

# Hocus pocus? Spirituality and soil care in biodynamic agriculture

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## Abstract

In this article, I participate in efforts to re-imagine soils as lively, complex, more-than-human ecologies, by turning to the largely sidestepped subject of spirituality in agriculture. Spiritual knowledge practices rarely sit comfortably alongside technoscientific, productivist accounts of soil health, and yet they can re-configure how soils are conceptualised and managed, with implications for relationships of care. Drawing on an extended period of learning with a Community Supported Agriculture project in south Wales, the article explores how care is cultivated through a non-conventional method of farming known as biodynamics, which incorporates astrological and spiritual principles. I suggest that biodynamic narratives and rituals encourage attentiveness to more-than-human agency and energy, to depth (not only underground but also above-ground influences of the air and celestial bodies), and to reciprocity between soil biota and humans. Biodynamic practices also make space for mystery, thereby resisting drives to measure and map, and offering possibilities for disrupting anthropocentric approaches to soil care. However, the example presented here also highlights how, despite biodynamic's growing popularity, its spiritual elements have a tendency to be kept quiet, their presence sidelined by more familiar, secular, narratives. Nonetheless, I contend that if effective soil care demands more diverse knowledge practices than those that are currently obliterating critical soil communities at an alarming rate, then there can be much to learn from a touch of magic.

## Keywords

Soil, care, spirituality, biodynamic agriculture, more-than-human ethics

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## Introduction

The importance of the Earth's soils, and the peril they are in, can hardly be overstated. A recent Intergovernmental Panel on Climate Change Special Report finds that soil is being lost more than 100 times faster than it is being formed in ploughed areas, and 10–20 times faster even in non-ploughed fields (Intergovernmental Panel on Climate Change, 2019). While concern for the plight of soils is commonly directed towards the technical practices, scales and economies that mediate human relationships with soils (Peterson, 2016), a growing body of research and practice is approaching human–soil relationships as matters of *care*. Care is becoming a useful concept for thinking *with* (rather than only *about*) soils, and for considering the kinds of agencies and communities (humans and more-than-human) that sustain life in myriad ways (e.g. Krzywoszynska, 2019; Puig de la Bellacasa, 2017). Recent work has begun to explore ways of knowing and caring for soils that are ordinarily obscured by the kinds of logics, relationships and temporalities that prevail in intensive and extensive agricultural practices (Puig de la Bellacasa, 2015), with examples from conventional farming settings (Krzywoszynska, 2019), community gardens (Pitt, 2018) and permaculture practices (Jones, 2019). In particular, *attentiveness* has been suggested as a potential mode of generating care-full relations with soil biota, by cultivating skills for paying attention and meaningfully responding (Van Dooren et al., 2016: 6). However, questions of precisely how attentiveness arises and how it works to generate ethical relations with more-than-human others open up rich areas of inquiry (e.g. Desai and Smith, 2018; Lyons, 2020; Pitt, 2018; Tsing, 2015; Van Dooren et al., 2016). In this article, I contribute to such explorations by turning my attention to spiritual practices associated with biodynamics, a form of organic agriculture that was developed by Rudolf Steiner in the early 20th-century.

## Biodynamics

The philosophical and practical basis of biodynamics was established in 1924 during a series of lectures delivered by Steiner at the Koberwitz estate (in what is now Poland) to a group of approximately 100 farmers who were concerned about the deterioration of their crops and livestock (Meyer, 1929). Following his philosophy of Anthroposophy (which he applied to fields as diverse as medicine and dance (Paull, 2011)), Steiner referred to his agricultural work as 'spiritual science', stating that the aim of his lectures was to combine 'what has already been gained through practical insight and modern scientific experiment with the spiritually scientific considerations of the subject' (Steiner, 1924a: 9). He noted that

Nowadays we are wont to attach the greatest importance to the physical and chemical constituents. To-day, however, we will not take our start from these; we will take our start from something which lies behind the physical and chemical constituents and is nevertheless of great importance for the life of plant and animal. (Steiner, 1924b: Lecture 1)

This mysterious 'something' was, Steiner argued, the influence of the cosmos on all life on Earth. These more spiritual aspects appear to have been a strong draw for his early followers. One attendee suggested that the course was a time 'when spiritual treasures of the greatest significance were entrusted to our care', and thus that farmers were guardians of this spiritual gift, 'for the well being of the Earth and her creatures' (Ritter, 1926: 52–54). Notions of holistic healing, and the planet as a living organism, run through biodynamic philosophy; Ritter reported that it 'brought to our consciousness the fact that the farmer . . . seeks to become a healer for Earth, plant and animal', and 'can finally become, by this

activity, a healer of men' (1926: 53). However, Steiner himself placed great emphasis on the importance of practical experiments to test the advice he was giving:

... the lectures should be considered first of all as hints, which for the present should not be spoken of outside this circle, but looked upon as the foundation for experiments and thus gradually brought into a form suitable for publication. (Steiner, 1924a: 10)

Within a few years, Steiner's lectures had been translated and circulated in most countries in Europe, as well as in Asia, Australia, New Zealand, America and Africa (Paull, 2011). In 1938 (13 years after Steiner's death), a book detailing the biodynamic approach was produced (Pfeiffer, 1938) and translated into in English, German, Dutch, French and Italian.

In common with other alternative agriculture practices, biodynamics pays close attention to soil life and fertility. Soil is not viewed as inert matter, but rather as a complex ecosystem, imbued with energy and life, and the abilities of these networks to positively impact soil fertility are usually perceived to exceed industrial-agricultural methods such as the Haber-Bosch system of artificial nitrogen fixation. Unlike other alternative agriculture methods, however, biodynamics seeks to promote soil fertility by administering special herbal preparations to fields and compost heaps at specific times of year, which are intended to concentrate or build cosmic, ethereal and astral forces that shape animal and plant growth, enliven the soil and promote decay (Ingram, 2007). Holistic and spiritual principles continue to underpin modern iterations of biodynamic practice; the Biodynamic Association of the UK states on its website that

For us agriculture is a sacred endeavour, and the foundation for all our well-being. Our roots are ecological, ethical, social and spiritual. Our aim is to regenerate the health and vitality of our soils, gardens and land; the integrity of our food; and the health and wholeness of our communities.<sup>1</sup>

Biodynamics now has a significant global following and an international organisation, Demeter, has been established to oversee certification. Over 5000 biodynamic farms are registered across more than 50 countries worldwide (98 of which are in the UK), amounting to 180,000 hectares – although many small biodynamic farms are not officially certified and so are not accounted for in these figures.<sup>2</sup> The wine industry, in particular, has seen a steady increase in producers adopting biodynamic principles (Castellini et al., 2017).

The success of biodynamics can, in part, be explained by its recourse to experimental science as a critical strategy in broadening its appeal to farmers (Ingram, 2007), alongside the growth in markets for organic food more broadly. Indeed, the effects on biodynamically treated soils have been researched and reviewed favourably in the context of mainstream science (e.g. Reganold et al., 1993, 2001). However, as Mrill Ingram (2007) points out, the spiritual aspects of biodynamics have not been so well received in cultures where science and spirituality typically are seen as occupying opposite ends of the spectrum. At best, the spiritual practices tend to be regarded as wacky distractions with no discernable influence on soil fertility; because they cannot be objectively tested or validated, as one horticultural scientist has put it, 'this means any effect attributed to biodynamic preparations is a matter of belief, not of fact'.<sup>3</sup> This statement reflects a widespread dismissal of the potential importance and material effects of *belief* in agriculture, and it is with this oversight in mind that I turn my attention to practices soil spirituality in this article.

## Soil spirituality

Maria Puig de la Bellacasa's recent work (Puig de la Bellacasa, 2016, 2019) has situated spirituality as an important terrain of inquiry in relation to human–soil relations. Her work draws inspiration from Susan Leigh Star's calls to include spirituality into our analyses of nature-cultures, in order to focus attention on the 'spaces between' which are often left unseen but which can hint at radically alternative practices and imaginings of community and politics (Puig de la Bellacasa, 2016). She also expands the concept of care in relation to soils. Acknowledging a well-established tradition of feminist scholarship on the ethics and politics of care which points out the often unjust ways in which (gendered) practices of care and social reproduction intersect with capitalist production (e.g. Fraser, 2013; Katz, 2001; Tronto, 1993), Puig de la Bellacasa works, alongside other scholars, to extend notions of care to more-than-human worlds. This is a topic fraught with contradictions, as she acknowledges in the introduction to her book *Matters of Care* (2017). Such tension is epitomised, for example, in Donna Haraway's call to develop kinship between species; a request which – Haraway concedes – raises the unsettling question of 'what must be cut and what must be tied if multispecies flourishing on Earth, including human and other-than-human beings in kinship, are to have a chance?' (Haraway, 2016: 2). Haraway herself seems to come down on the side of caring for non-humans at the expense of human life, via a thinly veiled contempt for human population growth – a decision that Sophie Lewis (2017) has lamented both for its (anti-feminist) ethical repercussions and its obscuring of the violent and unequal socio-economic structures that are much more worthy, she argues, of our scorn. But such tensions, as Puig de la Bellacasa suggests, should not be a reason to set aside notions of care, but rather to keep exploring their contradictions in relation to seeking non-exploitative forms of togetherness: '[w]e cannot afford to obscure the actual more laborious and situated conditions in which care takes place and by which its agencies circulate in interdependent more than human webs' (2017: 24).

An interest in spirituality might seem at odds with current efforts in the natural sciences to protect and restore soils which, as mentioned, are often directed towards technical practices. However, as Anna Krzywoszynska (2019) has recently argued, in order for soils to flourish, there needs to be an extensive 'care network' in place, encompassing policy and governance right through to the grower's individual intentions and beliefs. Acknowledging such diversity is not about pitting one knowledge practice against the other but rather about acknowledging the extent of their co-existence and interdependence. Indeed, agriculture, as an activity where human and more-than-human others are so intimately intertwined, has long been an activity around which spiritual meaning gathers; agriculture is not only a technical exercise for the procurement of food, but also an expression of people's relations with more-than-human others, and of nurturing and receiving (LeVasseur, 2016). And yet, spiritual meaning is rarely accounted for in the predominantly secular, reductionist and rational ways in which modern agriculture is narrated; as Tom Smith et al. (2017: 141) note more generally, magic, spirituality and the uncanny in everyday life are 'often ignored and unseen but [are] almost paradoxically ubiquitous' presences.

Indeed, when theorising the so-called 'Anthropocene', and particularly in efforts to decolonise it, Dipesh Chakrabarty contends that it is necessary to 'take gods and spirits to be existentially coeval with the human, and think from the assumption that the question of being human involves the question of being with gods and spirits' (Chakrabarty, 2000: 16). This means taking spiritual meanings seriously as pragmatically significant agents in social life, and recognising new ontological grounds upon which to examine the interactions of tangible and intangible worlds (see Blanes and Espirito Santo, 2014; Willerslev, 2013).

'Spirit', as Bronislaw Szerszynski suggests, is a central and yet poorly conceptualised aspect of this planetary era; spirits and other beings are increasingly being convened, both to invoke stories of the Earth's ongoing transformation, and in relation to situated dynamics of energy, value and power (Szerszynski, 2017: 253).

Engaging spirituality may be relatively novel in the context of Western, imperial knowledge cultures, but other cultures have long held spirit to be an important aspect of world-making. This is particularly the case for indigenous knowledges and practices, many of which weave complex cosmologies that are fundamentally 'posthuman' (itself an ontological term that is often misleadingly used by Euro-Western academics *as though such a position was a new discovery* (see Sundberg, 2014; Todd, 2016)). Indeed, many indigenous scholars, activists and philosophers have detailed how such cosmologies are alive to the possibilities of sentient environments and relationships between all things (e.g. Cajete, 2000; Kimmerer, 2015; Sheridan and Longboat, 2006; Watts, 2013). In this context, biodynamics is but one – relatively new and Euro-centric – point in a constellation of posthuman knowledge practices that have existed for millennia. As such – and although I broadly present biodynamics in this article as capable of fostering a more-than-human ethics of care – it is worth questioning whether biodynamics is decolonial or anti-imperial on the basis of its spirituality alone. Rather, it is necessary to acknowledge biodynamic's geo-historical and bio-graphic location (Mignolo, 2009): Steiner himself was Austrian, his original lecturers on biodynamics were delivered in Poland, and in the early 20th-century biodynamics spread rapidly through European networks to settler-colonies of Australia, Canada, South Africa, New Zealand and the United States. The headquarters of Anthroposophy, also a key instigator of biodynamics research, is located in the Goetheanum, Switzerland (Paull, 2011). In many ways, Biodynamics embodies the kind of incommensurability inherent to much posthuman thought in Euro-Western contexts; while it might well contribute to an ecological ethics, this does not automatically mean it contributes to *decolonialism* – rather, it may do the opposite (Tuck and Yang, 2012). While an in-depth discussion of these tensions is beyond the scope of this article, it is important that I highlight the relationships between posthumanism, decolonialism and spirituality here as a way of contextualising – and potentially problematising – what follows, and I will briefly revisit this in the concluding section.

I also must clarify how I interpret the notion of 'spirit', which is a nebulous term. Like Szerszynski, I do not use it to refer to religion or in relationship to a single body, but rather to indicate 'any embodied or disembodied non-human agency that is experienced, interacted with or is otherwise socially consequential' (Szerszynski, 2017: 255). In relation to soils, Puig de la Bellacasa uses spirit to refer to distributed non-human agency, a sense of *enlivenment* that nods to a shared material destiny (Puig de la Bellacasa, 2019: 400). In resurrecting the notion that the biophysical world might have spirit (something that that has historically, at least in Western contexts, been denied by scientific rationalism and industrial commodification), Puig de la Bellacasa plays with the idea of the 'vital force', which has referred to that inexplicable principle of animatedness of the living world, mysterious precisely because soil aliveness is not explicable by mechanical principles alone (Puig de la Bellacasa, 2019: 403). However, she notes that spirituality is a double-edged sword for describing the kinds of more-than-human enlivenment that she speculates about. On the one hand, the very word spirit is entrenched in a tradition of separation of spirit and body, mind and matter, and is therefore an ill-suited word for the kinds of materialist meaning-making practices she is interested in. On the other hand, if we return to the root of the word 'spirit' (*spirare*, 'to breathe'), then we are reminded that every living being needs this breathing; in respiring, we share a material destiny (Puig de la Bellacasa, 2016: 13). Ultimately, I use the word spirituality in lieu of a new or better word to describe 'that mysterious, unexplainable, and even

irrational something . . . that dwells in the possibility of a community to come' (Puig de la Bellacasa, 2016: 14, drawing on Davis and Weaver, 1975), and also because pronouncing the very word 'spirituality', despite – or perhaps because of – its baggage and connotations, might yet create openings and questions to think with in relation with soils.

My interest in soil spirituality therefore follows a feminist approach that draws attention to practices and experiences made invisible or marginalised by dominant, 'successful', forms of technoscientific mobilisation (e.g. Gibson-Graham, 2012). It also corresponds with calls for a re-enchantment of geography more generally, with enchantment being put forward as a reparative, ethical approach to research, which seeks to direct attention from 'repression and oppression to possibilities and potentialities' (Bennett, 2001; Woodyer and Geoghegan, 2013: 197). I am motivated by a desire to glimpse alternative, liveable relationalities that are always and at once at play in a world. Learning how to live better together in these fraught times requires 'a commitment to noticing things not (only) falling apart, but (also) coming back together again' (Jones, 2019: 3); accordingly, stories of everyday care need to be told, because actively storying these margins contributes to other possible worlds in the making (see also Cameron, 2012).

The story that follows emerges through my involvement with Cae Tan, a Community Supported Agriculture (CSA) scheme that practises biodynamics in south Wales, UK. Cae Tan was established in 2014 and is now the largest CSA in Wales, supplying weekly vegetable boxes for about 120 households (of which mine is one). My experiences with Cae Tan span a five-year period, with most of the research for this article gathered during the summer of 2015 when I volunteered regularly and attended workshops and events at Cae Tan's field; this was an intensive period of learning though 'joining in' (Ingold, 2014: 386), and through in-depth conversations with key staff and volunteers. I had no prior knowledge or experience of what biodynamics involved; indeed, I had never spent extended periods of time on a conventional farm, let alone an unconventional one. This research combines participant observation and interview material with my personal experiences of biodynamics. The latter perspective has been useful for noticing some of the bodily and affective engagements with biodynamics that are important realms of experience, knowledge, politics and learning (Anderson, 2009; Crang, 2003; Dewsbury, 2010; Thrift, 2011). It also aligns with a recognition that ecological crises – while planetary in their reach – are also felt at 'the visceral register of being' (Erev, 2019: 3). Remaining attentive to my own responses to biodynamics has therefore helped me to reflect on issues of subjectivity and agency that are central to the kinds of relational, posthuman environmental ethics that I am interested in exploring (e.g. Braidotti, 2019; Whatmore, 1996).

In the following sections, I illustrate, first, some of the ways in which biodynamics cultivates more-than-human sensibilities, as well as enlivened and deepened imaginings of soil as something *in relation*, rather than merely as an inert substrate. The second section explores the role of ritual in biodynamic practices, and how this serves to enrol humans as members in soil ecologies. The subsequent two sections visit an apparent tension, that is, the value that biodynamic rituals hold for Cae Tan's growers and volunteers, and yet a simultaneous reluctance to promote Cae Tan as a biodynamic farm because of the ways that a spiritual angle can be construed as 'hocus pocus'. The final section concludes with some thoughts about what spirituality might offer a soil care network in-the-making.

## **Matter, energy and atmospheres**

'It all sounds like witchcraft!' Tom – Cae Tan's founder and main grower – laughed as he explained the origins of a crumbly mixture of moist cow manure and various herbs that now

lay in the bottom of a chipped green tea mug in his hand (Figure 1). This biodynamic preparation had recently been dug up from the earth on Cae Tan's land where it had been fermenting in a cow's horn for several months. Today, on a muggy mid-July afternoon with wet grass underfoot, I was joining a small group of people – Tom and the assistant grower, Lizzie, and two Cae Tan volunteers – who had gathered to participate in today's administering of the preparation to Cae Tan's field in its first year of food cultivation, after many years of lying fallow under previous ownership.

Biodynamics is distinctive because it performs an attentiveness to the 'micro-world' of soil life through very particular material practices, which follow precise guidelines. Chief amongst these practices are the herb and manure preparations, of which there are nine variations depending on the time of year and the requirements of the soil. These preparations are administered – using a ritual that I will discuss more later – to the fields, crops and compost piles to promote fertility. Fertility is understood in both a material (microbial) sense as well as in an 'ethereal' sense, as this quote from Tom, describing the contents of that day's preparation, demonstrates:

it's manure from a cow that's fertile, that's got a calf, so already [the preparation has] got that fertility influence from the cow, and the cow's basically got this extremely long intestine that's got like loads of microbes in, so you get all the fertility from the intestines ...

This chain of fertility is perceived to extend from the soil, to the nutrient content of the plants growing in it, and so to the health of the people eating them. Tom explained to me how the biodynamic process is about 'connecting everything up', noting that when the soil isn't fertile, the plants can't access a full range of nutrients and consequently there is a general 'dullness' of life – which extends to humans when they eat nutrient-poor plants. Such a sentiment hints at a kind of 'vagabond materiality' (Deleuze, 1979); a sensitivity to the *vagueness* and *fuzziness* of matter, its instability and activeness and the ways in which material qualities are transferred and transformed. It highlights, too, the ways in which



**Figure 1.** A biodynamic preparation for soil fertility. It consists of fermented cow manure, recently recovered from a cow's horn that has been buried underground.

edible materials co-constitute the very molecules of our bodies, blurring perceived boundaries between ‘inside’ and ‘outside’ (Bennett, 2007: 134). As Bennett (2007: 145) contends ‘food—as a self-altering, dissipative materiality—is also a player. It enters into what we become’.

Ideas about energy and forces are also central in biodynamics, as this is how fertile qualities are shared and distributed. Tom frequently used words such as ‘vitality’, ‘energy’ and ‘quality’ to refer to what was going on in the ground. He described how he envisaged the work that energy does:

if you imagine the earth’s energy pushing out in the summer and everything grows, like all these tomatoes are shooting up, but then in the winter, all the focus is back in the earth. So it sort of goes backwards... it goes in on itself. So, you’re kind of trapping that inward energy... everything that’s happening here at the moment is actually happening under the soil in the winter, all this sort of busy, life force. So you’re kind of trapping that, in this cow manure in the cow horn ...

An attentiveness to energy also includes the energies of daily weather, seasonal conditions and planetary motions. Tom went on to explain that

the fertility [preparation] for today, the cow manure one, is all about building that downward, fertile energy in the soil. So you’ve got, like [today] the moon is descending, [and] you [spray it] after three o’clock when [...] the day is coming to an end, um . ideally the moon in its phase, will be closing, um ... but it depends whether you can get it all right or not—and also, ideally you’d have a day like today, not necessarily raining, [but] it should just be like a heavy, muggy, overcast sort of downward-pushing day.

This description of the ‘downward-pushing’, heavy, energy of the atmospheric conditions and the connection Tom makes between this and the fertility of the soil and the timing of the preparation resonates with what Mark Jackson and Maria Fannin (2011) have called ‘aerography’ – the experience of air as simultaneously meteorological *and* affective. That is, the atmosphere is imbued with a sense of feeling and meaning, as something which surrounds us – a ‘weather world’, where there is an ‘involvement of the land and air’ (Adey, 2015: 57). What’s more, to wait for the ‘right’ conditions is to heighten one’s awareness that the air, the winds and humidity are to a large extent beyond human control (Rose, 2013). For some, it has been a taking-for-granted of the elements – and in particular of the atmosphere – which has resulted in so many of today’s environmental woes: ‘what is climate change if not a consequence of failing to respect or even to notice the elemental medium in which we are immersed? Is not global warming, or global weirding, a simple consequence of taking the air for granted?’ (Abram, 2014: 301). In directing attention towards air and its qualities, and the effects these have on soil and plants, biodynamic practices make it harder to take this elemental medium for granted.

Biodynamic’s attentiveness to the three-dimensional interplay of the air, land and celestial bodies also suggests a ‘willingness to think through the compositional depths and dynamics of the planet’ (Clark, 2017: 216). Tom’s comments pay deliberate attention to the physical constitution of space, the agency of non-human entities and earthly energetic influences. As Bruno Latour has argued with his concept of the critical zone, an appreciation of *depth* and all manner of entities and elements that compose these depths, from the top of the lower atmosphere to the bedrock below, is crucial for developing an ethical politics of soil. Thinking this way, Latour argues, is a more manageable way of imaging our



responsibilities towards the land in a grounded, localised way rather than in relation to (a somewhat overwhelming notion of) the ‘whole planet’ (Latour, 2014: 4).

There is something of an ‘airy poetics’ (Choy, 2011; Engelmann, 2015) in Tom’s description of atmospheric influences in biodynamics, an elemental imaginary which develops an awareness of the simultaneous material, affective and aesthetic impressions of air. Tom’s description of atmospheric conditions demonstrates a sensitivity to how other beings attune to air and how subtle flows of energies influence their lifeworlds. As Timothy Choy (2011: 157) writes, ‘[a]ir muddies the distinction between subjects and environments, and between subjects. This thickness and porosity rendered by air is part of what makes the air and the airborne such deeply felt elements’. This leads us again to Puig de la Bellacasa’s idea of shared material destinies; how a need to respire – and thus a dependence, ultimately, on the atmosphere – connects all living things.

In biodynamics, non-human beings are also understood as possessing their own particular affective atmospheres (see Lorimer et al., 2017). For example, Tom contrasted the cow horn preparation with another one which involves a stag’s bladder:

the cow is this earthy heavy thing, it’s always got its head down it’s always eating, and they say that the cow’s consciousness is not in its head, it’s in its belly, it’s got like . . . four stomachs . . . so they say the cow’s consciousness is more in its belly than in its head . . . so a cow like processes the land, and its consciousness is totally processed through its gut? And the stag, is completely the opposite, it’s like the most alert creature, it’s all up there [head], and it’s like totally awake and really skittish, and it’s getting that energy, and its bladder is totally related to—it’s the first thing that sort of releases in fear, so it’s getting that total awareness and brightness, and combining it with the total opposite of the cow.

Herbs and plants in biodynamic preparations (yarrow, chamomile, nettle, oak, dandelion and valerian, amongst others) are also used for their medicinal and energetic properties (yarrow, for example, if associated with qualities of strength and protection and is used for replenishing tired soils), which are thought then to be passed to the soil, to the plants, and so to whoever eats them.

Whether or not such atmospheric, energetic attentiveness leads to ethical regard, and care, is not necessarily easy to discern. However, in my experience, there is an implicit sense of care in the ways in which, through biodynamics, human participants are encouraged to engage with more-than-human entities as things that are alive and energetic, and with their own particular lifeworlds. In addition, reflection on the interdependent, three-dimensional nature of multiple more-than-human worlds (soils, animals, atmospheres and planets, in this case) is, as Hannah Pitt (2018) suggests in her study of care in community gardens, more likely to generate caring relations than if attention is directed only towards specific (and isolated) non-humans.

## Ritual

After Tom had explained to us what the intention for the cow manure preparation was, we went to collect water from a nearby stream which was then poured into a copper barrel – copper being a material which is ideal for this purpose, according to biodynamic guidelines. The preparation was first combined with a little of the stream water and warmed over a stove, and then added to the water in the barrel. This then needed to be stirred, by hand, continuously for an hour. Tom explained how the vortex created by the stirring motion was intended to mimic the movement of the planets (Figure 2). We sat chatting on the grass next



**Figure 2.** Tom, Cae Tan's main grower, demonstrates how to stir water for the biodynamic preparation in order to create a vortex. This has to be maintained for 1 hour before the preparation can be sprayed on the land.

to the rows of crops, all the while taking it in turns to plunge an arm into the water and stir vigorously for as long as our muscles would allow us. As we handed over to the next person, we had to be careful not to let the vortex subside. Tom explained why this method of stirring was important:

you mix it in a spiral, so you cause like a vortex—you build up the speed of the water, and in about 15–20 seconds, you can see right to the bottom of the barrel? And then basically as you see to the bottom, then you turn the other way and it just causes chaos and everything breaks. And every time you cause chaos, it kind of imprints . . . well it imprints different things, it imprints, like, the influence of that day, and what's going on, so all the atmospheric conditions . . . you're kind of trapping them and printing them on the liquid that you're gonna spray on the land, and also your intentions as a group of people or an individual, sort of naturally goes into it.

At one point during the stirring process, one volunteer laughed that his 'left back-hand' stirring motion was 'rubbish' and that he feared if there was a patch on the field that doesn't grow properly this season it will be his fault. Finally, the mixture was poured out into plastic trays, one for each of us to carry under one arm as we walked between the crop rows, flinging the water from the tray with the fingertips of the other hand so that the mixture would fall in an arc across the soil and crops. This arcing motion (akin to that of scattering seeds) is also intended to mimic the motion of the planets, Tom told us.

Regardless of the efficacy of such rituals in terms of crop health (more on this later), I was struck by how it affected *me*. I was surprised to find myself feeling a personal responsibility towards the preparation and the soil: like the other volunteer's worries about his 'rubbish left back-hand', as I stirred the water I wondered if my technique, or even my thoughts, might affect the quality of the preparation. I wondered what *I* was imprinting on the water. The action of stirring, together with the talk of intentions and atmospheres and energies, therefore alerted me to possibilities of immaterial, affective influences between humans and

soil which are rarely entertained in more conventional approaches to agriculture. Moreover, the significant amount of time spent carrying out the ritual was itself an immersion in more-than-human worlds – the water on my skin, the grass I sat on, the air I breathed – a space ‘for the mind to mull over what floats by on the affective tide, or to swerve from its course as momentum decreases.’ (Gibson-Graham and Roelvink, 2010: 322). In this sense, the rituals associated with the biodynamic preparation also disrupted the kinds of fast, efficient, productivist temporalities of industrial agriculture. Indeed, making time for soils, as Puig de la Bellacasa (2015) suggests, helps to reveal a diversity of more-than-human interdependent temporalities – in this case, the interplay of bodily tempos (our aching arm muscles), daily rhythms, seasonal changes and lunar and planetary orbits.

The ritual of stirring water for an hour and applying it to the land is also a way of enrolling human actors into soil ecologies in more conscious ways. Ritual is one technique for cultivating bonds between fellow humans *and* between humans and more-than-human soil biota (Grimes, 2003). There is a ‘sensual directness’ in the performance of biodynamic rituals, a bodily closeness through which we are

invited to claim commonness and connection to the materiality we share with soil and other forms of elemental matter. There is a feeling that we may reduce distance by allowing ourselves to become physically intimate with the soils that we have culturally learned to avoid. (Puig de la Bellacasa, 2019: 398–399)

Here, rituals are ways of cultivating a sense of attentive membership *through which* soil ecology can be learnt.

Ronald Grimes (2003: 43) is careful to differentiate between an idea of ritualised human life being conservative, ‘one-dimensional, stereotyped, and inflexible’, and a much more enlivened understanding of ritual. In this latter understanding, environmental rituals are a way of bringing performance, theatre and creativity outside, instead of staged within theatre walls (Schafer, 1991). It is a means by which participants might, as Roy Rappaport (1999: 125) puts it, ‘enliven the order that they are performing with the energy of their own bodies, and their own voices make it articulate. They thereby establish the existence of that order in this world of matter and energy’. This sentiment about embodying earthly energies through rituals of growing and cultivating food is reflected in a comment from one of Cae Tan’s regular volunteers, who told me that:

Well . . . life is not embodied, necessarily, but it can become embodied by going through a certain process . . . so, it’s not the other way around. I mean that’s just a fact, the planet—whatever life is being generated on this planet is flowing through us, we’re not creating that life . . . you know.

Biodynamics may have an anthropocentric aim (to produce more nutritious and abundant plants for humans to eat), but it is underpinned by an understanding that place has agency, irrespective of human presence and awareness. The rituals are performed by humans, but humans are not considered the sole players. Rituals enable an emotional, embodied understanding of interdependence as well as an intellectual one, and this, as Grimes (2003) contends, is not easily expressed by other means. In ritualising, humans discover, then embody and cultivate their world views, attitudes and ethics. Attitudes must be cultivated by practice; performance is therefore an integral process in and of ecosystems (Kershaw, 2012). Tom’s summary of biodynamics conveyed as much:

[It’s] just reconnecting, when you go through the [whole process], it’s like reconnecting you with the soil, the food you’re eating, all the atmospheric conditions, where the moon is, what the

planets are doing, and it's just sort of . . . you're kind of working with all of it, in a very sort of practical, getting-your-hands-dirty way.

Notions of interdependence, gratitude, humility and co-becoming have much in common with panpsychist and indigenous philosophies that engage spiritual dimensions of the material world, as well as human and more-than-human non-existence and co-creation (e.g. Rigby, 2014; Watts, 2013). For example, Freya Mathews finds points of confluence with Daoism, particularly in a favouring of 'practices of conserving and cherishing "the given"—that which already exists—replenishing the sources of renewal in natural cycles so that 'production' is accomplished largely by the world itself, without our having to direct and design the process' (Mathews, 2006: 99; see also Kimmerer, 2015, for a Native American perspective on the world as gift). Likewise, the volunteer in the previous but one quotation also told me that the reason he got involved with Cae Tan was in part about

actually appreciating that our very lives are given to us as bounties, you know . . . we dream . . . the sense organs that we are observing everything through, you know . . . these things are amazing gifts, you know you're provided with all that you need . . . you know, it sounds like a throwback to some sort of biblical thing but it is just a fact—you know, er, the planet itself is what's producing us, and every other life form on it . . . it's kind of like the planet is the, er, the petri dish, if you will, that everything is growing on . . . it's the petri dish . . . nothing can survive [without it].

Importantly, biodynamic rituals enact and imagine a more-than-human world within which humans participate and co-operate, rather than outright control. Celebrating what is given 'as bounties', as this volunteer says, also alludes to a rather more benevolent imagination of the world than one in which nature is something that must be subdued, destroyed or outwitted. It constructs a notion of human agency which aligns '*with* rather than against the grain of existing conativities' (Mathews, 2006: 99), and thus resonates with an often neglected idea (e.g. Bawaka Country et al., 2016; see also Kropotkin, [1902] 2012) that ecologies (humans included) depend on co-operation and co-becoming as much as on competition.

### **Hocus pocus?**

Although there are favourable research findings about biodynamically treated soils with regard to the presence of microbial life compared to non-biodynamically treated soils, these successes are often put down to the more conventional, organic methods that biodynamics incorporates, rather than the ritual practices and preparations themselves (e.g. Spaccini et al., 2012). For example, one soil scientist has described the practice of administering herbal preparations as akin to 'driving a tractor naked' in terms of its actual effect on the soil (see Ingram, 2007: 307), a comment which hints at the kind of mockery that spiritual practices can sometimes elicit. Members and staff of Cae Tan with whom I have had conversations are not oblivious to biodynamic's somewhat wacky reputation. The landowner who leases the land to Cae Tan, and who is also a member and occasional volunteer, told me that 'Yeah I mean it might be all hocus pocus but it's ah—certainly not doing any harm!'

This raises an interesting point about the work that such rituals do. Whether one believes that the effect of biodynamics on the fertility of the land comes from the biochemical properties of the herbal preparations, or that the effect comes from people's intentions 'imprinting' on the water, is, therefore, not of central importance. The landowner added that

um, it's interesting... I think, yeah, I think it's kind of good... I mean even if [people don't] have a sort of appreciation on that kind of spiritual plane... they always appreciate how sort of intuitive they are about the land and about the relationship between the plants [...] I mean life's too full of... we're just obsessed by doing rational things, and I find it kind of quite a... creative... release. You know I think I like doing things for no rational reasons ...

Another Cae Tan member and volunteer, when I asked her about biodynamics, also told me:

... I mean, there's so many things in life that you can't understand or try and like... you know, things that don't make sense, but they don't need to make sense you know? Like, if it works and you see the results of it then—OK, I don't understand how a little cow's hoof [...] it's best [not to] try to have to make sense of things, you know? Takes all the magic out of life if you have to always make sense. So um... I keep my mind wide open! And say 'yeah, bring it on! sounds good to me!' [...] It's definitely not doing any harm!

These people seem to be comfortable with the spiritual elements of biodynamics, whether or not there is 'proof' of its efficacy. In one sense, this reflects an attitude which, according to Ingram (2007: 304), is frequently voiced by members of alternative food networks, that 'biologically complex systems are very difficult for conventional science to accurately embrace'. Rituals therefore occupy a space in which people are willing to suspend their disbelief, but also in which they can express their dissatisfaction with a purely rational explanation of the world, as the comments above suggest. In other words, expressions of spiritual meaning can be expressions of political resistance to dominant modes of environmental governance which tend to silence more embodied relations and perceptions of more-than-human others (Sullivan, 2010: 126).

These comments from volunteers also give a sense that they value an element of mystery inherent to biodynamics. Indeed, the Biodynamic Association explicitly states on its website that it is a method that 'embraces the mystery of all life processes, including the subtle and energetic realities that are not necessarily easy to measure or justify using current scientific methods'.<sup>4</sup> It may not be clear what the ritual does, if anything, but that's part of the appeal – there is a sense in which some things are beyond explaining, and, indeed, that they don't need to be explained. This sentiment was echoed in a webinar on biodynamic agriculture that I attended in May 2020, when one participant ventured that perhaps it is the unknowable of ecosystems that is important and something that ought to be accepted, with reverence. This space for mystery may also be an important aspect of attentiveness and care, as rituals offer a way to listen to what is otherwise silent and unobservable, providing a language to express the otherwise inexpressible (Lévi-Strauss, 1963; Rose, 2010). Katherine Yusoff (2013) has argued that in order for attentiveness to nurture an ethics of care in more radical and extensive ways, it needs to attend to what is *insensible* in the more-than-human world; a 'blind ethics' that is not limited to those relations that can be seen, felt, smelt or heard by humans by usual means. This is crucial given the insensibility of much of what sustains life on Earth, as well as what is destroying it. Similarly, Puig de la Bellacasa suggests that playing with a metamorphic re-arousal of mystery could be useful for soil ethics: 'returning the spirit to the soil brings back the mystery of the vital force into the more than human soil community because here soil aliveness is not explicable by mechanical principles' (Puig de la Bellacasa, 2019: 403). In this sense, rituals provide a means for imagining and perceiving soils in their (mysterious) complexity *without* disturbing or destroying them.

While biodynamic rituals can be thought of in terms of attuning to those more ephemeral aspects of the more-than-human world, they can also provide ways of collectively *doing* something in it, living in it, acting in it and transforming it – which itself transforms each human protagonist's relations with their own knowledge, hopes, fears and memories and provides a starting point for ethical and political deliberation (Stengers, 2005: 1002). The Cae Tan volunteers quoted above were prepared to put their doubts about biodynamics aside, in part, as a political act. As one put it to me,

I feel like . . . well . . . the world needs hope right now, and the world needs inspiration, and the world needs positive vibes, and it needs to feel like, amongst all of the chaotic stuff that's happening, that there is something good going on. And even if you bumble your way through it or you're not quite sure, the fact that there's still some aspiration um, the fact that you look towards the dreaming instead of . . . concentrating on the negative . . .

Grimes (2003: 44) suggests that people perform rituals to discover ways of inhabiting a place. As the comment above suggests, finding ways of inhabiting place seems to be a particularly fraught – but, arguably, essential – activity in these chaotic and worrying times. My experience of spending time at Cae Tan and participating with the biodynamic preparations leads me to agree with Puig de la Bellacasa's (2019: 403) suggestion that

fatigued and exhausted soils need heartening, but [. . .] so too the humans who strive to care for them. Acknowledging indeed that this might be a projection of empathy, my stance is that human–soil relations also (re-)animate in the sense of *raising spirits up*. From the lure of wonderful soil biological worlds and its teeming wonder, to the embodied hope of eco-poietic everyday soil care and joyful sensual proximities, in the promise of a composted afterlife, these stories speak of joy, hope and possible versions of humanness other than the world destroyer.

An involvement with soils' aliveness through biodynamic rituals not only animates hitherto objectified worlds, but in my experience it also intensifies a sense of ecological belonging and restorative purpose, which is linked into and supports a wider network of human and soil well-being.

### **Who caring for whom?**

Cae Tan's general approach to agriculture does, indeed, seem to be about heartening humans as much as soils; in addition to the biodynamic method, Cae Tan operates a CSA model which is based on mutual trust and co-operation: members pay regular instalments throughout the year, cushioning the grower's exposure to market changes and seasonal crop fluctuations, therefore freeing them to concentrate on growing good-quality produce for their members. Members are encouraged to get to know one another through harvest parties, volunteer days, recipe-sharing and social media. These webs of interrelations and dependencies all feed into the care network which ultimately supports the health of the soil (Krzywoszynska, 2019). Biodynamics and the CSA approach are mutually supportive; biodynamic methods produce nutritional food which is valued within the framework of a CSA community, while the CSA provides the kind of financial security for the grower so that they can make time for the soil's needs (Ingram, 2007).

During my time as a member and volunteer with Cae Tan, however, I noticed a reluctance to put the biodynamic approach in the spotlight. One regular volunteer told me that he tends not to go into the 'spirituality stuff' when he speaks with groups of visitors because

it tends to ‘turn people away’, adding that he feels people increasingly need these issues to be presented to them in secular ways. Tom also mentioned to me that he prefers not to ‘force’ the biodynamic aspect on people – it’s there if people want to know more, but he is concerned it might make Cae Tan feel less accessible. This hesitance comes through in Cae Tan’s publicity: biodynamics is rarely mentioned, and if it is, it is only by name (for example, on Cae Tan’s website – ‘We grow and supply fresh, seasonal, biodynamic produce to our members weekly throughout the year’<sup>5</sup>), without a description of what biodynamic agriculture actually entails.

Instead, Cae Tan’s publicity centres around the CSA model, particularly aspects such as closer relationships with food, with other members, and between consumer and grower. As Tom explains in a short film about Cae Tan, ‘CSA is more than just supplying food to people . . . we’re creating something bigger, we’re reformulating how the local food system works’.<sup>6</sup> A Cae Tan fundraising campaign in 2015 also emphasised this ‘big picture’ sense of belonging and care:

If you want a different kind of agriculture that cares for the soil, and cares for what goes into our crops, then we need the community to make that happen. [ . . . ] If we look after our soils, the soil’s going to grow healthy plants and those plants are going to be rich in nutrients, and going to give us the nutrition we need.

In the CSA model, human community takes centre stage. As Jennifer Hayden and Daniel Buck observe, ‘member participation is critical in establishing and maintaining a connection to the farm that inspires commitment to a particular CSA’ (Hayden and Buck, 2011: 333), and an online members survey carried out by Cae Tan in 2015 showed that many people identified feelings of community and the relationships between food, the grower and members, as a valuable feature of the CSA model. It is these community-orientated aspects of CSA which are deemed to present possibilities for more ethical relations with the land.

The sense of care and responsibility presented in the CSA model avoids any overtly spiritual meaning. There is little reference to the more-than-human agency, or indeed to the elements of mystery, that biodynamics is attentive to. Rather, the CSA model creates a more anthropocentric, secular focus whereby humans are stewards; caring for the soil appears as a one-directional act, with the simple purpose of growing food to eat. This is of, course, part of Cae Tan’s story, but I would suggest – given its biodynamic practices – it is not the *whole* story; biodynamics makes room for a more reciprocal understanding of human–soil relations, indeed, even the possibility that soil cares for *us*, rather than only us for it. Jane Bennett (2007: 143) recognises a similar tension in her analysis of the Slow Food Movement in America:

The strength of [the Slow Food Movement] resides in its ability to give consumers better insight into just what goes into their mouths: not only in terms of ingredients such as pesticides, animal hormones, fats, sugars, vitamins, minerals, etc, but also the exploitation of food workers, and the greed of agribusiness and its agents in Congress. But its weakness may be its anthropocentric allegiances, its tendency [ . . . ] to figure food as merely a resource or means.

The CSA model – while it has many benefits – is one that largely figures food as a resource around which a community of people can gather and reorganise local food production, and although there is a strong desire to care for soil, there are few indications that more-than-human soil and plant communities are considered as active participants. As Bennett observes, ‘this picture of food [ . . . ], as a tool to “be taken possession of”, perpetuates the

notion of nonhuman materiality as essentially passive stuff—on one side of an ontological divide between life and matter’ (Bennett, 2007: 145). In contrast, the biodynamic rituals – which are somewhat hidden from view in this case – seem to embody a more enhanced alertness to food as itself an agent within an assemblage that includes (but is not superseded by) human metabolism, cognition and moral sensibility. This is not to say that CSA and biodynamics are incompatible – indeed, they often go hand in hand, complementary in their shared (but differently orientated) endeavours to improve the health and well-being of society (Koepf, 1989). This returns us to the idea that a soil care network requires different perspectives and practices, working together (Krzywoszynska, 2019). However, one could question to what extent this is possible when some forms of soil care are rendered more visible than others.

Cae Tan highlights how spiritual meaning can sit uneasily in modern (agri)cultures. In this instance, it is easier – safer, perhaps – for Cae Tan’s leadership to narrate soil care through a lens of human stewardship; of humans caring for the soil rather than also the other way round. Although biodynamic rituals offer ways to animate soils and de-centre human agency, finding the language to talk about such ontological shifts is difficult. Traces of superstition and vitalism that nurture mystery and an attentiveness to what is *insensible* about our worlds (and thus, perhaps, towards more careful relations) are often sidelined by drives to map and measure, to know and to utilise; the overtly passive and/or secular frameworks within which soil life is figured more generally therefore constrain what *else* can be imagined.

## Concluding thoughts

The ways we make natures edible matter; that is, ‘what soils are conceived to *be*, visions and concepts of soil, will affect the ways they are cared for’ (Puig de la Bellacasa, 2019: 393). This, in turn, determines how great swaths of the Earth are used (and abused). Given this, it is more important than ever to consider *agri-cultures*; the ways in which knowledge practices bring different worlds into being, shaping the ways in which human participants are able to exist with others. If learning to care properly for soil requires learning to attend to soils as living communities, then the ways in which such learning is enabled through cultural practices are themselves worth telling stories about.

During my time spent with Cae Tan, I have learned to appreciate how a spiritual practice (biodynamics) can engender an attentiveness to soil as something that is agential, energetic and alive – a critical zone imbued with earthy politics, rather than an inert substrate subjected *to* human politics. It is possible to see how spirituality might enable more expansive modes of attentiveness and care than have been observed in conventional agricultural practices, particularly in the ways that it can get beyond some of the anthropocentric limitations of the soil care network (Krzywoszynska, 2019). For example, while relational ethics scholars have pointed to the ways in which attentiveness gives rise (through affective moments such as enchantment, curiosity or disgust) to relational ethics and a response-ability towards non-humans (e.g. Bennett, 2010; Ginn, 2013; Haraway, 2008), the mysterious, spiritual elements of biodynamics seem also to provoke an attentiveness to the possibility that humans are not fully in control; that there is something that exceeds us individually and collectively, and thus to the possibility that soil ‘cares’ for us, too. Spiritual knowledge practices can also introduce humility, such that we understand ourselves not (only) as stewards, but also – perhaps – as *relatives* in soil communities (Kimmerer, 2015; Puig de la Bellacasa, 2014).



Biodynamics is an example of a spiritual knowledge practice that strengthens notions of the soil care network as multidirectional and interdependent, with an attentiveness to care as a totality of living and non-living entities that enable life and mutually nourish one another (Lyons, 2014). Whereas attentiveness in more conventional farming practices has been observed to centre quite narrowly on soil biota, soil structure and soil organic matter (due to the productivity and efficiency benefits of doing so) (Krzywoszynska, 2019, 2020), biodynamics prompts an attunement to more ephemeral – and unmeasurable and *insensible* (Yusoff, 2013) – more-than-human worlds, such as the energetic qualities of air, water, plants and animals. In contrast to Krzywoszynska's (2019, 2020) observations of anthropocentric soil care practices on conventional farms (even those promoting soil conservation), the example of biodynamics I have presented here *does* support Puig de la Bellacasa's (2017: 200) assertion that an attentiveness to more-than-human worlds can result in production becoming secondary to nurturing what she calls 'immersed relation'. Indeed, this has been a central tenant of biodynamics from the outset, although it was always acknowledged that this represented something of a clash of cultures, as Ritter notes: biodynamics will 'give us the force to begin the fight against the "greediness" of agri-business [which is] turning the individual farms into mere mechanical "means of production" and the whole economic life into a "business"' (1926: 52).

Biodynamic spirituality offers an additional dimension through which caring relations may develop, that is, not *only* predicated on bodily encounter and proximity. As Pitt (2018) has argued, based on her research with community gardens, close contact alone does not make caring relationships inevitable. In biodynamics – as with other spiritual practices – there is a significant role for imagination and faith in addition to hands-on practices; at Cae Tan I observed how rituals such as stirring a barrel of water for an hour are different to other farming activities (such as planting and weeding), because they require not only a bodily and time commitment from the participants but also a willingness to have faith that these rituals will have an effect. Through such rituals, a person's imagination is enrolled and this, we know, is a vital aspect in creating more liveable worlds more broadly (e.g. Massey, 2004). In fact, Pitt (2018) contends that imaginative frameworks such as those developed through moral instruction and the sharing of narratives in farming/gardening practices may be more significant in generating care than the knowledge gained through bodily encounters, in part because they help people to develop a geographical imagination of interdependence dispersed far beyond our individual spheres of experience. Spiritual practices can therefore provide moral frameworks and stories to help people make sense of their encounters with soil and other more-than-human entities; given their potential importance, these realms of imagination and faith therefore deserve further attention in emerging soil care research.

While I am conscious of the dangers of romanticising spirituality and equating spirituality automatically with ethical relations (this is far from always the case), biodynamics is one example of how spiritual knowledges can be important influences in the material relations between people and soils. In recognising this, the ethereal notion of spirituality gains in thickness and flesh (Puig de la Bellacasa, 2016); not separable or transcendent from the material world, but integral to it. Here, spirituality is not a monolithic new religion, but rather something that 'arises from matter's own inner principles' (Mathews, 2006: 94) and 'a diversity of situated practices of invocation and thanksgiving appropriate to the cultural imaginary and ecosocial contexts' (Rigby, 2014: 287). As I have suggested, such practices might not altogether do away with ideas about human transcendence, and still must grapple with multi-species power relations (for the rituals can be seen in terms of manipulation of nature as well as celebrations of it), but they nonetheless significantly de-centre human agency. While there is no direct or easy link to be made here between biodynamic

spiritualities and the task of decolonisation, especially given its geo-historical roots, the practice *does* unsettle taken-for-granted, rational, secular ways of understanding soils that dominate contemporary industrial agriculture. Biodynamics presents one – of many – ways through which people are experimenting and (re)discovering ways of relating with the land that incorporate spiritual knowledges. Doing so, as Chakrabarty (2000) suggests, is a necessary aspect of decolonial – or at least, anti-imperial – endeavours. Necessary too, from a Western perspective, is the very experience of being unsettled and uncertain; of having previous assumptions and knowledges called into question (Singh, 2018).

The example of soil spirituality at Cae Tan that I have presented here highlights how shifts in awareness about soil care are not limited to technoscientific and economic practices. Indeed, as I mentioned in the Introduction, this era of global change might also be thought of as marked by questions of spirit; that is, rather than representing a *loss* of sacrality (as is often claimed), there is a great acceleration of spirit, coeval with a heightened awareness (within academia and elsewhere) of the pluriversal philosophies and teachings of non-western, indigenous cultures, as well as a proliferation of concepts such as quantum theory and non-equilibrium thermodynamics which seek to comprehend the ‘interlocking gradients and flows of energy, value, power and entropy’ that criss-cross the Earth in mysterious ways (Szerszynski, 2017: 253). Biodynamics makes no recourse to gods or spirits, but its philosophy is alive with energies, flows, more-than-human atmospheres and a sense of humility and reverence. Given how such knowledge practices can present opportunities for re-imagining the grounds beneath our feet, perhaps diverse soil care networks in-the-making have much to gain from embracing a touch of mystery and magic.

## Highlights

- Advances scholarship on soil spirituality and care
- Presents an in-depth account of experiences of engaging with biodynamic farming methods
- Argues that spiritual knowledge practices can help to re-conceptualise soils as lively ecologies, of which humans are members
- Illuminates a reluctance to openly discuss spiritual practices and more-than-human agency because of connotations of ‘hocus pocus’ irrationality

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## Notes

1. <https://www.biodynamic.org.uk/> (16 June 2020).
2. Figures from the Biodynamic Association of the UK at <https://www.biodynamic.org.uk/discover/#what-is-bd> (accessed 31 October 2019).
3. Linda Chalker-Scott <https://s3.wp.wsu.edu/uploads/sites/403/2015/03/biodynamic-agriculture.pdf>.
4. <https://www.biodynamic.org.uk/discover/#what-is-bd> (16 June 2020).
5. See <http://caetancsa.org/en/produce/> (accessed 16 June 2020).
6. Available at <http://caetancsa.org/en/> (accessed 16 June 2020).

## References

- Abram D (2014) The commonwealth of breath. In: Iovino S and Oppermann S (eds) *Material Ecocriticism*. Bloomington, IN: Indiana University Press, pp.301–314.
- Adey P (2015) Air's affinities: Geopolitics, chemical affect and the force of the elemental. *Dialogues in Human Geography* 5(1): 54–75.
- Anderson B (2009) Affective atmospheres. *Emotion, Space and Society* 2: 77–78.
- Bawaka Country, Suchet-Pearson S, Wright S, et al. (2016) Co-becoming Bawaka: Towards a relational understanding of place/space. *Progress in Human Geography* 40(4): 455–475.
- Bennett J (2001) *The Enchantment of Modern Life: Attachments, Crossings, and Ethics*. Princeton, NJ: Princeton University Press.
- Bennett J (2007) Edible matter. *New Left Review* 45: 133–145.
- Bennett J (2010) *Vibrant Matter: A Political Ecology of Things*. London: Duke University Press.
- Blanes RL and Espirito Santo D (eds) (2014) *The Social Life of Spirits*. Chicago: University of Chicago Press.
- Braidotti R (2019) *Posthuman Knowledge*. Cambridge/Medford: Polity Press.
- Cajete G (2000) *Native Science: Natural Laws of Inter-Dependence*. Santa Fe, NM: Clear Light Publishers.
- Cameron E (2012) New geographies of story and storytelling. *Progress in Human Geography* 36(5): 573–592.
- Castellini A, Mauracher C and Troiano S (2017) An overview of the biodynamic wine sector. *International Journal of Wine Research* 9(1): 1–11.
- Chakrabarty D (2000) *Provincializing Europe: Postcolonial Thought and Historical Difference*. Princeton, NJ: Princeton University Press.
- Choy T (2011) *Ecologies of Comparison*. Durham, NC: Duke University Press.
- Clark N (2017) Politics of strata. *Theory, Culture & Society* 34(2–3): 211–231.
- Crang M (2003) Qualitative methods: Touchy, feely, look-see? *Progress in Human Geography* 27(4): 494–504.
- Davis J and Weaver J (1975) Dimensions of spirituality. *Quest. A Feminist Quarterly* 1(4 Women and Spirituality): 2–6.
- Deleuze G (1979) 'Metal, metallurgy, music, Husserl, Simondon', delivered in Vincennes, 27 February 1979.
- Desai S and Smith H (2018) Kinship across species: Learning to care for nonhuman others. *Feminist Review* 118: 41–60.

- Dewsbury JD (2010) Performative, non-representational, and affect-based research. In: Delyser D, Herbert S, Aitken S and Crang MA (eds) *The SAGE Handbook of Qualitative Geography*. London: SAGE, pp.321–334.
- Engelmann S (2015) Toward a poetics of air: Sequencing and surfacing breath. *Transactions of the Institute of British Geographers* 40(3): 430–444.
- Erev S (2019) Feeling the vibrations: On the micropolitics of climate change. *Political Theory* 47(6): 836–863.
- Fraser N (2013) *Fortunes of Feminism: From State-Managed Capitalism to Neoliberal Crisis*. Brooklyn, NY: Verso Books.
- Gibson-Graham JK (2012) Diverse economies: Performative practices for ‘other worlds’. In: Trevor JP, Barnes J and Sheppard E (eds) *The Wiley-Blackwell Companion to Economic Geography*. London: Routledge, pp. 33–46.
- Gibson-Graham JK and Roelvink G (2010) An economic ethics for the Anthropocene. *Antipode* 41(s1): 320–346.
- Ginn F (2013) Sticky lives: Slugs, detachment and more-than-human ethics in the garden. *Transactions of the Institute of British Geographers* 36: 532–544.
- Grimes RR (2003) Ritual theory and the environment. In: Szerszynski B, Heim W and Waterton C (eds) *Nature Performed: Environment, Culture, and Performance*. Oxford: Blackwell, pp.31–45.
- Haraway D (2008) *When Species Meet*. Minneapolis, MN: University of Minnesota Press.
- Haraway D (2016) *Staying with the Trouble: Making Kin in the Chthulucene*. Durham, NC: Duke University Press.
- Hayden J and Buck D (2011) Doing community supported agriculture: Tactile space, affect and effects of membership. *Geoforum* 43(2012): 332–341.
- Ingold T (2014) That’s enough about ethnography! HAU: *Journal of Ethnographic Theory* 4(1): 383–395.
- Ingram M (2007) Biology and beyond: The science of “back to nature” farming in the United States. *Annals of the Association of American Geographers* 97(2): 298–312.
- Intergovernmental Panel on Climate Change (IPCC) (2019) Summary for Policymakers. In: Shukla PR, Skea J, Calvo Buendia, et al. (eds) *Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*. In press.
- Jackson M and Fannin M (2011) Letting geography fall where it may—Aerographies address the elemental. *Environment and Planning D: Society and Space* 29(3): 435–444.
- Jones BM (2019) (Com)post-capitalism cultivating a more-than-human economy in the Appalachian Anthropocene. *Environmental Humanities* 11(1): 3–26.
- Katz C (2001) Vagabond capitalism and the necessity of social reproduction. *Antipode* 33(4): 709–728.
- Kershaw B (2012) Performance ecologies, biotic rights and retro-modernisation. *Research in Drama Education: The Journal of Applied Theatre and Performance* 17(2): 265–287.
- Kimmerer RW (2015) *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants*. Canada: Milkweed Editions.
- Koepf H (1989) *The Biodynamic Farm*. Hudson, NY: Anthroposophic Press.
- Kropotkin P ([1902] 2012) *Mutual Aid: A Factor of Evolution*. New York: Courier Corporation.
- Krzywoszynska A (2019) Caring for soil life in the Anthropocene: The role of attentiveness in more-than-human ethics. *Transactions of the Institute of British Geographers* 44(4): 661–675.
- Krzywoszynska A (2020) Nonhuman labor and the making of resources: Making soils a resource through microbial labor. *Environmental Humanities* 12(1): 227–249.
- Latour B (2014) Some advantages of the notion of “Critical Zone” for geopolitics. *Procedia Earth and Planetary Science* 10(2014): 3–6.
- LeVasseur T (2016) *Introduction: Religion, Agriculture, and Sustainability*. Lexington, KY: University Press of Kentucky.
- Lévi-Strauss C (1963) *Structural Anthropology*. New York: Basic Books.
- Lewis S (2017) Cthulhu plays no role for me. *Viewpoint Magazine*. Available at: [viewpointmag.com/2017/05/08/cthulhu-plays-no-role-for-me/](http://viewpointmag.com/2017/05/08/cthulhu-plays-no-role-for-me/) (accessed 15 June 2020).

- Lorimer J, Hodgetts T and Barua M (2017) Animals' atmospheres. *Progress in Human Geography* 43(1): 26–45.
- Lyons KM (2014) Soil science, development, and the “elusive nature” of Colombia's Amazonian plains. *Journal of Latin American and Caribbean Anthropology* 19(2): 212–236.
- Lyons KM (2020) *Vital Decomposition: Soil Practitioners and Life Politics*. Durham/London: Duke University Press.
- Massey D (2004) Geographies of responsibility. *Geografiska Annaler* 86B(1): 5–18.
- Mathews F (2006) Beyond modernity and tradition: A third way for development. *Ethics & The Environment* 11(2): 85–113.
- Meyer C (1929) Requiem. *Anthroposophical Movement* 6(5): 38–40.
- Mignolo W (2009) Epistemic disobedience, independent thought and decolonial freedom. *Theory, Culture & Society* 26(7–8): 159–181.
- Paul J (2011) Biodynamic agriculture: The journey from Koberwitz to the world, 1924–1938. *Journal of Organic Systems* 6(1): 27–41.
- Peterson A (2016) Religion, local community, and sustainable agriculture. In: Shiva V, Deutscher Y, Hurtado L, Pembamoyo E, Lemons M, Adhikari J, Jain P, Sanford AW, Dixon MH, Sutterfield R (eds) *Religion and Sustainable Agriculture: World Spiritual Traditions and Food Ethics*. Lexington, KY: University Press of Kentucky, pp.233–249.
- Pfeiffer E (1938) *Bio-Dynamic Farming and Gardening: Soil Fertility Renewal and Preservation* (F. Heckel, Trans.). New York: Anthroposophic Press.
- Pitt H (2018) Questioning care cultivated through connecting with more-than-human communities. *Social and Cultural Geography* 19: 253–274.
- Puig de la Bellacasa M (2014) Encountering bioinfrastructure ecological struggles and the sciences of soil. *Social Epistemology* 28(1): 26–40.
- Puig de la Bellacasa M (2015) Making time for soil: Technoscientific futurity and the pace of care. *Social Studies of Science* 45: 691–716.
- Puig de la Bellacasa M (2016) Ecological thinking, material spirituality, and the poetics of infrastructure. In: Bowker GC, Timmermans S, Clarke AE and Balka E (eds) *Boundary Objects and Beyond: Working with Leigh Star*. Cambridge, MA: MIT Press.
- Puig de la Bellacasa M (2017) *Matters of Care. Speculative Ethics in More Than Human Worlds*. Minneapolis: University of Minnesota Press.
- Puig de la Bellacasa M (2019) Re-animating soils: Transforming human–soil affections through science, culture and community. *The Sociological Review Monographs* 67(2): 391–407.
- Rappaport RA (1999) *Ritual and Religion in the Making of Humanity*. Cambridge: Cambridge University Press.
- Reganold J, Glover J, Anres P, et al. (2001) Sustainability of three apple production systems. *Nature* 410: 926–930.
- Reganold J, Palmer A, Lockhard J, et al. (1993) Soil quality and financial performance of biodynamic and conventional farms in New Zealand. *Science* 260: 344–349.
- Rigby K (2014) Spirits that matter: Pathways towards a rematerialization of religion and spirituality. In: Iovino S and Oppermann S (eds) *Material Ecocriticism*. Bloomington, IN: Indiana University Press, pp.283–290.
- Ritter W (1926) On the work of the anthroposophical farmers and their meeting at Dornach in January, 1926. *Anthroposophical Movement* 3(7): 52–54.
- Rose M (2010) Pilgrims: An ethnography of sacredness. *Cultural Geographies* 17(4): 507–524.
- Rose M (2013) Negative governance: Vulnerability, biopolitics and the origins of government. *Transactions of the Institute of British Geographers* 39(2): 209–223.
- Schafer RM (1991) The theatre of confluence II. *Descant* 22(2): 87–103.
- Sheridan J and Longboat RD (2006) The Haudenosaunee imagination and the ecology of the sacred. *Space and Culture* 9(4): 365–381.
- Singh J (2018) *Unthinking Mastery: Dehumanism and Decolonial Entanglements*. Durham/London: Duke University Press.
- Smith TA, Murrey A and Leck H (2017) ‘What kind of witchcraft is this?’ Development, magic and spiritual ontologies. *Third World Thematics: A TWQ Journal* 2(2–3): 141–156.

- Spaccini R, Mazzei P, Squartini A, et al. (2012) Molecular properties of a fermented manure preparation used as field spray in biodynamic agriculture. *Environmental Science and Pollution Research* 19: 4214.
- Steiner R (1924a) To all members: The meetings at Koberwitz and Breslau. *Anthroposophical Movement* 1: 9–11.
- Steiner R (1924b) Agriculture course: Lecture 1. Available at: <https://wn.rsarchive.org/Lectures/GA327/English/BDA1958/19240607p01.html> (accessed 15 June 2020).
- Stengers I (2005) The cosmopolitical proposal. In: Latour B and Weibel P (eds) *Making Things Public: Atmospheres of Democracy*. Cambridge: MIT Press, pp.994–1003.
- Sullivan S (2010) “Ecosystem service commodities”—A new imperial ecology? Implications for animist immanent ecologies, with Deleuze and Guattari. *New Formations* 69(1): 111–128.
- Sundberg J (2014) Decolonizing posthumanist geographies. *Cultural Geographies* 21(1): 33–47.
- Szerszynski B (2017) Gods of the Anthropocene: Geo-spiritual formations in the Earth’s new epoch. *Theory, Culture, and Society* 34(2–3): 253–275.
- Thrift N (2011) *Non-Representational Theory: Space, Politics, Affect*. London/New York: Routledge.
- Todd Z (2016) An Indigenous feminist’s take on the ontological turn: ‘Ontology’ is just another word for colonialism. *Journal of Historical Sociology* 29(1): 4–22.
- Tronto J (1993) *Moral Boundaries: A Political Argument for an Ethic of Care*. New York/London: Routledge.
- Tsing A (2015) *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*. Princeton, NJ: Princeton University Press.
- Tuck E and Yang KW (2012) Decolonization is not a metaphor. *Decolonization: Indigeneity, Education & Society* 1(1): 1–40.
- Van Dooren T, Kirksey E and Münster E (2016) Multispecies studies cultivating arts of attentiveness. *Environmental Humanities* 8(1): 1–23.
- Watts V (2013) Indigenous place-thought and agency amongst humans and non humans (First Woman and Sky Woman go on a European world tour!). *Decolonization: Indigeneity, Education & Society* 2(1): 20–34.
- Whatmore S (1996) Dissecting the autonomous self: Hybrid cartographies for a relational ethics. *Environment and Planning D: Society and Space* 15: 37–53.
- Willerslev R (2013) Taking animism seriously, but perhaps not too seriously? *Religion and Society* 4(1): 41–57.
- Woodyer T and Geoghegan H (2013) (Re) enchanting geography? The nature of being critical and the character of critique in human geography. *Progress in Human Geography* 37(2): 195–214.
- Yusoff K (2013) Insensible worlds: Postrelational ethics, indeterminacy and the (k)nots of relating. *Environment and Planning D: Society and Space* 31: 208–226.