several weeks I was a participating observer with one seven-year -old child who was practising his tree climbing skills during his outdoor play. He tried to climb several trees but however was disappointed that he was unable to climb very high. The trees he found were not very climbable with very few branches and long slender trunks. Together we discussed the frustration and tried different ways of climbing and supporting him up the tree. We also discussed that these trees may be quite young with less time to develop sturdy branches. A few weeks later on a visit to a local wooded area the child discovered a tree that he was able to climb to a higher point. Having returned to the floor he enthused that, 'That tree was a lot older and had far more branches and that's why I went so high'. This episode revealed that this young child had gained much from the long-term opportunities to practice tree climbing, including confidence and physical development linked to balance and gross motor skills.[39] However, I was interested in this episode in terms of the child's perceptions of climbing the tree. He identified that the tree, due its characteristics of being older and having a more complex architecture, had allowed him to climb. The other trees he encountered were younger and less complex; the child had tried to climb and hang on to these trees to no avail. Their structure and current physical stature did not allow for this. The child showed he experienced much happiness from climbing this particular tree and demonstrated a positive disposition towards this particular tree. For the child this tree had a higher status, a tree which was climbable. Alongside other trees in the same woodland this tree has been transformed into a climbable tree which reflects its special material and physical properties. In subsequent play the child has purposefully looked for similar trees in terms of architecture and complexity which would allow him to climb rather than focusing as previously on his own perceived lack of climbing skills.

Such moments of play also suggest to me opportunities for engaging with concepts such as biodiversity. The child recognised trees as living, complex and with diverse structures. This brief tree climbing experience resonates with my

own childhood and experiences I have observed with other children. Finding woodlice, ladybirds, an oil slick rainbow in a puddle, or a rainbow in the sky; these experiences have the possibility to transform their understanding or perception of the non-human world, and in turn these interactions may have implications for these children's feelings towards their non-human world. These learning experiences are part of the child's wider learning in the formal classroom and from structured outdoor play and digital media. My own experience observing early years' practice suggests that the time provided children within the formal curriculum and in every day play to engage with the non-human environment has depleted, and thus this opportunity for learning has been reduced and replaced by adult-led or adult-controlled experiences. Work by Chawla, Jickling and Froebel would however suggest that the need to include these experiences is significant for children's holistic development.[40] Outdoor play, unlike more structured classroom activities, can also support many aspects of learning in a way that many more formal learning activities may not. For example, the boy climbing the tree developed emotionally (confidence, self-esteem), physically (gross and fine motor skills, balance), linguistically (discussion why he was able to climb and using new words), and socially (climbing with others, sharing the experience) by being outdoors playing and climbing, which sitting reading a book, drawing a picture, or filling in a worksheet could not provide in isolation. He also gained several curriculum insights linked to science, mathematics, language, literacy, and physical and creative development.

When reflecting on the climbing tree experience, I maintain that in some ways the child had not climbed a tree himself, but this specific tree had let him become a climber. In recent social studies' discourse the 'material turn' and 'new materialism' have been considered as a post-humanist move away from viewing society from an anthropocentric paradigm and instead recognising the relationships between the human and non-human world.[41] Barad discusses 'intra-action' in the relationships between the human-non human world, suggesting that intra-activity allows a 'way of understanding the world from within and as a part of it'.[42] Although Barad is discussing the quantum level, the focus on understanding the non-human world resonates with my own interest in opportunities for children to interact with the non-human world. Furthermore, in the context of early years practice and research, Lenz-Taguchi has developed new materialism as an alternative paradigm.[43] For example, when discussing a child playing in a sand pit she highlights 'the materiality of the sand can equally transform the notions, conceptions and emotions of the child as much as the child can transform the sand'.[44] The sand is an active player in the child's play and not simply a material which the child alone plays with. In the example of

the child climbing the tree and, as Lenz-Taguchi notes for the sand, 'The humans and non-humans are to be understood as performative agents that have power to act and transform each other and themselves'.[45]

However, in practice, different materials are given a different status, depending on the social-cultural context of a given society or time in history. For me there is therefore a danger in over-romanticising the status of the outdoors and concepts of 'nature', especially in a Euro-American context. As noted earlier, 'nature' is a contested construct and the notion of 'wild areas' which are devoid of any human impact in an era of climate change and plastic pollution era is problematic. Therefore, it is necessary for us to shift our gaze, thus discovering and valuing the non-human environment as the result of our everyday interactions with it. It then becomes visible in the school yard, pavement cracks, cloud formations, rainfall and everyday interactions. In terms of the education for sustainability context, digital devices and plastic toys are also materials that children and adults interact with. Therefore, if children have less opportunities to engage with the 'non-human' world directly, these become the dominant materials in engendering their sense of place. This can also be compounded because using the outdoor environment in early years' settings requires a risk assessment.[46] Many events linked to supporting practitioners to go outdoors with children, such as Forest School, involve training on risk assessing the environment, reflecting Healthy and Safety legislation, and setting policy.[47] However, my own reflections on risk assessments that lead to discussions on the dangers of a conker, the implications of stinging nettles, or the myriad of poisonous plants and physical features that could have negative consequences for a child and practitioner leans towards the 'ecophobia' (fear or hatred of non-human living things) discussed by Sobel.[48]

This may explain why, in recent years, there has been a move towards risk-benefit assessments where the risks and benefits of outdoor experiences are recorded.[49] Therefore a slope offers the risk of slipping, but it also offers the benefits of developing balance, body-sense and gross motor skills, further supporting the interaction between human and non-human.[50] Ironically, a short-term anthropocentric view of the world means plastic toys could be perceived as less risky than acorns and conkers, despite the global risks and consequences of plastic pollution which have been made visible in recent years. Driving to a weekly Forest School experience has become one way of engaging with the outdoors, despite the economic and carbon cost. In a sense we have created an environment where play has moved from the woodland, beach, field, wasteground spaces once easily available to children to the perceived safer, indoor, or manicured outdoor spaces. Or where the non-human world is part

a 'special' visit or event. Yet in my own childhood the non-human world was in the less 'special' areas, including the cracks in walls, the puddles and ditches. These environments for me resonate with Olds who suggested that 'Some environments encourage children "to pause, play, and stay awhile", while others do not'.[51] Some environments foster a "sense of place" in young children; others do not'.[52] Several early years' authors suggest children require extended periods of time outdoors every day and opportunities to engage with 'nature'.[53] This will be difficult if we depend on special weekly Forest School events or visits to areas that are perceived to be 'wild' or pristine. I suggest that the everyday experience of the non-human world should therefore not be undervalued and can take place in the backyards, local parks, school and nursery yards and other local environments which underpin our sense of place. I would argue that children need to have these unstructured opportunities alongside the indoor, digital and structured outdoor play experiences that currently form their play and learning context.

There is also a growing commercialisation of outdoor learning in early years, with training to support practitioners taking children to learn outdoors and catalogues allowing 'loose parts' materials, such as pebbles, pinecones and pieces of wood, to be purchased to supplement outdoor play.[54] There is however a danger that this approach to outdoor learning hides the real links to Harmony principles and sustainability. Making natural materials durable – such as laminating leaves, providing pre-painted pebbles, or collecting pinecones so they can be brought outdoors at all times of year – can mask the natural cycles and interaction of the child and material. It can also lessen the preciousness and uniqueness of the resources. Real leaves rot, smell, crunch. Pebbles are only painted if we paint them, pinecones grow and fall from real trees at certain times of the year. In another context, early childhood settings often use plastic cups and plates for snacks and lunch times. I have however, on a few occasions, visited settings that use glass or china crockery. Dropping a plastic cup does not destroy the cup, only spills the content. However, children who drink from breakable materials tend to use these as precious commodities. They are transformed by the vessels' material and thus the material becomes significant. During another outdoor experience one young child's engagement during an encounter with a butterfly also suggested this focus on the precious. Other children were chasing the butterfly, whereas his focus was as protector, ensuring that the butterfly was not hurt, spending much of the time making sure that when the butterfly landed it was not caught or squashed. As an observer, this appeared to me to be the initiation of a transformative moment and was inextricably linked to the precious and uniqueness of the butterfly.

In the reality of 21st century living I do not suggest a move back to childhoods of the past that can be perceived as idyllic. In many ways current thinking in Wales in terms of children's rights, inclusive practice and the creativity offered by modern technology provides a positive context missing from own childhood. Furthermore, the digital world also encourages children to 'pause and play' which may promote a significantly different way to engage with nature. One could argue that, only recently, many of us walked across littered streets and beaches obliviously, and that only after viewing programmes such as the *Blue Planet* documentary with images of plastic pollution on a global scale did we wake up to the interconnectedness with the non-human world, the need for a significant discourse on sustainability and the principles of Harmony.[55] However, with regards education specifically, I would support the work of Lenz-Taguchi and others who note that education should avoid reductionism and instead embrace complexity.[56] Young children need many places to develop many relationships with the variety of the living and non-living non-human world. In fact, this may be something which was missing in my own childhood. My own childhood interactions with frog, ditches and ponds may have been in a cocoon that failed until now to see the wider implications of my own plastic use, production of carbon dioxide pollution, and impact on biodiversity. Systems thinking considers these complexities and acknowledges how different issues interact and impact on each other.[57] Such a holistic approach may also resonate with the Wellbeing of Future of Generations Act which, in a Welsh context, implies that wellbeing is an interconnection of social, environmental, cultural and economic issues.[58] Latour argues that the separation of nature and society does not reflect the complexity of the real world and that separating the human and non-human world is simplistic.[59] On a practical level therefore a diversity of play experiences could provide this interconnectedness.

Right thinking

This chapter considers the 'material turn', affordance, and systems thinking as ways of considering our wider understanding of the cycles and interactions that create a sense of place. Children interacting with a diverse range of unstructured play opportunities indoors and outdoors over longer periods provides a basis to learn beyond the formal curriculum and to consolidate learning within the early years' curriculum. If, as a child, my interaction with plastic had allowed me to understand its lack of degradability and if, as a child, I had observed the rotting of leaves and the invertebrates, bacteria and fungi which underpins the carbon cycle, I may have had a holistic view of the implications of the materials we were increasingly becoming dependent on. When risk assessing a site for my own students to use, one of the pointers is to litter pick before the students arrive.

However, I often reflect if this is an artificial construct and if it is the litter that we need children and practitioners to acknowledge, so it allows us to confront the real context of unsustainable practice, and provide another learning experience. Such discussion can also be framed as part of 'junk modelling' activities where recycled 'rubbish' materials are the focus of the play.[60]

In early years practice there is an opportunity to engage with the complex interactions between humans and the non-human world and note the relationships Lenz-Taguchi explores in her work.[61] I have observed bug hunts where plastic bugs are hidden in bushes and hedges, which prompts the question: 'if we go bug hunting should it not be for real bugs'? From the 'material turn' perspective, plastic bugs are different materials and provide a different experience, perhaps more a tune to finding a plastic crisp packet or Lego block than a moving, fluttering, buzzing animal. If the plastic ladybird is left outside, how long will it be there for? Why does it not breakdown? What about the laminated leaf or real leaf? The outdoors should allow for ladybirds, acorns, conkers, dandelions and stinging nettles to be found.

However, there is a cultural (rather than simply environmental) component to consider here too. My own child berated me recently for picking a dandelion, having heard that picking wildflowers was illegal. However, dandelions are often perceived as weeds which are routinely killed with weed killer. Again, the complexity struck me. Picking a dandelion, using it to make a dandelion tea, or as part of a 'what's the time game?' are staples of our historic cultural and play context, as are weaving daisy chains or playing daisy 'she loves me, she loves me not' games. Picking all dandelions or daisies would be harmful, if very difficult to achieve for annual, early successional plants. Being outside, not picking any flowers is not reflective of sustainability. All animals have to eat and use resources. However, the discussion regarding picking or not picking dandelions allows us to develop a systems' thinking approach to one's relationship with the landscape. I would not have picked wild orchids or bluebells, because I have cultural knowledge about these plants, but I would have supported children to pick dandelions, within limits. Again, this is the discussion that allows us to understand how the patterns and cycles of life are entwined with the cultural notions of the wider world. In a world where we have over harvested several natural areas, if we wish to understand more sustainable approaches we should also allow children to engage with what these mean and the types of behaviour that can lead to unsustainable practices. For very young children, I maintain that being allowed to play in non-human environments is a significant first step. To be transformed by the non-human environment requires children and adults to engage with it in ways that allow the environment to teach us, and not the other way around.

Notes

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