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Valuation of Nature and Nature's Contributions to People

The Life Framework of Values and living *as* nature; towards a full recognition of holistic and relational ontologies

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Abstract

The Life Framework of Values links the richness of ways we experience and think of nature with the diverse ways nature matters. In this paper, we further develop and clarify the Life Framework in response to comments by Neuteleers et al. (Sustain Sci 14(1):4, 2020, 10.1007/s11625-020-00825-7). They supported its application to move beyond the instrumentalism and anthropocentrism associated with ecosystem services and nature's contributions to people, but were critical of our addition of the living *as* nature frame to O'Neill et al.'s (Environmental values. Routledge, London, 2008) original three (living *from*, *in* and *with* the natural world), and of the way we defined intrinsic and relational values. We argue that the original presentation of the frames was as distinct sources of concern for nature. The living *as* frame, characterised by oneness between nature and people, presents a unique source of concern not adequately represented by the original three frames. Whilst the Life Framework is open to diverse definitions of intrinsic, instrumental, and relational values, we present straightforward interpretations that are compatible with multiple ethical systems and can effectively serve deliberative processes. We demonstrate that intrinsic, instrumental, and relational values do not map onto the life frames one-to-one, as each frame layers multiple value justifications. Whilst a key purpose of the Life Framework is to facilitate recognition of a more inclusive set of values in valuation and policy, it can also enable more effective organisation, communication, assessment, bridging and deliberation of values. It also provides multiple levers for sustainability transformation, particularly by fully recognising holistic and relational understandings of people and nature.

Keywords Relational worldviews · Environmental governance · Environmental justice · Environmental ethics · Post-normal science · IPBES

Introduction

Understanding the multiple ways in which nature is valued is a complex and messy field, with plurality being expressed across a diversity of axiological, epistemic and methodological dimensions (Jacobs et al. 2016; Rawluk et al. 2018; Raymond et al. 2019; Kenter et al. 2019). The terms 'value' and 'nature' can be conceived in many ways, ranging from abstract philosophical concepts to technical language of appraisal and policymaking, to everyday descriptions of the world around us. As O'Neill et al. (2008, p. 1) point out:

> There are no such *things* as values. There are rather the various ways in which individuals, processes and places matter, our various modes of relating to them, and the various deliberations that enter into our considerations about action. Environments—plural—and

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their constituents good and bad, matter to us in different ways.

Conceptual frameworks can frame abstract theoretical concepts in understandable ways, clarify complex relationships, expose areas for decision-making that need improvement and become effective, practical tools for communication between stakeholders (Fish et al. 2016; Potschin-Young et al. 2018). By developing the Life Framework of Values, we sought to develop a framework that can achieve these aims, framing the multiple ways in which the natural world matters in a straightforward and intuitive, but comprehensive way, opening up valuation to include a range of moral orientations and worldviews. The Life Framework of Values views these many concepts and interpretations of values and more-than human nature, and ways that nature matters in relation to people, in four basic ways: (1) living *from* nature; (2) living *with* nature; (3) living *in* nature; (4) and living *as* nature (O'Connor and Kenter 2019). Within these four frames, it can organise different sets of values in the sense of broad principles and life goals, also known as transcendental values (Kenter et al. 2015) or simply broad values (Anderson et al. 2022), and more specific contextual values of non-human or more-than-human world, which may be instrumental, intrinsic or relational. For the sake of brevity, when referring to the non-human or more-than-human world, we will simply use the term nature, but with the recognition that this may be understood to include people. The four Life Frames have recently been adopted by IPBES in its Values Assessment to help organise and communicate values and relate them to different worldviews (IPBES 2022; Anderson et al. 2022).

Whilst empirical work applying the framework has recently started appearing (O'Connor and Kenter 2019; Reed et al. 2020; Harmáčková et al. 2021; Kelly-Quinn et al. 2022; Azzopardi et al. 2022), Neuteleers et al. (2020) have opened debate about how the framework was evolved from the original three frames described by O'Neill et al. (2008) and how we interpreted intrinsic and relational values when defining the framework. In this paper, we respond to these comments, and in doing so re-instate the salience of the Life Framework as a straightforward way of organising environmental values compatible with diverse conceptual frameworks, including ecosystem Services (ES) and nature's contributions to people (NCP), whilst at the same time seeking to move beyond their ethical and ontological limitations in terms of anthropocentrism and dualism (Jax et al. 2013; Silvertown 2015; Cooper et al. 2016; Kopnina et al. 2018; Kenter 2018; Kolinjivadi 2019; Muradian and Gómez-Baggethun 2021).

Neuteleers et al. (2020) acknowledge these critiques and are generally supportive of the introduction of the Life Framework as an organisational framework for valuing nature, which they describe as "promising" (p. 313). In particular, the authors commend its solid conceptual foundations in environmental philosophy, its transition away from a one-directional flow of benefits and services from nature to people; and the way the Life Framework creates space for the inclusion of intrinsic values.

However, in their constructive critique, they go on to argue: (1) that our conception of intrinsic values as "articulated intrinsic values" lacks clarity over longstanding moral debates and is too specific; (2) that articulated intrinsic values are conceptually difficult to disentangle from relational values; and (3) that the 'living as' frame is unnecessary and overly complicates the framework. In responding to these comments, a second section of this paper will discuss the relation between the Life Frames and the trifecta of instrumental, relational and intrinsic value types, or, more precisely, value justifications, and argue that the living *as* nature frame is an important, ontologically distinct source of concern that was not fully recognised by O'Neill et al. (2008). The third section will discuss the relations between intrinsic and relational values, and the fourth section will further clarify the concept of articulated intrinsic values. Whilst the discussion of intrinsic and relational value definitions is somewhat independent of the basic merits of the Life Framework, their clarification also helps to elucidate how the Life Framework can be applied as a way to practically recognise plural values of, for and in relation to nature, or the more-than-human world. Finally, the fifth section will address concerns by Neuteleers et al. (2020) around the practicality and operationalisation of the framework by outlining its key functions and purposes for research and policy.

The values trifecta and living *as* nature: questioning dualistic ontologies

O'Neill et al. (2008) introduced the living *from*, living *in* and living *with* frames as three ways of considering values regarding nature. Living *from* expressed how our environments matter as a means of existence and as a resource. Living *in* expressed how they matter as homes, places, and sources of meaning and personal and social histories. Living *with* expressed how nature matters separately from people, existing before us and continuing to exist after us. These authors developed the three value frames as easily understandable narratives of concern to serve as an introduction to their book, which in essence discusses how to navigate conflicts between plural values, bridging environmental ethics, political economy, and deliberative theory. These sources of concern include the sustainability of our resource use (living *from*), the cultural significance of our environments (living

in), and nature as an object of conservation, including as a direct object of value (living *with*).

Neuteleers et al. (2020) see this framework as a way to intuitively communicate the trifecta of value justifications of instrumental, intrinsic and relational values, which could be straightforwardly mapped to them. Consequently, introduction of the living *as* nature frame would overcomplicate things. In response, we firstly argue that such a simple mapping misconstrues the dynamic and multilayered nature of each of these value frames, which can express multiple value justifications, and secondly that there is a further fundamental source of concern that cannot be fully expressed through the living *from*, *in* and *with* nature frames.

In terms of the first, as we previously argued in O'Connor and Kenter (2019), and both we and Harmáčková et al. (2021) empirically found, each of the different frames are associated with more than one value justification. The fuzziness of value justifications in practice is not surprising, because intrinsic and instrumental value concepts do not have their origins in social research or policy but are constructs that have been subject to decades if not centuries of philosophical debate about their precise definition (Batavia and Nelson 2017). They have not been intended as constructs for deliberative and participatory processes, and their nuances (e.g., the difference between intrinsic and non-use values, or the difference between anthropocentrism and anthropogenism of values) are easily lost in practice. Indeed, it was this difficulty of relating to abstract intrinsic and instrumental value concepts that has motivated the more recent prominence of relational values, although there are differing perspectives whether relational values should be considered as a distinct ethical category, or as a broader boundary object or value lens (Stålhammar and Thorén 2019; Kenter et al. 2019).

In contrast, the three original Life Frames did not originate as ethical value constructs but as a narrative device for O'Neill et al. (2008) to define the scope of environmental values. Different frames express multiple contextual value justifications. Considering living *from* nature, farming, fishing and food all have instrumental but also relational connotations, both for food producers (e.g. relational identities and motivations; Jones and Tobin 2018) and consumers (e.g. sociocultural dimensions of food; Schösler et al. 2013), especially so in subsistence contexts (Kenter et al. 2011; Kenter and Fazey 2015). In terms of living *with* nature, Harmáčková et al. (2021) identified conservation concerns that can be associated with intrinsic values of biodiversity but also relational values (e.g. care for nature) and instrumental values (e.g. importance of regulation of pollution). And it is often not straightforward to classify values. For example, Harmáčková et al.'s (2021) stakeholders associated the resilience value of biodiversity with the living *with* frame, but this could cut across the three value justifications, as ecosystem resilience can support life regardless of whether this benefits people, sustains important human-nature relations, or conserves nature independent of human values. Similarly, participants did not appear to differentiate between the instrumental and relational values of recreation that were associated with living *in* nature. Thus, a one-to-one relationship between the Life Frames and the value justification trifecta is an oversimplification that misses the multi-layered nature of each of the frames.

This discussion around the tensions between abstract philosophical value concepts and more pragmatic use of value concepts also highlights a particular strength of the Life Framework practice. Harmáčková et al. (2021) write: "In comparison with other available value frameworks, it seemed that the advantage of the Life Framework of Values lied in embracing participants" intuition and referencing their lived experience with nature, instead of relying on rather abstract thinking about values such as in the case of the intrinsic/instrumental/relational framing." (p. 859).

Furthermore, values may fall in the intersections between frames. Harmáčková et al. (2021) again provide evidence of this, noting that their participants considered similar values in different ways, and this influenced how they were framed: "In addition, it is important to note that while the participants seemed to understand the framework quite readily, they occasionally placed seemingly similar values into different parts of the framework. From the related discussions during the workshops, we understood that this was happening primarily due to participants' different interpretations of certain values, rather than potential misunderstanding of the dimensions of the framework" (p. 859).

Returning then to our argument with regard to the living *as* nature frame, the three original frames already each related to multiple value justifications, and the utility of the framework as a tool for communicating and organising values is not lost, but enhanced by this multi-layered nature of the frames. Thus, in this regard, addition of a fourth frame is not problematic.

In terms of the addition of living *as* nature, it is well established that policy has historically undervalued the value of nature. There are many arguments put forward, both epistemic and ethical, to suggest that this undervaluation has its roots in an ontological worldview that much of western scientific (and political) thought has subscribed to: that of nature and culture as being separate entities, ultimately underpinned by a belief in human exceptionalism (Krebber 2011; Saxena et al. 2018; Ruuska et al. 2020; Muradian and Gómez-Baggethun 2021). By ontology we are referring to the varying conceptions of the nature of reality, which can play an important role in both understanding and in forming our environmental values. For example, Glaser (2006) distinguishes approaches to environmental discourse that have diverged between more holistic 'web of life' perspectives

and more dualistic perspectives such as 'nature through society' or 'pristine nature and society'. Importantly, such holistic perspectives move beyond the dichotomy between anthropocentrism and nonanthropocentrism towards more relational worldviews. This particular ontological source of concern for nature, as inseparable from us, is distinctly different from that of the other frames, including concern for nature's cultural significance and place identity associated with living *in*.

Neuteleers et al. (2020) also take the view that the living *as* nature frame is redundant because it is sufficiently reflected within the concept of relational values. It is true that important proponents of relational values have associated these values with broader relational epistemic and ontological lenses and worldviews (e.g. Muraca 2007; Himes and Muraca 2018; Gould et al. 2019), but others advocate assessing relational values through conventional dualistic western knowledge traditions, including for pragmatic reasons (Schulz and Martin-Ortega 2018). Relational values as a concept is embedded within the broader IPBES framework of NCP, which has evolved from ecosystem services. Key authors with regard to relational values have previously been important contributors to the cultural ecosystem services field (e.g., Chan et al. 2012; Chan and Satterfield 2015; Gould et al. 2015). While there thus appears to be a relational turn taking place, the broad church of the relational values concept—as bridging both transcendental and contextual values; bridging intrinsic and instrumental values; being both anthropocentric in the sense of relational values of NCP and seeking to transcend anthropocentrism through relational worldviews; being presented as both an ethical construct and an interdisciplinary boundary object—means that there is a real risk of holistic ontologies being lost, particularly if the overarching framework of what is thought to have relational value continues to be dualistically slanted, as with ecosystem services or NCP.

The NCP framework has sought to open up ecosystem assessment to more pluralistic values (Díaz et al. 2018). Indeed, this framework, and the cultural ecosystem services community previously, has made significant strides in terms of opening to living *in* nature framings by recognising cultural significance as an important source of concern for the environment (Braat 2018; Kadykalo et al. 2019). However, limited and predisposed by its semantics in terms of services, benefits and contributions from nature to people (Cooper et al. 2016; Kenter 2018; Kolinjivadi 2019; O'Connor and Kenter 2019; Neuteleers et al. 2020; Muradian and Gómez-Baggethun 2021), the ecosystem assessment community remains fundamentally challenged in reflecting nondualistic and nonanthropocentric ways of relating to nature. A more inclusive language, such as is encouraged through the four frames of the Life Framework, is needed to address the inclusion of holistic and relational ontologies and value lenses that continue to be underrepresented in the field (Bratton 2018; Gould et al. 2019; Brear and Mbonane 2019; Kenter et al. 2019; Muradian and Gómez-Baggethun 2021). To fully realise the potential of relational values, they need to be assessed within a broader plural values framework that is not fundamentally at odds with relational ontologies.

Returning to Neuteleers et al.'s (2020) argument to restrict the Life Framework to its original three frames, it is well established that many indigenous communities do not consider their environment, or certain elements of it, as separate from themselves. Such ontologies can be found across the world in diverse forms, for example in Ubuntu in various parts of Africa (Chibvongodze 2016) or in Hawaiian understandings of values (Gould et al. 2019). In western empirical work applying the Life Frames, local people also expressed views and experiences of holism and oneness both when prompted with interview (Reed et al. 2020), questionnaire (Kelly-Quinn et al. 2022), or workshop (Harmáčková et al. 2021) questions expressing the living *as* nature frame, and in analysis of secondary data (O'Connor and Kenter 2019). Furthermore, schools of thought in science and technology studies (Whatmore 2002; Law and Mol 2008), the environmental humanities (Neimanis et al. 2015), multispecies thinking (Haraway 2018; Celermajer 2020), and new materialism (Whatmore 2006; Bennett 2010) have all challenged dualistic ontological framings of nature and society, such as through notions of agency, affect and the materiality of the more-than-human world.

It is important to note that the living *as* frame is not conceived in opposition to the other frames. For example, concepts of embodiment (Raymond et al. 2018) and dwelling (Ingold 2011) as well as animal geographies (Buller 2015) and more-than-human research (Bastian et al. 2016), whilst ontologically reflective of the living *as* frame, can also be linked to place and a recognition of other species' harbouring their own interests, reflective of the living *in* and living *with* nature frames respectively. Similarly, it is self-evident that anyone who lives *as* nature still also needs to live *from* it, in the sense of relying on it to meet their needs. In some cases, certain elements of nature may be seen or experienced through a living *as* frame (e.g., certain species that are perceived of as kin), whereas other elements are not seen in this way, but may matter from the perspective of the other frames. Elsewhere, the living *as* frame can sit at the core of a more holistic and relational worldview through which the other frames can be perceived, articulated and embodied. Thus, whilst the living *from*, living *in* and living *with* frames are conventionally based on a dualistic, binary ontology (Krebber 2011; Herrmann-Pillath 2020; Ruuska et al. 2020), when there is integration of living *as* nature, these frames can themselves be infused by more holistic ontological lenses.

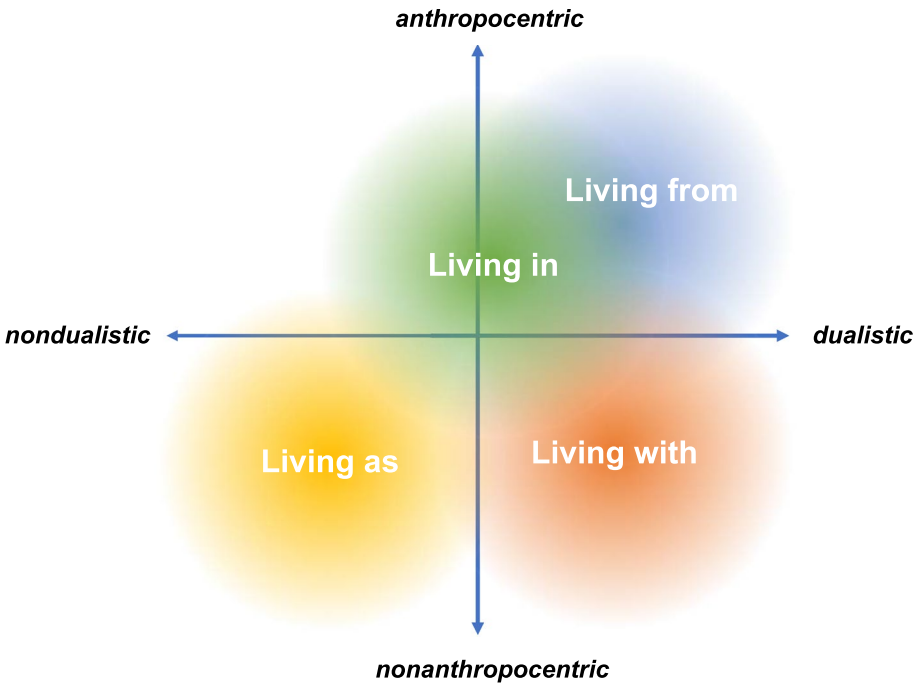

Fig. 1 The Life Frames in terms of their ontology (horizontal axis) and ethical orientation (vertical axis). Note that it is also possible to view the living *from*, *in* and *with* nature frames through the holistic, nonanthropocentric lens of the living *as* nature frame

This points to the transformative significance of the living *as* nature frame. Whilst the importance of value change for sustainable transformations has been a point of debate (Manfredo et al. 2017a, Manfredo et al. 2017b; Ives et al. 2017; Stålhammar 2021), a broad range of possible transformative pathways has been outlined, from individual value shifts leading to cultural and societal shifts (Van Riper et al. 2019) and vice versa (Kenter et al. 2019), to the roles of social learning and institutions as levers for change (Reed et al. 2010; Everard et al. 2016). However, peoples' values may not change sufficiently towards sustainability and care for nature, unless they more directly see themselves as part of and interdependent with the broader web of life. In other words, the value change demanded by sustainability transformation (IPBES 2019, 2022) also requires transformation of ontological worldviews. Such a transformation, however, starts with institutions creating space for plural ontologies. In this way, individual and collective values seen through a living *as* nature frame can be increasingly reflected within governance. Further, recognising that plural ontologies exist in the world, sensu the Zapatista statement, a "world where many worlds fit", introducing the fourth frame opens up environmental valuation to a more decolonial approach to valuing the environment (de la Cadena and Blaser 2018; Escobar 2018). This has been reflected in the interest in the notions of the pluriverse, as a post-development and decolonial approach to understanding and forming plural material socio-economic realities (Demaria and Kothari 2017; Escobar 2018; Kothari et al. 2019).[1]

In conclusion to this argument, the living *as* nature frame is salient as an ontologically distinct source of concern for nature, whereas the sources of concern expressed through the other frames are distinct from each other axiologically (Fig. 1). Furthermore, the living *as* nature frame can also provide an ontological lens through which the other frames can be reconsidered. In doing so, it helps extend the Life Framework beyond ecosystem services and NCP and provides a scaffolding that can support a more comprehensive assessment of relational values. Finally, the addition of the living *as* nature frame also connects the field of environmental valuation, both theoretically and methodologically, to a diverse range of interdisciplinary schools of thought, providing diverse avenues for deepening our understanding of plural values.

Disentangling intrinsic and relational values

The other critique leveraged by Neuteleers et al. (2020) relates to the way we defined and then empirically considered intrinsic and relational values within the context of the Life Framework. With regards to intrinsic values, they are

[1] When challenging dominant western ontology, researchers must be cautious with regards to how it utilises and applies ontological framings which are rooted in indigenous worldviews and thought, for risk of appropriating and colonising these forms of knowing and understanding the world (Sundberg 2014; Todd 2016; Chandler and Reid 2020).

concerned that our approach to intrinsic values does not sufficiently clarify the philosophical tensions between deontological vs consequentialist moral theory. This is the tension around 'what to do' with values once they have been identified; should they be acted on according to rights and duties (deontology) or with regard to what actions would lead to the best outcomes (consequentialism). With regards to relational values, they object to their supposed equation with subjective intrinsic values, arguing that they are broader.

Before responding to these concerns more specifically, it may help to restate that the Life Framework does not hinge on any particular definition of intrinsic, relational and instrumental values; it links to, but does not require the trifecta of contextual value justifications used by IPBES, amongst others, and is compatible with diverse interpretations of whether and how these value justifications are delineated from each other. Furthermore, in eliciting values through the framework, it is not necessary to have strictly defined value justifications, and as we discussed above, it is not always evident to what justification value expressions relate to, even if they are well-defined theoretically.

Our motivation for introducing the framework was to provide a scaffolding for eliciting and understanding nature's values that could be inclusive of benefits-based framings of nature's values (ecosystem services, NCP) but that would also transcend their (1) dualism and (2) anthropocentrism. The first was addressed through the living *as* nature frame. The second demanded a discussion of intrinsic values and how they could be encapsulated through the framework in a way that did justice to their significance and at the same time provided mechanisms for overcoming the divide between intrinsic and anthropocentric (instrumental and relational) values. For this purpose, we reinterpreted intrinsic values as a social concept, *articulated intrinsic values*, and advocated definitions of intrinsic and relational values that we deemed to be most practical in terms of working with expressions and deliberations of plural values whilst staying close to established work.

In defining intrinsic values within the context of the trifecta, it made sense that they should be both non-instrumental and non-relational. To qualify these terms, we built on well-established thinking by O'Neill (1992), considering non-instrumental to mean the importance of value objects as ends in themselves, and non-relational as a qualification of value without reference to the valuing agent, i.e., human beings that articulate values. We defined relational values as: "the values relative to the meaningfulness of relationships, including between peopleand non- or more-than human entities, and the contributions of these relationships to a 'good life'. While relationalvalues are considered as non-instrumental in the sense of non-substitutable and incommensurable with instrumentalvalues, they are still anthropocentric" (O'Connor and Kenter 2019, p. 1250). In otherwords, relational values signify the importance of non-instrumental relationships as ends in themselves, whereas intrinsic values signify the importance of objects of value as ends in themselves independent of their relationships to people. This way of interpreting intrinsic and relational values has the advantage of being straightforward, precise and compatible with previous work by IPBES and key recent contributions on relational values (e.g., Díaz et al. 2015; Pascual et al. 2017; Himes and Muraca 2018; Chan et al. 2018).

This approach implies that intrinsic values, in the way that we defined articulated intrinsic values (O'Connor and Kenter 2019), are objective in the sense of their independence of reference to people as valuing agents, whilst relational values are subjective in this sense. O'Neill (1992) already defined what the literature refers to as subjective intrinsic values, such as peoples' expressions of the awe, wonder and beauty of nature, as relational (we will discuss relationality, subjectivity and objectivity in this sense in more detail in the next section). This equation can be interpreted in two directions, which is what appears to have confused Neuteleers et al. (2020). Batavia and Nelson (2017) understand relational values to be subjective intrinsic values and thus, as an ethical construct, a redundant category, and Neuteleers et al. (2019) mistook this also to be our position, overlooking that we had provided a broader definition as quoted above. In contrast, we took subjective intrinsic values to be a *subset* of relational values. We did not imply that all relational values were subjective intrinsic values. For example, the importance of place identity refers to the significance of people's relationships to places, and thus is relational. Yet place identity would not typically be classified as a subjective intrinsic value. Part of the confusion may have stemmed from that Neuteleers et al. (2020) appear to mistake definitions that we cited from earlier work as our own, including relational values as "experiential analogues" of intrinsic values (Batavia and Nelson 2017, p. 370), and also definitions of strong and weak objective intrinsic value (O'Neill 1992). In the next section, we will further clarify the conceptual and definitional approach taken for articulated intrinsic values, and the advantages of the approach taken with regard to value plurality.

Clarifying articulated intrinsic values

The notion of articulated intrinsic values was grounded in the philosophical concept of strong objective intrinsic value. In summary, O'Neill (1992) discusses that intrinsic values can either be considered as objective—residing with the valued objects (in this context, various elements of nature)—or subjective, in which case it is assigned to valued objects by people. Objective intrinsic value is associated with objective, non-relational properties of those objects. O'Neill

discusses that there are then two interpretations of this: (1) a weak interpretation, where evaluative properties of objects exist *in the absence of* evaluating agents; (2) a strong interpretation, where evaluative properties of objects can be characterised *without reference to* evaluating agents (ibid.); for ease of discussion, we consider humans as evaluating agents, though from the perspective of the living *as* nature frame, their pool may well be expanded upon. First, O'Neill (1992) argues that natural entities have intrinsic value in the strong objective sense. Secondly, he argues that this does not infer a particular moral obligation (ibid.) In other words, that something has intrinsic value does not prescribe a way in which we should act towards it.

We built on this argument to consider the question of how to integrate intrinsic value within environmental policy and management. The term 'articulated intrinsic value' was coined to convey how intrinsic values, if they are going to be integrated in any kind of policy, require recognition and articulation, and appropriate value frameworks (such as the Life Framework) and valuation procedures for achieving this. This can be a broad spectrum of approaches, from articulation through ecological science, to articulation by stakeholders in deliberative and participatory processes, to symbolic and ritualistic expressions in practices of indigenous people and local communities.

Articulated intrinsic values, as strong objective intrinsic values, express that the more-than-human world has value in the sense of *goodness for*; e.g., a gardener pointing out that foxgloves are *good for* bees. This is important as it distinguishes the concept from weak objective approaches such as that of Rolston (2012), which argue that intrinsic values exist independently of the mind. We do not assert this, though whether or not this is true is of little practical significance in terms of environmental policy and management, which hinges on values being articulated. Acts of valuing, as acts of recognition, expression and articulation of values, and acts of valuation, as formal processes of assessing values (Kenter et al. 2015) are anthropo*genic*,[2] but through articulating intrinsic values can move away from being anthropo*centric*.

Both O'Neill (1992) and O'Connor and Kenter (2019) discuss the relation between ethics and meta-ethics in this context in some depth. However, where confusion seems to have remained for Neuteleers et al. (2020) is in how ecosystem services and intrinsic values can be considered together through the Life Framework, without resorting to either the moral absolutism of deontology or a purely consequentialist approach based on trading off different human and non-human interests. To resolve this, we proposed an ethically pluralist way of working grounded in post-normal science principles and deliberative democracy.

Post-normal science has increasingly been recognised as an important scientific disciplinary approach to navigate complex sustainability problems (Ainscough et al. 2018). Post-normal science embraces value incommensurability whilst recognising principles of quality assurance and multiple perspectives to be key to navigating complexity and uncertainty in scientific research (Funtowicz and Ravetz 1993). These multiple perspectives may include plural value lenses and ethical systems, meaning articulated intrinsic values may be interpreted as multiple differing *oughts* according to the perspective they are articulated from. For example, if one considers forest cover is *good for* mountains as an articulation of intrinsic values, the moral implications of this may vary according to whether the one articulating this value subscribes to a deontological, rights-based approach where actions for the mountain are a duty, or a virtue ethics approach, where attending to the mountain is part of a good life, or a consequentialist approach where outcomes for the mountain would need to be compared and potentially traded-off against other consequences of its management to ensure the best outcomes overall. It is important to note here that there is a difference between instrumental values and utilitarian ethics, which are often referred to interchangeably (e.g. Muradian and Gómez-Baggethun 2021) but mean different things. While the preference utilitarianism of neoclassical economics only considers instrumental values of nature, it is possible to articulate nature's or non-humans' intrinsic value within a utilitarian framework suggesting that consequences for them should be considered alongside consequences for humans (e.g. Singer 1975).

Our approach supports the plural inclusion of both utilitarian and nonutilitarian ethics. The emphasis on articulation of intrinsic values emphasises that the *right* answer to how they should be treated is a matter of moral argument, deliberation and social choice, where intrinsic and nonintrinsic values can be considered in one or more of many ways (deontology, consequentialism, care ethics, virtue ethics, narrative ethics, particularism, indigenous ethical systems etc.). Supported by the broader scaffolding of the Life Framework and operationalised through deliberative democratic processes (Zografos and Howarth 2010; Kenter 2016; Orchard-Webb et al. 2016), this approach crucially puts plural values at the centre, without the pitfalls of moral absolutism or the instrumental bias of benefits-based framings such as ecosystem services and NCP.

However, with regards to such an approach, Neuteleers et al. (2020) rightly raise the danger of anthropomorphism, suggesting that when we articulate intrinsic values for the more-than-human world, there are questions raised about the legitimacy as to these representations. Can we ever do

[2] It could be argued that some other species, such as primates, cetaceans and potentially cephalophods, also express values in their communications and behaviour, and could be recognised as valuing agents.

so accurately or fairly if we don't really know what it's like to, for example, 'be a bat' (Nagel 1974; Wemelsfelder 2012). In trying to understand and represent those that cannot represent themselves, are we not reinforcing the same paternalistic power dynamic reflective of the anthropocentric worldview at the core of exploitation of the more-than-human world to date (Warren 1990; Krebber 2011; Haraway 2013)?

To address this key question, Haraway (2013) suggests we might articulate *with* rather than *for* the more-than-human world. This does not contradict the understanding of articulated intrinsic values as 'goodness for', but rather adds nuance to the way in which the articulation happens. Take for example, a person who might express goodness *for* bees in a garden, e.g., the gardener planted marigolds because they're good for bees, the bees *like* them. How do we come to know what bees 'like' without anthropomorphising? The literature offers a range of methodologies and practices that can be drawn upon that help us to answer this from observation, sensory perception, embodied knowledge and experiential learning towards more sensitive practices such as empathy and attentiveness (Ingold 2011; Haraway 2013; Raymond et al. 2018). In this case then we might observe the bees as they appear to be attracted to a particular plant, leading the evaluating agent (in this case the gardener) to articulate that the plant is 'good for' them, or simply that they 'like' it.[3] Nonetheless, anthropomorphising remains a noteworthy concern. Again, principles of communicative rationality and post-normal science can help discern between varying quality of different lines of reasoning.

To conclude our discussion of the merits and pitfalls of articulated intrinsic values, we might borrow from Batavia and Nelson (2017, p. 370), who in discussing ecofeminist critiques of traditional intrinsic value conceptions, speculate an alternative in which, through a "radical re-imagining, 'value' is neither an objective fact nor a subjective judgment, but a dynamic reality produced, interpreted, and enacted in the interplay of human and nonhuman agents." This encapsulates what articulated intrinsic values, embedded within the Life Framework, can offer in moving away from an anthropocentric approach to valuation.

Operationalising the Life Framework

The final critiques raised by Neuteleers et al. (2020) relate to the way the Life Framework was applied in our empirical work in the context of a UK marine case study, where they argue that: (1) we took the wording of the Life Frames, and particularly the living *in* nature frame too literally in terms of the specific empirical examples presented from our stakeholder interviews, which included prepositions such as 'amidst', 'through' and 'in'; and (2) that categorisation of stakeholder statements seemed of little relevance to them in the first place.

In terms of the first, in presenting an empirical application of the framework, our focus was to demonstrate subtle, but important, differences between the Life Frames and associated value justifications. For example, when quoting a participant as discussing "paddle boarding with porpoises in the surf with us", this quote was selected to highlight the difference between the living *in* and living *with* frames; in this instance, the interviewee was referring to their recreation and expressing values of the place, seascape and species that contributed to the stage for their activities (living *in* nature). As with qualitative research more generally, the meaning of these extracts needs to be interpreted in context, and we sought to understand the perspectives from which each participant was expressing their values. Thus, whilst we quoted prepositions as illustrative in many of our examples, we fully agree that the frames should not be considered as dependent on their prepositions. They are basic categories that can be described without them, where nature is considered to matter as a resource (living *from*), as place (living *in*), as important other(s) (living *with*) and as self (living *as*), as we discussed in more detail in O'Connor and Kenter (2019).

In terms of the second, we again agree with Neuteleers et al. (2020) that a key aim of the framework is to help "keep the normative lens open and sensitive, namely in order not to forget certain valuing attitudes." (p. 316). Our qualitative analysis, where interview transcripts where analysed ex-post, was relevant to clarify empirically how the Life Frames could be expressed by diverse stakeholders and how they were related to each other and to different values. However, the Life Framework can be applied for multiple purposes (Fig. 2). These include: (1) organising values; (2) communicating values; (3) designing valuations; (4) assessing values; (5) deliberating values; (6) bridging values; (7) prioritising values; and (8) transforming values. We will briefly discuss these in turn.

Organising values

Values do not co-occur arbitrarily, and the Life Frames provide a coherent and intuitive way to identify value assemblages, sets or systems. For example, a strong focus on a living *from* frame is likely to be more associated with a dualistic ontological perspective on the relation between people and nature, an anthropocentric worldview, and emphasis on instrumental contextual values and transcendental values such as wealth and security. This organisation of frames can build on established associations between certain sets of worldviews, values, beliefs and norms, such as those in environmental psychology (Dietz et al. 2005; Raymond and

[3] This could be seen to have parallels in economists or ecologists assessing other species or people's behaviour to reveal their preferences without qualitative insight into their lifeworld.

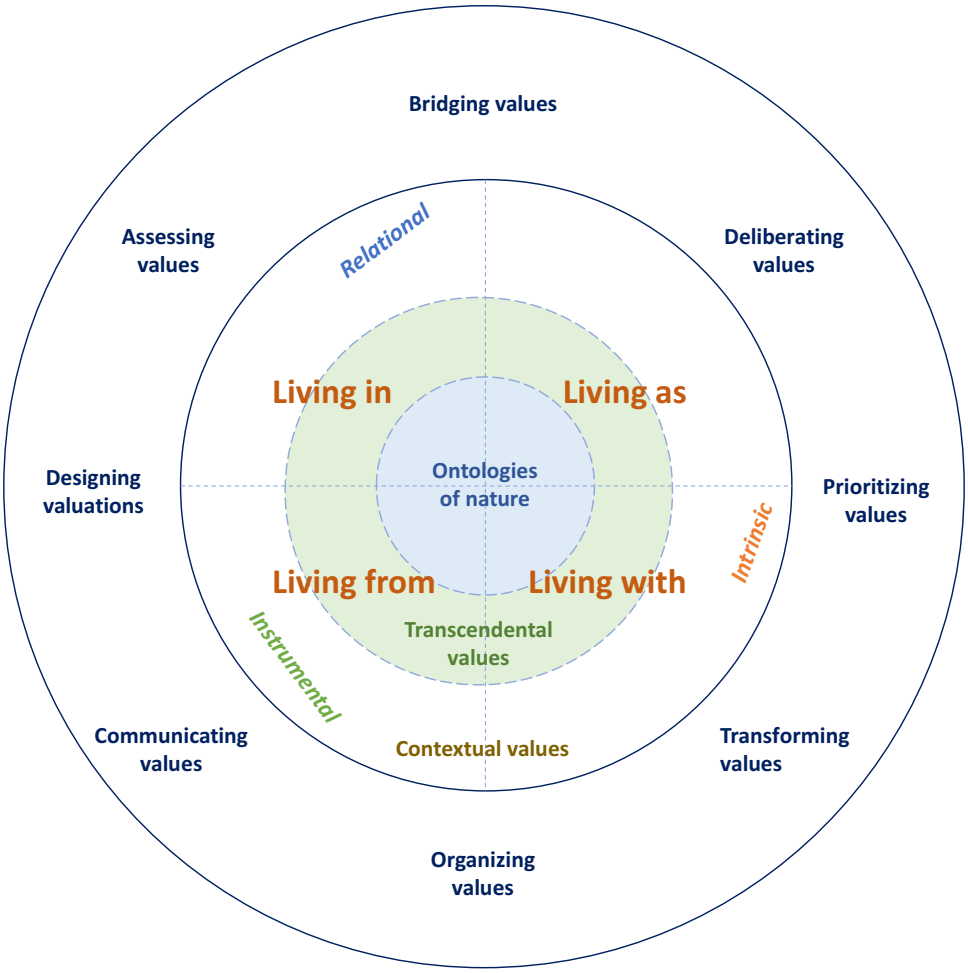

Fig. 2 The Life Framework of Values and its key functions and purposes

Kenter 2016), while it can broaden and clarify the multiple ways in which values, worldviews and ontologies interrelate beyond established measures such as the New Ecological Paradigm (Dunlap et al. 2000).

Communicating values

The field of environmental values is complex, diverse and multifaceted (Pascual et al. 2017; Raymond et al. 2019; Kenter et al. 2019). Abstract concepts and diverse value indicators are not easy to differentiate by lay people, and the Life Framework provides an intuitive and straightforward way of representing and conveying sets of values described above (Neuteleers et al. 2020; Harmáčková et al. 2021; Kelly-Quinn et al. 2022) that can significantly reduce the number of conceptual dimensions of values that need to be communicated, whilst still embracing diversity. The Life Framework can also support communication and bridging of value concepts across different disciplines with diverse ontologies, providing a tool for epistemic brokerage. For example, Azzopardi et al. (2022) use the Life Framework to bridge between the fields of heritage and environmental management.

Designing valuations and assessing values

When undertaking valuation, it is increasingly recognised that multiple methods are often needed to identify the diversity of values of nature (Jacobs et al. 2016; Kenter et al. 2019; Kronenberg and Andersson 2019), as assumptions associated with pre-existing value frameworks can determine and limit the values elicited (Hunter and Lauer 2021). In designing valuations, methods and approaches can be explicitly selected and framed to help ensure the value sets within each of the Life Frames are recognised and assessed, and to acknowledge the limitations of approaches where this is not the case. Methodological options include using the Life Framework as a way of structuring value elicitation and articulation, as in Harmáčková et al. (2021), or to analyse secondary data to aid decision contexts, as in O'Connor and Kenter (2019). Importantly, the framework can also provide avenues for targeting capacity building with researchers and policy makers, by identifying where there are gaps in the

ways that values and value frames are recognised, assessed, and integrated in policy and practice.

Deliberating, bridging and prioritising values

O'Connor and Kenter (2019), Harmáčková et al. (2021), Zimmermann et al. (2021) and Kelly-Quinn et al. (2022) demonstrate how stakeholders with diverse backgrounds can nonetheless share and recognise each other's value frames. As such, the Life Framework, by helping to recognise, organise and communicate values, can be a support for value deliberation in research and policy, including processes of trust building that can aid the identification of synergies between multiple values (Cooper et al. 2016; Orchard-Webb et al. 2016; Kolinjivadi 2019). Processes of reconciliation of multiple value frames may also serve to help identify value priorities, and support buy-in despite disagreement. For example, stakeholder participants in a process described by Ranger et al. (2016) prioritised the living *with* nature value frame to help achieve legal obligations within a protected area context, but explicitly considered, and sought to minimise negative impacts on values associated with living *from* and *in* nature frames, such as livelihood sustainability of fishers, the cultural identity of ports, and local recreation. The living *as* nature frame was made explicit by ethnographic video work, highlighting experiences associated with deep emotional and spiritual connections to the sea. Because these were common to fishers, conservationists, and recreationists, this helped build the trust needed to support respectful and effective deliberations. The application of the Life Framework can help make these frames more explicit and provide a structure for deliberations to support the recognition of shared frames, or processes of reconciliation, bridging and prioritisation between conflicting frames. This potential for the Life Framework to aid inclusive processes of reconciliation may also help to overcome alienation and distrust in stakeholder communities that have resulted from conventional technocratic approaches to environmental governance (Mehring et al. 2018).

Transforming values

The Life Framework provides various levers for sustainability transformation. Everard et al. (2016) report, based on historical analysis, that a key process for the emancipation of environmental values is a 'ripple effect' where values are shared over time between different stakeholders and sectors through social learning, and also in more concentrated processes (e.g. Ranger et al. 2016). The four distinct frames, presented on an equal footing, intuitively support an approach where values and interests associated with frames are regarded with similar consideration, whereas historically the living *from* nature frame has heavily dominated (Millennium Ecosystem Assessment 2005; IPBES 2019, 2022). This can promote strategies of searching for synergies, with a recognition of ecological constraints, impacts, and other species in their own right (living *with* nature), and our interdependence, connectedness and reciprocity with nature (living *as* nature), whilst respecting the importance of nature for our livelihoods and needs (living *from* nature) and its significance for place and culture (living *in* nature). Making underlying ontologies and transcendental values explicit through deliberation and identification of shared frames can also transform contextual value priorities. As discussed in the second section, the living *as* nature frame provides a further, particular lever for change, by shifting our ontological worldview towards seeing nature as less separate, which can underpin a shift in the way we consider the other value frames in turn. Such ontological shifts can take place at the individual, collective and institutional level. While there may be formidable barriers within current institutions (e.g., dominance of instrumental rationality in impact assessments; strongly engrained, narrow living *from* framings associated with vested economic interests), case studies at the local level suggest that the living *as* nature frame can be more prevalent with stakeholders than is commonly recognised in policy (Ranger et al. 2016; O'Connor and Kenter 2019). This is important with regard to the role of value-articulating institutions. Vatn (2009) defines value-articulating institutions as the structural rules, norms or conventions that facilitate how values are articulated. If valuation design and methodologies based on such rules, norms and conventions are not able to frame nondualistic human-nature relationships, then a 'scaling up' of holism from individuals and local communities to wider governance, based on the elicited understandings of people's values, is unlikely to take place (Kendal and Raymond 2019; Moore et al. 2015; Van Riper et al. 2019). In other words, value articulating institutions act as a gatekeeper that can hinder the scaling up of more holism into policy decisions. Conversely, more inclusive gatekeepers can help institutionalise more holistic and less anthropocentric values associated with living *as* nature (Moore et al. 2015). Such a process could contribute to further social and cultural value shifts through feedback loops and bi-directional relationships connecting values at the individual, collective and institutional level (Kendall and Raymond 2019; Van Riper et al. 2019).

Conclusion

The way we describe, frame and classify how nature matters is important: it determines what we see and do not see, what we look for and emphasise, and consequently what values we prioritise or overlook (Lakoff 2010; Kenter 2018;

Muradian and Gómez-Baggethun 2021). The Life Framework of Values challenges important aspects of established framings of how nature matters, including in much of the scientific literature. These aspects include anthropocentrism, which is a defining feature of the ecosystem services and NCP frameworks, and nature-culture dualism, which ontologically underpins anthropocentrism, but which has also characterised much conservation work from a nonanthropocentric perspective. The Life Framework does not address these critiques by elevating another normatively privileged perspective, but rather by recognising, in an equal and straightforward way, multiple key frames of nature and its values. This provides a foundation for a more comprehensive and inclusive approach to valuation, including through building capacity for the recognition, appreciation and integration of multiple value perspectives in research and practice. Through equal and inclusive recognition of these perspectives, shared and conflicting frames can be recognised and bridged, potentially aiding reconciliation processes between traditionally alienated communities and decision-makers.

Whilst the Life Framework can be used with multiple definitions of instrumental, relational and intrinsic values, an understanding of intrinsic values as both non-instrumental and non-relational helps to provide a clear distinction between these three justifications of value. Whilst this interpretation of intrinsic values relies on a recognition of objective, non-relational properties, this does not necessarily entail moral obligation or confer rights to everything with intrinsic value. The Life Framework provides a vessel for articulated intrinsic values to be considered alongside other values in democratic deliberations, where they can be expressed through diverse ethical reason, such as in terms of preferences, virtues, rights and duties, and care, narrative and indigenous ethics.

Addition of the fourth frame, living *as* nature, to O'Neill et al.'s (2008) original three, further supports recognition and epistemic justice through explicit consideration of values and knowledge that is underpinned by holistic and relational ontologies that are not made explicit through the other three frames. It can also provide an ontological lens through which the other frames can be reconsidered and provides the necessary scaffolding for a more comprehensive assessment of relational values, and nondualistic ways of considering intrinsic values. The living *as* frame provides opportunities for new collaborations connecting environmental valuation to diverse schools of thought across the humanities and social sciences. Together, the four frames enable more effective recognition, organisation, communication, assessment, bridging and deliberation of values in democratic debate and policy. The Life Framework provides multiple levers for sustainability transformation, including through counterbalancing the historical overemphasis on living *from* nature. By making ontologies and transcendental values explicit and providing opportunities for identification of shared frames, more sustainable value priorities can be identified. The addition of the living *as* nature frame provides a particular lever for sustainability transformation by challenging core aspects of western dualistic thought that have underpinned unsustainable exploitation of nature, and by its emphasis on the fundamental oneness of people and nature. Future research may explicitly consider how this frame can be used as a lens through which the other frames might be considered, and to support pathways for increased integration of holistic and relational worldviews in institutions and decision making.

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