Navigating cultural transformations: the shifting narrative landscapes of regenerative sustainability.

Contents

Introduction 4

Section One: The Sustainability Paradigm 6

Indicators, targets, and narrative frames 7

Separation from Nature and the mechanistic worldview 10

The limits of sustainability 11

Section Two: The Regenerative Paradigm 12

Living systems and the ecological worldview 13

Uncertainty, creativity, and transformative change 15

The role of design and innovation 16

Section Three: Between narrative worlds 18

Deep narrative change 18

Inner and outer transformation 20

Living the questions 21

Conclusion 21

References 23

Navigating cultural transformations: The shifting narrative landscapes of regenerative sustainability.

Abstract

The urgency of our converging planetary crises presents a tension between the need to act quickly with the call for a deeper transformation of global society. The emphasis placed on technological advancement in climate action strategies ("techno-fixes") poses great risk to the sustainability of our long-term future if not matched by an evolution of our cultural values. Critical scholars have identified the regenerative paradigm as the next progression of sustainability, which would constitute a worldview shift for humanity – letting go of a mindset which presupposes a separation between humans and nature, replacing it with an ecological worldview that situates humanity within a co-creative, interdependent relationship with the living world. This paper reviews the current literature on sustainability and regenerative paradigms, appealing to the emerging practice of deep narrative change and its speculative contribution to transformative innovation. Reassessing sustainability through the lens of the regenerative paradigm raises the ambition of calls for social transformation to systems-level flourishing, acknowledging the role of design in facilitating this relationship, and the opportunity for innovation to build creative and regenerative capacities across all levels of our social-ecological systems.

Keywords: Regenerative sustainability; Paradigm; Narrative change; Cultural transformation

Journal: Environmental Communications. Taylor & Francis

http://www.tandfonline.com/toc/renc20/current

Introduction

> The world is a complex, interconnected, finite, ecological–social–psychological–economic system. We treat it as if it were not, as if it were divisible, separable, simple, and infinite. Our persistent, intractable global problems arise directly from this mismatch. – Donella Meadows

While technical, economic, and political aspects of sustainable development have been widely addressed, the cultural dimensions of sustainability transitions have not received as much attention (Munshi et al., 2020). *The Sixth Assessment Report* of the United Nations Intergovernmental Panel on Climate Change (IPCC) recontextualizes incremental adaptation approaches with respect to longer term transformation strategies which encompass changing 'the fundamental attributes of our social-ecological system'. The urgency to meet 'a brief and rapidly closing window to secure a liveable future' serves as an effective final warning from scientists: urgent mitigatory action is needed to address the increasing pace and worsening impact of climate change. This needs to be done in service to a deeper socio-technical transformation which can address the 'interwoven and overlapping crises' - or 'polycrisis' - that we are living through (Morin, 1999:73).

The predominant technological approach to addressing climate change is coming under increased scrutiny (reference). Instead of placing all hope on techno-solutions, the advancement of technology in its current forms should be recognised as an amplifier of economic, political and cultural practices that are perpetuating 'endless accumulation of capital and economic growth' and therefore 'ultimately result in 'less sustainable' outcomes' (Feola, 2020: ?). The insufficiency of technological solutions to major challenges such as decarbonisation and decoupling do not rest solely on the technical capability of the systems or their designers. Unless we can meet the revolutionary momentum of technological advances with an equally radical shift in our cultural values and ways of thinking, we risk continuing down a pathway that leads to further, irreversible destruction rather than realigning our practices with the ecological constraints of our planetary ecosystem (Pearce, Wahl).

In their book *Flourish: Design Paradigms for our Planetary Emergency*, urban design practitioners Sarah Ichioka and Michael Pawlyn question if 'it may sound naïve to point out

that we already have nearly all the solutions we need to address our predicament' (2021:2). A growing chorus of scholars in sustainability transitions research echo this sentiment and acknowledge that we are on the precipice of an ecological catastrophe which calls for a fundamental reorientation of our relationship with the natural world as well as with each other, and that what holds us back from meeting our sustainability goals is not inadequate technology but the political will and social infrastructure to accelerate and scale the solutions we already have available (references).

Capra and Luisi define a paradigm shift as a revolutionary moment in which there is a shift in the 'constellation of concepts, values, perceptions, and practices shared by a community' (2014: ?). Cultural historian Thomas Berry (1999) considered the need to move from our current era in which we are guided by a capitalistic and human-centred paradigm towards an earth-centred paradigm that realigns our values with ecological principles, which he termed the Ecozoic Era. For Berry, this requires nothing short of a rewiring of our 'cultural coding', for what we are targeting with this change in our underlying beliefs and value systems has been built up and reinforced over generations of human activity (Ibid:158). The move away from an anthropocentric worldview towards an ecocentric one demands that we relinquish the drive for absolute control of the earth's natural systems and instead embrace our place as part of an interconnected web of life (Hathaway, 2015; du Plessis and Brandon, 2015). This paradigm shift also requires a reevaluation of our infrastructure, including economic and social systems, which have been shaped by a focus on economic growth and short term profits at the expense of the environment.

[Para on established sustainability paradigm]

The 'regenerative sustainability' paradigm is being increasingly lauded as the progression of sustainability that our society needs to achieve this cultural evolution.[1] Looking at our crisis through an integrative systems-based lens, regenerative thinking invites us to raise our ambitions for sustainability 'to embrace approaches that restore ecosystems, reunite divided communities, and reciprocally enhance the interdependent health of people, place and planet' (Ichioka and Pawlyn, 2022:10). Daniel Christian Wahl (2016) places culture at the centre of this transformation. In his book *Designing Regenerative Cultures*, he argues

[1] The terms 'regenerative paradigm' and 'regenerative sustainability paradigm' are used interchangeably throughout to distinguish from the 'established sustainability paradigm' also shortened to 'sustainability paradigm'.

that we need 'to let go of outdated mental models and a narrative about who we are that no longer serves us' (p19) in order to step into alignment with our planetary ecosystems.

Sentence about the connection between narrative and culture change. As will be explored in this article, a 'deep narrative' of human separation from nature has become embedded in Euromodern thought over centuries and can be considered one of the major unseen forces of our converging planetary crises (Ghosh, 2021). Our perceived separation has been influential in justifying standardised sustainability strategies that favour technological solutions rather than regenerative practices that put the human-nature relationship at the heart.

What follows is a critical overview of the shifting narrative landscapes of sustainability signalled by a progression from the established sustainability paradigm to the emerging regenerative paradigm. The provocations of this article are threefold: to reprioritise cultural change in sustainability transitions; to provide an initial reassessment of the ambitions for sustainability in alignment with regenerative principles; and to identify the capacities, of individuals and systems, that must be developed by practitioners navigating this transformation. **(This should refer to narrative change)**

Consolidating perspectives from academic literature published between 1993 and 2022, in sections One and Two we delineate key principles of the *sustainability* and *regenerative sustainability* discourses to compare the definitions, standards and measurement of success, underpinned by a closer look at the embedded mindsets and narratives that contribute to the conceptual foundations of each paradigm. This comparison highlights the need to question the role of technological and economic innovation within the broader context of a socio-cultural transformation. Furthermore, it calls into question the criteria of success that is assumed by the dominant sustainability paradigm and invites a new interpretation of the role of design and innovation to facilitate an evolved appreciation of the human-nature relationship that regenerative sustainability entails.

Building on this appraisal of regenerative principles, in section Three we appeal to the disciplinary field of deep narrative change to assess its potential to intervene at the deepest levels of cultural paradigms: our mindset and worldview. A complimentary analysis of academic literature and reports published by practitioners at the forefront of this emerging practice indicates the contribution that this disciplinary field can bring to cultural transformation through deep narrative work. The findings of this article are then synthesised

into opportunities for further research exploring operational applications of narrative change practices in accelerating the paradigm shift from sustainability to regeneration.

Section One: The Sustainability Paradigm

➔ **Framing:** Technology is a catalyst of innovation and enables design choices that are driven by social forces; some of which are visible (institutions, regulations, financial incentives) whilst others are unseen (power structures, narratives, value systems and worldviews). Only when the criteria for technology changes can we undergo the sorts of socio-technical transitions that will realise a climate-positive future - for example, from diesel to electric vehicles (Kemp and van Lente, 2011). These criteria will only change when there is a shift in the underlying values and beliefs that inform the design decisions in the first place, which highlights the need for change at the level of our cultural beliefs and value systems.

Climate change is no longer seen as one of many isolated issues but rather it provides the context for many of the converging ecological and humanitarian crises (the 'polycrisis') we are facing. This section will provide a brief overview of the modern sustainability project as it has emerged in response to (and has in turn shaped) these escalating global crises over the last half century. This will be furthered by a socio-historical account of traditional Euromodern patterns of thinking which threaten the effectiveness of any action we take if we cannot 'avoid the trap of trying to find solutions from within the same thinking, the same tools, and the same worldview that caused the problems in the first place' (du Plessis, 2012:14).

The publication of the 'Brundtland Report' (Our Common Future) in 1987 initiated a turning point in the contemporary environmental movement by connecting the notions of sustainability and development for the first time. The given definition of sustainable development as 'development that meets the needs of the present without compromising on the ability of future generations to meet their own needs' (p45) pointed towards a causal relationship between the attitudes and actions of current generations and the prospects of future ones, thereby establishing a temporal horizon of responsibility and placing the needs

and interests of humans at its centre. This opened the door for sustainability thinking and practice to become an active concern in several domains of public and policy discourse, from economics and business to urban planning and consumer lifestyles (Scoones, 2016).

Despite the progressive connection of environmental, economic and social domains with sustainability signalled by Brundtland's definition, a growing number of scholars are calling for further precision in our use of the term 'sustainable' and a reprioritisation of nonhuman needs and interests alongside anthropocentric goals.[2] Gibbons (2020) expresses the concern thus:

> A focus on meeting minimally acceptable levels of human wellbeing within negotiated environmental limits, incremental change, and addressing symptoms rather than causes has effectively crippled the field from achieving not only net-neutral states but the much loftier aims of thriving and flourishing living systems. (Gibbons, 2020:1)

This reduction of sustainability to a quantifiable measurement of acceptable resource use has fuelled a tendency towards incremental and superficial change, whilst also obscuring the deeper pattern of human-nature and human-human relationships that initiated and continue to intensify the worsening environmental crisis (du Plessis, 2012). As we shall explore in the remainder of this section, the established sustainability paradigm has been instrumental in justifying narrowly targeted solutions that have failed to address the root causes of climate change and so have been insufficient to facilitate a transition toward…

Indicators, targets, and narrative frames

The notion that planet earth has environmental limits (also referred to as planetary boundaries) became central to the sustainability debate in the late twentieth century, putting the scarcity of 'natural resources' and the negative impacts of human activity at the forefront of climate action strategies (Robinson and Cole, 2015). The language and concepts of business were influential in shaping sustainability strategies within this new framing, which became a matter of 'calculations of quantitative limits and indicators as well as monetary values of the different forms of capital' (du Plessis, 2012:14). The application of 'business logic' to sustainability was instrumental in narrowing its scope of action and

[2] There is still contention over the meaning of 'sustainable development' (e.g. see Capra and Luisi, 2014) however, this definition is widely considered to have set the standard for a sustainable society as one that can satisfy present needs without jeopardising the prospects of future generations.

impact (Hahn and Tampe, 2021); within this logic, society could continue to pursue economic growth as long as it did not overstep the ecological limits that had been identified – 'in other words, determining how much damage can feasibly be inflicted' (du Plessis, 2012:12) without fundamentally changing the way the system worked. [Then something on 'overshoot' and techno-fixes here?]

To align and accelerate sustainability efforts globally, indicators have been established to serve as measurement frameworks against which progress could be assessed at the international scale (e.g., the United Nations Sustainable Development Goals). These indicators tend to refer to physical, natural, and biological factors of climate change and have been instrumental in determining the 'negotiated environmental limits' that Gibbons (2020) makes reference to. However, it has been argued that abstracting our planetary crisis into a set of quantitative indicators and thresholds that ignore the cultural and systemic context is reflective of a 'reductionist' tendency that runs throughout the established sustainability paradigm. Ecological writer Charles Eisenstein (2016) cites 'CO2 reductionism' as a particular instance where the complexity of climate change is reduced to 'an abstract, global quantity' (carbon and/or greenhouse gas equivalent (GGE) emissions) which has resulted in similarly narrow strategies to bring these quantities within environmental limits (carbon off-setting and sequestration technologies). In prioritising these solutions, we not only fail to address the multi-systemic causes of our carbon intensive economy, but at the epistemic level we promote 'intellectual buy-in to the very same systems of authority that have long presided over and defended our ecocidal system' (Ibid.). The upshot of this in the long term is that we risk prolonging and deepening the polycrisis rather than solving it (Wahl, 2016).

The notion of *framing* is integral to Eisenstein's criticism, insofar as he considers the deliberate framing of climate change in terms of CO2 (or GGE) emissions to have resulted in an affective detachment from the real world context of people's lived experiences of climate change (Munshi et al., 2020). Cognitive linguist George Lakoff (2010) suggests that all knowledge and communication makes use of frames, whether we are aware of them or not. In the instance under discussion, the chosen frame [of…] leads to an understanding of climate change as a series of isolated problems for the technological domain to handle, rather than as the convergence of many dimensions across social, economic, technological, and ecological domains.

Narratives are another intuitive framing device we constantly make use of, and the *narrative consciousness* that humanity has developed over millennia is considered one of the principal ways in which we make sense of the world (Porter Abbott, 2002). We use narratives to explain the universe and our place in it; they are a framing structure with which collective meaning is made in our societies, and therefore are an instrumental force in the way we identify problems, as well as influencing our decision-making (Evans, 2017). In this way, narratives can reveal more about us than they do about the world 'out there'.

In the context of sustainability, repeated affirmations that human impact on the planet must be restricted for the benefit of the natural world reinforces narratives of scarcity (of planetary resources), limitation (of human impact), and separation (of humanity from nature) (du Plessis, 2012; Robinson and Cole, 2015). Over time, these narratives naturalise the view that humanity (rather than a specific social system) is inherently harmful to the planet, to the degree that it becomes impossible to 'even imagine what beneficial relations between [our] species and others might look like' (Kimmerer, 2013:9). This can have a paralysing and disempowering effect on individuals and communities, which moves us in the opposite direction to the engaging narratives that we need to motivate us in climate action (Robinson and Cole, 2015; Munshi et al., 2020).

The perceived separation between humanity and nature functions as a *deep* narrative or regulative ideal operative at the [deepest] level of our culture, firmly embedded in our worldview (Taylor, 2021). Consequently, it becomes easier for us to accept without questioning other narratives that are the corollary of our perceived separation from the world, such as the narrative of limitation that pervades the sustainability paradigm. Restoring the discursive connection between humanity and nature at this level of our mindset is 'a vital step to restoring both planetary health and the health of our societies' (Du Plessis and Brandon, 2015:9).

Separation from Nature and the mechanistic worldview

To understand the depth of our perceived separation from the natural world, we will briefly venture further upstream to explore the conceptual origins of the mechanistic and dualistic worldviews that have informed this narrative. The 'cognitive history' of these attitudes has

been recently explored in Capra and Luisi, 2014; Lent, 2017; Charbonnier 2021 and Ghosh, 2022. What follows is a highly synthesised account of some of the key ideas that have shaped the modern way of knowing and narrating our relation to the natural world.

A radical revaluation of the relationship between humanity and nature was integral to the Scientific Revolution in the sixteenth and seventeenth centuries, under the influence of thinkers and experimentalists such as Galileo Galilei, Francis Bacon, René Descartes, and Isaac Newton. The emergence of a 'mechanical' understanding of natural phenomena was a key aspect of this epistemic transformation and took a variety of much-debated iterations throughout this period (Garber, 2002; Hattab 2011; Wolfe, 2012). Central to the mechanistic worldview was the *reduction* of all things (both living and non-living) to fundamental units with basic properties (such as size, shape and motion) and whose causes and interactions were governed by universal, deterministic laws (Capra and Luisi, 2014). From this conception of reality arose a vision of the universe as a vast clock-like machine or automaton, composed of isolatable constituent parts whose diverse features and effects could be observed, measured, analysed and understood independently of each other. With this story of an intelligible chain of causes and effects underlying all phenomena, the mechanistic worldview diverged radically from both earlier theological conceptions that attributed the patterns of the world to the acts of a divine creator, as well as from the holistic perspective of a 'web of life' that has remained a central tenet of Eastern philosophies as well as many ancestral and Indigenous knowledges across the planet (Ichioka and Pawlyn, 2021).

A commitment to mechanism did not in itself imply separation, only a radical reductionism down to fundamental properties and parts. For Descartes however, the mechanistic view of nature was qualified by a conception of the thinking mind as an entirely different kind of substance to the body (and the rest of nature). This 'dualistic' outlook implied an exceptionalism by which rational thought (and the human who possessed it) was decoupled from the mechanical laws, limits and finitude of the material universe. In this view Descartes reaffirmed the philosophical tradition of dualism which has been traced as far back as Ancient Greece (for example in Plato's dialogue *Phaedo*) often considered to be the catalyst of an intellectual tendency which culminates in the Euromodern narrative of separation between the rational thinking human and the non-rational natural world.

Crucially, mind and nature were not only seen by Descartes and others to be separate from one another but there was also a fundamental asymmetry in their value, as Jeremy Lent argues:

> According to Cartesian logic, if the mind is the source of our true identity, then our bodies are mere matter with no intrinsic value. And if that is true of our own bodies, it must be equally true of the rest of nature – animals, plants, everything else – since no other entity possesses a mind capable of reason. (Lent, 2017:237)

It was this purported asymmetry which underpinned the 'heroic' enlightenment narrative of the mastery of irrational nature by rational mind (Adorno and Horkheimer 2002; Kheel 1993) a task underpinned by the supposedly 'God-like power mechanics gives us over nature' (Hattab 2011). This motif of mastery was taken up and advanced in the work of philosophers such as Locke, Kant and Hegel, who reinforced the idea that the human being (specifically, the white, European, male) was uniquely endowed with reason and therefore enjoyed both the moral right and duty to dominate and instrumentalise the rest of nature (a rationalising and civilising 'mission'). The non-rational and mechanical natural world, in these accounts, became little more than the passive 'material' with which the projects of scientific knowledge and individual freedom could be actualised (Adorno and Horkheimer 2002; Echeverria 1998: 68). This attitude was especially evident in the application of new forms of technical and instrumental rationality to production, setting the industrial revolution in motion. As ecofeminist and anti-racist scholars have pointed out, these arguments also established the foundations of legitimacy for modern projects of colonisation, enslavement and patriarchy, for if non-modern peoples or women were cast as less-than rational this also implied a less-than fully human status (Eze 1997; Kheel 1993) rendering them subject to the same processes of objectification, manipulation and legal possession as the rest of nature.

In a matter of centuries European society thus underwent a major shift in its perception of the world, adopting (albeit in more variegated and contested ways than this brief sketch can depict) a vision of a 'dispirited' and 'inert' mechanical system that could not only be predicted and controlled, but which humans had the right to dominion over (Hutchins, 2014). This understanding of objective reality as a clockwork-like machine both served to justify an attitude of instrumental exploitation towards both nature (Eisenstein, 2016) and putatively irrational or 'uncivilised' peoples (Charbonnier, 2021), whilst also narrowing our understanding of the relationships between the constituent parts of the

world's systems to a linear and deterministic pattern of cause and effect. [[These core assumptions of the 'mechanistic worldview' continue to inform dominant theories of change that see systems as essentially technical objects, fixed and responsive to human control. This has in turn influenced our flawed approach to the management of living systems, as will be considered in the next chapter.]]

The limits of anthropocentric sustainability

The anthropocentric bias of sustainability as it is predominantly practised today is deeply intertwined with these socio-historical patterns of thinking. Whilst the notion of 'sustainable development' has been central to a new discourse of global governance and 'green growth', the reduction of sustainability to quantitative indicators and isolated solutions has failed to challenge this long-standing paradigm of separation, for 'it is hard to feel a sense of engagement with Nature when our perspective of it is seen through an objectifying lens perceiving a mechanistic, soulless world' (Hutchins, 2014:49). [[a divergence and asymmetry that has led to the polycrisis we endure.]] Until we can identify, expose and unlearn the deep separation between humans and nature that has been written into the modern european cultural psyche, we will fall short of the "embodied engagement" with humans and nonhumans that constitutes a symbiotic relationship of mutual care and flourishing (Kramvig and Verran, 2020, 68).

It is important to acknowledge the revolutionary impact of these ideas at the time they were first formulated, which has been integral to the many of the technological, scientific and social transformations that have reshaped global life in the past four centuries (Wahl, 2016). However, even the scientific basis of the mechanistic conception of the world has been, if not entirely refuted then at least 'provincialised' by more recent discoveries in fields of enquiry ranging from quantum physics to ecology, which evidence the non-linear interdependence between entities within complex systems, including humanity and the planetary ecosystems we as a species are part of (du Plessis, 2012).

Whilst we cannot completely eschew the quantitative indicators, targets and solutions that are emphasised by the established sustainability paradigm, we must urgently reframe

them within the context of a more ambitious and holistic transformation of our 'cultural coding' if we are to also achieve real change at the deeper level of our mindsets and attitudes (Pearce, 2007; Reed, 2007). In the next section, we turn our attention to the regenerative sustainability paradigm as a conceptual framework for this transformation.

Section Two: The Regenerative Paradigm

Having laid out the conceptual framework of the established sustainability paradigm, this section considers the regenerative paradigm as an evolution of sustainability rather than as a replacement of it (Gibbons, 2020). The call for a different mindset to frame our thinking about the world is not new in the context of ecological discourse. Writing in 1993, Metzner recognised that 'existing cultural paradigms cannot deal adequately with the issues we are now facing' (p163). Regenerative practices have been garnering new appreciation for much the same time as the modern sustainability project, but it is only more recently in the twenty-first century that these pocketed activities have coalesced into what can be considered a formalised conceptual framework. This development has been pioneered by practitioners and theorists in the field of agriculture, urban planning and the built environment in particular (Hahn and Tampe, 2021), and the overarching objectives can be summarised as so:

> This paradigm attempts to address the dysfunctional human-nature relationship by entering into a co-creative partnership with nature. It aims to restore and regenerate the global social-ecological system through a set of localized ecological design and engineering practices rooted in the context and its social-ecological narratives. (du Plessis, 2012:19)

There are three significant points of departure from the sustainability paradigm indicated here. Firstly, regenerative thinking flows from an integrative awareness and a systems-based perspective of how the world works, underpinned by an ecological worldview (Metzner, 1993; du Plessis and Brandon, 2015). Secondly, this worldview encourages us to adopt a radically altered understanding of the role of the human within these social-ecological systems (Metzner, 1993; Reed, 2007; Hathaway, 2015). Thirdly, there is an inherent

recognition of the complexity and unpredictability of such systems, with implications on how change is managed during transformational growth (Holling, 2001; Robinson and Cole, 2015). The systems perspective within the ecological worldview, the altered role of the human, and the management of change within this context will now be considered in turn.

Living systems and the ecological worldview

The regenerative paradigm flows from an ecological worldview that sees the world 'as a fundamentally interconnected, complex, living and adaptive social-ecological system that is constantly in flux' (du Plessis, 2012:15). The reference to ecology in the naming of this worldview is associated with the ecological philosophy of Arne Naess, whose distinction between *deep* and *shallow* ecology remains influential in environmental discourse today (Capra and Luisi, 2014). While shallow ecology still ascribes instrumental use to nature for human benefit, and is therefore human-centered, deep ecology sees the world as a network of fundamentally interconnected and interdependent entities, of which human beings are an integral part (Naess, 2016). The ecological worldview aligns with the values of Naess' deep ecology, and therefore departs significantly from the mechanistic worldview which sees humanity and nature as isolated from one another and separate in their being.

Fritjof Capra (2005) makes explicit the connection between what contemporary scholars refer to as systems thinking and 'the ancient thinking that enabled traditional peoples to sustain themselves for thousands of years' (p19). Whilst we have seen that modern thought has strayed far from a holistic understanding of the world, it has been central to the cosmologies and practices of many traditional and indigenous cultures through to the present day and therefore should be considered as 'newly appreciated' rather than a 'brand new' mindset or worldview. The regenerative paradigm seeks to engage in dialogue and perspective-taking between these cultures and viewpoints, which Indigenous scholar Melanie Goodchild (2021) suggests creates a shared space within which each can detach from 'the cages of our mental worlds'.

The relationship between human and non-human, as seen and experienced through the lens of the ecological worldview, is of 'a co-creative partnership with nature' which shifts the role of humanity from being 'users', 'consumers' or 'clients' of the world's resources to being

contributors towards the health and functioning of its ecosystems (du Plessis, 2012). The regenerative paradigm aligns the human aspirations for sustainability with the 'aspirations' of the natural world, referred to interchangeably throughout the literature as a qualitative state of 'flourishing' or 'mutual flourishing' (Kimmerer, 2013; Haraway, 2016; Gibbons, 2020; Ichioka and Pawlyn, 2021), and 'thriving' or 'thriveability' (Gibbons, 2020; Warden, 2021). This signals a departure from the measurements and indicators of the established sustainability paradigm which are quantitative and distinctly anthropocentric, towards a measurement framework that values qualitative indicators of human and planetary health and well-being. Robinson and Cole (2015) suggest that regenerative approaches call for more emphasis on process outcomes than performance outcomes that can be measured against environmental or scientific factors. Whilst there is ambiguity about what these process outcomes are and whether they can be measured in a standardised way, what is important is that there is 'a reorientation of focus from reducing harm and damage to creating net-positive outcomes in both environmental and human terms' (Robinson et al., 2013:8).

The interdependence between human and non-human flourishing is such that 'the success of the whole community depends on the success of its individual members, while the success of each member depends on the success of the community as a whole' (Capra and Luisi, 2014:353). The reintegration of humanity into an interconnected ecological totality implies an alternative narrative of 'interbeing' that underlies the regenerative paradigm (Gibbons, 2020). According to this narrative, the ambitions for human well-being are inseparable from the well-being of the living world, demanding a shift in thinking to acknowledge that our own ambitions are not in competition or conflict with the rest of nature; rather, the most effective way of preserving and enriching human existence is through greater integration within the natural world, as a member of a broader ecological community (Mathews, 2011).

This suggests the need for an alternative approach to measuring change in human systems, drawing inspiration from the cyclical patterns of regeneration found in nature which balance periods of growth, maturity, decline and recycling. Capra and Luisi (2014) describe this qualitative growth as 'growth which enhances life' (p368). A significant part of this shift in our thinking requires us to alter our approach to change, which as we shall see

has significant implications on how innovative and just transitions can be facilitated within this uncertain terrain.

Uncertainty, creativity, and transformative change

The regenerative paradigm recognises the complexity and unpredictability of the living social-ecological system that humanity is part of, viewing the world as a living system rather than a mechanical object. The complex adaptive system model developed by C. S. Holling (2001) is often cited as a general framework for the cyclical process of change that complex living systems go through, from the developmental phase of growth and stability to an experimental period which brings change and variety. In short, when a system encounters a period of instability, it moves into a phase of rapid reorganisation, which 'is a fertile environment for experiments' and therefore primes the system for innovation (Holling, 2001:395). In human social systems, periods of crisis or confusion likewise indicate that the system is primed for restructuring and renewal (Capra, 2005). When civilisation is in a period of transformation, it is the task of living generations to build 'the social flexibility needed to cope, innovate, and adapt' (Holling, 2001:404).

The regenerative paradigm raises the aspiration of sustainability to the systems level: no longer aiming for success one species at a time; rather, the frame of reference for sustainability is shifted to the much loftier ambitions of a healthy social-ecological system (Hahn and Tampe, 2021). In line with systems thinking principles, du Plessis and Brandon (2015) contribute that 'sustainability is not an aggregate of social-economic-technological solutions, but rather an emergent property arising from the interactions of all these systems' (p.12). Emergent properties arise from specific relationships and interactions among parts of a system yet cannot be reduced to the component parts of the system itself (Capra and Luisi, 2014). This challenges the idea that a sustainable society can be achieved through addressing problems in isolation; simply limiting human activity in specific domains will not go far enough in restoring a positive relationship between us and the non-human, living world.

The systems-level perspective highlights the complex, dynamic and constantly evolving context that sustainability sits within. Packard, Clark, and Klein (2017) offer a typology of

uncertainty which sheds light on decision-making as an unfolding, iterative process which is 'revisited, renewed and revised', rather than as a static 'fork in the road' where a decision made leads down a single path. According to their account, we might consider that current management strategies in the context of sustainability are tending towards *risk-management* approaches, which seek to 'reduce the impact of unwanted outcomes' (Packard, Clark and Klein, 2017:5) – affirming the limitation approaches that were evidenced in the previous section. However, *creative uncertainty* happens when the options for achieving a set of outcomes are open; there could be endless possible methods to get there, and the decision-maker has full 'artistic license' to achieve the desired outcome. The science has shown us (and continues to clarify) what our options are: we either respond through social transformation, or we maintain the status quo until we surpass the ecological limits that will lead us towards civilisational breakdown. If we choose to embrace creative uncertainty, we will be better prepared to apply the 'human imagination, intuition and estimation' (Packard, Clark and Klein, 2017:7) that transformation requires.

The role of design and innovation

Reinstating an ecological mindset as the global norm will constitute the most significant intentional worldview shift that humanity has ever had to make (du Plessis, 2012). An appeal to systems thinking in this chapter so far has suggested that the period of instability we are experiencing also provides the right conditions for transformation to occur in our culture. However, we cannot ignore the urgent needs of sustainable technological and economic transitions whilst pursuing transformation. This requires simultaneous management of dual approaches, which ensure the smooth functioning of 'business as usual' operations in our society whilst simultaneously experimenting with more radical, transformational changes (Wahl, 2016).

Wahl (2016) identifies 'transformative innovation' as the vehicle for the experimental arm of this balancing act, which is innovation that aims beyond the disruptive potential of technology to make changes within the system to the kind of cultural disruption that transforms the system itself. Facilitating innovation in this context requires letting go of the idea that increasing our control over ecosystems will solve ecological instability. Architect

and urban planner Bill Reed (2007) considers that this 'moves our frame of discourse from 'doing things TO nature' to one of participation as partners WITH and AS nature' (p677), leading to a radical reinterpretation of the role of design and innovation in the context of regenerative sustainability. Robin Wall Kimmerer (2013) agrees that trying to regain control of a dynamic, living system, especially in an era of rapid climate change, is futile. Instead, the only thing that is within our control is the relationship we choose to have with the earth, which must become 'a relationship of respect, responsibility and reciprocity' so that earth's systems can rebuild the capacity to restore itself (Kimmerer, 2013:336). The unit of change therefore moves from the constituent parts (or quantitative magnitudes) of the system to the qualitative relationships between these parts; in other words, we need to 'get back to the relationship because that is [our] foundation of survival' (Chief Oren Lyons quoted in Raworth, 2018).

Understood in this way, the role of design is more akin to stewardship. Du Plessis (2012) characterises the role of the designer as a 'facilitator in the process of revealing' our co-creative partnership to nature, rather than being 'master of mind'. Moreover, there is a marked emphasis on the 'ongoing regenerative capacity' of design applications beyond their initial impact, therefore extending the responsibility of the designer to build the 'capacities of people to design, create, operate and evolve regenerative social-ecological systems in their place' (Robinson and Cole, 2015:4), rather than their responsibility ending with the delivery of a finalised product.

The question of interest then becomes: How do we as humans cultivate the capacity to facilitate a co-creative partnership with nature, rather than reverting to a habitual anthropocentric stance as master or conqueror of its resources (Hathaway, 2015)? In Section Three, we turn our attention to the emerging discipline of deep narrative change as one of the tools that could shed light on this question.

Section Three: Between narrative worlds

According to systems theorist Donella Meadows (2008), the ability to transcend paradigms and to relinquish our attachment to any given paradigm is the most effective leverage point in changing a system. Even where material practices and relationships, patterns of

production and consumption are at stake, the collective sense that is made and the future objectives that are set are crucial to the process of social change. Political activist and executive director of the Narrative Initiative, Rinku Sen (2021) echoes this sentiment that 'to change systems we need many people to hold and use shared stories about their ability, intention and vision to change systems'. This makes the link between narrative change and our cultural paradigm shift explicit: narratives and paradigms are collective phenomena built up and reinforced over time, reproduced by daily practices, and both can change when enough people reevaluate the values and visions of change that they want to make and act accordingly. It is therefore impossible to influence one without addressing the other.

Sections One and Two outlined two narrative worlds that are in contention at this critical moment – the narrative of separation and the narrative of interbeing. Navigating this shift between them will require us to 'carefully evaluate what aspects of the old story can continue to serve us once we re-contextualise them for a more inclusive and integrative perspective' (Wahl, 2016:50). This final chapter will draw insight from the evolving practice of deep narrative change as a cultural transformation tool, exposing the importance of inner change in the context of our wider cultural evolution.

Deep narrative change

Whilst all narratives are influential in our understanding of the world, certain narratives take on a mythic significance. Some authors have characterised these narratives as 'myths' (Evans, 2017) or 'meta-narratives' (Saltmarshe, 2018) however, narrative strategist Ruth Taylor (2021) offers the term 'deep narrative' as encapsulating their cultural embeddedness in comparison to issue-specific narratives. In December 2021, Taylor published a report assessing the landscape of deep narrative change practice. A key finding of her inquiry reveals that whilst there are varying interpretations about what deep narrative change constitutes, there is a growing awareness that work at the level of narrative needs to be invested in to shift our cultural value systems.

In spite of this growing awareness, there is still a clear need for deep narrative change practice to be formalised; since it draws insight from many disciplines, acknowledging the contribution of marginal communities and traditional knowledges, there is not yet an

established vocabulary here in the UK (Taylor, 2021). Taylor's report suggests that even the distinction between narrative change and *deep* narrative change is somewhat contentious, as some practitioners associate the issue-specific, shorter term narrative work as akin to strategic communications. This later approach chimes with our general cultural tendency to favour measurable project aims over more radical transformations that are the work of generations, not years, whereas deep narrative change work invites us to revise our understanding of success and to expand our timelines for measuring it (Ibid.).

Civil rights leader Rashad Robinson (2018) highlights the need to build *narrative power* in our culture in order for counter-narratives to take hold in our imaginations. Narrative power can be distinguished from *narrative presence*, which concerns the volume of communications rather than the integrity of the narrative that is being constructed. Narratives gain power when our real-world spaces reflect the values of our narratives, highlighting the connection between narratives and physical places and contexts. For instance, the urban built environment is a manifestation of our relationship towards the non-living world realised through design. Systems can also be considered as manifestations of narratives, for they 'exist as an expression of our collective social values' (Sen, 2021). Building narrative power for newly emerging narratives of the regenerative paradigm is therefore reliant on our actions and decisions reflecting the shift in our understanding of the world.

Finally, whilst it may be obvious to point out that human beings are the main vehicle for building narrative power, Robinson (2018) notes it is essential to build the capacity of 'a tight network of people on the ground to develop strategic and powerful narrative ideas… required to enduringly change hearts, minds, behaviours, and relationships'. This brings our attention to the inner work that is required for transformative innovation.

Inner and outer transformation

The practice of narrative change acknowledges the importance of what could be referred to as 'inner work' in transforming our systems, which has been underrepresented in sustainability science research to date however, it is becoming increasingly noticed by scholars in this field (e.g. Ives, Freeth and Fischer, 2020; Milligan, Zerda and Kania, 2022). As

Meadows writes, 'the capacity for individuals to suspend assumptions, critique their mental models and potentially adopt new paradigms thus is one of the most powerful ways to dramatically influence sustainability outcomes' (Meadows, 2008). The regenerative paradigm integrates both inner and outer transformation in its conception of change, acknowledging the influence that the exterior forces (such as policy, culture and education) have on the inner world, as well as the influence that our inner world (worldview, values, beliefs) has on the outer world (Gibbons, 2020).

Both systems thinking and deep narrative change practice invite a theory of change that prioritises a transformation of fundamental values rather than incremental changes that add up to the whole. Experiencing new narratives at the individual level is essential to this shift, which amounts to prioritising the immersion of narratives as much as their communication. Robinson (2018) makes the distinction between getting "our message out" through communication to getting "our message in" through designed interventions. Building on this idea, Taylor (2021) adds that 'through the design of deep narrative immersion we are able to provide people with the opportunity to glimpse what a different world could look like' (p18). The emphasis in deep narrative work should therefore be on building an internal narrative capacity within designers and facilitators to revaluate the values, assumptions and biases they hold, and to reflect them outwards into the real world through their work (Milligan, Zerda and Kania, 2022). Until the outer world mirrors the shift in our mindset that narrative work can encourage in the inner landscape of the individual, we will not be able to fully break free from the legacy worldviews and mental models we are bound to.

[A: I wonder if it might be useful here to briefly canvas or at least acknowledge some of the emerging narratives that might count as positive responses to the 'deep' issues raised throughout the article? e.g. degrowth, caring practices, indigenous perspectives, etc..?]

Living the questions

The intersecting conversations, ideas and theories explored in this paper have been brought together in response to Wahl's (2016) invitation to live the questions, which is all the more poignant against the backdrop of a culture that sees more value in providing answers than in

engaging in deeper questioning before jumping into action. The following opportunities for future research have been identified to serve as bridges between this focused narrative review and the broader applied contexts of deep narrative change and the regenerative cultural transformation.

- ⇒ To what extent can deep narrative immersion increase the 'regenerative capacity' of a designer or design project? What might a measurable study of this look like?
- ⇒ What are the limits to deep narrative change? What other tools could be part of a regenerative transformation toolkit to amplify the scope of narrative change work?
- ⇒ What frameworks can assist the innovation manager in shifting from a risk-management approach towards embracing creative uncertainty? At what stages in the dual pathways of tackling 'business as usual' management and experimental innovation would such tools be useful?
- ⇒ How do regenerative principles translate back into business contexts, so that the business is framed within a systems logic instead of sustainability being framed within a business logic? What narrative interventions might educate business executives and entrepreneurs in applying regenerative principles to business decision-making processes?

Conclusion

Mounting scientific evidence and a growing social consciousness suggest that sustainability strategies favouring fragmented technological solutions have been insufficient to realise a sustainable society. This paper has considered that the established sustainability paradigm has reached the limit of its usefulness in guiding our thinking on climate action, and that we must reassess our ambitions for sustainability to align with the holistic principles of the regenerative paradigm. The importance of cultural transformation is central to this work, attending to the narratives, mindsets and worldviews that have not only been instrumental in bringing us to crisis point but which are preventing us from being able to effectively navigate this critical moment.

Theories of change in living systems can serve as a model for the qualitative flourishing that we should be aiming for, at the heart of which is a co-creative partnership between humanity and nature. The narrative of separation, deeply embedded in our cultural understanding of the world, must be replaced with a narrative of interbeing which aligns human aspirations with those of the natural world. This radical, intentional worldview shift must happen in parallel to the sustainable transitions that will ensure stability in the near future, whilst transformative innovation serves as the vehicle for a more experimental parallel pathway to plant the seeds of the regenerative culture that we must grow into.

Lastly, an appeal to deep narrative change practice has shed light on how the work that we must do on our inner landscapes, attending to our worldview and mindset, must be reflected back into the world around us. The role of design and innovation cannot be underestimated in this work, and the responsibility of design to facilitate an ongoing process of change versus delivering finished solutions has been considered. Ultimately, practitioners need to acknowledge that we can no longer operate from a risk-management mindset, and we must embrace the creative uncertainty of the present moment if we are to respond to the call of a regenerative cultural transformation.

References

Adorno, Theodor W. & Horkheimer, Max (2002) *Dialectic of Enlightemnet,* Trans. Edmund Jephcott, Stanford: Stanford University Press.

Thomas Berry, The Great Work: Our Way Into the Future (New York: Bell Tower, 1999)

Brundtland Report, Our Common Future

Capra, F. (2005) 'Speaking Nature's Language: Principles for Sustainability', in Ecological Literacy: Educating Our Children for a Sustainable World.

Capra, F. and Luisi, P.L. (2014) The Systems View of Life: A Unifying Vision. Cambridge University Press.

Climate Change 2022: Impacts, Adaptation and Vulnerability. Summary for Policymakers. (2022). Intergovernmental Panel on Climate Change.

Eisenstein, C. (2016) 'Grief and Carbon Reductionism', Charles Eisenstein, February. Available at: https://charleseisenstein.org/essays/grief-and-carbon-reductionism/ (Accessed: 24 March 2022).

Evans, A. (2017) The Myth Gap. Eden Project Books.

Eze, E. C. (1997) 'The Colour of Reason: The Idea of "Race" in Kant's Anthropology', in E.C. Eze (ed.) *Postcolonial African Philosophy: A Critical Reader,* Oxford: Blackwell, pp. 103-131.

Garber, D. (2002) 'Descartes, Mechanics, and the Mechanical Philosophy', Midwest Studies in Philosophy 26 (2002), 185–204.

Ghosh, A. (2021) The Nutmeg's Curse: Parables for a Planet in Crisis.

Gibbons, L.V. (2020) 'Regenerative—The New Sustainable?', Sustainability, 12(13), p. 5483. doi:10.3390/su12135483.

Goodchild, M. (2021) 'Relational Systems Thinking: That's How Change is Going to Come, From Our Earth Mother', Journal of Awareness-Based Systems Change, 1(1), pp. 75–103. doi:10.47061/jabsc.v1i1.577.

Hahn, T. and Tampe, M. (2021) 'Strategies for regenerative business', Strategic Organization, 19(3), pp. 456–477. doi:10.1177/1476127020979228.

Hattab, H. (2011) 'The Mechanical Philosophy', in The Oxford Handbook of Philosophy in Early Modern Europe, edited by Desmond M. Clarke and Catherine Wilson, Oxford University Press, pp. 71-95.

Haraway, D. (2016) Staying with the Trouble: Making Kin in the Chthulucene. Duke University Press.

Hathaway, M. (2015) ‘The Practical Wisdom of Permaculture: An Anthropoharmonic Phronesis for Moving towards an Ecological Epoch’, ENVIRONMENTAL ETHICS, 37, p. 19.

Holling, C.S. (2001) ‘Understanding the Complexity of Economic, Ecological, and Social Systems’, Ecosystems, 4(5), pp. 390–405. doi:10.1007/s10021-001-0101-5.

Hutchins, G. (2014) Illusion of Separation: Exploring the Cause of our Current Crises. Floris Books.

Ichioka, S. and Pawlyn, M. (2021) Flourish: Design Paradigms for our Planetary Emergency. Triarchy Press.

Ives, C.D., Freeth, R. and Fischer, J. (2020) ‘Inside-out sustainability: The neglect of inner worlds’, Ambio, 49(1), pp. 208–217. doi:10.1007/s13280-019-01187-w.

Kheel, Marti (1993) "From Heroic to Holistic Ethics: The Ecofeminist Challenge," in Greta Gaard (Ed.). Ecofeminism: Women, Animals, Nature. Philadelphia: Temple University Press, pp. 243-271.

Kimmerer, R.W. (2013) Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants. Penguin Books.

Lakoff, G. (2010) ‘Why it Matters How We Frame the Environment’, Environmental Communication, 4(1), pp. 70–81. doi:10.1080/17524030903529749.

Lent, J. (2017) The Patterning Instinct. Prometheus Books.

Mathews, F. (2011) ‘Towards a Deeper Philosophy of Biomimicry’, Organization & Environment, 24(4), pp. 364–387. doi:10.1177/1086026611425689.

Meadows, D. (2008) Thinking in Systems: A Primer. Sustainability Institute.

Metzner, R. (1993) ‘The Emerging Ecological Worldview’, The Bucknell Review [Preprint].

Milligan, K., Zerda, J. and Kania, J. (2022) The Relational Work of Systems Change (SSIR). Available at: https://ssir.org/articles/entry/the_relational_work_of_systems_change (Accessed: 19 February 2022).

E. Morin, Homeland Earth, Hampton Press, Cresskill, NJ (1999)

Munshi, D. et al. (2020) ‘Centering Culture in Public Engagement on Climate Change’, Environmental Communication, 14(5), pp. 573–581. doi:10.1080/17524032.2020.1746680.

Naess, A. (2016) Ecology of Wisdom. Penguin Modern Classics.

Packard, M.D., Clark, B.B. and Klein, P.G. (2017) ‘Uncertainty Types and Transitions in the Entrepreneurial Process’, Organization Science, 28(5), pp. 840–856. doi:10.1287/orsc.2017.1143.

Pearce, W.B. (2007) ‘Critical Moments that Shape our Social Worlds’, in Making Social Worlds: A Communications Perspective. Blackwell Publishing.

du Plessis, C. (2012) ‘Towards a regenerative paradigm for the built environment’, Building Research & Information, 40(1), pp. 7–22. doi:10.1080/09613218.2012.628548.

du Plessis, C. and Brandon, P. (2015) ‘An ecological worldview as basis for a regenerative sustainability paradigm for the built environment’, Journal of Cleaner Production, 109, pp. 53–61. doi:10.1016/j.jclepro.2014.09.098.

Porter Abbott, H. (2002) The Cambridge Introduction to Narrative. Cambridge University Press.

Raworth, K. (2018) Doughnut Economics. Random House Business.

Reed, B. (2007) ‘Shifting from “sustainability” to regeneration’, Building Research & Information, 35(6), pp. 674–680. doi:10.1080/09613210701475753.

Robinson, J. and Cole, R.J. (2015) ‘Theoretical underpinnings of regenerative sustainability’, Building Research & Information, 43(2), pp. 133–143. doi:10.1080/09613218.2014.979082.

Robinson, R. (2018) ‘Changing Our Narrative about Narrative: The Infrastructure Required for Building Narrative Power’, Othering & Belonging Institute at UC Berkeley [Preprint], (Blueprint for Belonging). Available at: https://nonprofitquarterly.org/changing-our-narrative-about-narrative-the-infrastructure-required-for-building-narrative-power-2/ (Accessed: 13 April 2022).

Saltmarshe, E. (2018) ‘Using Story to Change Systems’, Stanford Social Innovation Review [Preprint]. Available at: https://ssir.org/articles/entry/using_story_to_change_systems (Accessed: 27 November 2021).

Sen, R. (2021) ‘Systems Language for Narrative Power’, Narrative Initiative, 16 June. Available at: https://narrativeinitiative.org/blog/systems-language-for-narrative-power/ (Accessed: 9 April 2022).

Taylor, R. (2021) ‘Transforming narrative waters’.

Wahl, D. (2016) Designing Regenerative Cultures. Triarchy Press.

Warden, J. (2021) From sustaining to thriving together. RSA.

Wolfe, Charles T. (2012) ‘Forms of Materialist Embodiment’, in *Anatomy and the Organization of Knowledge, 1500-1850*, eds. M. Landers and B. Muñoz, London: Pickering and Chatto, 2012, pp. 129-144.