Transmaterial Worlding: Beyond Human Systems

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Abstract

In this paper we reframe systemic social construction as transmaterial worlding to include human and non-human participants. We discuss what it means to be human in the Anthropocene era with reference to posthuman new materialist theory. We introduce systemic living as onto-epistemological becoming, movement and meaning-making practices in and between human and non-human parts of our worlds. The paper discusses power relations and ways of bringing forth lost-destroyed indigenous ways of knowing which make time and space for new understandings and experimental responses to what we are making together at a local and global level. We discuss how transmaterial worlding requires a new understanding by humans to see their place in this planet as co-inhabitation. We offer examples of transmaterial worlding from across different contexts and suggest some systemic questions for how we can live ethically in a transmaterial world that honours societal, cultural, professional and other kinds of situated knowledge and know-how.

Introduction

I find a parking space under some trees. Opening the car door, I turn up my nose at the smell of my car's diesel fumes and feel lost about how I can afford a less polluting car.

Around the car the ground is flooded. I take a big step onto the grass and see gleaming new-born conkers lying among the leaves. I look up at the canopy to see how the horse chestnut tree is faring given the spread of the new species-threatening disease. Far fewer fruits than last year. Was last year's bumper crop a farewell? My stomach contracts. I bend down and pick up six or eight differently sized conkers, put them in my pockets and head for the café in the woods.

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After talking with Callie for a while, she notices the conkers on the table by our mugs. I picked them up, I tell her, for us to use to see how you are all connected in your family. How you want to be connected. With her

mother, we imagine configurations of Callie and her family when she is at home or at school and when she might want to move away from home. I want to move to a big city, she says and then adds, if I can afford to. What would the conkers have to say about that, I ask? Her mother answers: They would say come and live near us in the countryside or parks. We can clear the air for you so your asthma doesn't, um, make you ill. Callie interjects you mean so the pollution doesn't make me ill. My asthma is triggered by others, by the way we all live. It's good to meet in the park.

When we are ready to finish, I want to offer Callie the conkers. She hesitates about taking them. The world, she says, needs trees. Let's plant them, I suggest. Callie divides them up between me and her. I have soil and pots, her mother says. Callie puts them in her pocket. We are all trying to save the planet and live well.

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As an example from systemic practice, this might feel familiar. Many of us will have worked with stones or leaves or other everyday objects from nature that we might use to represent family or workplace systems, human beings in relation to each other. These elements offer us useful ways of describing relationships between things or people or parts of the world but it also runs a risk of overlooking their own vitality, contribution and place in and of this world. Systemic living involves more than a focus on *human* systems.

In this paper, we propose a development on a key concept in the pivotal work "Human Systems as Linguistic Systems" by Harlene Anderson and Harry Goolishian (1988) to *transmaterial systems as communicating systems*. We may live in a relational world mostly thought of as mediated and manufactured through human communication but we also live in layers and entanglements of different kinds of materiality. As systemic practitioners and researchers, when we study human life, we cannot see it or investigate it as separate from all else around it and us, whether "man-made" and/or naturally occurring. We are in a world of worlding (Barad, 2007).

Transmaterial worlding

Transmaterial worlding extends the notion of "social" in social construction to include human *and* non-human participants – animal, vegetable and mineral.

Transmaterial worlding is a reframe of social construction in emphasising the continuous process of intra-becoming within and between species and matter (Barad, 2007). Transmaterial worlding describes processes we use to make sense of and create realities about human experience and the vitality of other matter, to show interconnectedness between humans and non-humans, to reframe life and death as not species specific but grounded in complex systems of animacies.

We are all involved in *worlding* processes (Barad, 2007) – bringing the world into being as we respond within it. Stories we generate have consequences for human and non-human life, for our environment, for how we go on together. Systemic theories arise out of more than the practices of therapy or leadership, they reflect and resist everyday and dominant values and practices for living in and understanding complex transmaterial systems. We use the term "co-construction" (Tomm, 1999) to describe joint, continuous meaning-making activities. We are always in the process of becoming-in-relationship and creating social worlds through our engagement with and as parts of the world, human and otherwise. We do not live *in* ecology, we *are* ecology.

Non-human parts of the world have their voices and experience interpreted by some more or less "expert" humans in many different ways which leaves most people perplexed about what counts as fact or how to use facts in a way that feels coherent with their lifestyles. The invention of terms such as "climate crisis" potentially connects and separates humans from the lived experience of their non-human co-inhabitants. As humans we have been taught to practice compartmentalised naming, selective hearing, selective processing and to decontextualise what we see, hear, eat, and consume. Living with not knowing what to do is no longer a practical or ethical option. Yet we must hold an openness to develop better listening abilities – not just to grasp more fact in a world where fiction is promoted in the form of decontextualised truths – but to develop new comprehension abilities, to become translinguistic to hear our transmaterial family and see how we are making and unmaking this world together.

The idea that humans alone are able to develop stories about the world is anthropocentric, a man-made myth. Other parts of the "universe" also story humans. We need to learn to read responses from other material as communications of what we have been making. Together we create a multiverse of stories but human stories are what most people in advanced capitalism tend to tell and be told. Some of the most interesting and useful storying of the transmaterial world have come from Indigenous cultures. Most theories about how the world functions have side-lined this rich knowledge and promoted instead the unacknowledged ideological assumptions about the superiority of white people, particularly men and based on heterosexual, cisgendered, wealthy, male, westernised privilege. Stories, and those voicing them, from indigenous human cultures, have been systematically oppressed or erased but they have much to counter and extend the dissociative living of advanced capitalism (Braidotti, 2019; Pillow, 2019; Richardson-Kinewesquao 2018; Rosiek & Snyder, 2018).

The declaration in 2019 that Uluru (formerly Ayer's Rock) can no longer be climbed by visiting tourists is an example of how decolonial actions, however delayed and inadequate, can reform westernised human behaviour and potentially restore sacred living landscapes for human and non-human inhabitants: spirits, living histories, flora, fauna, indigenous people. Uluru, to Australian Indigenous people, is an animate, sacred landscape that is not just a *site* of Anangu knowledge and culture, it *is* the living of stories of knowledge, knowing and know-how. It is living and breathing. Our actions are communications which open or close possibilities. The message given to local indigenous people by the last minute rush of climbers to Uluru before the legislation came into force shows disregard for people and place, and disconnect between "me" and "we".

Several systemic therapists have developed ways of supporting the narratives of experience in response to concerns expressed by oppressed and colonised groups of people to counter falsehoods written *about* them, which have often led to the development of policies which have served to oppress these groups further and render invisible issues of concern facing those communities (McCarthy and Byrne, 2007; Reynolds, 2019; Salter, 2018; Simon, 1998; Tuhiwai-Smith, 1999; Visweswaran, 1994). First person and co-constructionist research act as a counter-movement to decolonise research practice (Dillard, 2000; Lather 1994, 2007; Madison 2012; Pillow 2019; Tuhiwai Smith, 1999; Wade 1997).

Reframing "me" and "us" and "them"

To extend this idea of transmaterial worlding further let's take some systemic questions, apply them in another professional context and step into a different ecology.

Let us imagine for a moment that we are in the mountains in The Himalayas, surrounded by clean, white snow, feeling the burning sun on our skin and the biting cold in our bones. We are researching the impact of mountain climbers on Everest. Educational and policy led innovations have had only a limited effect on the demand to climb Everest. We are experimenting with an intervention that we hope might go some way to protect the fragile ecology of the mountain Sagarmatha (Nepalese) or Chomolungma (Tibetan). The boundary between Nepal and the "Tibet Autonomous Region" runs across its summit.

We are curious about the human impact on the mountain and the impact the mountain has on humans. The relationship is more complex than a simple two-way model of interaction. We are in the realm of *intra-action* (Barad, 2007) in which there is no separation of climber, mountain, photographer, competing economies, international power relations and air travel. Together they-we create a transmaterial ecology of all that is locally and remotely present in the material and narrative worlds. If, in this context, we were to ask transmaterial systemic questions about this, they might look or sound like this:

- *How could the snow at the bottom of Everest make its experience of being transformed by climbers heard in ways that climbers became more sensitised to the needs of the mountain over personal pursuit resulting in a change of climbing practice?*
- *How might we tell stories that move people about the tipping point between profit or gain of the individual, wellbeing of the mountain and its indigenous communities for human and non-human stakeholders in Everest?*
- *What kind of pre-booking preparation could there be for climbers to empathise with the mountain and its surrounding ecology before making a decision to book their trip?*
- *How does an international boundary between Nepal and now China affect the local exchange and practice of knowledge previously used by the peoples of Tibet and Nepal on the mountain, if at all?*

Palaeontologists have named this era the Anthropocene to witness how humans have affected the planet to such a degree that there is little left that is unaffected by humans. Philosopher, Rosi Braidotti speaks of the posthuman as a way of describing a shift away from anthropocentrism which allows for new ways of understanding and describing the implications of what it means to be human with the fast-moving sciences of biotechnologies, neural sciences, communication technologies, climate change and so on.

> The posthuman predicament is… framed by the opportunistic commodification of all that lives, which… is the political economy of advanced capitalism.
>
> Braidotti, 2019, p. 35

Art in 1995. Endangered species in 2019.

The artwork, Moss wall by Icelandic/Danish artist Ólafur Eliasson is made up of reindeer lichen (Cladonia rangiferina) an important food source for reindeer in Iceland and Norway. It is now illegal for humans to pick in Norway as reindeer struggle to find food. The artist spoke at the opening of his retrospective exhibition at the Tate Modern, London in July 2019:

> The air that we breathe cannot be taken for granted as natural anymore. It is human, it is influenced by human activity. There's nowhere, not a rock in Iceland which has not been touched in some way or another by airplane pollution, or the change in temperature, the arctic moss that I photographed and documented so often, the rivers. Those glaciers for example. How different they are after 20 years. They really are unbelievably different. A whole glacier is just gone.
>
> Ólafur Eliasson 2019

Material-discursive practice

When we use language that says that we are *inter-acting* with someone or something, we are separating out parts of a relationship. The concept of "inter" assumes ontological distinguishability between entities: things or people, apparently separate *from* "one another", as configuring *of* "each other", as doing things *with* "each other". Karen Barad argues, "humans enter not as fully formed, pre-existing subjects but as subjects intra-actively co-constituted through the material-discursive practices that they engage in." (Barad, 2007, p.168).

What it means to be human has been changing. For example, humans can be understood as techno-humans. To say we "have" a phone perpetuates a distinction of separation, and ownership, between

the human and the technological device. When we say, "My phone reminded me that…" or "I messaged…" these phrases still show phone and self as separate from each other and yet we have become fused with our gadgets (Haraway, 2004, 2015). Technology plays an increasingly significant role in how we interact in and with the world, how we communicate with others, in how our gadgets extend our memory, how we are remembered or lost by others, how we are identified by others, how we identify ourselves to our gadgets and remote systems, how we locate ourselves in the virtual-physical worlds, and how we are located by remote unknown others with or without our permission (Simon, 2010; Allinson, 2014).

The Guardian (October 2019) reports that a prototype phone has been developed by French scientists that is covered in a material that responds like human skin. You can pinch it, pull it, interact with it, as if your phone has skin, like you and I. Techo-human; human-techno. Where is the point of separation? Rosi Braidotti (2013) asks if prosthetic limbs are really "otherwise human". Gregory Bateson (1972) previously asked if the blind man, his cane, and the environment he moves about in are not all one entity or act as one. Bronwyn Preece speaks of the intersections in embodied theory between ecology and disability, explaining how she engages "with the other-than-human world as alive… I do not segregate biota from abiota, organic from non-organic, the trees from the forest, the ocean from the machines, the stone from mountain" (Preece, 2019, p. 76). These questions invite us to consider if the phone can be seen as simply an implement (other to "us") to navigate the modern world (out 'there')? Or are humans enabling the phones to go about the business of remote corporations while the dominant narrative is of the phone enabling its owner? The mobile phone may not yet be a microchip under the physical skin of a human but proximity of humans and their devices is becoming increasingly intimate. Braidotti suggests that the relationship between human and technology has been extended to "unprecedented degrees of intimacy and intrusion" (Braidotti, 2013, p.89).

If *knowledge* practices are inseparable from the contexts out of which they emerge, then we must accept that *language* is never innocent or neutral. Social constructionism reminds us of the power of language which we extend to include the role of all matter and power that takes material forms through legislation or profit, for example.

Recognising the presence of power relations and which realities have more influence over others is critical to transmaterial worlding as a form of inquiry. In transmaterial worlding, we understand researching linguistic practice as a form of mattering. There are no final conclusions – though there may be useful knowledge – and the need to attempt to describe journeys of knowing in which contextualised, situated ways of knowing extend or close down ways of accounting and the potential for transformation of participants. Transmaterial worlding is a process of moving, constructing, deconstructing, reconstructing and reviving stories which include the voices of those normally heard through privileged channels and the voices of marginalised, silenced or exterminated peoples, places, human and non-human, across many matters, across context, across time. Inevitably, material changes depending on where the describer is standing, how they are dressed, how the light is falling or arranged. Any "apparatus" in use, is part of the world that is being co-constructed (Barad, 2007). Discursive mattering is inevitably influenced by the limits of the describer's own apparatus - cultural lenses and filters which frequently result in a reproductive mattering of dominant white supremacist, patriarchal, heteronormative narratives and practices (Chen, 2012; Pillow, 2019).

How we *configure* "other" people, places or things can happen through taking an aboutness position (Shotter, 2011) and become an act of colonisation in attributing meaning or interpreting meaning. Acts of colonisation separate the knower from their knowing and know-how leading us into binary

constructions of "us" and "them", and stories of people who apparently know nothing. Histories are lost and communities fractured. This has resulted in catastrophic change such as loss of rainforests, sustainable communities, homelands, dunes, clean air, uncontaminated sites, the ozone layer and much, much more. So, it becomes an *ethical imperative* to ask, "What and who are in focus?" and "Why?" and "How can other silenced voices or erased matters be animated, rendered audible through our research?"

Transmaterial worlding evokes ecological and contextual curiosity and invites questions that pay attention to relational affect involving a more-than-human relating and a more-than-local focus. For example, a recently commissioned beach survey by Surfers Against Sewage (2019) found that Coca Cola and Pepsi Cola were together responsible for 25.8% of the plastic found on UK beaches (Pipeline, 2019). In this example, so many major world issues (plastic waste and water pollution, dune conservation, advanced consumerism, violence towards workers in low paid countries, bio-diversity, sugar addiction, wealth inequality and more) are in the frame and it becomes difficult to see them as isolatable issues. They are connected. The shock of half a million "hermit" crabs living on "remote" islands dying from plastic pollution shows us that we need to deconstruct narratives of geographical remoteness and isolated entities. Though the branding of the litter is often more visible to our consumer eyes than the litter itself, this, too, is changing. Consumers are beginning to re-brand it for themselves as "single use plastic".

In the era out of which we are emerging, we are moving from recognising a "coke" bottle to seeing it as single use plastic or associated with workers' rights. This is the transitional material world in which we are living-transforming. Slowly, perhaps too slowly, humans are trying to change their habits and environment by researching these items, reading about them, picking up their own and other people's litter, to stop buying plastic, to learn to connect local and remote contexts. To become a consumer under advanced capitalism often requires becoming dissociated from the context of production of the material goods one is purchasing. The opposite of dissociation is relational reflexivity which is an ethical stance. Joining dots is a systemic activity. We are unlearning compartmentalisation. We have a choice of who we listen to, who we believe. Are we listening to the "silent" deaths of other creatures and glaciers, rain forests and fields of lichen or have we trained our ears to filter matters out that apparently do not matter to us in our human and immediate time-frame? How do we listen, how do we listen in order to witness, to live with shock and concern, to not become numb, to be moved instead to alternative action, and to look after "ourselves" (*and* check who is included in "we")?

Systemic therapy has produced a number of transdisciplinary questions which help bring forth others not present but who would understand the experiences of others such as internalised other questions (Burnham, 2000), outsider witness practice (White, 1997), wider system questions used with hypothetical audiences (Simon, 1998). These differing real life contexts and the threads that connect them can be understood as *transcontextual* material (Nora Bateson, 2016) and form part of the rich tapestry of "what counts" as "worthy of study" within qualitative inquiry (Denzin, 2017; Simon, 2018). Victims of injustice, their advocates, professionals, academics the world over struggle for their truths to be taken seriously in a world which uses 21st century technologies to amplify dominant discourses and fan preferred truths to generate simplistic dismissals of what, in another era, would have counted as fact.

Systemic living and ethical mattering

We are using the term *systemic living* in lieu of systemic practice to emphasise systemic ways of being, doing, thinking, feeling, noticing and communicating. It includes systemic therapy and leadership and supervision and so on but systemic ways of thinking about things, conceptualising things go way beyond what takes place under the auspices of commissioned or employed professional practice. Systemic living means being alert to incoherence between stories lived, stories told, stories ignored and stories re-written (Cronen and Pearce, 1999; McNamee, 2020 forthcoming). These are not activities which are separable from each other, which take place chronologically in different moments. Systemic living is a commitment to fluidly attempting integration of changing positions. Transmaterial worlding describes philosophically based ways of systemic being-seeing-doing-becoming in and of the world. It is living onto-epistemological coherence: we learn as we go; we become as we reflect on what we are doing; we write and learn, listen and change. All the time. That is the systemic ethic.

We understand systemic living as a form of social activist inquiry. This goes beyond observing. It reframes participant-observation (Anderson and Goolishian, 1988) as intentional, inevitably disruptive, preoccupied with social and environmental justice, and committed to collaborative transformation. Stasis is an illusory concept existing in a humancentric timeframe. Instead, we live in perpetual, hard-to-follow entangled movements for which we try to develop narratives depending on the ideological contexts affecting our investment in some theories of relational causality over others. The use of the term relational here is included purposefully, not superfluously, to render visible contexts for theories of causality. Theories do not randomly exist in isolation. They have their lobbies and investors expecting different kinds of return for distinct sections of the population.

Systemic living is guided by an ethical imperative to address practices of power by asking how stories are generated, why some truths are propagated over others, by whom, and to what end. Systemic practitioners are committed to understanding the relational effect of stories and how some stories carry more weight than others in different contexts. Transmaterial worlding reframes professional, personal and academic activities as bringing into being a diverse but connected transmaterial world. Systemic practice and research become an opportunity to understand *and* disrupt power relations in order to challenge and reduce injustice. It is an opportunity to pay attention to who-what matters, who-what is directing and who-what counts as mattering.

In her book, "Staying with the Trouble. Making kin in the Chthulucene", Donna Haraway says,

> It matters what matters we use to think other matters with; it matters what stories we tell to tell other stories with; it matters what knots knot knots, what thoughts think thoughts, what descriptions describe descriptions, what ties tie ties. It matters what stories make worlds, what worlds make stories.
>
> Haraway, 2016, p.12

As systemically informed people, we understand the power of fragmented or contradictory narratives and how to engage enquiringly in talk that exposes incoherence and helps to understand the context for why some narratives are problematic or enabling in dominant or subaltern discourses. We situate these challenges within relationships. Mainly within human relationships. But what if we don't think of externalising exercises (White and Epston, 1999) or internalised other interviewing (Tomm, 1998; Burnham, 2000) as human relationship strategies but as opportunities to build more understanding relationships with non-human life in our world? How would it have been to ask Callie and her mother to speak as a conker or cluster of conkers and explore interconnections between their futures?

Systemic mattering practices draw on social construction and narrative theory to open dialogical spaces in which we can deconstruct taken for granted terms and cultural constructs. Matter and what matters - whose voices we listen to and how we respond - can include many parts of our "universe": trees, plants, mosses, plastic (and other) waste, drugs we pass through our systems and into the water table of the earth, chemicals which benefit, sedate or annihilate entire communities with growing medical punctuation of social and political problems. We are waking daily to long lists of interconnected environmental matters and in an ongoing state of shock or denial or compliance.
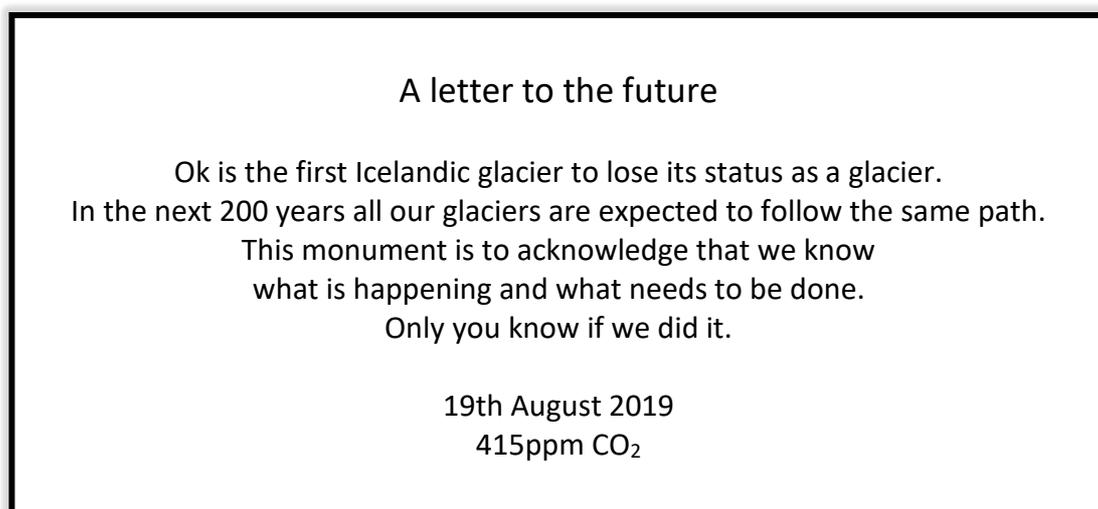
Deconstructing animacy and inanimacy

Definitions of what counts as alive and dead are changing and also the rights accorded to non-human matter. Some human communities are realising we are killing other life forms and that we need to act to prevent further death.

> **"On 26 February 2019, a lake became human."**
>
> Appalled by the lake's degradation, and exhausted by state and federal failures to improve Erie's health, in December 2018 Toledo residents drew up an extraordinary document: an emergency "bill of rights" for Lake Erie. At the bill's heart was a radical proposition: that the "Lake Erie ecosystem" should be granted legal personhood, and accorded the consequent rights in law – including the right "to exist, flourish, and naturally evolve".
>
> MacFarlane, 2019

In Iceland, in August 2019, a hundred people gather at the funeral of a glacier. The Okjökull glacier was declared dead about a decade before but the symbolic funeral was arranged in 2019 and a plaque was erected entitled "A letter to the future" that read:

A letter to the future

Ok is the first Icelandic glacier to lose its status as a glacier.
In the next 200 years all our glaciers are expected to follow the same path.
This monument is to acknowledge that we know
what is happening and what needs to be done.
Only you know if we did it.

19th August 2019
415ppm CO_2

This is a profound message that draws on a dialogue between present and future timeframes as a mechanism to evoke emotions that might lead to action, now. It is open about accountability, about cause and effect. Many things in our material world are linear albeit part of complex systems. But how

we maintain or disrupt linearity is a systemic challenge. Perhaps this paper is written for a moment in time, this moment in time: it's message: let us take down the idea that systemic practice takes place within four walled spaces and bring systemic living into the streets, the mountains, the shopping centres and listen to other voices speaking back to us. We are still working on fighting for human rights. Now we have to extend this campaign to those living parts of the world who are not accorded human status but treat them as if they were a human with high entitlement for safety, survival and quality of life.

New materialist thinkers invite us to deconstruct the concepts of animate/living, and inanimate/dead (Bennett, 2010; Chen, 2012). These can be understood as socially constructed narratives which teach communities and their colonisers to disconnect their immediate local environment from remote global environments. Jane Bennett discourages the term "environment" in order to highlight what she calls "vital materiality" (Bennett, 2010, p.12). She points out that "We are vital materiality and we are surrounded by it, though we do not always see it that way. The ethical task at hand here is to cultivate the ability to discern nonhuman vitality, to become perceptually open to it." (Bennett, 2010, p.14).

When Gregory Bateson and the Milan School of Systemic Family Therapy critiqued the notion of linear causality, they shifted their interest from how problems started to what maintained problems. The cybernetic theories of self-correcting systems and homeostasis proposed by Maturana and Varela (1992) and earlier by James Lovelock in relation to earth as a self-correcting system (1979) do not fully address what happens when the balance tips to the point that systems can no longer self-correct but are threatened with extinction (Braidotti, 2008). Sometimes things end, people are displaced, territories lost to their dwellers or dwellers lost to their territories.

Extinction Rebellion protests that started in 2018 have demonstrated the relevance of humans using their bodies to visually represent their concern for the earth and its' dwellers and to symbolise the fear that our world might be lost, permanently. People putting themselves in the way of cars or aeroplanes is one way to do this; but we also need to acknowledge that it is human activity that has created this "wicked problem" (Nora Bateson, 2016). The aeroplane and car (at this moment in time) are neither self-organising nor self-regulating; they are propelled by human activity. Human life is given more weight than other life forms including the earth itself as a living *entity,* not simply as a *resource*.

One consequence of the anthropocentric narrative is to categorise matter as *either* animate or inanimate (Bennett, 2010). Rock is not inanimate, it is alive. It hosts life, it protects life. It provides a platform for life. In terms of the time frame in which plants, animals and humans live, rock offers stability. We humans have a short life span compared to rock. Rock grows or changes in mostly a much slower time frame to the life spans of humans, flora and fauna. We don't notice the parallel time worlds. We think rock and glaciers are dead because they are not moving in ways *we* can perceive with our eyes. We tell ourselves simple stories. We say they are frozen, immobile, inanimate. But it is we who are frozen in time. Our own timeframe. A human timeframe.

Transmaterial worlding requires that we re-think our relations *with-in* our environment, that we re-position ourselves from in-habiting the world or co-habiting (both separate us from other materiality) to *co-inhabiting.* Co-inhabitation emphasises not simply collaboration and intra-action (Barad, 2007) but a humility to re-position humans as living *in* a vital-emergent-disappearing world, *alongside* and *as* vital-emergent-disappearing matter. We are all equal earth dwellers. Thinking in terms of co-inhabitation requires an active stance - to engage *in* and *with* our environment with an ethic of care and an assumption of having some responsibility. We are not sharing *our* planet with other forms of

life; we are reconfiguring what it means to live, temporarily, alongside and with others, human and other material life forms.

In separating out human and non-human we recognise we are engaging in a particular way of viewing and storying the world. We have a long history of connecting with these ideas in systemic thinking. Gregory Bateson, in 1972, challenged the practice of categorising, and therefore separating, subjects and things; with the impact of creating a narrative that obscures relationality, highlights differences over similarities and foregrounds thingness over relational activity. New materialist thinkers might call this an epistemological error (Bateson 1972), critiquing the anthropocentric narrative of human as separate from the world around them. Karen Barad proposes that matter of *all* kinds is not separate but inevitably *entangled*. Barad explains,

> The very nature of materiality is an entanglement. Matter itself is always already open to, or rather entangled with, the 'Other.' The intra-actively emergent 'parts' of phenomena are co-constituted

> Barad, 2007, p.393

Transmaterial, co-constructive questions

Transmaterial worlding as inquiry asks investigative, co-constructive questions such as,

- How can *we* show what matters, how it matters, and to whom it matters?
- How can *we* show others what is being constructed, how and with whom?
- How can *we* use our understanding of communication to show how relations in the world are being created?

The *how can we show* questions are not innocent or decontextualised research questions. Firstly, the "we" is a cynical we which needs critical and reflexive responsivity. The questions reflect some anxiety that facts and findings alone will not be accepted as evidence. They anticipate an increasingly sceptical audience. Members of the public see politicians fighting with scientists over who is telling the truth. Black, minority ethnic and Indigenous communities struggle to have their realities of systematic and institutionalised abuse taken seriously by those in positions of influence. Evidence using what was traditionally considered robust research methods is no longer enough. On the one hand, methods often reproduce colonising values which serve to reproduce material which does not reflect lived experience for example, of oppressed and minority peoples. On the other hand, approaches that do reflect experiences of minority or oppressed peoples are often critiqued for being too subjective and insufficiently rigorous.

Systemic questions, and the theory behind them, extend the new materialist understanding of worlding by attending to emergent relationality and living contexts.

These questions address the voices of human and non-human life forms:

- How is material being defined?
- Which voices are being included or excluded?
- What are the politics of representation?
- What negotiations are involved in the process of knowledge generation and knowledge sharing?

There are different kinds of power to consider in transmaterial worlding:

i)   The power to influence how people configure realities through discourse and narrative
ii) The power to create structures which solidify and embody those realities
iii) The power to deconstruct and reconstruct material and linguistic structures
iv) The power to recognise that truths are not representative of one's own, other people's or the material environment's experience
v)   The power to deliberately seek out first person experience and alternative truths

In order for systemic living to make a difference, we need to ask:

• What are the governing contexts that have given rise to the problem?
• How are imbalances of power maintaining this problem?
• How can systemic living disrupt the power relations that prevent social justice driven change?
• Which voices need to be heard and how can we extend what we can hear and see?
• Who-what is best placed to represent issues and how and with what support?

Transmaterial worlding needs to draw on systemic and posthuman understandings of context and power to explain:

i)   why is change difficult to effect?
ii) Why is challenging the social construction of language in itself not going to result in systemic change - desirable, meaningful, sustainable change?
iii) how can we create change and why it might be difficult?

Here are two examples of transmaterial worlding which use a range of systemic questions to bring forth both human and beyond human knowledges, to explore narratives and act as transformational practice by inviting new and empathic ways of knowing.

Research driven by concern for young people at risk in their neighbourhoods could extend the framework of contextual safeguarding (Firmin, 2018) to include human and non-human voices and understand research as transformative of people, places, discourses and power structures:

• If the voices of stairwells in housing estates were included as research participants, what would they say works well about them as spaces to allow effective intimidation of young people by people who lead them into trouble?
• How can research support young people to re-design the stairwells in their block of flats and empower them to make their views heard by those in power to make changes?
• How can research map where local people, landlords and local organisations say the threshold is between personal monetary gain and social gain? And how can research bring forth their ideas for what can be done where doing nothing is not an option?

An inquiry into how current residents are affected by illness and lost relatives through radioactive toxicity brought into their worlds by local factories or nuclear plants (see the moving ethnographic research by Cathy Richardson Kinewesquao, 2018) could ask:

• Do the spirits of your ancestors speak to you about their experience or yours? How do they communicate? What do they advise you to do?
• What are the languages that you feel local government officials are most likely to listen to when local people express worry about their sickness?
• How can research support local people to teach government officials local knowledge and practices of knowing?

- If local government officials understood your experiences and could listen to what the land has to say and took advice from your ancestors, what would persuade them to act on this understanding and knowledge? What would they see that convinced them that this had been a good thing to do?
- How have you managed to keep alive practices that give life and hope?

These examples of questions from practice remind us that questions are never neutral and are a contextual intervention for the person being asked a question (Selvini Palazzoli, 1980; Tomm, 1988). Some questions invite an "ethic of care" in "imagining the other" (McCarthy and Byrne, 2007). Others are hypothetical questions (Tomm, 1988), context setting questions, appreciative inquiry, hope oriented, narrative questions. Systemic therapy has a rich array of types of questions, and theories of transformation through dialogue and relational response-ability (for example, Burnham, 1992, 2000; Fredman, 2004; Hedges, 2005; McCarthy and Byrne, 2007; Tomm, 1999; Waldegrave et al., 2003).

Summary

In this paper we propose how we can reframe systemic social construction to move away from a focus on human systems and human communication to transmaterial systems as communicating systems. This involves a fundamental re-think of who-what counts in decision-making and what counts as knowledge and know-how. Systemic living is a meta-position to *being* a systemic practitioner. It involves critically reflexive engagement in entanglements of *becoming-with* and has an eye or two for how power is present and to what effects. Transmaterial worlding is a process of becoming through learning. It takes place in and between human and non-human activity motivated by a concern for ecological survival and "social" justice where social is reframed to include a consideration of all peoples and ecosystems. This requires critically separating from anthropocentric ideology and moving into a new way of seeing oneself and humans in a world of vital matter with whom we are in communication.

Transmaterial worlding invites the development of fluid and shifting connections between experience and explanation, between theory and practice, language and matter, human and non-human relating. It extends social to include human and non-human matter; promotes co-construction as intra-action as onto-epistemological becoming with and through learning; co-inhabitation of a world of complex entanglements; and systemic living as a way of being open to and supportive of stories and experience that make a difference across transmaterial contexts. Co-construction is not just a systemic activity but a systemic ethic and a systemic reality. We recognise the power of co-construction and its consequences. Transmaterial worlding is an important discursive and political tool. Firstly, it promotes understanding and support of decolonial, new materialist strategies to show, extend and disrupt relationships between language and material structures. Secondly, transmaterial worlding locates human activity as co-inhabitation within a wider fluid sphere of human and non-human environmental context. Examples of systemic questions demonstrate transformative possibilities for generating new and old knowledges that impact on daily practice; and extend curiosity for the purpose of promoting social justice and developing better social worlds (Pearce, 2007).

Acknowledgments

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