

# Valuing nature as individuals and communities



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## Summary

For many people today, especially in urban settings or in the wealthiest economies, the current relationships with nature are broken, with multiple negative repercussions for health, environment, and overall sustainability. The fractured relationship is characterized by a transactional and unidirectional worldview that treats nature almost exclusively as resources and stocks to be extracted and valued economically. This instrumental interpretation of nature for human progress is the foundation of systemically unsustainable forms of development and habits. Unless this assumption is addressed and adjusted to the biological reality of the biosphere, the future well-being of humankind and all other life will remain in jeopardy. This paper discusses the reasons behind this nature disconnection and, presents an overview of the literature on human–nature connectedness (HNC), and its relevance for sustainability science. Based on this, some actions are proposed for repairing this relationship and reconnecting people and societies to nature.

## BACKGROUND PAPER

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## Key messages

- Human-Nature relationships shape how we define and operationalize human progress.
- Western Human-Nature disconnection favours a form of progress characterized by dominance over animals, instrumental use and utilitarian abuse of biophysical resources.
- Indigenous relationships with nature support sustainable civilizations that have survived for millennia.
- Human Nature Connection is needed to create sustainable societies.
- Access to nature, nature-based Indigenous education, and legal recognition of the Rights of Nature are essential steps to heal the Western relationship with nature.



## 1. Introduction

The past 50 years have seen huge losses and degradation of nature globally. As the latest Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) report starkly puts it, 'nature across most of the globe has now been significantly altered by human drivers, with the great majority of indicators of ecosystems and biodiversity showing rapid decline' (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, 2019). Humans have altered 75% of the planet's land surface, impacted 66% of the ocean area and destroyed (directly or indirectly) 85% of wetlands. From 2010 to 2015 alone, 32 million hectares of forest were lost (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, 2019).

Since the Industrial Revolution, human activities have had such a pervasive effect on the biosphere as to warrant a subdivision of geological time: the Anthropocene. The philosophy that supported the initiation of the Industrial Revolution is based on a separation between human and non-human life (White, 1967), as though humans were indeed separate from the Earth's functioning. In some traditions, humans have viewed themselves as separate from and superior to 'nature' for millennia, leading to valuing non-human life purely for its instrumental value. To this day, the anthropocentric distinction between human and ecological systems continues to define human development in western, educated, industrialized, rich and democratic (WEIRD) countries and it is still a core assumption in how most countries conceive development and growth. However, the significant impact that the Anthropocene has had on biosphere functioning (Lewis & Maslin, 2015) makes evident that such an assumption is flawed and the past, present or future actions of humankind cannot be considered in isolation from Earth system dynamics.

### 1.1 The historical roots of our disconnect with nature

Historically, the separation between humans and nature is considered the philosophical foundation of the Industrial Revolution and the beginning of the unsustainable form of development of the Anthropocene (White, 1967). In the 17th century, René Descartes began to popularize the idea that animals function like unconscious machines (alike mechanical clocks, which were modern at the time). He believed in and promoted a vision of life on Earth in which animals have no feelings, and therefore do not deserve compassion, empathy or respect (Descartes, 1649/1989). Humans were considered by Descartes to be the centre of God's creation, superior to all other forms of life, and with the responsibility to dominate the natural world.<sup>1</sup>

This set of beliefs favoured a form of industrial and academic progress characterized by dominance over animals, instrumental use and utilitarian abuse of biophysical resources, and the assumption that any form of harm and disruption to the biosphere could be externalized and isolated from human well-being. Such a worldview has been instrumental in the development of colonial Western societies and has been largely unquestioned until clear global limits to industrial and economic growth were identified (Meadows et al., 1972).

1. This worldview aligns with the concept of dominion over nature that is put forth in Genesis 1:28 of the Bible: 'God blessed them and said to them, "Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish in the sea and the birds in the sky and over every living creature that moves on the ground"' (New Revised Standard Version Bible, 1989).

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This historical worldview is the foundation for individual habits, communal lifestyles and a shared societal idea of continuous infinite progress that, given the biospheric boundaries within which we live, is inherently unsustainable and is currently undermining the possibility for future generations to thrive on Earth (Meadows et al., 1972). Unless such an assumption is addressed and adjusted to the biological reality of life on Earth, humans will fail to conceive, design and implement a sustainable development pathway, and the future well-being of humankind will remain in jeopardy (Edwards, 2005).

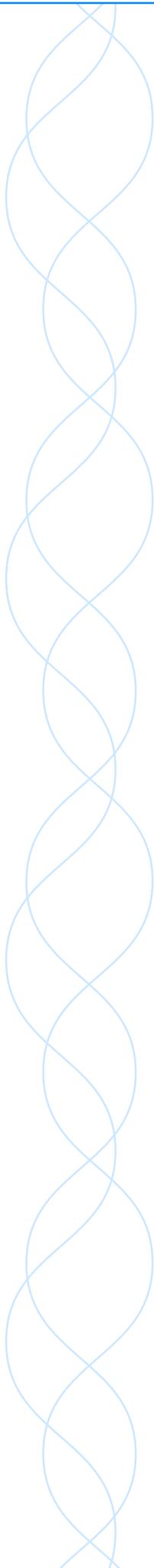
## 2. How nature is valued

The value of nature for human life is unquestioned in academia. Humans are dependent on the biosphere, which provides all essential services, such as clean air, water and food, and is a resource for health improvement through the provision of pharmacological opportunities or as a setting for physical activity. The direct experience of nature itself has clear health and well-being benefits (Bowler et al., 2010; for a review see Hartig et al., 2014; Keniger et al., 2013). The benefits people receive from nature-rich routines include: reduced mortality, better self-rated health, mental health benefits (reductions in stress, fatigue, anxiety and depression), better fetal growth and higher birth weight, healthy microbiome, healthy immune system and reduction of inflammatory-based diseases such as asthma, lower rates of obesity, more favourable heart rate, blood pressure, vitamin D levels, recuperation rates and cortisol levels, and possibly also type 2 diabetes. Nature interaction also improves psychological and physiological development in children (Burdeett & Whitaker, 2005; Ginsburg, 2007). Such evidence is so pervasive that nature interaction is now prescribed by doctors (e.g. in Japan, Scotland and the US) and academically discussed in 'doses' (Barton & Pretty, 2010; Jiang et al., 2014).

So, if nature is so valuable to us, why are we witnessing its rapid destruction and degradation? How do we value nature today? In the Western conceptualization of development, nature is mostly considered for its instrumental value. While humans do recognize the multiple benefits that nature provides, nature is valued mostly when linked to a short-term economic and quantifiable use value (Leventon et al., 2021). Even systems designed to recognize and better account for these services, such as the valuation and payment of ecosystem services, still rely on instrumental or use value to humans and assume that humans are separated from and meant to dominate nature (Gibbs, 2010).

Such attempts to better recognize the value of nature are also problematic. For example, markets for ecosystem services impose the creation of an exchange value for whole ecologies (Collard & Dempsey, 2013), relying on the faulty assumption that any ecological capital can be converted into economic capital in the first place. In addition, markets for ecosystem services rarely address the political struggles that arise over the distributional outcomes of such markets (Cooper, 2015).

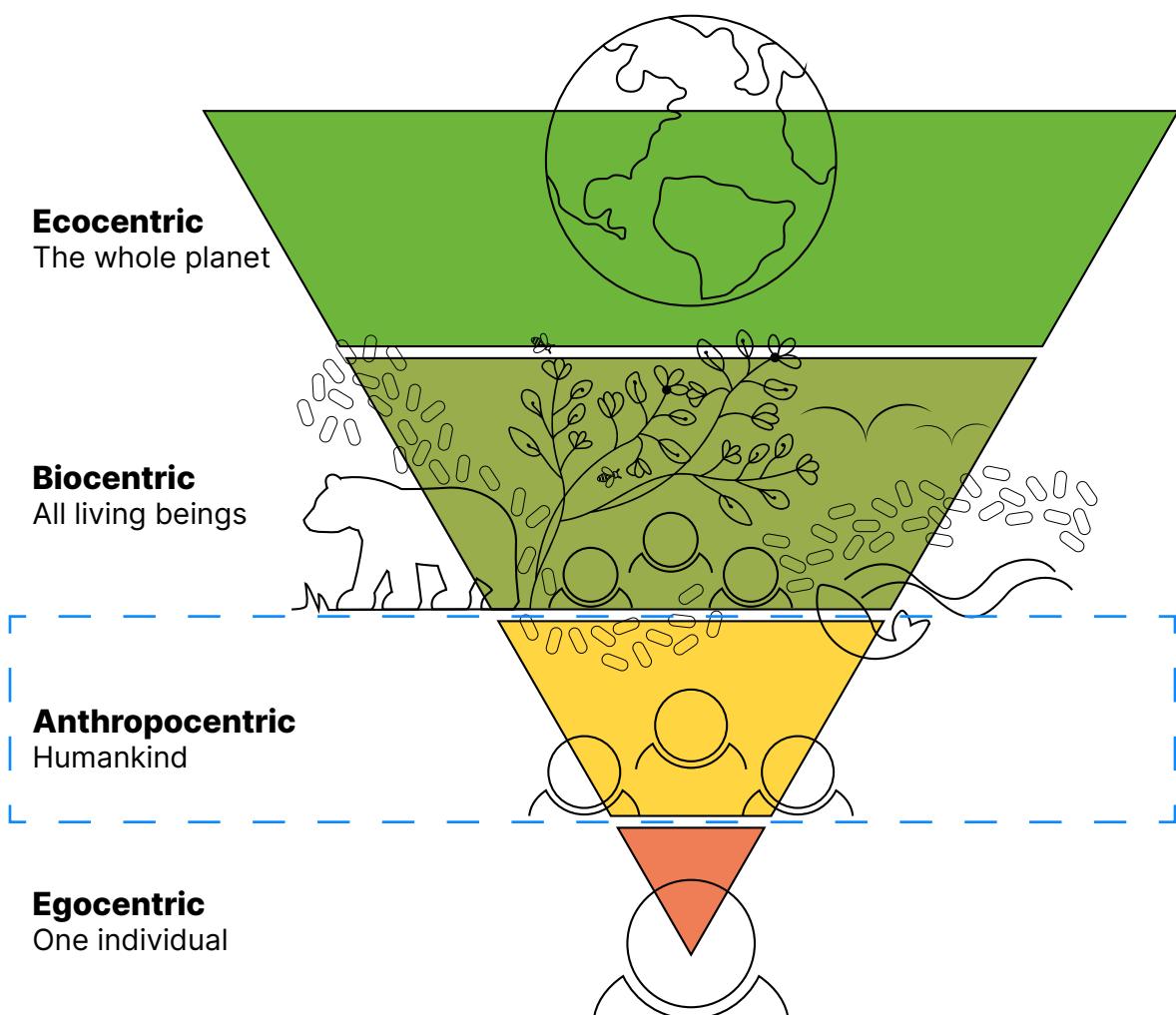
In general, if progress is quantified using the metric of gross domestic product, a forest is worthless until cut down. If we assume a separation between humans and nature, then nature only has value when extracted and valued economically, with disastrous consequences. This utilitarian and anthropocentric framing is challenged by many who recognize that nature has intrinsic value. That means that nature has value in and of itself. Many conservationists support this position and hold that dismantling the dichotomy between humans and nature would force humanity to adopt a more ethically and evolutionary accurate position in the biosphere (Batavia & Nelson, 2017; Davidson, 2013).





Recognizing the intrinsic value of all life on Earth with its living and non-living components is a core principle of the philosophy of 'deep ecology', which underpins the human–nature connectedness (HNC) literature (Naess, 1973). Alongside the instrumental and intrinsic value of nature, several authors also highlight the need to recognize the relational value of nature (Chan et al., 2018). Here, the emphasis is on how the relationships between humans and nature create value. In their Life Framework of Values model, O'Connor and Kenter (2019) conceptualize the relationships between instrumental, relational and intrinsic values. These conceptual framings aim to bridge the gap between multiple disciplines concerned with how value is attributed to nature and then is embedded in environmental management (Figure 1).

Such approaches hold that there is worth in both human and nature and proposes an alternative to the historical human–nature dichotomy. This concept has been further developed to recognize that the value of nature is embodied, which means that value emerges from the relationships created by worldviews, social and physical contexts in a lifetime of experiences (Giusti, 2019; Raymond et al., 2017).



*Figure 1: Focus of contemporary sustainability science.  
Regenerative sustainability instead holds a biocentric or ecocentric vision of sustainability.*

Source: Modified from Schaubroeck and Rugani (2017).

### **3. Our and their connection to nature**

Not all cultures share the same view of nature. The dichotomy of humans and nature that is so pervasive in WEIRD countries is non-existent in most – if not all – indigenous cultures. Salmon (2000, p. 1327), a representative of the Tarahumara community in Chihuahua, Mexico, writes: ‘Indigenous people view both themselves and nature as part of an extended ecological family that shares ancestry and origins.’ Despite numerous articulations, indigenous people consider themselves as an integral part of the life and the place in which they live. Land is therefore not a commodity that can be bought or sold, but ancestral history to which one belongs (Cajete, 2000).

This profound relationship with the land and its resources has allowed indigenous societies, like Aboriginal Australians, to exist sustainably with nature for about 40 000 years (Nagle et al., 2017). Similarly, Asian cultures, values, religious teachings and beliefs such as animism (i.e. attribution of a living soul to plants, inanimate objects and natural phenomena) promote the perception of nature as alive, holy or a gift, inspiring environmentally benign behaviour (Kunchamboo et al., 2021).

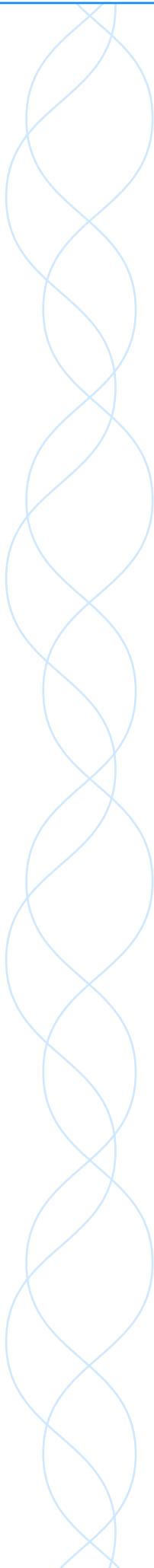
Over millennia, these holistic understandings of the place of humans in the biosphere have produced traditional ecological knowledge that is central to global natural resource management (Berkes et al., 2000). Allowing for disturbances and change to occur, constant learning that combines local, expert, traditional and tacit knowledge, maintaining high functional diversity, and ensuring the self-organization of people are principles for resilient ecosystem stewardship inspired by such traditional ecological knowledge (Berkes et al., 2003). Such balance between intrinsic, instrumental and relational values is at the core of successful sustainable futures (O’Connor & Kenter, 2019).

As the ecological crisis worsens, there is increasing global pressure to further the command-and-control of natural resources to ensure the viability of socio-economic institutions in the face of unexpected global ecosystem transformation. The perennial desire to manage and overpower ‘the other’, rather than successfully co-exist, is a pathological form of WEIRD management that stems from the unfounded separation between human societies and the surrounding life (Holling & Meffe, 1996).

### **4. Repairing the broken relationship: human–nature connectedness**

To many people born in WEIRD countries ‘reconnecting people with nature’ may sound vaguely New Age and closer to ‘tree-hugging’ than science. Such common feelings of uneasiness in considering these concepts worthy of scientific debate are themselves evidence of the deep-rooted historically industrial and colonialist approach that ridicules indigenous knowledge and practices in favour of the mechanistic and quantifiable ‘truths’ (Rout & Reid, 2020). However, assuming that societal functions are embedded in, and bounded by, biospheric dynamics is a tenet of ‘strong sustainability’ (see Figure 2).

A recent review of the literature (Ives et al., 2017) has identified more than 500 scientific papers that empirically investigate the psychological, social and environmental dimensions of reconnecting with nature. There is also a growing body of research on the relationships between humans and ‘more-than-human’ organisms (Sheldrake, 2021) and between different non-human species (Simard et al., 1997;





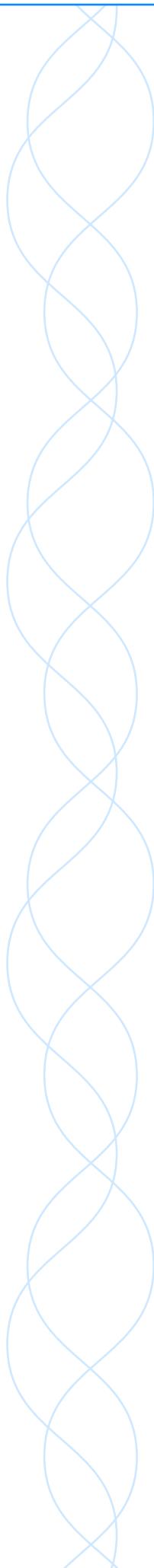
Wohlleben et al., 2016). Alongside the scientific endeavour, the need to reconnect societies with nature has also been recognized in popular books (Louv, 2008, 2012) and has motivated extensive grassroots movements (e.g. Children & Nature Network, Evergreen, Future for Nature Foundation).

The academic literature on HNC empirically addresses the psychological, cultural and environmental dimensions of a sustainable relationship between humans and nature (Ives et al., 2017). In short, HNC scientifically disentangles the various ways that individuals and communities connect to nature and their significance for sustainable development. With its philosophical roots in deep ecology (Naess, 1973), HNC branches out into environmental psychology (Gifford, 2014), conservation biology (Miller, 2005; Pyle, 2003), evolutionary biology (Kellert & Wilson, 1993), and social-ecological urbanism (Colding et al., 2020; Giusti et al., 2020; Giusti & Samuelsson, 2020), and is increasingly discussed in sustainability science (Andersson, 2014; Barker, 2007; Folke et al., 2011; Ives et al., 2018).

HNC is an umbrella term that accounts for and expands several conceptualizations of human–nature relationships (Giusti, 2018; for a historical review see Kollmuss & Agyeman, 2002). As Giusti (2018) summarizes, these include biospheric values (Steg et al., 2014), environmental identity (Clayton, 2003), connection to nature (Cheng & Monroe, 2012), connectedness to nature (Frantz & Mayer, 2014), nature relatedness (Nisbet et al., 2008), environmental concern (Schultz, 2001), general ecological behaviour (Kaiser, 1998), environmental attitudes (Kaiser et al., 2011), love for nature (Perkins, 2010) and environmental worldviews (Dunlap et al., 2000).

At its core, this literature deals with how human–nature relationships are valued in individuals' emotions, thoughts or intentions (Ives & Kendal, 2014; Schultz, 2002). HNC indicates an ability to value nature. For instance, a person who strongly identifies with nature would view environmental conservation as an evolutionary act of self-preservation, rather than an act of moral or ethical consideration. Bai (2009, p. 135) expressed this point eloquently by noticing that the 'ecocide is due to humanity's inability to perceive and feel the intrinsic worth of the other – in this case, nonhuman beings'.

It should be noted that HNC is not only a psychological feature, but a contextual ability (Giusti, 2019; Giusti et al., 2018; Ives et al., 2017). Like any other ability, HNC refers to how a person, with her mind and body, is able to interact with nature given a specific cultural and physical surrounding (Ives et al., 2017; Raymond et al., 2017). This means that surrounding cultural norms and the spatial access to nature experiences are drivers of HNC. Like most other abilities, the quantity and quality of nature experiences (i.e. practising HNC) matter for progressing in such ability (Giusti et al., 2018). In short, nature routines in different social and environmental contexts can shape human–nature relationships ranging from the shallow material use of natural resources to the spiritual assimilation of the interdependences between humans and nature (Ives et al., 2018). Such a spectrum of HNC is visible in how comfortable people are in natural environments, in their ability to read and act in different natural environments, or in their ability to recognize the health or distress of other life forms or ecosystems (Giusti et al., 2018).



## 5. HNC is needed for strong sustainability

The relationship between humans and nature underpins the core of what sustainability really means (see Figure 2). The strong sustainability model recognizes that human systems (e.g. social or economic) are embedded within the boundaries of the biosphere (Rockström et al., 2009). According to this model, humans are integrated in the biosphere and all social and economic activities can exist only within a healthy, resilient and bounded biosphere (Folke et al., 2011; Rockström et al., 2009). Despite critique from within the field of development studies and from Global South activists that the model ignores issues of global inequality and social justice (Biermann & Kim, 2020), it remains the dominant model of contemporary sustainability science. As we have seen above, and as the model of strong sustainability implies, focusing on human well-being alone might be very limiting, if not counterproductive, to the goal of achieving a sustainable form of development.

Many authors claim that to be true to the inseparability of all species in the web of life, the goal of sustainability should be to not only protect the interests of humans, but also enhance the richness and resilience of all life on Earth (Gibbons, 2020; Wahl, 2019). Moving from an anthropocentric to a biocentric understanding of sustainability allows full recognition of the fact that no life form on Earth can live in isolation from all others, humans included (Figure 2). Thus, reconnecting humans and nature implies defining sustainable development as the sustainable co-evolution of humans and the biosphere, rather than sustainable trajectory of the human species alone. This whole-system worldview is gaining traction in sustainability science as regenerative sustainability (Du Plessis & Brandon, 2014; Gibbons, 2020; Wahl, 2019).

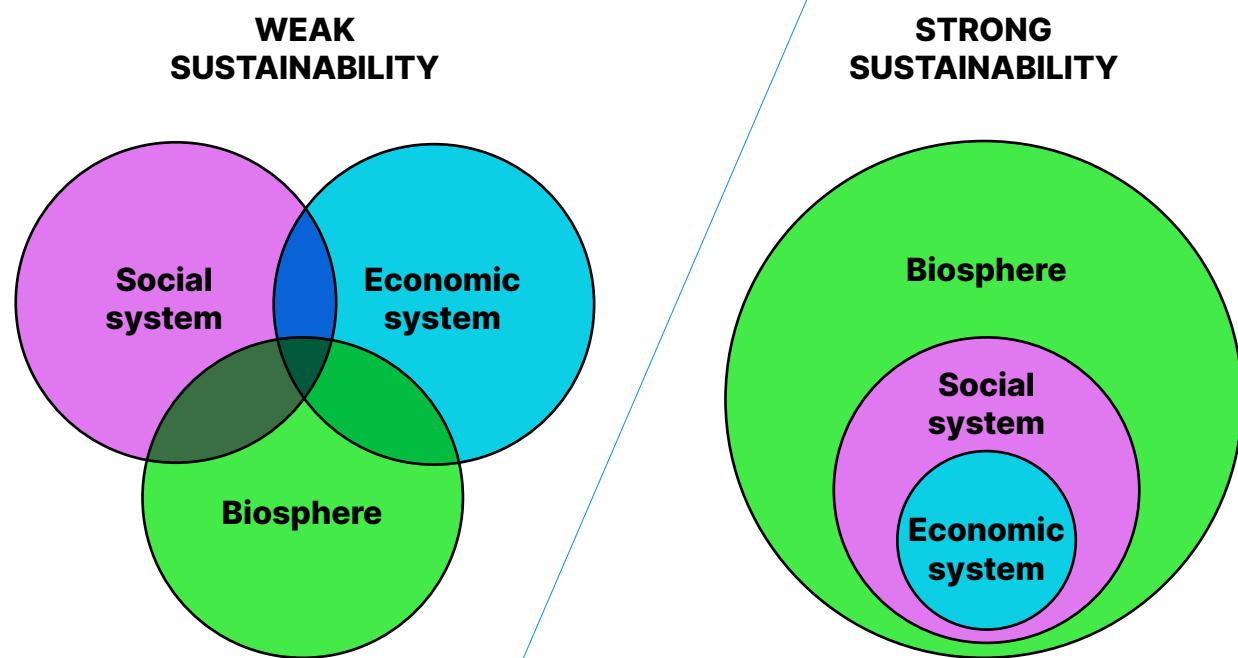


Figure 2: Strong and weak sustainability models.

Source: Adapted from Cato (2009).



HNC is the empirical embodiment of this approach to sustainability. To be true to the interdependencies between humans and all other life, to be able to integrate indigenous knowledge in the scientific arena of sustainability science, and to be able to distance human progress from natural exploitation of people, communities and institutions, humanity should indeed 'reconnect with nature'.

## 6. The role of HNC in future sustainable societies

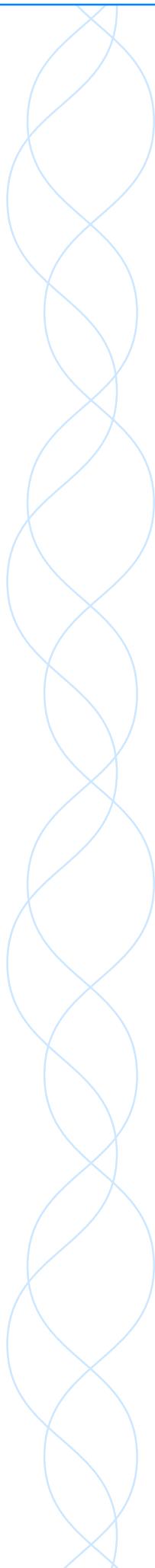
At the individual level, HNC is often associated with attitudes and norms that motivate pro-environmental behaviours (Fulton et al., 1996; Stern et al., 1999). There is empirical evidence of this association for a range of pro-environmental behaviours including using public transportation (Hunecke et al., 2001), mindful use of energy (Black et al., 1985), recycling (Guagnano et al., 1995), environmentally friendly purchasing behaviours (Thøgersen, 2005), acceptance of climate change policies (Nilsson et al., 2004), acceptance of energy policies (Steg et al., 2011), everyday pro-environmental habits (Thøgersen & Ölander, 2002), limited car use (Jakovcevic & Steg, 2013), water conservation (Barrera-Hernández et al., 2020) and donating money to environmental organizations (de Groot & Steg, 2008).

However, pro-environmental values and attitudes alone do not necessarily lead to sustainable lifestyles. The gap between values and actions is a well-known dilemma in environmental psychology (Kollmuss & Agyeman, 2002). Most of human behaviour is not rational or deliberate, but occurs via automatic processes engrained in habits or learnt behavioural patterns (Kahneman, 2011). By living in stable physical, social and cultural contexts the human mind creates pre-determined behavioural responses that dominate people's everyday life (Linder et al., 2021). Thus, individual and collective behaviours are heavily influenced by the systems that humans find themselves in.

Empirical evidence suggests that repeated exposure to natural environments and pro-environmental social groups influences the value that we attribute to nature (Chawla, 1999; Giusti et al., 2014) and also that pro-environmental behaviours in themselves positively influence pro-environmental values (Linder et al., 2021; Weinstein et al., 2009). Thus, psychological connection with nature needs to be coupled with institutional structures that make it easy for people to behave sustainably (Kaiser et al., 2011). Sustainable behaviours and choices must be the default options in sustainable civilizations.

Beyond enabling, promoting or assisting individual environmentally conscious behaviours, isolating humans from nature has consequences for how the value of nature is recognized and embedded in societal institutions. The systems of institutions, laws and regulations that govern how we interact with and impact nature are grounded in the assumption that nature has either intrinsic, instrumental or relational value. In WEIRD countries, natural resources and non-human life are increasingly commodified through laws, indicators and policies, making the living fabric increasingly privatized (Heynen & Robbins, 2005).

These developments are not all driven by the private sector. For example, Parenti investigates the role of the state in valuing nature, emphasizing that capital cannot, and historically does not, capture non-human nature without the participation of the state. The state delivers utilities of nature by creating property regimes, physical infrastructure and scientific knowledge (Parenti, 2015). Examples of this are common: the industrial production of timber in northern New Mexico was made possible



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through the state's mediation of capital and nature by way of a state–private monopoly (Correia, 2005).

In the traditional Western policy arena, the importance of nature had to be rationalized and quantified to enter the formal economic evaluation framework and to be considered in political decision-making. 'If you can't measure it, you can't manage it' is a long adhered to myth in business and policymaking that inevitably fails to realize the value of unmeasurable, or yet unmeasured, values. For example, the intrinsic value of biodiversity is rarely recognized because it is inherently difficult to quantify. Considering the intrinsic or relational value of nature would imply changing the default option for what is considered appropriate when managing, or participating in, biospheric processes.

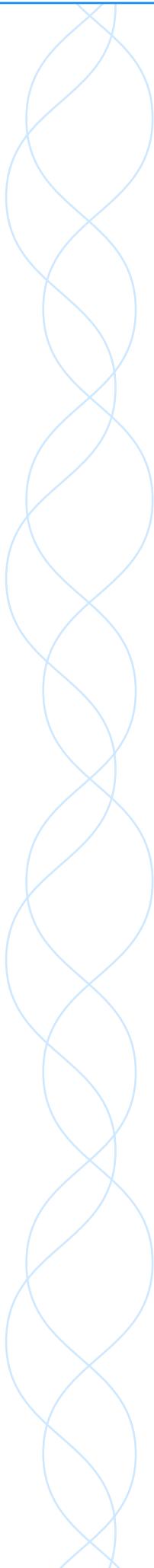
Many social, cultural and physical environments today do not promote connection with nature or the common good (Holmes et al., 2012). In many societies, people are more focused on wealth, status and image, over the transcendent larger-than-self aim of caring for the environment (Kasser et al., 2020, p. 9). Over the past century, barring a few exceptions, most cultures across the globe have come to associate the idea of leading a successful life with the pursuit of material wealth. Many of these extrinsic values are not associated with the common good (Schwartz, 2012). HNC can facilitate individuals to hold pro-environmental, prosocial values and behaviours, but the responsibility to seek out nature-connecting experiences and override mainstream activities and influences that promote extrinsic values should not be placed on individuals alone.

The human reliance on biospheric dynamics should be made evident with rich opportunities to access, experience, enjoy and appreciate the value of nature in everyday habits and routines. The lack of connection with nature is at the centre of a self-reinforcing cycle of disaffection, indifference and disconnection from nature (Miller, 2005) that has negative consequences for people's well-being (Giusti & Samuelsson, 2020). Thus, HNC could play a key role in promoting a sustainable future in the short and long term in which individual, institutional and environmental systems are healthy, resilient, aligned and nature-based.

## 7. Gender and generations

When it comes to HNC, it's critical to consider the role of gender, its significance over generations and how it links to different places and cultures. Several studies have found that women have more positive attitudes towards the environment and engage more in pro-environmental behaviours than men (Blocker & Lee Eckberg, 1997; Gifford & Nilsson, 2014; Giusti et al., 2018; Gutteling & Wiegman, 1993; Luchs & Mooradian, 2012; Scannell & Gifford, 2013; Stern et al., 1993).

Data from thousands of households in Sweden also show that women are more environmentally conscious than men in every aspect of their lifestyle (e.g. food, holidays, transportation) (Carlsson Kanyama et al., 2021) and, throughout the EU, women consume considerably less energy than men (Räty & Carlsson-Kanyama, 2010). This eco-gender gap is somewhat explained by the tendency of individuals to associate with stereotypically gendered social identities. Care and appreciation for the environment and sustainable consumption are aspects seen as feminine and therefore threatening to the shared social idea of masculinity (Bloodhart & Swim, 2020; Swim et al., 2020). Unfortunately, most policies and interventions to address the current climate and ecological crisis are conceived of and led by men. Although there is no





reason to expect that women in patriarchal positions will behave any differently from males (Buckingham-Hatfield, 2000), the role of gender in supporting HNC, sustainable change and policies must be acknowledged. UN Women (2014) recognizes that gender equality is a prerequisite for sustainable development. Whether for biological or social reasons, the eco-gender gap should open a conversation about female-specific roles for sustainability in institutions, organizations or governments.

Beyond gender, HNC has implications for younger generations. Recent publications suggest that today's children suffer from nature-deficit disorder (Louv, 2008). The lack of interaction with local flora and fauna is so pervasive in younger generations that it has negative consequences for children's psychological and physiological development (Soga & Gaston, 2016). Through generations, the increasing absence from nature experiences and the exposure to increased levels of environmental degradation redefines what is the 'normal' level of pollution, engagement, enjoyment and concern for nature. This inter-generational dynamic, called environmental generational amnesia (Kahn, 2002), redefines what we expect the 'normal' and appreciated status of nature to be. The more it degrades in our lifetime, the more the next generation will consider such degraded status as 'normal'.

These considerations suggest that HNC should not be considered a universal concept isolated from gender, culture or environmental contexts. How society values nature and nature conservation is an emergent property that is constantly redefined by the experiences that people have with their cultural and environmental context. For example, children's desire to protect nature is influenced by the environmental context of previous family routines (Giusti, 2019). Thus, the unquestioned separation between modern human and natural habitats built in most cities can self-perpetuate the human–nature dichotomy with counterproductive consequences for the emergence of sustainable societies (Colding et al., 2020; Giusti et al., 2014; Marcus et al., 2016).

## 8. Policy responses to connect individuals and communities to nature

Changing the perceived value of nature in WEIRD countries and shifting humans from the centre of the moral universe and relegating them to simple participants in the vast web of life is not a simple task. As Rockström and Klum (2015, p. 49) wrote, this requires a 'mind shift at the scale of a "Copernican revolution" ... to put our minds in harmony with the earth system we depend on'.

Below, we present three policy responses that can be meaningful for promoting HNC and can help to set a new trajectory of sustainable development for humanity.

### 8.1 Nature accessibility

To create a meaningful relationship with nature, young children must experience high-quality, frequent interactions with nature in everyday life (Chawla, 1999; Giusti et al., 2018). This implies providing access to a diversity of nature-rich areas in the human habitat (Colding et al., 2020; Giusti et al., 2020). Nature-inspired solutions can contribute to making cities more liveable while improving the health and the well-being of urban residents (Vujcic et al., 2019). Everyone can benefit from urban green space interventions, but they can be of particular relevance for socially disadvantaged or underserved community groups, which often have least access to high-quality

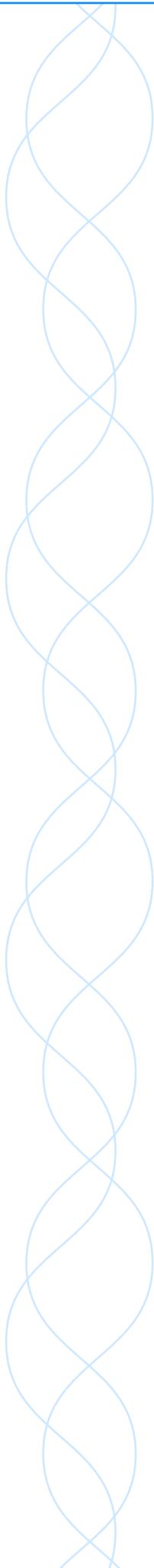
green spaces (de Sousa Silva et al., 2018; Mahendra et al., 2021). Nature-inspired solutions that are framed as people and nature working together collaboratively can help to foster nature stewardship (Jax et al., 2018; Seddon et al., 2020). Biophilic design is an example of how cities have faced the challenge of being sustainable, resilient and promoters of healthy societies (Beatley, 2011).

A range of accessibility standards for nature-rich sites that are within easy reach of people's homes should be established. For example, the Accessible Natural Greenspace Standard (English Nature, 2003) proposes a hierarchy of accessibility to natural spaces (e.g. 2 ha within 300 m, 20 ha within 2 km). As well as improving physical access to natural areas, the Accessible Natural Greenspace Standard aims to enhance 'naturalness' and biodiversity of these spaces (e.g. through the creation of meadows and wildflower planting) and improve nature connectivity by encouraging communities to use their natural spaces for social, educational and cultural events.

### 8.2 Nature-based, authentic and indigenous-inspired education

Since its inception in 1977, a key goal of environmental education has been 'to provide people with the skills and attributes needed to play a productive role in improving life and protecting the environment with due regard given to ethical values' (United Nations Educational, Scientific and Cultural Organization, 1978, p. 24). However, classic environmental education that favours curricula abundant in ecological knowledge, but ignores practical skills and social circumstances is inadequate for building a deep relationship with nature (Hungerford et al., 1980). Literature has shown that the most effective programmes in environmental education are characterized by occurring over an extended period of time, by learning about existing, local and immediate environmental issues, by directly practising action skills, by experiencing and taking ownership of environmental problems, and by participating together with role models and mentors (Chawla & Cushing, 2007). This is also known as 'authentic education' and its meaningful effect on shaping people's HNC has been recognized (Barthel et al., 2018).

There are many examples of meaningful nature-based learning across the world (see Box 1 on forest schools as one example). Experts emphasize the need for high-quality early childhood education to lay a reliable foundation for environmental literacy (Jordan & Chawla, 2019). Ensuring that the educational systems of Western countries recognize and appropriately teach the true value of nature must be a priority for educational institutions at all levels. However, given the rapid decline in adolescent connection to nature, a strong nature-based curriculum is also needed for children from the age of 10 (Richardson et al., 2020).





### Box 1. The growth of forest schools.

Forest education involves teaching children outdoors through play and hands-on learning. Although people have been learning in nature for millennia, the first formalized forest school was started in the 1950s in Denmark by a woman named Ella Flautau. When Ella's children and her neighbours' children began gathering daily in a nearby forest, the parents formed a group and created an initiative to establish 'walking kindergartens' based on the Waldorf-Steiner approach to education, where learning is child-led and play-based, with adults as facilitators, not teachers (Forest School Foundation, 2020). Similar forest schools, known as Naturbørnehavens, opened all over Denmark during the 1950s and the trend later spread to the rest of Scandinavia. Today, pre-school education conducted outdoors is a widely accepted practice in the region.

Inspired by the Scandinavian model, the forest school movement emerged in the UK in the 1990s and has grown globally since then. Known as forest schools in the UK, *bush kindys* in Australia, *waldkindergarten* in Germany and *Mori-no-ie* in Japan, the forest school concept has been adopted all over the world (Forest School Foundation, 2020).

The core elements of a forest kindergarten include all-weather nature immersion time every day; child-led learning; inquiry-based teaching style; child-inspired, child-directed documentation of emergent curriculum; place-based education; and small class sizes (Forest School Foundation, 2020).

### 8.3 Recognize the rights of nature

A radical approach to redefining humans' relationship with nature is based on the idea of environmental personhood. Christopher D. Stone, a law professor at the University of Southern California, first highlighted the concept in essays collected in a 1974 book entitled *Should Trees Have Standing: Toward Legal Rights for Natural Objects* (Stone & Hardin, 1974) Stone argued that if an environmental entity is given 'legal personality' it cannot be owned and has the right to appear in court. The Rights of Nature movement provides a path to effective environmental protection which challenges the pervasive instrumental view of nature. Traditionally, nature has been subject to a Western-conceived legal regime of property-based ownership. The idea of environmental personhood turns that paradigm on its head by recognizing that nature has rights and that those rights should be enforced by a court of law.

Several ecosystems around the world have been declared living entities by local or federal courts, with many of them also granted personhood. New Zealand recognized the Whanganui River and Te Urewera National Park as a 'legal person' with accompanying rights and obligations (Magallanes, 2015). The Ecuadorian constitution also granted rights to nature, due in part to beliefs held by indigenous peoples regarding the way that human beings should interact with nature (see Box 2). Similarly, the Rights of Nature are enshrined in the Bolivian constitution.

### Box 2. The right of a river to run its course.

In 2008, Ecuadorians amended their constitution and in the seventh chapter *Pacha Mama* (Mother Earth) was recognized as a legal entity. *Buen Vivir*, or good living, comes with living in harmony with nature as its own entity, and was the basis for the amendment. *Buen Vivir* is based on the understanding that Nature is itself a subject and is central to the indigenous worldview of the Andean region.

In 2011, the first case was tried in which the Rights of Nature concept was applied: the right of a river to its natural course. An NGO based in the province of Loja filed a lawsuit on behalf of the Vilcabamba River which had been redirected under a State-led project to widen a road. Although it would have been possible to argue that the river is a vital natural resource that the local population rely on for a healthy environment, because of the recent constitutional reform, it was possible to claim that the river itself has the right to its own natural course. One of the main arguments in the judgement from the Penal Tribunal of Loja's Provincial Court, dated 30 March 2011, is the recognition of the Constitutional Rights of Nature:

*Our constitution of the republic, without precedent in the history of humanity, recognizes nature as a subject of rights. Article 71 affirms that Nature, or Pachamama, where life is reproduced or occurs, has the right to integral respect for its existence and for the maintenance and regeneration of its lifecycles, structure, functions and evolutionary processes*

(Georgetown University Center for Latin American Studies, 2011).

The court ruled in favour of the river and the state was forced to repair the damage that had been done during the initial stages of road construction. However, when the company involved in the road construction did not comply with the court's ruling, the NGO couldn't afford to bring the case a second time.

As illustrated in the Ecuadorian case (Box 2), bringing cases to court is expensive and often beyond the capacity of local communities or NGOs typically advocating on behalf of nature. Also, merely observing that nature has rights will not provide the effective force of law; enforcement must be included.

A more fundamental challenge, though, is the lack of recognition of indigenous values and beliefs in judicial systems. Global North or Western-conceived legal systems place limitations on who and what a rights bearer can be (O'Donnell et al., 2020).

Rights of Nature conflicts with Western definitions of property, which view anything non-human as a good that can be owned and used. For example, the US judicial system favours corporate rights, and corporations have personhood, but nature does not (Gordon, 2018).

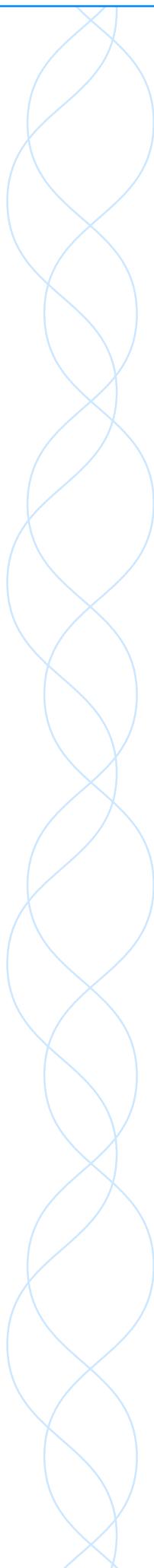


## 9. HNC requires multifaceted policies and adaptive co-management

Policies that aim to connect people with nature must recognize that HNC is a multifaceted attribute. HNC emerges from the quantity and quality of nature experiences in the existing cultural and environmental contexts. As the availability of nature experiences is as important as nature education, policy interventions must seek synergistic interventions across education, urban planning and health promotion, rather than aiming for reductionist, yet efficient, solutions. Supporting people's well-being, preserving local flora and fauna, and promoting environmental education must all be separate goals for the same policy.

How nature is used and cared for, whether at the local or global scale, must operate with the novel realization that ecological systems are complex, adaptive and in constant change. In ecological systems, change is the constant driver of progress, disturbances are sources of renewal, and redundancy and diversity are key for resilience (Berkes et al., 2003). The modern understanding of ecology demands a form of management that is not based on command-and-control, maximization and efficiency of quantifiable indicators, or accurate linear predictions. Rather, modern ecology requires adaptive co-management based on the creation of feedbacks that allow the system to build the resilience of desirable states (Armitage et al., 2009) and on the integration of expert, local, traditional and tacit knowledge (Díaz et al., 2019).

There is an urgent need to reorient how we value nature away from the management of resource units to be consumed. Supporting a relationship with nature in line with Earth system dynamics will help humanity identify the aesthetic, intrinsic, relational and spiritual value of nature and systemically embed such value in its institutions, policies and business.



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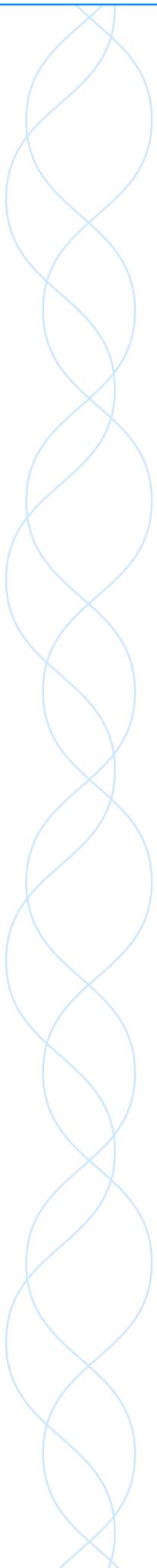
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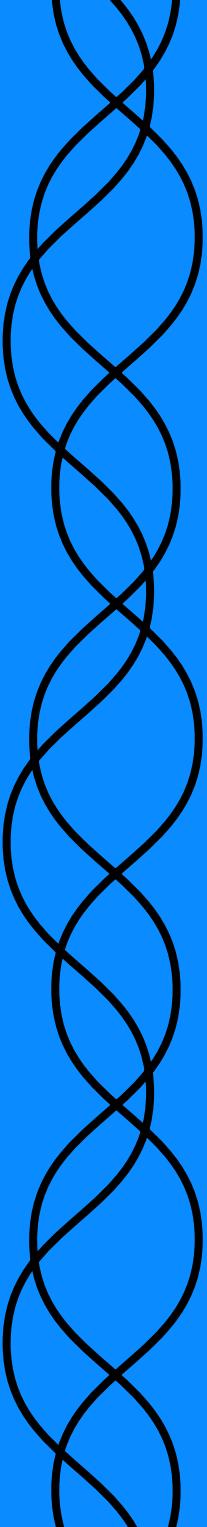
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