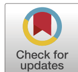
Environmental Science and Policy 175 (2026) 104297

Contents lists available at ScienceDirect

Environmental Science and Policy

journal homepage: www.elsevier.com/locate/envsci



What is there to sustain? Ontological imaginaries and the existence and agency of gods, Tūpuna, and everything else

Linde Draaisma [a,b,*], Stewart Lockie [c,d]

[a] College of Science and Engineering, James Cook University, 1 James Cook Drive, Townsville, QLD 4814, Australia
[b] Faculty of Religion, Culture and Society, University of Groningen, PO Box 72, Groningen, AB 9700, the Netherlands
[c] The Cairns Institute, James Cook University, PO Box 6811, Cairns, QLD 4870, Australia
[d] School of Sociology, the Australian National University, Canberra, ACT 2601, Australia

ARTICLE INFO

Keywords:
Sustainability
Environmental science and policy
Political ontology
Socio-technical imaginaries
Ontological imaginaries

ABSTRACT

Sustainability science looks at who and what can continue to exist into the future. To do so, it must also grapple with ontological questions about what and who currently exists. Whereas people's worlds are inhabited by vastly different entities and relationships, it is often only the entities that exist in dominant, science-based realities that are discussed in environmental research and policy. In such cases, a separation between objectivity and subjectivity particular to post-Enlightenment thought disqualifies entities like gods and spirits from serious consideration. We argue that gasses, temperatures, gods and angels can all play important roles in the origins, consequences and resolution of environmental issues. However, a practical way of conceptualising and investigating the wide variety of entities that exist is needed. To that end, we introduce the concept of ontological imaginaries and explain how this can be incorporated into research. Ontological imaginaries describe and prescribe the entities and relationships that exist for people. They recognize reality to be multiple and enacted, thus rejecting the premise of a singular and objective truth. Ontological imaginaries embody diversity, transformation and multiplicity and are therefore well equipped to capture the dynamic and often messy nature of people's realities. By recognizing the existence and agency of gods, *Tūpuna* (ancestors) and everything else that exists, the concept "ontological imaginaries" can provide a tool for engaging with ontological multiplicity in environmental science.

1. Introduction

Sustainability begins with a fundamental question: What is to be sustained, and for whom? Moving beyond conservation of the natural environment for the ongoing benefit of humans (Komiyama and Takeuchi, 2006; Jerneck et al., 2011), scholars in environmental science and cognate fields are paying increasing attention to the relationships among people, animals, plants, microbes, waterways, gasses, and so on, implicated in ecosystem processes and to the injustices wrought on numerous communities of humans and non-humans through environmental change (Martinez et al., 2023; Whyte, 2018; Norgaard, 2011). Such scholarship addresses what exists in the world today, which entities are deserving of moral consideration, and how they can be sustained into the future. Environmental research and policy stress inter-relatedness, complexity and inclusiveness (Turnhout et al., 2016) and yet absent from consideration, for the most part, are the gods, spirits, ancestors and other entities many people consider central to existence (Howitt, 2020) but which science treats typically as elements of culture or belief.

There are important exceptions to this generalization. "Particular entities" – distinguished, for the sake of our argument, from the "universal entities" that populate the world of science – do appear in environmental research. Interviewing young adults in Saudi Arabia about their sustainable purchasing attitudes, for example, Elgammal and Al-Modaf (2023) found that, for some respondents, purchasing and consuming sustainable products is a means to obey Allah. Research on natural resource management in Aotearoa/New Zealand meanwhile recognises that, for Māori, soils and rivers are not simply media in which ecosystem processes play out but entities with their own *mauri* (life force/vitality/energy) (Stronge et al., 2023; Harcourt et al., 2022; Paterson-Shallard et al., 2020). They are *taonga tuku iho* (treasured possessions sustained through generations) gifted by the *tūpuna* (ancestors), meaning rivers and soils have intrinsic value as living entities,

* Corresponding author at: College of Science and Engineering, James Cook University, 1 James Cook Drive, Townsville, QLD 4814, Australia.
E-mail address: linde.draaisma@jcu.edu.au (L. Draaisma).

https://doi.org/10.1016/j.envsci.2025.104297
Received 18 November 2024; Received in revised form 28 November 2025; Accepted 3 December 2025
Available online 15 December 2025
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instrumental value as sources of food, fibre and other resources, and relational value as entities that bind people, place, knowledge and spirituality (Stronge et al., 2023).

Still, recognition of particular entities in environmental science is limited, both in terms of how often they are discussed and in terms of the agency with which they are attributed. As two environmental social scientists with European heritage working in North Queensland, Australia, and the wider Pacific region, we encounter various entities that are crucial to the health of socio-ecological systems like the Great Barrier Reef. We also encounter significant challenges in recognising myriad entities and people's knowledge of them within scientific structures, as these structures assume an ontological separation of material and spiritual realms (Löfmarck and Lidskog, 2017). Humans, animals, plants and gasses are affirmed as objectively and materially real – their ontological status fixed across space and time. *Tūpuna*, Allah and *mauri*, by contrast, are treated as products of subjectivity, culture, and folklore and, with little or no ontological status outside language and belief, they are treated for the most part as peripheral to environmental science and confined to the domain of cultural heritage (Löfmarck and Lidskog, 2017).

However, research on biocultural diversity – that is, on relationships between biological, linguistic and cultural diversity – highlights numerous cases in which the languages and cultures of Indigenous peoples have coevolved with ecosystems (Maffi, 2005; Thornton et al., 2019). Language and culture, in such cases, are as important to the composition and evolution of the biological realm as they are to peoples' understanding and ability to live sustainably (Caillon et al., 2017). Spirits, ancestors, and creation stories are inscribed in the landscape whether other people believe in them or not (Watts, 2013). When environmental science recognizes these entities as worthy of consideration and care, very different answers to the question of what is to be sustained, and for whom, begin to emerge. This has implications for what environmental issues are identified and prioritized, what interventions are recommended as possible and favourable, and thus what futures are built (Aspøy and Stokland, 2022; Hakkarainen et al., 2020; Turnhout et al., 2016).

There are at least three reasons environmental policy and research should be inclusive of particular entities. First, discounting other-than-scientific knowledges as culture or religion because they include particular entities enforces colonial, classist and racist relationships between people who "know" and those who only "believe" (Latour, 1993; Caillon et al., 2017). Many people around the world do not live (or do not live entirely) in science-based realities. Their knowledges, problems and possible solutions are not seriously considered when researchers rule out entities and knowledges that do not fit with scientific, rational realities (de la Cadena and Mario, 2018b; Negev and Teschner, 2013). Second, research and policy that connect with people's truths and experiences have more potential to generate social reform (Komiyama and Takeuchi, 2006; van Maurik Matuk et al., 2023; Matuk et al., 2020; Orlove et al., 2023), while dismissing the presence or agency of particular entities risks alienating the very people sustainability and social policies try to effect (Coscieme et al., 2020; Garrido Corredor et al., 2021). Third, a broader understanding of what there is to sustain has potential to inspire new and more creative approaches to global sustainability (Cole, 2023; Vogel and O'Brien, 2022; Hunt, 2014; Watts, 2013; Coscieme et al., 2020). For many people, knowledge about the environment cannot be separated from their knowledge of other "realms", like spirituality, history, and ethics (Caillon et al., 2017). Many non-scientific knowledges, including the Indigenous, local and traditional knowledges the IPCC sees as a "unique source for techniques for adaptation" (IPCC 2022b, 469) arise from particular entities (Watts, 2013; Strang, 2005). Dismissing particular entities means discrediting these knowledges, too. From a purely pragmatic point of view, restricting the existence and agency of gods, spirits, and prayer to the realm of subjectivity forecloses the possibility of them being allies in designing and building more sustainable and just futures.

We explore in this manuscript how the particular entities that exist for people can be conceptualized and investigated in a way that omits distinctions between the subjective and the objective. In part, this is a conceptual inquiry, as we are not comfortable with commonly used terms like "religion" or "worldview" to describe people's realities that include gods, spirits, and other particular entities. These terms enforce onto-epistemic assumptions that are particular to post-Enlightenment Europe (Draaisma and Wilson, 2021; Law, 2015). Applying these concepts to people, biota and places that are distinctly different, denies their uniqueness and is to the detriment of our planet's biocultural diversity. Additionally, our exploration is a practical one. We are aware of the difficulties that come with ontological multiplicity in academic research and want to make a modest contribution to scientific methodologies that preserve multiplicity and diversity. To both these ends, we introduce "ontological imaginaries" as a concept and framework for engaging with the diversity of entities that exist for people. Unfortunately, ontological imaginaries are no "quick fix" for the complexity of enacting socio-ecological justice for everyone. Paying attention to context and staying with the complexity and messiness of ontological multiplicity are some of the elements we consider necessary for engaging with people's diverging truths in a constructive way.

2. State of the art

2.1. Particular entities in environmental science

Environmental science does not commonly engage with entities that belie measurement and generalization. Environmental issues like climate change, ecosystem degradation and overfishing are generally approached as the results of human interference in the biosphere and assessed against their implications for human enjoyment and consumption and for natural values such as biodiversity. In such framings, universal entities such as humans, gasses, money and nature are central (Hulme, 2009). However, a growing number of researchers are seeking a more inclusive approach by looking at how people, with their diverse realities, make sense of environmental issues. This broader understanding of environmental research means it now has to work also with particular entities like Allah (Elgammal and Al-Modaf, 2023), *tūpuna* (ancestors) (Harcourt et al., 2022) and spirits (Childs, 2020) that inhabit specific realities.

When particular entities are considered, they are often either celebrated for their potential to inspire more sustainable relationships between humans and the natural environment (Mohamad et al., 2012; Muñoz-García and Mª Dolores, 2020; Ives et al., 2023; Savage, 2006) or criticized for inspiring unsustainable behaviour (White Jr, 1967; Morrison, Duncan, and Parton, 2015). In various religious traditions, God identifies humans as Stewards of Creation. To some, this appointment behoves more responsible and careful behaviour toward the natural environment (Bratton, 2018; Mohamad et al., 2012; Plieninger et al., 2023; Wang et al., 2022). Others highlight that ideas of human exceptionalism and an afterlife would encourage unsustainable behaviours (White Jr, 1967; Morrison et al., 2015). Without attempting to downplay the influence that particular entities have on people's behaviours, we do think it is important to engage with people's realities in a more nuanced way that does not generalize how large and diverse groups of people navigate the world. We argue that a deeper understanding of the entities that exist for people, and the ways they relate to those entities, is needed. The relevance of particular entities to environmental issues may be increasingly recognised, but they are still not treated as the equal of universal entities. The existence of universal entities like greenhouse gasses, insects and ice caps is treated as self-evident. Whether they exist is not a question; they are part of the "unthought" (Casanova, 2009, 58) of environmental science. The existence of particular entities, on the other hand, is not so settled (de la Cadena, 2019).

2.2. Unsustainable dualisms

Many researchers in the environmental and social environmental sciences criticize dualistic ways of thinking that separate society from nature and objectivity from subjectivity (Hegger et al., 2012; Buitendijk et al., 2024; Hulme, 2009). The scientific revolution and the so-called Enlightenment that took place in Europe between the 16th and 18th century are understood to still inform dominant understandings about what reality is ("ontology") and how reality can be known ("epistemology") (Law, 2015). At the base of much scientific reasoning lies an assumption of the existence of a singular and independent reality, knowable through modern science (Latour, 2010; Law, 2004). Scientific research requires and prides itself on a level of objectivity, where people's opinions, personalities and beliefs are separated from the knowledge they produce. This is deemed necessary because opinions, personalities and beliefs are subjective and can frustrate an objective understanding of reality. The origin of this ontological divide between objectivity and subjectivity is often traced back to Descartes' distinction between physical and psychic reality. The Cartesian separation of the objective, physical world and people's subjective representations of that reality, can also be recognized in many other dualistic categories, including nature/culture, body/mind, rationality/emotion, fact/fiction, world/worldview, masculine/feminine, and secular/religious (Wilson, 2017; Latour, 1993; Escobar, 2018). Various names are used to refer to the ontologies and epistemologies that enforce these dualities, including modernity (Latour, 1993), Euro-modernity (Blaser, 2009), the modern ontology (Blaser, 2009), the one-world world (Law, 2015) and the Euro-Westernized academia world (Eitel and Meurer, 2021). We will not use any of these labels in this manuscript, because we do not want to reduce a wide variety of ways of thinking about reality and knowledge to a straw person. We agree that in some cases it is useful and maybe necessary to contrast ontologies and epistemologies that are ignored or even oppressed in a somewhat unnuanced way with a singular, powerful entity. Here, we want to emphasize the plurality of realities, including the ontologies and epistemologies that rely on a separation of subjectivity and objectivity.

Calls for the inclusion of Indigenous knowledges in environmental science are becoming especially clear (Smith and Sharp, 2012; IPCC 2022a; Ford et al., 2016). Environmental issues such as climate change present challenges that disproportionately affect certain Indigenous peoples due to their nature-oriented, resource-dependent livelihoods and socially and economically vulnerable positions resulting from long histories of oppression and inequality (Green and Raygorodetsky, 2010; Hulme, 2009). Furthermore, the intricate knowledge that some Indigenous peoples have of their diverse territories and the beings that live on them can inform more effective, legitimate, equitable and quality responses to environmental issues (Tengö et al., 2017; Welch-Devine et al., 2020). The IPBES, or Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, explicitly argues for and facilitates deep engagement with various knowledge systems (Díaz et al., 2015). Key aspects of IPBES' approach include mobilizing diverse knowledge holders to come together around a particular environmental issue by developing respectful relationships, articulating common knowledge bases and making joined decisions on those bases (Tengö et al. 2017). The integration of Indigenous knowledges into environmental science and policy remains limited, however, in part because of diverging valuations of the particular entities that can play important roles in Indigenous knowledges of territories (Goldman et al., 2018; Demeritt, 2001; Klenk et al., 2017; Nadasdy, 2003).

One of the steps to addressing persistent obstacles to the consideration of particular entities in environmental science is understanding how science constantly bridges the (assumed) divide between objectivity and subjectivity. There is an enormous body of scholarship on how "objective" scientific knowledge is influenced by the theory-ladeness of observations (Hanson, 1958; Feyerabend, 1975), the dynamics of scientific communities and paradigms (Kuhn, 1962; Merton, 1973) and instrumentation (Baird, 2004; Latour and Woolgar, 1979). We are not going to attempt to give an overview of these discussions here. Instead, we look at Sheila Jasanoff's concept of socio-technical imaginaries as she builds on this literature in a way that is particularly relevant to this manuscript.

2.3. Imaginaries and Ontologies

Jasanoff (2004a) argues that scientific facts and social norms, typically positioned in the antithetical categories of objectivity and subjectivity, are mutually constituted, or "coproduced". Thorough consideration of the trajectories of science and technology show that these trajectories are not linear and universal but, rather, intertwined with developments in social, economic, political and cultural contexts (Jasanoff 2004b). Jasanoff calls these trajectories socio-technical imaginaries. The concept "imaginaries" is used, not to reinforce a division between real and imagined but to defeat it, as imaginaries comprise the productive dialectic between (mental) (re)presentations of a future reality (e.g., ideas, norms, stories and art) and reality itself (here particularly focusing on science and technology). According to Jasanoff, visions of a desirable and attainable future inform and are informed by how people act at present. Institutions with power (legislative, judicial, cultural/social or other) prioritize and pursue some hypothetical futures over others through, for example, research fund allocations, university curricula and policies (Jasanoff and Kim, 2015). Imagined futures are about more than what science and technology could make possible: They express what futures are worth pursuing and thus reflect societies' values, too (Jasanoff and Kim, 2015). In that sense, "objective" science and technology is inextricably linked with "subjective" norms, ideals and ethics.

The (largely) insignificant role that particular entities play in environmental science could then in part be explained by the institutionalization and enactment of imagined futures that do not feature particular entities. Indeed, the idea that scientific and technological progress will inevitably lead to a "disenchantment of the world" (Weber, 1905) shapes how religion and spirituality are treated in many secular contexts (Casanova, 2009; Wilson, 2017; Taylor, 2007), including environmental science and policy (Skrimshire, 2019; Hulme, 2017; Berry, 2022).

The so-called ontological turn in social theory also problematizes the assumption science provides a direct window into a singular, objective reality. This theoretical and methodological turn to ontology – in this context referring to "what exists" – argues that multiple truths exist, not as different reflections and interpretations of a singular world, but as articulations of plural worlds (Holbraad and Pedersen, 2017; Salmond, Amiria, 2014; Holbraad et al., 2014; de la Cadena and Blaser 2018b). One stream of research that has come to the fore through this ontological turn is Mario Blaser's political ontology. Building on the work of, amongst others, Law, Mol and Latour, Blaser argues that all worlds (or ontologies), including scientific ones, are enacted by assemblages of humans and nonhumans through "ways of worlding" (Blaser 2013b). Political ontology focuses on the relation among worlds, particularly the ways in which modern, scientific ontologies/worlds continue to expand and further infringe on and erase the worlds of Indigenous peoples in South America (Blaser, 2013a, 2013b; de la Cadena, 2015). By paying and drawing attention to the implications of the worlding of an "all-encompassing modernity"(Blaser, 2013a, 552), political ontology both studies and enacts the pluriverse – a space where an indefinite number of partly overlapping worlds is unfolding (Blaser, 2014).

Our main concern here is finding language for and approaches to engage with the various networks of entities that exist for people in the context of environmental problems. Both Jasanoff and Blaser inform our thinking about this with three overlapping, fundamental points. First, they both demonstrate that there is no universal, objective way to differentiate between objectivity and subjectivity. Objectivity does not exist independent of subjectivity in the same way the material does not exist independent of the spiritual. These dualisms are better understood

as dialectics, producing their meanings together. Without a strict separation between subjectivity and objectivity, there is no legitimate basis to discredit all but one truth on the basis of them being informed by subjectivities like tradition, stories and ethics. We take from this point that objectivity versus subjectivity is an unsuitable basis for excluding particular entities from consideration in environmental science. Second, both draw attention to the social and political implications of science and technology, showing that academia is not a separate realm from politics, society and nature. Blaser, in particular, highlights the injustice that exists in many parts of the world where one world continues to colonize and infringe upon the worlds of (Indigenous) minorities. The way we practice environmental science, including the choices we make about what entities and relationships are worthy of consideration, impacts people's everyday lives. Third, Blaser and Jasanoff testify to the enacted nature of realities and the performative power of stories and other (re)presentations of realities. This means that the stories we (environmental scientists) tell about the world, including which entities and relationships we include in them, actively contribute to the enactment of realities. Still, neither socio-technical imaginaries nor political ontology provide us with the language to conceptualize the myriad entities that exist for people. Because particular entities are often not considered to be relevant to science and technology, they rarely feature in policies and other publicly performed and institutionally stabilized conceptualizations of a socio-technical future worth pursuing, even though gods, spirits and totems do exist for individual people. Therefore, socio-technical imaginaries are not fitted to engage with particular entities. Political ontology and "ways of worlding", as the terms imply, focus on the actions and processes through which different worlds or ontologies are built or destroyed, thereby centering (political) practices rather than the compositions of assemblages of humans and nonhumans (Blaser, 2014).[1] We are especially interested in what configurations of those assemblages are real to people and how these configurations affect and are affected by environmental change. Building on Jasanoff's conceptualization of imaginaries and Blaser's use of the term ontology, we introduce "ontological imaginaries" as a new concept and approach to engage with the question: what there is to sustain, and for whom?

3. Ontological imaginaries

3.1. Defining ontological imaginaries

An ontological imaginary is a person's configuration of what entities exist in the world, through which that person, in relation to those entities, understands and acts upon the world. The adjective "ontological" signifies that the entities included in these imaginaries are not a matter of belief but of reality, and that reality is multiple and enacted (Mol, 2002; de la Cadena and Blaser 2018b). In line with Jasanoff's use of the term, an imaginary is not *imaginary* in the sense it exist only in a person's mind. Rather, an imaginary encompasses the dialectic of the material, "outside" world and the immaterial interpretations a person has of the world. This dialectic can be observed in the way certain stories, knowledges and rituals inform how a person understands the world and how that understanding of the world informs the stories that person tells, the knowledges they develop, and the rituals they perform. Such processes look different for different people, as people in different places and times inform and are informed by different stories, knowledges, technologies and rituals, or what we call "presentations of reality". Bringing these two concepts together, an ontological imaginary is a foundational component of how a person interprets and acts upon the world. Like socio-technical imaginaries, an ontological imaginary can be held by groups of people, and can become institutionally stabilized. However, this does not mean that reality is singular within a group of people that share one aspect of their identities. Whilst groups of people (for example, people with the same nationality) share certain stories and experiences, individuals can hold multiple and sometimes conflicting ontological imaginaries. This can be the case for people who are part of religious-, linguistic- and sexual minorities, where presentations of reality within those groups differ from or even conflict with dominant ones. Indigenous peoples living and working in a settler colonial context, for example, are having to "dance between worlds" (Hunt, 2014, 27), constantly shifting between dominant truths and their Indigenous, ancestral realities.

The concept "ontological imaginary" does not contradict the existence of dualisms like objectivity/subjectivity, nature/culture, real/imagined, but rather recognizes them as being part of certain (quite powerful) ontological imaginaries. Alternative ways of structuring reality exist and are valid. We understand realities and the ontological imaginaries that underly them as processes and thus as being adaptive. They are always embedded in a particular place and time. General categories and conceptualizations like "*the* Aboriginal/Christian/eco-centric ontological imaginary" defeat their own purpose. The strength of the concept, in our humble opinion, lies in its articulation of all realities as context-specific and enacted.

3.2. Agency

All kinds of entities can be part of people's ontological imaginaries. In line with actor-network theory (ANT), we understand existence to be relational and thus dependent on relationships (Law, 2002; Latour, 2023; Law, 2008). Particular entities should be considered in environmental science and policy, not because of their material presence in an objective reality, but because they are part of people's ontological imaginaries. We understand agency as entities' capacity to affect change through relationships (Latour, 1999; Mol, 1999; Law, 2008). Understood in this way, agency does not presuppose free will, self-awareness, or the ability to act with intent. Animals, materials, technologies, ideas and spirits can potentially all effect change through their interactions with other entities. We say "potentially", because in certain ontological imaginaries, relationships of dominance and dependency can exist that can diminish the agency of entities, as we see with spirits and gods in some dominant, anthropocentric ontological imaginaries. Entities thus do not intrinsically have or lack agency, but perform agency within the ontological imaginaries they are made part of. When entities are continuously excluded from dominant ontological imaginaries, the material effect they have in the world diminishes. The absence of gods, spirits, and totems as actively involved in environmental science can be seen as a consequence of a systematic sidelining of so-called subjectivities and not, in fact, as evidence for their "un-realness" or lack of agency. In the same way, we see power as a relational effect. Like agency, we do not understand any entities to have or lack power intrinsically. Within ontological imaginaries, entities can have (various degrees of) agency but only when these ontological imaginaries are stabilized and/or institutionalized do certain entities become powerful. Within anthropocentric and science-based ontological imaginaries, humans and technologies have more influence than, for example, gods and spirits. However, within other ontological imaginaries, those same gods and/or spirits are omnipotent and the fate of humans is predetermined. Thus, when certain ontological imaginaries rise to the level of common or even objective knowledge, the entities within those ontological imaginaries gain power. Some individuals and institutions have more influence on how reality is presented and enacted, as is the case with courts, media outlets, policy makers, religious leaders, and now also influencers on social media. The stories they tell and the standards they set inform how people understand the world and consequently how they move within it.

[1] How our suggested concept interacts in practice with the works of Jasanoff and Blaser will be a point of focus in our ongoing work, where we use this concept to make sense of people's diverging realities of a changing Great Barrier Reef. Of course, we also invite others to join us in exploring the added value of this concept in other contexts.

Although ontological imaginaries are held by humans, this does not mean entities cannot exist or affect change independently of humans. It may well be that, unbeknown to any human, there are networks of entities enacting realities and affecting the world we live in. We do see that the effects of human presence and behaviour on the world is significant. As we focus on those networks through which humans understand and act upon the world, we cannot engage with the agency and existence of all possible entities. Ontological imaginaries can help us better understand people's diverging truths and so create more inclusive environmental science and policy.

3.3. Relevance

The ability of some particular entities to affect change in the world has been significantly reduced through the dominance and imposition of ontological imaginaries that elevate humans and rationality above all else. Some anthropocentric, science-based realities are enacted in all parts of the world, whereas countless others never become real (Law, 2004; Wilson, 2017), constituting, we argue, a kind of ontological injustice (Wilson, 2017). Ontological injustice is not only suffered directly by those whose realities are disregarded as beliefs, but across generations, species, and realities. Still, some feel the effects of ontological injustice more profoundly than others. It is not "just" a problem of lost potential. Ontological injustice is also the displacement of Indigenous peoples from their sovereign lands and waters, the violence inflicted on bodies and psyches through contaminated lands and waters, the extinction of species, and the enrolment of entities in networks that enact their own oppression and demise. People and other entities do not choose the ontological imaginaries that inform the networks they are part of, or the reality they consequently enact. Entities of all kinds can be and often are involved in the enactment of realities that are oppressive and destructive to them. Unjust and unequal relationships between entities may always exist. However, by presenting and enacting realities as adaptable and evolving rather than "just the way things are", such relationships can be contested and transformed.

With respect to environmental issues, research and policy that engages with multiple ontologies is better equipped to address them in all their complexity and diversity (Cole, 2023; Coscieme et al., 2020; Aspøy and Stokland, 2022; Howitt, 2020; Ives et al., 2023). An apparently global phenomenon, understood to play out in a singular reality, can manifest as very different "things" when understood in the context of local realities. To understand and respond to an issue in a way that contributes to socioecological justice, researchers and policy makers must at least know what entities are affected by or involved in the local enactment of an issue. Think, for example, about the development of wind turbine parks on sacred land. Or the classification of dugongs and turtles – which are culturally significant food sources to many Aboriginal and Torres Strait Islander peoples – as protected species. Ontological imaginaries constitute a fundamental "lay of the land", essential to navigate such complex situations.

Environmental science and policy is also informed by the way we (researchers) imagine the world as it is and how it should be (de la Cadena and Blaser 2018a; Jasanoff, 2010). For example, dominant presentations of global climate change are made up of actors that include humans, gasses, temperatures, centimetres, icecaps and rainforests (Hulme, 2009). These networks together produce realities that include human reliance on fossil fuels, the greenhouse effect, sea level rise and the Paris Agreement. Working towards a future with reliable and sustainable energy supplies, liveable (coastal) lands and international cooperations, proposed responses to global climate change consequently involve the development of sustainable energy resources, the reduction of greenhouse gasses in the atmosphere, the restoration of wetlands and dunes, and UNFCCCs "Global Stocktake". This reality of global climate change is widely accepted and invested in. But it does not address the roles of *tūpuna*, spirits and Sky Woman, who are, for various people, part of everything that happens on Earth. The actor-network perspective invites us to be open to unexpected entities and relationships, to "not decide beforehand what kinds of actors to consider, or in what 'domain' they 'reside'" (Lassander and Ingman, 2012, 205). Accepting this invitation could provide new insight into environmental issues like climate change, including realities of these issues brought about by gods and mountain deities (Yeh, 2016; Schnegg, 2021; Day, 2010). Questions to ask include: Who seeks to speak for particular entities? Who challenges or stabilizes an ontological imaginary, and for what reason? And on what tools (instruments, discourses, laws, etc.) do they draw? Michael Schnegg describes that, to Damara people in Namibia, climate change is the result God's anger. They explain that God is angry because people have become more self-centred and violent (Schnegg, 2021). Researching ontological imaginaries could, in such a context, help us understand what (ecological, social and moral) processes together result in climatic changes in Namibia, how these changes impact people's individual and collective lives, and how the problems that arise through these changes can be addressed in a sustainable and fair way.

3.4. Suggested methods

Methodologically, ontological imaginaries raise the same challenge as ANT, the post-human or material turn, and other attempts to conceive reality as a product of relationships among people, technologies, materials, ecosystem processes and other things (Lockie, 2015) –how to take seriously the agency of entities who do not speak for themselves (at least, not in a language we understand)? As we, the authors of this paper, think in human terms, we cannot know if other entities can and do actively conceptualize of and imagine reality in the way we do. Without excluding this possibility, ontological imaginaries are about human conceptualizations of what exists and thus we focus on the human-made representations of realities as these are communicated through media that we can interpret.

An obvious start to mapping ontological imaginaries and the socio-ecological realities they produce is to engage with presentations of reality such as people's lived experiences, stories and policies. In some cases, presentations of reality explicitly sum up what entities exist in the world and how they relate to each other. More often, they communicate the existence of entities implicitly. Consultation or (better yet) collaboration with people who hold local knowledge is important in any environmental research, even when the project is not about people or their experiences. How do people make sense of a particular environmental issue? What powers do they attribute to other entities, and how do they interact with them? Stories of all sorts, including cosmologies, popular literature, news articles and histories are rich sources of information for research on ontological imaginaries. It is through stories and narratives that people reflect on and establish their relationships with other entities (Lejano, Ingram, and Ingram, 2013; Blaser 2013b). Policy documents can also be seen as a type of story, but are especially relevant as they often reflect the ontological imaginaries that are institutionally stabilized and publicly performed.

In addition to mapping out who and what is involved in an issue, ontological imaginaries prompt us to ask what realities are enacted by these entities. ANT, as a method, involves "following the actors", where researchers trace interactions between all entities involved in the enactment of a local reality (Latour, 2005). Tracing these interactions gives insight into what is established, how it is established and by whom, but also how this establishment could be disrupted. Bennett (2018), for example, follows the interactions among sandstone cliffs, birch trees, the National Trust, policy documents and a group of local people, to better understand and potentially inform a remedy to a conflict over the management of a small area in South West Cheshire, United Kingdom. Bennett analyses policy documents that present a discourse of conservation in which birch trees are a threat to local and global biodiversity. In South Africa, Nathen (2018) writes about a network of local medicinal plants, Rastafari *bossiesdokters* (bush doctors) and *kruiemanne*

(herbalists) to understand how plants come to have *gees* (spirit). Nathen interviews some of the entities involved, including the plants themselves. She touches, sees, smells, and tastes the plants, follows their movements, and also moves them (to a herbarium); a method she refers to as “being attentive” (Nathen, 2018). These interactions between plants, researcher, *bossiedokters* and *kruiemanne* are presented in “herb-I-graphies” (as opposed to ethnographies), for these better reflect the co-authored nature of their research. Bennett and Nathen exhibit different ways of engaging with the non-human entities they encountered in their work (discourse analysis and herb-I-graphies). Despite their diverse methodologies, both their studies emphasize that realities are highly contextual and that what is real cannot be exported to just any other place, scale, or time.

The ontological imaginaries that inform and are formed by environmental research shape how an issue is defined and consequently what can and should be done in response. Not all researchers have the same level of influence, of course, but academic positions do come, in many contexts, with authority. Contrary to common understandings of our role in society, our jobs are not just about understanding and communicating the world as it is. Researchers can inform how we and others around us imagine and enact the future. We therefore have a responsibility to use that “world-making” power in a constructive way (de la Bellacasa, 2011, 86). We will not pretend to know what that constructive way entails, but we do argue that self-reflexivity is a good start. Building partnerships and collaborating with others can also help us become aware of our own assumptions and reimagine them. Such collaborations can include working with colleagues across disciplines as well as with non-academic knowledge holders.

For many Indigenous peoples, the existence and agency of non-speaking, non-human entities are self-evident and deeply ingrained in their knowledge (Todd, 2016; Watts, 2013). Indigenous peoples around the world communicate with non-human entities, understanding reality to be multiple and enacted, and live with the danger of being diminished to the subjective realm, to a “cultural being”. We humbly realize how much we can learn from them and encourage readers to collaborate, listen and recognize their authority as knowledge- and rightsholders. Through this paper, we hope to shine some light on why non-scientific knowledges are difficult to comprehend when Sky Woman, gods, or *geeste* (spirits) are not part of people’s ontological imaginaries. That said, many people are fluent in both their traditional or religious realities and post-European, science-based realities, proving that multiple realities can exist alongside each other. So, rather than an excuse for not understanding other-than-scientific realities, we want our contribution to inspire curiosity, openness, and respect towards "others" – in the broadest sense of the word.

4. Conclusion

“What is there to sustain, and for whom?” is a question that underlies and pre-dates research on sustainability. Researchers are increasingly considering more diverse answers to that question. In addition to rational, scientific realities consisting of humans, nature, technologies and sea levels, particular entities like gods, *geeste* and totems are recognized as relevant to understanding and responding to environmental issues. However, their influence is rarely recognized as extending beyond people’s subjective experiences. We argue that gods, *Tūpuna* and everything else that exists are real and have agency, as they are part of the configurations of entities that enact diverse realities.

It remains a challenge to talk and think about the various entities that exist in a constructive and inclusive way. Many of the concepts and frames of academic research are informed by an assumption of reality as objective, knowable and singular. It is therefore difficult and somewhat counterintuitive for researchers to discuss entities like spirits, sentient mountains, and God as objectively real. Often, such particular entities are discussed as existing in religions or worldviews, instead of existing in reality. Such linguistic distinctions have consequences for the existence and agency of entities, for they exist and act in relation to how they are imagined and interacted with by humans and other entities. When entities are marginalized as artefacts of religion, culture, worldview or imagination, or ignored altogether, their agency and ultimately their existence is reduced. We argue that a future in which only scientific and rational realities are sustained is not a Future We (all) Want (UNCSD UN Conference on Sustainable Development, 2012).[2] Rejecting or ignoring the realness of particular entities can thus be detrimental to the pursuit of socioecological justice.

We have introduced ontological imaginaries as a way to conceptualize and investigate the various entities that exist for people. An ontological imaginary is a network of entities through which those entities exist and affect change to the world. We see the existence and agency of all entities – gods and greenhouse gasses alike – not as predetermined but as arising from their interactions with people and other entities. Through their interactions, entities like totems and mountain deities are part of the socioecological systems that environmental science aims to understand and protect. They are inscribed in the landscapes, laws, and knowledges of people around the world. Ontological imaginaries provide a framework for speaking about environmental issues including sustainability that allows a place for the diverse entities that exist within peoples’ realities. Integrating ontological imaginaries in environmental research and policy can help to ensure sustainability addresses the totality of peoples’ realities and does not enforce a triumvirate of the environment, the social and the economic. When institutionally stabilized and publicly performed, ontological imaginaries inform the realities that are enacted on a societal scale. Research can make explicit what stories and assumptions underlie the enactment of realities, so that they can be challenged when they enact realities that are unhelpful and/or unjust. Further, they can highlight realities that are not institutionalized and accepted as common knowledge, so that environmental issues, including questions about what to sustain, can be addressed in a more inclusive way.

Acknowledging and working with the existence of multiple ontological imaginaries is unlikely to make anyone’s job easier. It makes the world more complex and less structured. The coproduction of diverse (ontological) imaginaries and realities means that there is no single world definable through biodiversity or other metrics on which to focus the project of environmental science. There are multiple, albeit interacting, realities in which particular entities assume importance both as subjects and agents of environmental change. Recognizing the agency of particular entities further complicates already complicated and pressing challenges, including climate change, food security and territorial conflicts. However, we argue that engaging with the various entities that exist is an important step in the pursuit of socioecological justice and sustainability. As researchers, we have a responsibility to reflect on our own ontological imaginaries and to collaborate with other knowledge holders, as we are not just imagining a future for ourselves but for everyone and everything that exists.

Vitae

Linde Draaisma is a PhD candidate at James Cook University and the University of Groningen. With a background in Religious Studies, Linde is interested in the ways in which different truths about the world interact and construct common or conflicting realities. In her PhD research, she uses this lens to understand what climate change means for different people with rights and responsibilities to the Great Barrier Reef, Australia.

Distinguished Professor Stewart Lockie is an environmental sociologist whose research addresses environmental governance and risk in a

[2] The Future We Want – Declaration of the UN Conference on Sustainable Development, Rio (2012) https://www.eea.europa.eu/policy-documents/the-future-we-want-2013declaration

variety of contexts including climate change, biodiversity conservation, agriculture and food security, the greening of consumption practices, and the social impacts of resource development. Professor Lockie is committed to lifting research capacity and impact among the social sciences and humanities in the South Pacific and across the broader tropical region. He is the Director of the Cairns Institute at James Cook University, a Fellow of the Academy of the Social Sciences in Australia and Adjunct Professor at the Australian National University.

CRediT authorship contribution statement

Linde Draaisma: Writing – review & editing, Writing – original draft, Conceptualization. **Stewart Lockie:** Writing – review & editing, Supervision.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

We acknowledge and warmly thank the Traditional Owners of the Great Barrier Reef, on whose (Sea) Countries the ideas conveyed in this manuscript have been articulated.

We thank the two anonymous reviewers for their insightful comments and suggestions.

Professor Erin Wilson’s support and teachings are foundational to this work. We are also thankful for the feedback and guidance from Professor Scott Heron and Dr Sean Desjardins.

This manuscript was developed in the context of a Cotutelle PhD program- a collaboration between the University of Groningen (the Netherlands) and James Cook University (Australia). Both universities have financially supported the first author through scholarships.

Data availability

No data was used for the research described in the article.

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