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FROM PRODUCTIVISM TO REGENERATION IN SOCIO-ECOLOGICAL SYSTEMS: AN EXPLORATION OF TENSIONS, TRADE-OFFS AND WAYS FORWARD

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A mi familia y profesores

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1 ABSTRACT

This thesis explores an ideological phenomenon that underlies organizational sustainability practices grounded on active restoration, natural regeneration, and environmental protection. It originates as a contraposition to a productivist ideology attached to growth, the commodification of nature, and the arbitrary use of ecosystems and resources to satisfy human needs, excessive consumption, and business demands. It differs from environmental management practices and counter-movements, making explicit its methodology based on the place flourishing, harmonization, and reconciliation of organizations and natural systems, and on a deep ecocentric ethic that recognizes the intrinsic value in all forms of life and ecosystems themselves, including their abiotic components. We label it *Regenerativism*, and we define it as the belief that place-restoration, ecological engagement, and protection of life support systems are the inherent action-purpose and responsibility of the human organization. The main objective of this thesis is to investigate and explore the principles, mechanisms, and micro-foundations that actively shape acts of repair, regeneration, and protection of ecosystems at the organizational level, which allow for shedding light on a transformative change in the beliefs system and ways of seeing the world. The thesis applies configurational methods to address causal complexity, and inductive exploratory methods, based on informal interviews, ethnographies, and audio-visual methods, to uncover and theorize about new premises that build plausible ecological values, ecocentric principles, and regenerative practices at the organizational level beyond the sustainability paradigm.

The first paper proposes a conceptual framework with six interrelated building blocks that could be the explanatory basis for the "Regenerativism" phenomenon. Although Ecocentrism is a worldview that recognizes the intrinsic value in ecosystems and the biological and physical elements that compose them, Regenerativism is part of the ecological processes that connect ecosystems and the biological and physical elements spatially and temporally.

The second article allows us to elucidate ecocentric management approaches using one of the blocks proposed above in the framework of sustainability-as-flourishing. Configurational methods are used to offer a new conceptual apparatus and a systemic characterization of ecocentrism in business sustainability.

Finally, the third article interweaves three proposed building blocks to explore through an ethnographic study how regenerative organizations work and collaborate with non-human animals in acts of restoration and protection of nature. We call it: human-animal mutualism in environmental protection work, and our findings could shed light on the importance of understanding meaningful human-animal relationships to advance our knowledge of environmental protection and business sustainability more broadly.

Overall, the findings suggest Regenerativism, within the world of Ecocentrism, is reconnecting human systems and natural systems in acts of restoration, protection, and ecological regeneration. These results also indicate how the organizations that promote and lead *regenerativism*, an elusive approach until now, are capable of mitigating productivism and weighing it under planetary boundaries. The thesis further shows relevant, unique, and empirical evidence on ecocentric approaches to business management, and principles grounded on animal mutualism to restore and protect

patterns of vegetation, biological diversity, and the abundance of species. The findings result in a model that would allow exploring and uncover new micro-foundations based on a socio-ecological context and would allow contributing not only to transform our belief system and ways of seeing the world, but also to materialize regenerative environmental management actions beyond business sustainability practices that are still far from the zero impact that would characterize them as a sustainable enterprise

2 INTRODUCTION TO THE THESIS

One of the main avenues of thought concerning how human beings have interpreted the satisfaction of needs has been guided by a set of beliefs and principles that often associate consumption and material economic production, with the level of satisfaction, human well-being, and social valuation (Diener & Seligman, 2004; Costanza et al., 2007; Stevenson & Wolfers, 2008).

This belief system that flows from the economic discipline tends to downplay the legitimacy of any distinction between needs, preferences, or wants (Jackson, 2016). The assumptions related to consumer sovereignty, revealed preference, rationality, and insatiability, are part of strong anthropocentrism that dominate the economic modern thought, the free market, the invisible hand, and the idea of an economy that can grow "infinitely" in terms of GDP denying the willingness to accept biophysical limits to Growth (Meadows et al. 1972; Daly, 1991; Washington, 2015; Washington & Maloney, 2020).

Some articulate that accepting consumer sovereignty, and the idea of a strong and corrective market, could be one of the most reliable instruments to understanding human needs, entrepreneurial spirit, and even negotiating sustainability (Max-Neef 1991; Jackson et al., 2004; Royo, 2007; Jackson, 2016). In this sense, human systems would be, so, sovereign, autonomous, and insatiable consumers in their choices, playing a determining role in the quantities and characteristics of the goods and "satisfiers" produced and distributed in the market (Jackson et al., 2004; Royo, 2007).

The production systems, meanwhile, would be continually subordinate to the monotonously strict requirements of the consumer, who expresses his wishes and

preferences through decisions and consumption signals (Costanza et al., 2007; Royo, 2007). In this way, production systems would try to influence these decisions, not only through the creation of wishes, or the capture of surpluses, but also through state support to increase the production of consumer goods (or "satisfiers"), and justify them through high-demand projections (Royo, 2007).

This loop, between the "insatiability of the consumer" to satiate human needs, and the "increases in production" to provide "satisfiers" in an endless cycle (Daly, 1991), have made Productivism the predominant logic guiding human productive activities and accordingly the satisfaction of the needs and the life quality (Giddens, 1994; Wood, 2002; Heikkurenen et al., 2019).

Productivism is the belief that measurable economic productivity and growth are the purposes of human organization, and that "more production is necessarily good" (Henkel, 2015).

It quickly took hold in most of the contemporary welfare states that could be described as intimately productivist, since they saw in the ideological adoption of this cycle, an opportunity for growth and improvement in human well-being (Jackson, 2004; McGann, 2020). This would be satisfied thanks to an entrepreneurial spirit focused on the production of "satisfiers", and due to monotonously strict preferences, higher production of satisfiers will always be preferable to lower production of these. However, an increase in the production of "satisfiers" will not always necessarily be good, or will lead to well-being, because not all goods are destined to satisfy human needs. This context, then, seems to shape a considerable desire for the production of goods in themselves, limiting "human need" to the consumption of these, and embarking contemporary societies in a

meaningless productivist race to increase the consumption of satisfiers, productivity, and the capital of their organizations (Max-Neef, 1991).

From the perspective of sustainability, insatiability on the part of consumers, and productivism on the part of organizations as a means to material production and accumulate more and more wealth, has not only led to stress and burnout within productivist organizations but also to a problematic overshoot of the biosphere (Meadows et al. 1972, 2004; Foster et al. 2010; Harvey, 2014; Heikkurinen et al., 2019).

Although the ecological crisis is a complex phenomenon, it is usually reduced to the consequences of climate change, and not to the destruction/deterioration of ecological systems derived from a capitalist logic and an expanding industrial production, which puts additional loads on a fixed earth system to the point of overloading it planetarily, and pushing ecosystems towards an Inflexion point (Jackson et al., 2004; Klein et al., 2014; Steffen et al. 2015; Heikkurinen et al., 2019).

Some argue that an effective way to correct environmental overshoot is to produce and consume less, in material terms. However, neither alternative economic thinking, public policy, nor environmental counter-movements have been successful in radically transforming a productivist belief system, proposing an ecologically consequent ideology, and dealing with an alarming decline in biodiversity, increased biochemical fluxes, or major changes in terrestrial systems (Klein et al., 2014; Steffen et al. 2015; Ward et al. 2016).

These counter-movements such as decoupling, downshifting, circular economy, or bio-economy (among others) demand a rethinking of productivist activity, capital accumulation, business sustainability, and how human beings satisfy needs. However,

they are often ambiguous, bureaucratic, lack ecological ethics, or represent a "greener" or "lighter" option of capitalist material production (Ward et al. 2016; Heikkurinen 2018; Heikkurinen et al., 2019).

This has allowed small local movements focused on the flourishing of specific socio-ecological systems to manage an organizational transformation radically different from macro-environmental counter-movements. They do not condition the anthropocentric biospheric overshoot to the consequences of climate change, but rather, they address the ecological destruction that comes from productivist belief systems and excessive consumption as an opportunity for organic growth. Led by organizations whose principles are based on ecocentric values, biophilia, strong sustainability, and deep ecology, they propose an alternative way of thinking regarding the satisfaction of human needs and the reconciliation between organizations and natural systems.

To make sense, Branzei et al (2017) introduces the idea of Regenerative Organizations and define them as ecologically-embedded businesses that restore and regenerate degraded natural ecosystems and build resilience in and improve the wellbeing of the communities relying on such ecosystems (Branzei et al. 2017; Muñoz & Branzei, 2019). They use Regenerative Development as a methodology of reconciling, harmonizing, and place-based approach, with a holistic ecological worldview, and that takes a whole living systems approach and works towards intrinsically regenerative sustainability (Rhodes, 2017; Gibbons et al., 2018).

This dissertation is particularly motivated by how these organizations have begun to reconfigure the idea of productivism that merely focuses on accumulation and growth,

which in turn responds to excessive consumption demands to satisfy absurd needs, and destabilizes essential ecological balances to ensure the flourishing of life.

This thesis explores throughout different dimensions, the underlying logic that guides the purpose, being, and doing of these organizations. We explicitly addressed the gap of an elusive belief system so far. We label this philosophical approach Regenerativism, defining it as the belief that place-restoration, ecological engaging, and protection of life support systems are the inherent action and responsibility of the human organization and the main purpose for a socio-economic activity. Through an exhaustive literature review, we put forward six interrelated building blocks that lay out the foundations of this thesis. Through i) ethics of care, ii) mutualism co-evolutive, iii) nature relatedness, iv) human-nature engaging, v) active restoration, and vi) protection of ecosystems, we explore principles, mechanisms, and micro-foundations that are the center of this work, and that chapter 1 addresses in greater depth.

The interrelation between the six blocks, we argue, can explain this ideology, allow diving into aggregate dimensions that we define as "Being in the place", and that includes: ecological ethics, co- evolutive mutualism, and nature relatedness; and "Doing in place", and that includes: environmental protection, engaging, and ecological restoration, to shed light on a transformative change in the belief system, human need, material reduction, and ways of seeing the world.

Regenerativism is embedded in the broader notion of Ecocentrism, reflecting a worldview that recognizes the intrinsic value in all life forms and ecosystems themselves, including their non-living physical and chemical components in the ecosystem. Although Ecocentrism is a worldview that recognizes the intrinsic value of ecosystems and the

biological and physical elements that compose them, *Regenerativism* is part of the ecological processes that connect ecosystems and biological and physical elements spatially and temporally.

In this way, the proposed building blocks would allow addressing, First, an ecological ethic that intercedes against the destruction of ecosystems induced by Anthropocene to preserve and protect living systems, their needs, and intrinsic value; Second, to address the coevolutionary mutualism between human systems and natural systems, which allows satisfying human needs for mutual benefit both for the organization and the system in which it inhabits; Third, to recognize at least three types of relationship that arise at an affective, cognitive and experimental level between the coupling of human systems, their organizations and ecosystems; Fourth, engaging, create awareness, and commit to natural systems and cycles beyond the challenges of ecological sustainability and environmental management; Fifth, develop active ecological restoration practices in view of ecological succession, especially in highly deteriorated and fragmented ecosystems; and finally, Sixth, protect those life support systems and those living systems that allow the creation of favorable conditions for life and the regeneration of ecosystems or nested subsystems.

The thesis, therefore, focuses on those interrelated blocks to try to explain a multidimensional phenomenon that nourishes a worldview between ecological systems and the organization, not only to transform the conception of human needs but also to regenerate the environmental overshoot induced by it. In doing so, the thesis explicitly simplifies the more complex panorama of dimensions that could also be explaining *Regenerativism.* The overall objective, therefore, was to explore an ideological

phenomenon that underlies organizational sustainability practices based on active restoration, natural regeneration, and environmental protection, and that could potentially modify our belief system and ways of seeing the world.

The objective of the first chapter is to broaden this discussion and lay the conceptual foundations for the development of this thesis. This allows Chapter 2 to approach through inductive reasoning, and attempt to infer general premises from particular premises. While Chapter 3, approaches abductive reasoning that goes from data to compression, to offer a tentative "first suggestion" of the observed pattern or phenomenon.

Chapter 1 briefly addresses the origin of productivism, its ecological impact, and some counter-movements that try to soften its implications. Then we focus on Regeneration, Regenerative Organizations, and how they challenge productivism. We also present the conceptual framework of Regenerative Development, some illustrative cases, and *regenerativism* as an integrative framework that interrelates six building blocks, and that would allow us to advance and contribute towards a holistic ecological worldview, and a transformative and intrinsic organizational change.

Through an inductive approach, the second chapter draws on the ecological ethical dimension to unpack principles of deep ecology and strong sustainability, and thus mold profiles of Ecocentrism at the business level. It should be noted that this chapter has a version published under the name: Reformists, Decouplists, and Activists: A Typology of Ecocentric Management, in the Organization & Environment Journal.

Taking Ecocentrism as the broadest term for world views that recognize the inherent value in all life forms and ecosystems themselves, our results allow us to rethink the current understanding of organizational needs and liberties, which could shape business

sustainability strategies nature-based, and that would prevent/mitigate critical environmental aspects, and manage systemic and multidimensional dilemmas inserted in the cultural and social bases. We propose three configurations of conditions that could explain ecocentric thinking and decision-making in management. These results provide valuable contributions to challenge lifestyles that according to productivism and excessive consumption characterize modern societies, and corrective markets that "advance" in sustainability through the analysis of externalities and environmental compensations.

Starting with abductive reasoning, Chapter 3 provides a particularly novel approach to explore *regenerativism* as an emerging and poorly understood phenomenon, in which existing theories may be inappropriate or complex to apply, given the nature of the phenomenon, the context, or the research objectives (Robinson, 2019).

This type of research is "pre-theory" in nature, usually beginning with a hunch, a question or results based on observation, or simple logic, but eventually develops plausible explanations for them, and in doing so expands and enriches theory (Robinson, 2019). This allows the research work carried out by Chapter 3 to be able to interrelate the blocks proposed above, and through an ethnographic study contribute to the debate on environmental protection, which has been approached by a dualism between command-and-control and business agreements, and has neglected nature as a focus of protection in itself. We proposed to explore in this chapter: how is environmental protection seen, experienced, and enacted on the ground by organizations interested in looking after nature? In doing so, we discovered a unique form of collaboration, which is organically formed between the organization and non-human animals to restore and protect nature

and is actively maintained through mutual rewilding, relational ambivalence, and interdependence of tasks.

Overall, the thesis contributes in a holistic and detailed way to the growing field of nature-based organizing, regenerative development, Ecocentrism, sustainability-as-flourishing, and organizational sustainability practices focused on ecological restoration and environmental protection. Exploring *Regenerativism* as an ideological phenomenon constitutes a more generalized contribution to the valuable intersection between management sciences, business sustainability, and natural sciences (Whiteman et al., 2013). More broadly, the thesis offers explorations, constructs, and the examination of a promising ideology that could mediate the parallelism between organizational stress and environmental overshoot. First, *Regenerativism* conceptualization constitutes the basis for the search and analysis of gaps, spaces, dimensions, building blocks, and nature-based solutions that can explain and contribute to the ecocentric ideological formation based on the place, on the ecological engaging, material reduction, and the protection of life support systems as a mutual means for the satisfaction of human needs. Second, reordering principles and characteristics of a hitherto uncertain and unknown puzzle about ecocentric management profiles could encourage the adoption of environmental behaviors and ecological identities in business sustainability and environmental management more broadly.

The framework offers a systematic characterization of ecocentric thinking in business sustainability, laying the foundation for a new appreciation and understanding of sustainable decision-making. By providing an empirical typology capable of accommodating different ecocentric approaches in a management context, at least three

unique ways in which ecocentrism materializes and distinctly departs from more traditional anthropocentric environmental thinking and decision making are revealed. Finally, the thesis also contributes to revealing a nature-led approach to the protection and restoration of the environment, three unique mechanisms at the organizational level that connect humans and animals and to build channels of a pre-theory nature to explore emerging and disruptive phenomena at the intersection of organizational and environmental sciences. Through them, the thesis offers an alternative and grounded vision of organizational management for the restoration, protection, and regeneration of ecosystems. This particular work makes it possible to contribute not only to the need for ethnographic studies, field practices, and in the search for new alternatives for business sustainability, but also opens the door to interdisciplinary and transdisciplinary research focused on environmental work, that is, the collaborative and multidimensional actions that will allow us to modify our belief system, and the ways of approaching sustainability in the Anthropocene.

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3 Chapter 1: Productivism and regeneration: Overview and a conceptual framework

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3.1 Abstract

The management productivist philosophy to satisfy human needs and respond to the insatiability of the consumer has been widely criticized for an excessive emphasis on growth, material production, and overshoot of ecological limits. The commodification of nature, arbitrary use, carbon overshoot, and human-induced loss of biological diversity, have sharply modified the dynamics of ecosystems, resilient capacity, and consequently the self-regeneration of socio-ecological systems and living systems in general. Some counter-movements attempt to provide alternative routes of production. However, they are often questioned for being less radical alternatives, for a weak engagement between business sustainability and nature, lacking in ecological ethics, and for reducing the Anthropocene to climate change effects and not ecosystems destruction. We address this gap in the literature to propose regenerative development as a place-based reconciliation and harmonization change methodology that nurtures a holistic ecological worldview,

takes a whole living systems approach, and works towards inherently regenerative sustainability.

Materialized through a nature-based organization, we address the ecocentric ideological phenomenon that underlies business sustainability practices, we call it *regenerativism*, and we propose six building blocks that will allow us to move away from productivism, and move towards a change in the belief system and socio-ecological flourishing.

3.2 Introduction

The quality of human life can be understood as the function of both the level of human needs satisfied and the degree to which individuals or organizations are satisfied with this level (Costanza et al., 2007). How humans have interpreted the satisfaction of needs, and consequently the life quality, has been guided by belief systems and principles that often associate consumption and material economic production, with the level of satisfaction, subjective well-being, and social valuation (Diener & Seligman, 2004; Costanza et al., 2007; Stevenson & Wolfers, 2008).

This belief system that flows from the economic discipline tends to downplay the legitimacy of any distinction between needs, preferences, or wants (Jackson, 2016). The assumptions related to consumer sovereignty, revealed preference, and insatiability, are part of strong anthropocentrism that dominate the economic modern thought, and shaping production systems to materially satisfy human need, consumption patterns, and productivity (Washington, 2015; Washington & Maloney, 2020).

This trade-off, between the "insatiability of the consumer" to satiate human needs, and the "increases in production" to provide "satisfiers", have made Productivism the predominant logic guiding human productive activities and accordingly the satisfaction of the needs and the quality of life (Giddens, 1994; Wood, 2002; Heikkurenen et al., 2019). Productivism is the belief that measurable economic productivity and growth are the purpose of human organization, and that "more production is necessarily good" (Henkel, 2015).

This philosophy has shaped management practice leading to increments in industrial output, high demand projections, and excessive behavior patterns. Also, to intensive ecological unbalances (Sage & Kenny, 2017), since the relationship between production growth and satisfaction of human needs and social order (Stevenson & Wolfers, 2008; Biggeri et al., 2018), discounts the effects on natural ecosystems (Rosin, 2013). The latter calls into question not only the productivist logic underlying the satisfaction of human needs, but also the degree to which individuals, organizations, and companies have agreed with those ideas. This notion has been widely criticized for adopting parallelism between environmental overshoot and mental burnout in individuals and organizations, anchor life quality, and human development measures unilaterally to excessive increases in production and consumption, and arbitrarily deteriorate ecological systems to satisfy human needs and productive demands (Whiteman et al., 2013; Steffen et al., 2015; Gibbons et al., 2018; Heikkurinen et al., 2019).

The emergence of social and ecological counter-movements is not surprising, which have put forward ideas and frameworks such as decoupling, circular economy, bio-economy, or socio-ecological resilience. They call for a fundamental rethinking of

productive activity, and in the way in which human needs are satisfied. However, while these ideas have the potential to substantially alter the traditional productivist paradigm, they have also been criticized for questionable assumptions about linearity and place-homogeneity, nature commodification, notions lacking in ecological ethics, and an unclear engagement between how organizations and companies satisfy needs without depending on productivism and its ecological impact (Evans et al., 2002; Basurto & Ostrom, 2009; Wilson & Burton, 2015; Growther et al., 2018; Wu et al., 2019; Heikkurinen et al., 2019).

This has allowed small local movements focused on the flourishing of specific socio-ecological systems to manage an organizational transformation radically different from macro-environmental counter-movements. They do not condition the anthropocentric biospheric overshoot to the consequences of climate change, but rather, they address the ecological destruction that comes from productivist belief systems and excessive consumption as an opportunity for organic growth.

Grounded in principles and values of biophilia, strong sustainability, deep ecology, and regenerative development, these ideas have been mostly propelled by movements, disciplines, and ecologically-embedded organizations deeply engaged with restoration, regeneration, and the protection of natural ecosystems (Branzei et al. 2017; Rhodes, 2017; Gibbons et al., 2018). They see the satisfaction of human needs as necessarily based on a mutualistic and intimate relationship with nature (Wilson, 1984; Kellert & Wilson, 1995; Simaika & Samways, 2010). These new movements, organizations, and ecologically-embedded businesses call for a fundamental rethinking of the productivist notion and seem to propose a new logic. This logic, which resonates with core ideas being

articulated in the sustainability-as-flourishing debate and ecosystem restoration, is yet to be unpacked.

In this dissertation, we seek to take stock of the evolution of productivism, reflect on criticisms and the role of counter-movements, and look ahead as the field begins to witness the emergence of new "nature-led" logics of production to satisfy the needs of humans, which we call *regenerativism*. The present dissertation focuses its attention on spaces and notions proposed by nature to materialize production logic at discrepancy with traditional ideologies. In doing so, the thesis sheds light on how to understand, recognize and adopt mechanisms of work guided by nature, to guarantee and promote a coherent and realistic purpose regarding a contradictory and unsustainable economic activity.

In this introductory chapter, we will first offer an overview of the evolution of production logic, from productivism to recent ecological counter-movements. Following, we draw on ecocentrism, nature-based organizing, and regenerative development to elaborate a conceptual framework comprising six building blocks that we argue underlie *regenerativism*. The framework lays the ground for the empirical work conducted in chapters 2 and 3, which we summarize in the closing of this introductory chapter.

3.3 Productivism: Promises and pitfalls

3.3.1 Logics of production

Productivism is the belief that measurable economic productivity and growth are the purposes of human organization, and that “more production is necessarily good” (Wilson, 2001; Henkel, 2015). It was originally conceptualized in the agricultural sector, associated

with the productivist regime industrially-driven (PAR), state support, intensive agriculture, and increases in crop per hectare productivity (Lowe et al. 1993; Shucksmith 1993; Wilson, 2000).

It quickly became established in most contemporary welfare states that could be classified as intimately productivist, since they directly adopted the ideological spirit on the satisfaction of needs via consumption, social security, and the organizational participation of the market, to consequently stimulate the commercialization of work, intensive production, and growth in employment sources (Jackson, 2004; McGann, 2020).

As ideology became internalized and materialized in developed and developing economies, it caused that much of the measurement instruments regarding the calculation of technical efficiency, the marginal productivity of capital, labor, or real wages, built and derived from standards and neoclassical frameworks, which often suggested economically productivist indices to measure and parameterize productivity activity, growth, organizational result, and consequently human development (Schreyer & Pilat, 2001; Petrin & Levinsohn, 2012).

For this reason, it is habitual to find causal relationships between productivist objectives and socio-economic objectives subordinated to market growth, which through discursive, psychological, and institutional processes and mechanisms, motivate the ideological and business spirit in the achievement of a better quality of life and social development (Edwards, 1998; Schreyer & Pilat, 2001; Nicoletti & Scarpetta, 2003; Azam, 2019; McGann, 2020).

The main theoretical and empirical constructs in economics, management, or business areas have built on those foundations, usually recommending a political-economic-business integration to make growth compatible, consumer insatiability, investment, and continuous development of human capital to capture benefits derived from notions anchored to expansion, and encourage and contribute towards the efficient development of markets and business productivity (Bleischwitz, 2001; Kocher et al., 2006; Costantini & Monni, 2008, Balk, 2008; Petrin & Levinsohn, 2012; Sickles & Zelenyuk, 2019).

These nuances have made growth-oriented philosophies the main tool to satisfy human needs and enjoy those underlying liberties, guiding beliefs and social principles that have been established as the dominant force, and determinant feature of the global economy for over a century (Victor & Dolter, 2017; Jackson, 2019).

Despite their incidence and ideological adoption in a large part of world economies, productivist measures are often questioned due to their excessive emphasis on parameters of competitive behavior, unbridled attempts to reach production standards, little heterogeneity between sectors and organizations, and strong assumptions about the type of sector performance (Balk, 2008; Rangelova, 2008; Petrin & Levinsohn, 2012; Rada & Fuglie, 2019).

Without going too far, the well-known green revolution, and which gives rise to productivist notions in the agrarian sector focused on the intensification and crops production to alleviate famine and production problems, stimulated sectoral competitiveness, assumed homogeneous behaviors and structures, and promised to meet immediate needs. This created a strong dependence on agricultural practices

towards high-yield crops, inputs, pesticides, and synthetic fertilizers that do not generate productivity without their application. And although a large number of people and farmers managed to meet needs in the short term, many others (to this day) present considerable deficiencies in vitamins and essential nutrients, in addition to causing irreparable damage to ecosystems exposed to those pollutants (Singh, 2000; Rhodes, 2017; Harwood, 2020).

As a result, the context begins denoted a considerable deficiency, particularly in the agricultural sector, on how productivism adhered to and intricate itself in a collective system of beliefs and forms of production that conditioned productive development, the human psyche, and consequently, the complex interrelationships of the environment (Heikkurinen et al., 2019). Progressively, productivist welfare states not only began to see business insertion and participation in the market as the end of welfare provision but also deploy their mechanisms and social services to facilitate them and meet the monotonously strict demands of the consumer (Royo, 2007; Kozák, 2020; McGann, 2020).

These mechanisms and services could be highly questioned for promoting a "mandatory" economic and productive dependence, since many societies, economies, and especially small organizations, factory workers, and farmers, depend precisely on productivism because a large part of the labor conditions and even the institutional incentive mechanisms unilaterally lead to that function, and it ends up being anchored as the main economic sustenance to satisfy basic needs and improve the quality of life (Spash, 2017).

Productivism as a system of fundamental ideas, which define and support collective principles and beliefs to lead the satisfaction of prosperous needs, and create well-being

through productive gears is modifying the society's thought-action, entrepreneurial spirit, and political decision making.

Jackson (2019) for example, argues that the rising inequality and political instability are a direct consequence of continuing to cling to the ‘growth fetish’, at a time when economic and ecological fundamentals are pointing in a different direction (Jackson, 2019).

In this context, the challenge is not to ‘turn growth off and productivity’, but to recognize there are limits to growth, protect social progress, environmental integrity, and justice mechanisms.

For this reason, the notion of limits to growth deeply has criticizes the traditional production logic, excessive consumption, and the current systems oriented to growth and global productivity, which defy the carrying capacity of the planet, and hinders to maintain the system within its limits (Meadows et al., 2004).

From the sustainability perspective, it is the same notion that is classified as an intensive human disturbance in change-ecological approaches, which frequently pushes planetary boundaries, and modifies the stability, resistance, and resilience of complex socio-ecological systems and living systems in general (Walker et al., 2004; Jackson, 2017; Molles & Sher, 2018; Bowles et al., 2019). Regardless of the approach, productivist notions in welfare states have transformed cultural norms and values into growth, consumption, and market-oriented beliefs. The productivist principle, of having higher performance, often underlies both burnout and overshoot in the organizational context, ignoring finite resources of the human psyche, the boundaries of the environment, and the natural regeneration rates (Knudsen et al., 2010; Heikkurenen et al., 2019).

3.3.2 Ecological tensions and complications

The satisfaction of human needs and the creation of well-being, entails inevitably the alteration of the basic functions of ecosystems, changes in the composition of species, the flow of energy, and the chemical cycle (Whiteman et al., 2013; Steffen et al., 2015).

From an ecological perspective, much of the composition and structure of ecosystems concerning their viability, vitality, and evolutionary capacity, has been modified at different levels of incidence given excessive consumption and productivity activity (Gibbons et al, 2018). This affects the level of self-organization in a system, and also those conditions that allow improvement in the resilience and self-regenerative capacity thereof (Holling, 2004; Gibbons et al., 2020).

Industrialized forms of agriculture, deforestation, manufacturing, and dependence on the use of fossil fuels in our production process, have released incalculable amounts of carbon into the atmosphere, triggering cascade effects that contribute to global climate change, changes in the water cycle, droughts, floods, and consequently melting of polar ice caps (Hooper et al., 2005; Ricklefs & Relyea, 2014; Lewis & Maslin, 2015).

The consumption-production cycle has become the main threat to the biological biodiversity of the biosphere under the Anthropocene framework, and it seems that no corner of the world is intact (Ruddiman, 2013; Lewis & Maslin, 2015). Subsumed from by conventional and industrialized agriculture, to increased burning of grasslands and tropical forests for livestock and mining purposes, many species have barely managed to survive in a fraction of their previous ranges and in increasingly fragmented landscapes (Chapin et al., 2002; Hooper et al., 2005; Cushman, 2006; Rhodes, 2015; Barrowclough et al., 2016).

Pollutants derived from the productive activity are capable of being transported for thousands of kilometers through the atmosphere, modifying living systems in their composition, structure, and deliberately polluting both poles of the Earth (Yang et al., 2019; Henao et al., 2020).

Proposing limits to productive activity has been an important step forward. The planetary boundaries framework -for example- is a scientific approach to identify the processes that regulate the Earth system state and propose limits so that these processes maintain a state similar to the Holocene (Rockström et al., 2009; Rockström et al., 2018).

These biophysical frontiers attempt to strategically persuade societies, organizations, and economies, in general, to maintain a safe space for living and thriving. However, we see with concern how our belief system and behaviors based on industrialization and excessive consumption, seem to continue destabilizing certain thresholds such as the cycles of nitrogen, phosphorus, natural regenerative rates, and the increasing loss of biodiversity (Steffen et al., 2018).

The latter can be considered as one of the main ecological tensions proposed by productivism (Samper, 2009; Rogers et al., 2017). When biodiversity decreases, for example, a reduction in species diversity resulting from habitat loss and fragmentation, we would expect the diversity of trophic networks and links to decrease as well, with potentially less diverse and strong links (Metcalf et al., 2015; Venter et al., 2016). This can create ecosystems that are less resistant to disturbances, and more vulnerable to destabilizing changes. When an ecosystem experiences a significant disturbance, such that the recovery and restoration process is complex, it is considered to have crossed a

threshold or a tipping point (Sterling et al., 2003; Sterling et al., 2010; Libralato et al., 2019).

Unfortunately, it seems that we have crossed more than one inflection point, or we are very close to it since the ecosystems that are especially vulnerable to the biodiversity decreases given the loss and fragmentation of habitat, are precisely those with the greatest demand for human-productive use, such as the roads construction, houses, industrial production plants, livestock, and agriculture in general.

Natural landscapes have been modified to such an extent that organisms, populations, communities, and complete ecosystems have no longer been able to survive there, fragmenting and subdividing natural biomes into increasingly smaller landscapes that are poor in biodiversity (Lehtinen et al., 1999; Schmiegelow and Mönkkönen, 2002; Hooper et al., 2005; Ricklefs et al., 2014).

This contradictorily leads to a paradox of satisfying needs by providing ourselves with nature, while nature is deteriorating to satisfy needs.

When the habitat is fragmented, those species that depend on it not only lose part or all of their distribution area, but also face new risks of exposure, invasive species, and human overexploitation. Likewise, habitat fragmentation also isolates communities and populations, interrupting the dispersion and migration of genetic material, plants, and animals across a landscape (Lehtinen et al., 1999; Cushman, 2006; Molles & Sher, 2018).

These consequences show those ecological tensions derived from notions and beliefs not only destabilizes biological cycles by destroying and restricting natural conditions of an ecosystem through overexploitation, arbitrary use of nature, and needs and liberties restrictions, but also by introducing artificial processes and invasive species

into economic activities such as transportation and trade, pollutants discharged to interfere with vital processes such as reproduction or immunity, and a climatic variation that causes changes in vegetation patterns, distribution species, and seasonal cycle maladjustment (Brown & Timmerman, 2015; Rhodes, 2017; Steffen et al., 2018; Woodhead et al., 2019).

3.3.3 Emerging counter-movements

Productivist principles to guide the quality of life, and the ecological tensions that derive from this, have triggered multiple counter-movements, disciplinary debates, and new approaches to rethink the productive activity and the satisfaction of needs. Much of the productivist notions oriented to growth and accumulation seem not to converge with ecological economics principles, as well as with most constructions relating to sustainability, such as green economics, circular economy, bio-economy, doughnut economics, or socio-ecological resilience.

For ecological economists, for example, the vision of the earth is that of a thermodynamically closed and nonmaterial growing system, with the human economy, their organizations, and production activities as a subsystem of the global ecosystem. Sustainability needs satisfaction, and well-being creation should thus be defined according to ecological, rather than economic criteria (Costanza et al., 1997; Harris & Roach, 2017).

In that sense, decoupling, for example, challenges the notion of economic growth dismounted from environmental impact, and shows that growth cannot ultimately be

dissociated from growth in the use of materials and energy (Jackson, 2009; Ward et al., 2016).

The green economy is the one that results in “improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities” (UNEP, 2013; Chang et al., 2017). Circular Economy continues to gain ground among policymakers and firms in Europe, China, and other places in the world (Korhonen, 2018; Schröder et al., 2019). They continually position it as a new environmental paradigm, and Korhonen (2018) definition: *Circular economy is an economy constructed from societal production-consumption systems that maximizes the service produced from the linear nature-society-nature material and energy throughput flow. This is done by using cyclical materials flows, renewable energy sources and cascading -type energy flows*; It has been valued by various academics (Geissdoerfer et al., 2017; Korhonen, 2018; Millar et al., 2019; Suárez-Eiroa et al., 2019).

The Bio-economy comprises those parts of the economy that use renewable biological resources from land and sea – such as crops, forests, fish, animals, and microorganisms – to produce food, materials, and energy (European Commission Research and Innovation, 2018; Giampietro, 2019). Doughnut Economics is an economic model used to measure the performance of an economy, at the same time people meet their needs without overshooting Earth's ecological ceiling (Raworth, 2017).

The idea of socio-ecological resilience brings into the debate of production the notions of adaptation, learning, and self-organization, in addition to the general capacity to resist disturbances. In this sense, socio-ecological resilience involves 1) the amount of disturbance a system can absorb and remain within the same state or domain of

attraction; 2) the degree to which the system is capable of self-organization; and 3) the degree to which the system can build and increase the capacity for learning and adaptation (Gunderson and Holling, 2002; Folke, 2006).

It should be noted that they are not the only disciplines and conceptual frameworks that emerge and are consolidated in the face of productivist perspectives. Some emphasize the specific potential of each approach, the need to integrate multidisciplinary research, and define a common framework on long-term sustainable transition (Geissdoerfer et al., 2017; Chang et al., 2017; Korhonen, 2018; Millar, 2019; Singh et al., 2019; Monkeelbaan, 2019; Giampietro, 2019), while others argue that they are only discursive strategies, that the inherent value of nature is not recognized, little flexibility concerning their applicability and impact in a specific place, and even desperate attempts to re-establish economic growth patterns (Lele, 1991; Anderson, 2009; Sneddon et al., 2002; Growther et al., 2018; Wu et al., 2019; Giampietro, 2019).

Table 1: Main characteristics that differ from productivism

Counter movement	General characteristics and discrepancies with productivism
	- Ecological economics was founded upon the importance of placing the economy within its biophysical limits while recognizing the need for the conduct of human society to respect others both present and future, human and non-human (Spash, 2017). - In economic theories of production and consumption, compensation and substitution reign supreme. Not so in ecological economics, where diverse

Ecological Economics	standards of value are deployed 'to take Nature into account' (O'Connor & Spash, 1999). - In contrast to the economic orthodoxy, the aim of societal transformation to a more just, equitable, and environmentally benign system involves a realization of the need for deconstructing the current capital accumulating, energy-intensive, materialist, hedonic system and the academic economics that provides it with supporting rhetoric (Martinez-Alier & Muradian, 2015). - Transdisciplinary work, pluralism, and a holistic vision of the world are fundamental to face environmental problems. Nature is the life support of humanity, and it has a value on its own, regardless of its use or utility to humans. Issues of inter-and intergenerational equity and distribution are critical (Baumgärtner, 2008; Costanza, 2020).
Circular Economy	- Circular economy is an economy constructed from societal production-consumption systems that maximizes the service produced from the linear nature-society-nature material and energy throughput flow. This is done by using cyclical materials flows, renewable energy sources and cascading -type energy flows. Circular economy limits the throughput flow to a level that nature tolerates and utilizes ecosystem cycles in economic cycles by respecting their natural reproduction rates (Korhonen, 2018). - Focuses on stock optimization. Has a structure of three loops: reuse and re-marketing for goods, product-life extensions for goods and a recycling loop for molecules (Stahel, 2013). - The value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste is minimized (EC, 2015a). - An economic and industrial system based on the reusability of products and raw materials, and the restorative capacity of natural resources, which also

	attempts to minimize value destruction in the overall system and to maximize value creation in each link in the system (Bastein et al., 2013).
Green-Economics	- The United Nation Environment Programme (UNEP) defines a green economy as the one which results in "improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities". - According to the Economic and Social Commission for Asia and the Pacific (ESCAP) of the United Nations, green growth is a prerequisite for building a green economy in the context of sustainable development and poverty reduction (Chang et al., 2017). - The core assumption of green growth is that currently environmental progress cannot be separated from economic growth and development. Green growth results from the investment in the upgrading of the entire production system to environmental and resource-saving processes and products (Jänicke, 2012).
Bio-Economy	- Bio-economy comprises those parts of the economy that use renewable biological resources from land and sea – such as crops, forests, fish, animals, and microorganisms – to produce food, materials, and energy (Giampietro, 2019). - Some differentiate three types: I) An ecological economy that is compatible with the biosphere; II) A science-based economy driven by industrial biotechnology; III) A biomass-based economy. Social actors concerned with the lack of sustainability of the present path of economic growth call for a "mission-driven" bioeconomy, to contribute to ecological transition using input substitution as a lever for the transformation of production and consumption modes (Vivien ET AL., 2019).

Doughnut Economics	- The objective of economic activity should be to satisfy everyone's basic needs and to do so in balance with the planet. - It consists of two concentric rings: a social base, to guarantee basic needs, and an ecological roof, to guarantee that humanity does not exceed the limits of the Earth (Raworth, 2017). - This model suggests that instead of an economy that depends on that indefinite expansion, what is needed are economies where progress is a balance between what people need to satisfy their needs, and preserve their rights within the framework of the resources that the planet has (Raworth, 2017).
Socio ecological resilience	- First, resilience was described as the ability for a natural system to tolerate change (Barnes, 2013). - Socio-economic systems rely on ecological systems for daily survival, for larger economic activities, as well as for cultural and/or recreational purposes. Conversely, ecological systems are impacted by the way socio-economic systems use, regulate and manage them (Gómez et al., 2016). - Resilience interlinkages both systems. It became a lens through which one would assess not only the capacity of a system to maintain its functions, but also its “capacity for renewal, re-organization and development” (Folke et al., 2010). - Resilience thinking focuses on “strengthening the ability to deal with uncertainties and surprises, rather than attempting to control nature” or to maintain the state of a system at all costs. This means that “resilience provides for adaptive capacity”; to be resilient, a system needs to be persistent, adaptive and transformable (Folke et al., 2010; Ebbesson & Hey, 2013; Blanchard et al., 2019).

The same happens when we analyze the productivist notion in the agricultural sector. Post-productivism, neo-productivism, sustainable productivism, non-productivism, multifunctionality, and others, are part of the discussion about sectorial change (Pelucha & Kveton, 2017).

Post-productivism has been recognized as a kind of counterpart of productivism. This notion was conceptualized as philosophically distinct and multidisciplinary. While promising, the transition debate has been dominated by economic policy and structuralist approaches, providing only partial responses to the main challenges of the agricultural sector and modes of production more broadly (Wilson, 2001; Walford, 2003). Likewise, the sustainable productivism approach was born from the joint pressures of climate change and population growth. And the same line, two approaches have attempted to delineate the neo-productivism idea. First, an actor-oriented spatial-temporal perspective that focuses mainly on geographical and temporal-historical characteristics in the adoption of neo-productivist actor spaces. Second, structuralist interpretations which see neo-productivism predominantly as a response to macro-political regime change (Lowe et al., 1993; Whitby & Lowe, 1994; Wilson, 2000; Evans et al., 2002; Wilson & Burton, 2015; Pelucha & Kveton, 2017; Juntti & Downward, 2017).

Regardless of the approach, we argue that each framework is essentially relevant to the debate on sustainability-as-flourishing, to protect and restore ecosystems, rethink the belief system and needs satisfaction, and transform ecological values into collective values. We highlight the urgency of each counter-movement to address productivist demands that often run counter to objectives of ecological conservation, protection, and restoration in living systems. Failure to do so may continue to contribute to exceeding

ecological thresholds that can have highly synergistic and complex effects to separate. Therefore, protecting the needs and liberties of biological diversity, regardless of the type of organism or living system, is crucial to comply with conservation and restoration policies. New approaches explicitly emphasize the role of people, organizations, and companies in ecological restoration, including concerns about equity and how people are incorporated into nature, get organizationally involved, and actively shape new and novel ecosystems.

3.4 The emergence of regenerative organizations: Challenges to productivism

Branzei et al (2017) introduced the idea of Regenerative Organizations articulated to the emerging regenerative development framework. These: are ecologically-embedded businesses that restore and regenerate degraded natural ecosystems and build resilience in and improve the wellbeing of the communities relying on such ecosystems (Branzei et al. 2017; Muñoz and Branzei, 2019).

Instead of operating under the assumption that negative externalities need to be minimized (mitigation), and that companies should focus on lowering the risks–to-business posed by climate changes (adaptation), these firms are advancing an alternative business approach through which climate change issues are directly tackled by the firm, effectively reversing the direction of the so-far unsuccessful business-environment relationship.

Regenerative organizations can extend their purpose outside the market, and pay attention to complex ecological dynamics at different time and space scales. The main mission does not seek profit maximization, but other forms of regenerative growth, such

as spiritual development, and healing on behalf of the individual entrepreneur, communities, and socio-ecological systems (Muñoz and Cohen, 2017; Bansal et al., 2018; Vlasov, 2019).

The deep and intimate exchanges between regenerative organizations and living systems have triggered an ethic of care and an ecological worldview capable of prioritizing and protecting biological diversity, facilitating ecological succession, and engaging through specific micro-dynamics of the place, to commit to a sustainable restoration, and a long-term socio-economic activity (Muñoz and Cohen, 2017; Quarshie et al., 2019; Slawinski et al., 2019; Vlasov, 2019).

The living systems approach that guides the purpose of those organizations conceptualizes business sustainability in terms of regenerative business, developing business and socio-economic strategies that allow unfolding specific scales in restoration, preservation, and ecological enhancement (Hahn & Tampe, 2020).

Clearly, the ideological system that guides the regenerative organizations' purpose differs considerably from those more classical productivist beliefs and mechanisms. They are capable of facilitating and providing suitable conditions to sow life, especially in ecosystems highly fragmented and degraded by the human concept.

Facilitating and conducting restorative work precisely depends on the characteristics, size of the system, and the organization's purpose. Can be local regenerating solutions (e.g. improve soil quality, watercourse, increase biodiversity); systematic regenerating solutions (e.g. regeneration of networks, relationships, evolutionary capacities); and systemic regeneration of field of endeavor, e.g. organizational movements, larger ecosystems (Rhodes, 2017; Dias, 2018).

Regeneration invites us to protect the socio-ecological systems that surround us and give vital support to our activities. Nature-based organizing is reconciling and harmonizing the functioning of human/social systems with natural systems to satisfy needs in harmony. It seems that these examples revert that organizational belief, where production and growth are the only purposes of human organization for needs satisfaction and well-being creation. If so, we could be witnessing a different production logic, engagement to biological diversity, and the regeneration of highly degraded ecosystems. Could we talk about a new sustainability logic called "*Regenerativism*"? If this is the case, conceptual development and further empirical examination is required.

3.5 Regenerativism: Conceptual development

3.5.1 Three illustrative cases

Before delving into the conceptual elaboration of regenerativism, in this section we will offer an empirical illustration, comprising three cases from "Stories of Regeneration" (Muñoz & Hargreaves, 2020), providing insights into the uniqueness of regeneration as an alternative ecological approach. They are characterized by a recognition of nature as part of human co-evolution, by an explicit, mutualistic, and beneficial dependence for human, natural, and living systems in general. They point to transformational rather than incremental changes. They visualize the satisfaction of needs as a respectful and responsible act with who it provides abundance and thriving.

El Reinal (Chile). To the south of Chile is Fresia, a commune with privileged climatic and geographical conditions. Fresia is an area of fruitful soils with abundant and unique

biodiversity in the world. The Undurraga family, who bought their first field in that area for livestock purposes, was not satisfied with the current lifestyle of the city, and they founded "El Fundo El Reinal" (https://www.elreinal.cl/). Matías Undurraga, committed to his family, to the soil, and to the animals, gradually became part of the livestock industry. Following his intuition, Matías introduces the first changes in the production system. He eliminated the use of agrochemicals and herbicides in the field, the animals stopped receiving growth hormones and corn grains as a food supplement, and natural grass began to be their only source of food. They were the beginnings of what, years later, he would know as Holistic Management. In his search for a new agricultural-livestock production system, Matías came across the work of Allan Savory, founding ecologist of the Savory Institute. Savory's proposed system seeks to combat desertification and reverse the effects of climate change. Savory is convinced that herded and constantly moving cattle, imitating ancient herds and predators, is the only option to regenerate degraded ecosystems. This is holistic grazing planning, which takes into account environmental, social, and economic variables. Holistic management is capable of regenerating soils and complete ecosystems, which ensures an increase in carbon sinks and greater storage of organic matter. The rest times of the pasture must be respected, moving the cattle from one sector to another, considering the animal load and the time of year. The results are visible in the short term. Many farmers who have implemented holistic management as a grazing system have seen a “pasture explosion” from the get-go. In 2017, "El Reinal" changes its production system, trains its employees, and begins its path towards Grass-Fed certification. Proud of his work towards regenerative livestock farming and convinced that

Chile can go on the market with world-renowned natural and regenerative products, Matías decides to dedicate full time to the Fundo.

Camino Verde (Perú). Of the 73 million hectares of tropical humid forests that the Peruvian Amazon originally had, 7.7 million have been lost as a result of productivist economic development. This includes logging and other illegal activities such as mining and drug trafficking; and as a result of climate change, which produces heavy and concentrated rains followed by longer periods of drought. In the province of Tambopata, in the Southeast of the Peruvian Amazon, there are some initiatives for the conservation of native species and restoration of degraded ecosystems. Agroforestry, reforestation, and agroecology are some of the practices that regenerate biodiversity and strengthen communities that coexist with nature. In this context, Camino Verde was born, a non-profit organization dedicated to protecting and understanding the biodiversity of the Peruvian Amazon (https://www.caminoverdetambopata.org/). Founded in 2007 by Robin Van Loon, Camino Verde seeks to develop regeneration and conservation systems for native species in Peru and to create conditions that favor sustainable lifestyles. Robin came to live in the Peruvian Amazon at age 20 and was enchanted by the richness of its biodiversity and the beauty of the landscape. In the first 10 years, 400 species of Amazonian trees were planted in the Reforestation Center to experience their resilience, achieve the most successful planting designs, and propagate native species that have been exploited. Camino Verde has developed successful agroforestry systems in terms of forest conservation, restoration, and regeneration, capable of restoring ecosystems

and enriching biodiversity. In addition, sustainable production systems allow the generation of short-term economic benefits for the farmer.

Procoreef (Colombia): The ocean is an ecological structure imperceptible in its entirety and unknown to humans. It is a universe made up of complex ecosystems that are part of a fascinating biological gear. The ocean acts as the planet's blue carbon sink, capable of absorbing gases and carbon dioxide and supplying between 50 and 85% of oxygen to the atmosphere. Ecosystems of high biological diversity such as coral reefs, mangroves, and seagrasses or meadows allow the interaction of innumerable species that coexist in tropical coastal marine environments. In healthy conditions, this ecosystem trilogy protects coasts from extreme weather events. It also provides resources that serve as food and economic sustenance to thousands of communities. Sadly, "coral reefs are being boiled alive," said Gabriel Grimsditch, of the marine ecosystem’s division of the United Nations Environment Program. More than 50% of the planet's corals have collapsed in the last 30 years and by 2050, between 70 and 90% of the world's corals will be lost. Fabio Gómez Delgado is a Research Professor at the Faculty of Sciences of the Pontificia Universidad Javeriana in Bogotá. He has dedicated his career to the study of corals and other species on Isla Fuerte, a small island perched on a fossilized coral shelf, in the Colombian Caribbean. In 2000, Fabio developed an Isla Fuerte Species Conservation Project together with his students. They began by identifying some diseases and categorizing the most resistant coral species: those with the potential to work, those species that capture and fix much more carbon than others without damaging natural reef communities and populations. Fabio designed a new regeneration technique,

which is neither extractive nor aggressive, which he called “fragments of opportunity”. Fragments of opportunity are pieces of coral that have detached from the reef and are found on the seafloor with little growth potential. These fragments are transferred to a nursery, a pyramidal structure made up of 15 strings where the corals are hung; In this way, the coral does not have to invest energy for its initial fixation process, but instead invests the energy exclusively in its growth. After a year, the coral has grown enough to be moved and stocked on the reef under restoration. Their transplantation is key in the recovery of biodiversity, in the increase of biomass and productivity of the species that depend on the reef. The results have been surprising, currently, 80% of transplanted corals survive. At the end of 2017, Olga (ecologist and expert in conservation project management) and Fabio founded ProCoReef, an organization that has developed a sustainable, participatory, and highly scalable proposal for the conservation and restoration of coastal marine ecosystems. Since 2018, almost 12,000 coral fragments have been planted by ProCoReef, partners and clients, twelve nurseries, and each housing 1,000 fragments, which is equivalent to a quarter of a hectare of the reef.

3.6 Regenerative development

The above are examples of how organizations carry out a socio-economic purpose to satisfy human needs while facilitating and conducting ecological restoration guided by nature. How can we make sense of it? Regenerative Development offers a robust conceptual basis to make sense of the above phenomena and articulate the idea of regenerative organizations in light of the empirical evidence, and develop the conceptual apparatus underlying regenerativism (Gibbons et al., 2018).

Regenerative Development is a place-based reconciling and harmonizing change methodology, which is nurtured by a holistic ecological worldview, adopts a whole living systems approach, and works towards intrinsically regenerative sustainability (Rhodes, 2017; Gibbons et al., 2018). It allows to strengthen the necessary competencies of living systems to increase their complexity, diversity, sustains life capacity, and to promote regenerative sustainability focused on strengthening systematic health, adaptation capacity, and the evolutionary potential of a socio-ecological system capable of reproducing, sustaining itself, and create thriving and abundant options for the future (Mang et al., 2016; Dias, 2019; Gibbons et al., 2020).

Essentially, the word regenerative means: the capacity to bring into existence again or something growing or being grown again; hence, if an item, population, ecosystem, or any living system is regenerative, it has the inherent capacity to bring itself into existence once more (Rhodes, 2015). It is a primary attribute of all living systems, guides the conceptual framework of regenerative organizations, and it allows for restoring a system's capability to continuously self-organize and evolve, at the time it builds healthy human, organizational, and natural networks (Dias, 2018).

As the sciences of ecology, landscape, sustainability, and regenerative agriculture, the principles and mechanisms of regenerative development emerge from the same principles and foundations of the natural and social sciences that characterize socio-ecological systems (Mang et al., 2016; Gibbons et al., 2018). In this sense, a regenerative framework that connects those foundations with field action, organizational purpose, and a sense-place explicitly recognizes the potential to improve regenerative capacity concerning the viability, vitality, and evolutionary capacity of living systems, at the same

time that it constructs integral visions and co-evolutionary mutualistic relationships, not only in isolated fragments but in whole systems and nested subsystem (Benne & Mang, 2015; Rhodes, 2017; Gibbons et al., 2018).

Thus, the literature has identified the potential of regenerative development, and a possible underlying philosophy to reconcile the fragmented, symbiotic, and dependent coevolutionary relationship between humans, organizations, and nature (Du Plessis & Brandon, 2015; Benne & Mang, 2015; Gibbons, 2020).

Some examples that conduct thriving and abundance across scales are ecological design, water retention landscapes, syntropic agriculture, permaculture, holistic management, living buildings, forest regeneration, and others. The cases presented above as empirical evidence comes from those study areas. In each example it's materializing principles, mechanisms of change, interrelationships, values of integrity in frameworks, plans, and design and development technologies to create and manifest designs, routes, planning, and capacities in thriving socio-ecological systems (Du Plessis, 2012; Cole et al., 2013; Robinson & Cole, 2015; Gibbons et al., 2018).

It determines the integral role of the human being and their organizations under an underlying regenerativism ideology in the planning, design, implementation, production, and monitoring of the iterative process, specific to each place, and integrated into deep learning, will, social building, and future adaptation (Mang and Reed, 2012; Hes & Du Plessis, 2014; Mang et al., 2016).

3.7 Regenerativism: An integrative framework

To elaborate the conceptual structure of regenerativism, we use a systems perspective to describe human systems and natural systems as interconnected living systems, and explicitly differentiating two dimensions (which we label "Being in place" and "Doing in place") capable of understanding relationships between the place, beliefs, people, activity and time (Ingold, 2000; Bennett, 2013).

First, we believe in the ecological ethics that Ecocentrism represents, as the broadest term for worldviews that recognize the intrinsic value in all life forms and ecosystems themselves, including their abiotic components (Washington & Maloney, 2020). Although Ecocentrism is a worldview that recognizes the intrinsic value in ecosystems and the biological and physical elements that compose them, Regenerativism is part of the ecological processes that connect ecosystems and the biological and physical elements spatially and temporally. Second, epistemological belief focuses its attention on how human beings and organizations generate knowledge through purposes, reflections, and ideologies that have as their ultimate goal the restoration, regeneration, and protection of ecosystems. Its relationship with ecological systems requires the development of capacities and qualities inherent to life, to consequently, create conditions conducive to it in individuals, communities, ecosystems, and living systems. These foundations and unique properties of those beliefs offer the possibility to personify and describe that implicit philosophy that interrelates values, beliefs, and responsibilities with the field of action. We present a brief definition of Regenerativism to provide and guide an analysis framework towards future research and opportunities for continuous improvement:

“Regenerativism is the belief that place-restauration, ecological engaging, and protection of life support systems are the inherent action-purpose and responsibility of the human organization. Where relations, co-evolutive mutualism, and care are intrinsically deep, and synergistic for conjoint human and natural flourishing and the main purpose for a socio-economic activity”

We draw on ecocentrism, nature-based organizing, and regenerative development to elaborate a conceptual framework comprising six interrelated building blocks that we argue underlie Regenerativism. We explain, on the one hand, three blocks that emerge from "Being in place", which we define as care, mutualism, and relatedness, while on the other hand, we explain three blocks that emerge from "Doing in place", which we define as engaging, restoring, and protecting in living systems.

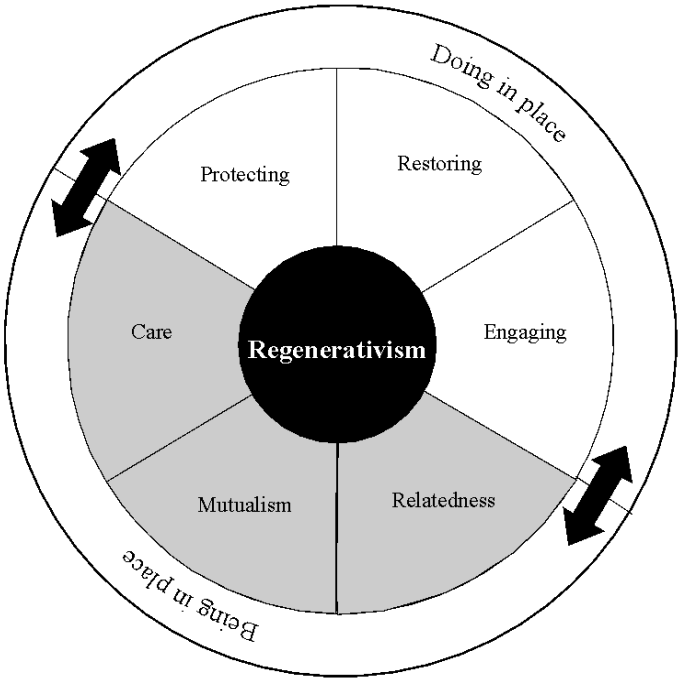

Figure 1: Conceptual framework Regenerativism

3.7.1 Being and doing regeneration in living systems

Living systems are the epicenter in which methodology and *regenerativism* logic operate. They are unique, specific, and in their place. Living systems are complex, dynamic, unpredictable, and as a self-organizing whole governed by biological, chemical, and physical functionality laws (Holling, 2004; Gibbons et al., 2020). Each specific subsystem, belonging to a complex living system, and previously defined through understanding, application, analysis, and evaluation is an open system that facilitates the exchange of matter, energy, and information with its environment, participating in multiple different interactions, generating emergent and unpredictable properties, maintaining a stable state of negentropy, degree of complexity, and integration (Cohen & Harel, 2007; Dias, 2019).

Human, natural systems, and their interactions are all living systems. A socio-ecological system is a living system as such. Describing the species and their functioning often requires identifying parts and mechanisms of the place, properties, behaviors, and discontinuous macro-patterns that emerge from the interrelationship between interactions and micro-dynamics.

For example, Holling & Gunderson (2002), coined the term "Panarchy" to try to describe, and capture the form and structure, in which those complex living systems separately and together, are interrelated in cycles of growth, accumulation, restructuring, and adaptive renewal. They show how slow or fast, small, or large events and processes can transform ecosystems, organisms, and ecological equilibrium through evolution, or they can transform human systems, their organizations, and societies through opportunities and learning (Holling & Gunderson, 2002; Holling, 2004).

Making sense of a living system requires an ecological worldview and a holistic integration of life support systems. Hence, “doing and being in place" are the main dimensions that materialize as mechanisms of action, performance, execution, exercise, and feedback that emerge from the continuous iterative process of regenerative development. Engaging and involve the action of doing and being with the natural place, can empower and protect appropriate and prosperous conditions, to facilitate the self-organization of a living system, and evolve towards favorable conditions of complexity, diversity, the capability to sustain life, future opportunities, and systemic well-being (Holling & Gunderson, 2002; Kay & Boyle, 2008; Mang & Reed, 2012; Gibbons et al., 2020).

3.7.2 Being regeneration in place

Ethics of care in regenerativism advocates and intercedes to maintain and protect living systems, their needs, intrinsic value, their manifestation, and those properties that allow guaranteeing conditions conducive to their development, restoration, and prosperity. It involves moral interaction and personal protection between two systems and their peers, holding a deep position on the irreplaceability of biodiversity, and the inherent value of life support systems. It is intersecting with at least two constitutive notions, the strong sustainability notion, which derives an irreplaceable and essential natural capital ethic, limited by cyclical characteristics such as irreversibility, uncertainty, and the existence of critical components in contribution to human well-being (Costanza, 1992; Baumgärtner, & Quaas, 2009), and deep ecological philosophy, which emphasizes the inherent value

of living organisms and systems, independent of the instrumental utility to meet human needs (Naess, 1973; Drengson,1995; Akamani, 2019).

Deep Ecology and strong sustainability propose a reassessment of the understanding of human nature in terms of the protection of biodiversity and environmental conservation. This radically questions the ambivalent thinking about the damage/protection that we exert on nature and the continued human-induced biospheric destabilization. The human being in harmony with nature understood as biocentric equality, and the right to cultural diversity are three essential principles of an ethic embodied in the care and protection of freedoms and needs of ecosystems and non-human life organisms (Naess, 1973). The well-being and intrinsic value of every living organism, its wealth and diversity, and the right to its existence, materialize a vision necessary to personify a regenerative ethic, at the same time that we satisfy needs, while we protect the integrity of the ecological communities of the earth and the ecocentric values (Naess, 1973; Drengson, 1995; Booth, 2013; Vaissière, et al., 2017).

Mutualism in regenerativism reflects a co-evolutionary and symbiotic dependence between the human being, the organization, the natural system, and the capacity to regeneratively satisfy needs for the benefit of both parties. It emerges as a part of being and flourishing with the place, at the same time that it facilitates the exchange or biological trade in resources or natural services essential for the joint benefit. Mutualisms are a common phenomenon in nature, and apparently, it has generated significant contributions in the evolution of life and ecological integrity of the biosphere (Molles & Sher, 2018).

They are reciprocally positive interactions between pairs of species, quantifying benefits in terms of fitness, population, or ecosystem dynamics (Bronstein, 2009).

Mutualisms can often be classified as facultative, where species can survive without mutualistic partners, and obligatory mutualisms, where species and organisms are unable to survive without mutualistic partners (Molles & Sher, 2018).

Human beings, organizations, and societies in general not only mandatorily depend on nature, but we are natural in composition. That biological need requires regenerating our being, the energy flow, the cycle of nutrients, ecosystem services, and that psychological and spiritual dependence that comes from those equilibriums that sustain the biosphere.

Examples of mutualisms that contribute substantially to the ecological integrity of the biosphere are many since it is even considered that mutualism subsumes transitory interactions of small effect, as long as both partners experience a net positive benefit or effect (Holland & Bronstein; 2008).

Plants benefit from mutualistic associations with a wide variety of bacteria, fungi, and animals (Mouquet et al., 2008); Algae provide reef-building corals with their main source of energy in exchange for foods and nutrients, especially nitrogen (Knowlton & Rohwer, 2003); Pollination is a classic example: mainly flowering plants usually benefit from pollinating animals that transmit plant gametes, and receive nectar in return (Sachs & Simms, 2006).

Without mutualism, the biosphere would be completely different. Therefore, the co-evolutionary mutualism between humans, organizations, and nature, captures that natural and beneficial dependence between both parties to satisfy needs, since not only

traits of an organism or species have involved that benefit other organisms or species, but also maintain those interactions difficult to reconcile by natural selection. (Bronstein 1994; Sachs & Simms, 2006; Molles & Sher, 2018).

Relatedness in regenerativism explains the link and coupling between the regenerative belief of the place and at least three kinds of relatedness that emerge between human systems and natural networks. We intercept this dimension with the biophilia hypothesis (Wilson, 1984), and the nature-relatedness of Nisbet et al. (2009).

The healthy and symbiotic relationship between the deep affective, cognitive, and experimental aspects, which at the same time address a personal identity and inclusion with nature as an extension of the cognitive representation that a person has of himself (Schultz, 2001; Clayton, 2003); affective and practical care towards biodiversity and natural systems (Perkins, 2010), and an emotional affinity that correlates with positive protective and environmental behaviors (Kals et al., 1999), depend precisely on an innate emotional affiliation, an ecological worldview, and a co-evolutionary experience of human beings towards other living organisms.

The identification of at least three kinds of relatedness in regenerativism allows us to identify affective, sentimental, and emotional aspects with nature, which usually correlate with pro-environmental and protective behaviors towards biodiversity (Mackay, C. M., & Schmitt, 2019); Cognitive aspects that allow understanding instructions, guides, and natural frameworks own of living systems thanks to an external worldview (Wilson, 2018); And experimental aspects that derive in the desire to be and to do in the place (Nisbet et al., 2009).

Natural relatedness that emerges from Regenerativism attempts to compromise ecological behavior through the expansion of our sense and meaning of "I", since if the "I" expands and is understood as a complete system, which includes the natural world, the behavior that leads to the destruction and deterioration of living systems will be experienced at an emotional and cognitive level as a self-destructive process (Mayer & Frantz, 2004). That is why it insists on exposing the coherent-realistic human search, identity, and personal fulfillment as an evolution dependent, in one way or another, on our intimate relationship with nature (Wilson, 1984; Kellert & Wilson, 1995). This relationship could provide insight into how people and organizations relate to living systems and they unfold in the place. Therefore, the natural relationship of Nisbet et al. (2009) provides synergistic theoretical foundations towards regenerativism through personal and sentimental identification with nature, an external worldview, a sense of agency, and a physical familiarity with the natural cycle (Nisbet et al., 2009).

3.7.3 **Doing regeneration in place**

Engaging, restoring, and protecting the regenerative capacity concerning the viability, vitality, and evolutionary capacity of the place as a living system, represent the concrete actions derived from ethical, mutualistic, and relational foundations of regenerativism. They focus on conserving and protecting biodiversity from the massive impact of human activity while trying to restore damaged and/or destroyed ecosystems to an acceptable level of diversity, physical structure, and functioning (Molles & Sher, 2018).

Engaging in regenerativism refers to the ecological attitude, the involvement degree, environmental commitment, nature orientation, and the level of awareness in

individuals and organizations face to the challenges of local and global ecological sustainability (Opdam et al., 2015; Gunnarsson et al., 2016; Livingstone et al., 2018).

The systemic change proposed by regenerative organizations towards personal identifications with places, ecosystems, and action fields, makes socio-economic activity compatible with the engagement towards place restoration, and consequently the protection of it.

For this reason, **restoring in regenerativism** refers to active ecological restoration, which is assisted and supported by controlled human intervention, and which works synergistically in conjunction with natural regeneration concerning ecological succession (Chazdon & Guariguata, 2016; Crouzeilles et al., 2017).

Restoration is guided by human systems, while regeneration is guided by natural systems. In both, mutualistic patterns are identified, and they must align biophysical and ecological priorities, to restore groups of biodiversity, fragmented ecosystems, and vegetation structures compatible with socioeconomic incentives (Chazdon, 2008; Walker et al., 2009; Crouzeilles et al., 2017).

Actions such as (re) afforestation or the restoration of degraded agricultural and tropical lands represent important responses to the carbon balance, the protection of species, increased resilience of biodiversity, and the provision of ecosystem services (Harris et al., 2006; Wortley et al., 2013).

Some factors that influence successional change and restorative actions are for example physical and chemical stressors; dispersal rates; plant establishment; Interspecific plant interactions, and herbivory. Where restorative actions materialize in: reduce physical stressors by, for example, adding organic matter and nutrients to

restoration area; actively adding seeds to the restoration site, attract animal seed dispersers; create suitable safe sites; control strongly inhibitory species; foster species that facilitate late-successional species; and protect vulnerable plants until well established (Walker et al., 2007; Molles & Sher, 2018).

The latter describes why protection is a relevant dimension. **Protecting in regenerativism** refers to the effort in which human systems and their organizations protect and safeguard species, structures, properties, and conditions that allow the restoration and regeneration of an ecosystem or nested subsystems (Kong et al., 2019; Chapman et al., 2020).

Place protection and conservation practices have been widely incorporated into natural resource strategies as measures to combat climate change, improve food health, water supply, and biodiversity.

Protective behavior towards nature cannot be explained purely with rational or cognitive approaches (Kals et al., 1999), nor can it be limited to instrumental values or purely intrinsic values (Chan et al., 2016), protect nature and those conditions that ensure thriving and abundance, it implies protecting ourselves, and it requires understanding and reevaluating our emotional affinity with nature, and those relational values that emerge.

Although these values can be explained by those dimensions that correspond to "being in place", those ecological results that come from "doing in place", and that correspond to the vegetation structure, diversity and abundance of species, and ecological processes, also they are subject to socio-economic, political, moral, and historical factors that can condition the scope and execution of regeneration (Ruiz-Jaén & Aide, 2005; Sheng et al., 2019).

Table 2: Theoretical building blocks: Summary table

Dimension	Description	Key literature
Care	Care intercedes for an ecological ethic to preserve and protect living systems, their needs, intrinsic value, their manifestation, and those properties that allow guaranteeing conditions conducive to their development, restoration and thriving.	(Naess, 1973; Costanza, 1992; Drengson,1995; Baumgärtner, & Quaas, 2009; Akamani, 2019)
Mutualism	Mutualism reflects a co-evolutionary and symbiotic dependence to satisfy needs between the human being, the organization, the natural system, and the regenerative capacity that benefits natural and human systems in a synergic way.	(Holland & Bronstein, 2008; Bronstein, 2009; Sachs & Simms, 2006; Molles & Sher, 2018)
Relatedness	Relatedness explains the link between the regenerative belief of the place, and at least three kinds of relatedness that arise at the affective, cognitive, and experimental level, between the coupling of human systems, work networks, and natural cycles.	(Wilson, 1984; Kals et al., 1999; Schultz, 2001; Nisbet et al., 2009)
Engaging	Engaging refers to the ecological attitude, the involvement degree, environmental commitment, nature orientation, and the level of awareness in individuals and	

	organizations facing the challenges of local and global ecological sustainability.	(Opdam et al., 2015; Gunnarsson et al., 2016; Livingstone et al., 2018)
Restoring	Restoring refers to active ecological restoration, which is assisted and supported by controlled human intervention, and which works synergistically in conjunction with natural regeneration in the function of ecological succession and highly fragmented ecosystems.	(Walker et al., 2007; Chazdon & Guariguata, 2016; Crouzeilles et al., 2017)
Protecting	Protecting refers to the effort in which human systems and their organizations protect and safeguard species, structures, properties, and conditions that allow the restoration and regeneration of an ecosystem or nested subsystems.	(Kals et al., 1999; Chan et al., 2016; Kong et al., 2019; Chapman et al., 2020)

3.8 Moving research forward

Alongside laying the ground for the empirical work conducted herein, the review and conceptual framework offered in this introduction contribute to the literature in several ways. First, by reflecting on productivism, and the underlying ecological tensions, we widely agreed on a collective criticism regarding the ideological inability of productivism to satisfy coherent and realistic human needs. This notion incessantly separates the organization from the natural world, its co-evolutionary dependence, and ignores personal will, the resources availability, and the limits of the environment. Second, we argue that

ecologically-driven movements may be better positioned to contribute to transformative change, and to the building of new collective beliefs "nature-led" to satisfy human needs and improve the quality of life.

Our conceptual contribution could offer a new perspective to transform "productivist values" into "regenerative values", without losing sight of the socio-economic need, but with a deep engagement towards the restoration and protection of nature. We offer a conceptual expansion and further specificity around the actions, ethics, and relations of a new breed of nature-centered organizations. We argue that the living systems regeneration can enrich the mental and emotional patterns that motivate the entrepreneurial spirit in ecological succession, and allow a holistic thought to carry out a socio-economic activity under planetary boundaries, and environmental ethics. Finally, we propose those bases that could give impetus to new empirical studies on the ecosystem’s regeneration. We declare that explicitly addressing both dimensions of belonging with the place, together with its main constructs, can foster a constructive conceptual development and novel methodologies that encompass non-conventional intuitive and subjective sources of knowledge, in addition to addressing the underlying problems that contribute to social injustice, environmental degradation, and the business and organizational means to address them.

3.9 Papers in this dissertation

The empirical papers in this dissertation seek to advance the notion of *regenerativism* by providing evidence, applied contribution, and explanation of core principles, values, and functioning of the proposed logic. Next, we present two articles that use both

aggregate dimensions of the conceptual framework. The first article uses the dimension of care of "being in place", particularly ecocentrism and deep ecology notion, while the second paper uses the dimension of protection and restoration of "doing in place". We start by motivating each article and then present each article in its entirety.

3.9.1 Paper 1: The antecedents of Ecocentrism in Small Business Management.

Ecocentrism has grown in academic interest and in business sustainability, driven primarily by the role of organizations and businesses in the ecosystems flourishing, and by the complex human-induced overshoot of the biosphere (Heikkurinen et al. 2019). Ecocentrism is the broadest term for worldviews that recognize intrinsic value in all life forms and ecosystems themselves, including their abiotic components (Washington & Maloney, 2020). This represents an ecological change approach that challenges the linear and dualistic compression between human systems and natural systems that prevail in the anthropocentric conception and much of modern societies (Lynch & Norris, 2016; Heikkurinen et al. 2019).

From ecological economics, Ecocentrism is promoting a new ecological economic thought, which tries to shed anthropocentrism, and suggests addressing the ecocentric worldview, ecological ethics, and eco-justice as fundamentals of essential change for economies and organizations (Washington and Maloney 2020).

In management studies, Ecocentrism has been gradually explored, especially on how organizations can (re) integrate into natural environments and systems (Shrivastava, 1995; Whiteman and Cooper, 2000; 2011; Shrivastava and Kennelly, 2013), and the search for new values and principles for sustainable entrepreneurship (Vlasov 2019), the

management of paradoxes in natural environments (Slawinski et al., 2019), or ecological regeneration (Branzei et al. 2017).

Despite their relevance, decisive ecocentric thinking and action remain elusive. The understanding and formation of Ecocentrism tends to remain in the form of eco-efficient thinking (Young & Tilley, 2006), and therefore limited by anthropocentrism. How human beings continue to satisfy needs based on consumption and productivism remains at the center of the debate on business sustainability, which considerably restricts the understanding of Ecocentrism in organizational management and ecological work. In this next paper, we ask two interrelated questions: what enables the formation of ecocentrism in small business management? and what ecocentric approaches emerge as a result?

To answer these questions, we draw on deep ecology to focus on forming a nature-centered approach. We elaborate a model that organizes the possible arguments in the Ecocentrism formation. We used comparative configurational analysis to map the responses of 160 small enterprises in Chile that participated in the 2018 National Survey on Environment and Climate Change. Our analyzes reveal three configurations of conditions that would allow us to elucidate ecocentrism at the organizational level, which we label as: Market reformist, Legitimated decouplist, and Self-centered activist. These results allow to configure a conceptual framework, an empirical typology, and a systematic characterization of ecocentric thinking and decision-making in business sustainability, in addition, they allow to shed light on a more radical approach to environmental thinking and the formation of an ecological ethic.

3.9.2 Paper 2: Beyond environmental protection: Human-Animal work in Regenerative Organizations.

Interest in environmental protection (EP) has grown significantly as it is considered essential to promote corporate sustainability practices. In general terms, EP refers to the efforts of institutions and organizations to protect, safeguard and restore the environment (Kong et al., 2019; Chapman et al., 2020). As such, EP is believed to have a high potential to counteract the Anthropocene-induced overshoot of the biosphere, and restore destroyed or highly fragmented ecological systems (Lewis and Maslin, 2015; Lau et al., 2019). Command-and-control approaches and voluntary agreements have dominated EP's thinking and practice (Khanna, 2001). These have been widely criticized for being too rigid, bureaucratic, and neglecting nature as a focus of protection itself (Aragon-Correa et al., 2020). As a consequence, they have moved away from the natural world, neglecting valuable interactions and mechanisms at the micro-level, through which organizations interact with ecosystems in their attempts to repair and protect them (Restall & Conrad, 2015; Fios, 2019). Exploring ecocentric organizations whose commitment to protecting nature forms and maintains intimate relationships with it could reveal radically different protection practices and mechanisms (Huber et al., 2020). In article number two we asked ourselves: how is environmental protection seen, experienced, and enacted on the ground by organizations interested in looking after nature? To answer this question, we conducted an ethnographic study of the Panguilemu Farm in Southern Patagonia, Chile. Fundo Panguilemu is a regenerative agriculture company that approaches sheep farming, small farming, and tourism using the philosophy and practices of Holistic Management. We use the approach of Whiteman

(2010) and Guthey et al (2014), who emphasizes that to truly understand interactions in socio-ecological contexts, first-hand situated knowledge is essential.

We discovered a unique form of collaboration, which is formed between the organization and non-human animals to restore and protect nature, we call it: human-animal mutualism in environmental protection work. Through mutual rewilding, relational ambivalence, and task interdependence, mutualism describes the ecological interaction between the organization and the animals, where each appears to benefit from collaborative work, needs are met, and ecosystems are restored and protected as a result.

We contribute to the literature on business sustainability by revealing a new nature-led approach to environmental protection and restoration and three mechanisms at the micro-level. We allow ourselves to get involved with three conceptual spaces to make sense more broadly: environmental protection work, natural relationships, and human-animal work. Finally, we contribute to the growing literature on regenerative organization and sustainability as flourishing.

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4 Chapter 2: The Antecedents of Ecocentrism in small business management (Organization & Environment)[1]

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4.1 Abstract

Ecocentrism has grown in interest in business sustainability research, mostly driven by recent debates exploring the role of business in the Anthropocene. While relevant and promising, examination and explanations of ecocentrism remain anchored in conventional dualistic thinking. Ecocentrism, unlike environmental management, places nature's rights at the core and demands radical changes to our way of living. This creates an important gap as we do not know what actually drives the formation of ecocentrism in managerial thinking. This paper tackles this issue by mapping the responses of 160 small business owners and managers in Chile. We use configurational comparative analysis to assess the combination of conditions leading small business managers to embrace an ecocentric approach consistent with deep ecology principles. Our analyses reveal three sets of antecedents, leading to three types of ecocentric approaches: Market reformist, Legitimated decouplist and Self-centered activist. The paper offers a new conceptual apparatus and systemic characterization of ecocentrism in small business management.

[1] A version of this paper has been published in Organization & Environment

It shows what matters and when for the formation of a more radical approach to environmental thinking and decision-making.

4.2 Introduction

Ecocentrism has grown in interest in business sustainability and management research, mostly driven by recent debates calling for a departure from anthropocentric values and thinking (Heikkurinen et al. 2016). Ecocentrism refers to a new ecological approach (Purser et al. 1995; Lynch & Norris, 2016) that defies the linear, siloed, and dualistic understanding of human-nature relationships that still prevail and shape environmental management and anthropogenic business activities (Heikkurinen et al. 2019). Although it represents a disruptive alternative paradigm, this form of ecological philosophy is no longer considered to be a mere radical environmentalist dream. In biodiversity conservation, 'conservation through capitalism' has already given way to 'science-led ecocentrism' (Sandbrook et al. 2019). Ecological economics is pushing toward a new ecological economic thinking, which breaks free from anthropocentrism embracing instead an ecocentric worldview (Washington & Maloney 2020). Management scholarship has been gradually exploring how organizations can (re)embed themselves in natural environments (Purser et al. 1995; Shrivastava, 1995; Whiteman & Cooper, 2000; 2011; Shrivastava & Kennelly, 2013).

Research on ecocentrism has set strong roots in entrepreneurship and small business management. Researchers have explored new meanings and practices in sustainable entrepreneurship (Vlasov 2019), venture-nature synchronicity (Muñoz & Cohen 2017), ecological regeneration (Branzei et al. 2017), biomimicry in new venture

development (Fernhaber & Stark 2019), new organizational design principles (Parrish, 2010), among others.

Despite its relevance, the large number of barriers facing small and medium enterprises (Álvarez-Jaramillo et al. 2018; García-Quevedo et al. 2020) seem to be restricting a definite departure from anthropocentrism, while decisive ecocentric thinking and action remain elusive. An inevitable consequence is the formation of a space of ambiguity, leading to obscure lines in our observation and measurement of ecocentrism in business management, where explanations tend to remain shaped eco-efficient thinking (Young & Tilley, 2006) and thus bounded by anthropocentrism. Human needs, rights and modern (market-based) lifestyle remain at the center of the business sustainability debate, restricting our understanding of ecocentrism in business management, i.e. antecedents, mechanisms and outcomes. While we know what leads to environmentally-friendly behavior under an eco-efficient (e.g. environmental management) paradigm (Young et al. 2013), we still do not know what explains the formation of ecocentrism in particular business contexts and the complex set of conditions driving a strong ecological thinking.

In this study we ask two interrelated questions: *what enables the formation of ecocentrism in small business management? and what ecocentric approaches emerge as a result?.*

To answer these questions, we draw from deep ecology to focus on the formation of a nature-centered approach, one that places nature's rights above or in equal importance as human needs and liberties. Given the many possible antecedents, we examined literature on ecocentric thinking through the lens of Gosling and Case's (2013) ecocentric

ethics. Leveraging their ideas on social dreaming and future imagining, we elaborate a model that organizes potential explanations of ecocentrism formation into three categories, reflecting ecological sensing, envisioning and enacting, namely: *ecological crisis, ecological reform and ecological engagement*. Using configurational comparative analysis, we map the responses of 160 small business managers and owners in Chile, who took part of Chile's 2018 National Survey on the Environment and Climate Change.

We discover that in small business management not only can ecocentrism exist but it can also take many forms. Our analyses reveal three configurations of conditions explaining ecocentrism in small business management, we label: *Market reformist, Legitimated decouplist and Self-centered activist.* Interestingly, our findings also show that ecocentrism can emerge in the absence of factors so far assumed central within ecocentric ethics and philosophy and in the presence of combinations of factors so far neglected in business sustainability research.

Our work makes several contributions to business sustainability literature. First the paper offers a conceptual framework and systematic characterization of ecocentric thinking and decision-making in business sustainability. Second, we provide an empirical typology comprising three distinct approaches to ecocentrism in small business management. They reveal that ecocentrism is indeed different, showing the unique ways in which it can materialize and how it uniquely departs from traditional anthropocentrism. We show what matters and when for the formation of a more radical approach to environmental thinking and decision-making.

4.3 Theoretical grounding

4.3.1 Ecocentrism in small business management

While literature at the intersection of ecocentrism and small business management is scarce, the phenomenon has been explored in a variety of sub-fields, e.g. business sustainability, ecological economics, resource conservation, circular economy, sustainable entrepreneurship, business and environmental ethics. Despite the diversity, at the core is the idea that humanity is a part or a subset of nature. Ecocentrism, as an ecological philosophy, positions nature as a moral entity, with its own rights and value. It recognizes the intrinsic and inherent value of all life forms and ecosystems, irrespective of the utility they might have for humans. It thus rejects the conventional dualistic worldview, still prevalent in western societies, where humans and their activities are separated, or diverging from nature (Washington & Maloney, 2020).

In this sense, advocates of ecocentrism continuously call for a reconsideration of the human-nature relationship (e.g. Shrivastava, 1995; Wolff, 1998; Heikkurinen et al. 2016). The emphasis on the need for transitioning is grounded in a fundamental criticism of anthropogenic business-as-usual, commonly seen as the underlying cause of the current ecological crisis, as it only values other life forms insofar as they are valuable to human well-being, wealth creation, and their own interests (Nordlund & Garvill, 2002; Vlasov, 2019). This has forged an individualistic and destructive identity, far from an ecocentric and sustainable identity (Hay, 2010). The transition from anthropo- to ecocentrism is understood as essential to protect the rights and needs of nature, which in turn restricts arbitrary exploitative activities (Fios, 2019) and hence protects the environment from

further degradation. Ecocentrism thus becomes both an ethical imperative and a mechanism to drive change and avoid ecological collapse.

For small businesses, such transition entails going beyond environmental management (Muñoz & Cohen, 2018), in terms of what the “environment - management” conjunction means in philosophical and practical terms. Philosophically, the recognition of ecocentric relevance requires adherence to biospheric egalitarianism. This means that at the core of the business there will be an equal recognition of the needs and rights of other species and ecosystems, and that human organizations no longer have an inherent superior value than nature. As such, one would expect to find ecocentric businesses demonstrating a coherent and respectful environmental behavior, constrained by the rights of non-human living beings (Nordlund & Garvill, 2002). This includes other ecosystems and environments wilder and more distant to us, beyond our common conception of what counts as nature (Kortenkamp & Moore, 2001). Alongside the recognition of inherent value; ecosystem embeddedness and dependency are recognized as central premises in this renewed organization-nature relationship. Here, like individuals themselves, organizations are seen as a subset of a larger complex system. They depend on the ecosystem in a vital and operational way for their activities and processes, and they are not the only source of intrinsic value (Heikkurinen et al., 2016).

In practice, ecocentric businesses neither minimize negative externalities nor adapt their strategies to lower environmental risks. They strive to deliver climate-sensitive solutions through new ways of doing business, with ecological systems placed at the core of the business. Branzei et al. (2017) argue that these “climate smart organizations” have been systematically neglected by mainstream management. Muñoz and Branzei (2017)

put forward the idea of regenerative organizations, as “ecologically-embedded businesses that restore and regenerate degraded natural ecosystems and build resilience in and improve the wellbeing of the communities relying on such ecosystems.” Research on circular business models has advanced the idea of restorative ecosystems (Zucchella & Previtali, 2018), yet regeneration goes beyond industrial symbiosis as it involves deep entanglement and synchronization with nature (Muñoz & Cohen, 2017).

While conceptually appealing, these businesses and their practices seem to remain in the periphery, perceived as radical environmentalists trapped in the world of permaculture, biodynamics, biomimetics, holism and so on. It is not surprising then (and disappointing at the same time) that mainstream business sustainability research has largely ignored these ideas. Theory and practice seem to widely embrace ecological systems and the services they provide (Thompson, 2018; van den Belt & Blake, 2015), but a more pronounced publicly expressed deep ecology position tends to be, at best, dismissed (Kopnina 2012).

This creates a triple-problem in any attempt to examine ecocentrism in small business management. First, business sustainability research still places human needs and rights at the core of the debate, restricting our view and potential explanation of the phenomenon. Second, the phenomenon – outcomes and antecedents - might be more complex than previously thought. Third, we lack an appropriate conceptual apparatus to deal with complex explanations of biospheric egalitarianism in small business management. This requires crossing disciplinary boundaries (Shrivastava et al. 2013) and an alternative perspective on outcomes and antecedents. In the following, we turn our

attention to deep ecology as it pertains to business sustainability and provide an overview of potential antecedents.

4.3.2 An alternative view from deep ecology

Deep ecology is an ecological philosophy that emphasizes the inherent worth of living beings regardless of their instrumental utility to human needs and promotes the restructuring of modern human societies in accordance with such ideas. While seemingly disruptive, deep ecology does not seek a radical shift in fundamental values (Glasser, 2011). It rather proposes a reevaluation of the understanding of human nature within the environmentalist movement since, in Naess's (1973) view, much more was needed in terms of environmental protection and conservation. In his seminal article he stressed that: "Ecologically responsible policies are concerned only in part with pollution and resource depletion. There are deeper concerns which touch upon principles of diversity, complexity, autonomy, decentralization, symbiosis, egalitarianism, and classlessness" (p.95). Instead of focusing on the well-being of the individual organisms that an ecosystem contains, deep ecology values the ecosystem as a whole, which includes the well-being of its parts as well the properties of the ecosystem regarding biological diversity and ecological integrity (Mikkelson & Chapman 2014).

Against the shallow ecology movement, Naess's ecological philosophy nurtured new ideas about humans and the natural world, it encouraged social dreaming upon which an alternative vision of the future was conceived with a model of civilization orientated towards ecological needs (Tyburski 2008). While these ideas have remained in the periphery, they seem to have gained more prominence today facing climate disaster, as

the way modern human life is organized is widely recognized as ecologically damaging (Heikkurinen et al. 2016).

As with the environmental movement in the 1970s, embracing deep ecology in business management also requires a major rethinking of the economics of business, the role of nature as resource and the logics underlying environmental management. First, the adoption of an ecocentric epistemology, Borland and Lindgreen (2013) argue, involves necessarily the development of an alternative business approach. This is one that brings nature and ecological sustainability to the fore as the source of well-being for human and other species, as well as the source of all products and services. Clark and York (2005) go one step further to argue that a departure from “industrialization as usual” is central to the deep ecology effort, which involves fundamental changes in the prevailing economic-centric view that conceives the natural environment as a reservoir of resources available for human exploitation. In this vein, deep ecology offers an alternative worldview contrary to "managing the environment". In environmental management, the environment is an external entity that can be manipulated and controlled for human benefit (Booth, 2013). Since dualism is rejected in ecocentrism and deep ecology, there is nothing to be managed or controlled. Deep ecology sees interactions between people and the environment as co-constitutive, in an insubstantial manner, where each element influence the other, i.e. where people and organizations are not the same without the environment, and the environment is not the same without people and organizations (Booth, 2013). This call for ecological equality is both a central point of contention and a key principle of deep ecology, and serves to illustrate the radical nature of this form of ecological philosophy (Jacob, 1994; Spash, 2013).

A second principle (and point of contention) revolves around profound changes to our modern way of living, particularly in relation to our current understanding of what human needs and rights allow humans to do. In Grey's (1993) view, to reduce destructive behavior a new set of moral restrictions that protect ecological rights and needs must be set in place. Since individual freedom is at the core of modern human societies, a rebalancing of liberties will necessarily involve a deep restructuring of our way of living.

So far, attempts to implement these moral restrictions, which intercede in the protection of ecological rights, have remained mechanical and superficial (Drengson, 1995; Hoy, 2000). However, while radical, deep ecology's principles of equal rights and changes to modern lifestyle can resolve the intractable environmental sustainability tension of either to economize the ecology or to ecologize the economy (Drengson, 1995; Clark & York, 2005; Scerri, 2016).

4.4 Mapping out potential antecedents

What drives individuals to level the ethical playing field and defy modern lifestyle in the name of nature? Contributors agree that this goes far beyond environmentally-friendly behavior. It entails embracing the ideas of equality amongst living beings and restrictions of human liberties as a way of restoring balance. Deep ecology offers a way forward, as it focuses on nature-centered thinking and action, but it has been criticized due to applicability issues in managerial practice and the lack of clarity regarding antecedents. This is about individuals imagining alternative environmental futures, irrespectively of whether the firm in question is focused on tackling environmentally-relevant problems

directly. Our examination of antecedents is focused on the factors that can potentially influence the formation of an alternative ecological approach.

Since ecocentrism involves a paradigmatic change, we leverage Gosling and Case 2013's ecocentric ethics and the ideas of social dreaming and future imagining. Facing the restrictions of modern rationalities, the authors propose these ideas as a new way of sensing, thinking and talking about climate change. This, in their view, can trigger "non-anthropocentric sensibilities and organize responses to an impending crisis" (p.705). They articulate their arguments along three dimensions: imagining climate change catastrophe, new ethics and the role of dreaming-visioning and the collective seeing of the other side of catastrophe. We organized our review leveraging these dimensions and derived three categories of antecedents, pertaining to sensing, envisioning and enacting, we label: *ecological crisis, ecological reform and ecological engagement*. In line with Muñoz et al. (2020), this represents a framework that can link different theoretical units into a coherent whole. In Figure 1, we provide a configurational framework showing elements and interdependencies[2].

[2] A summarized view of the literature and the structure of the derived categories is available from the authors upon request.

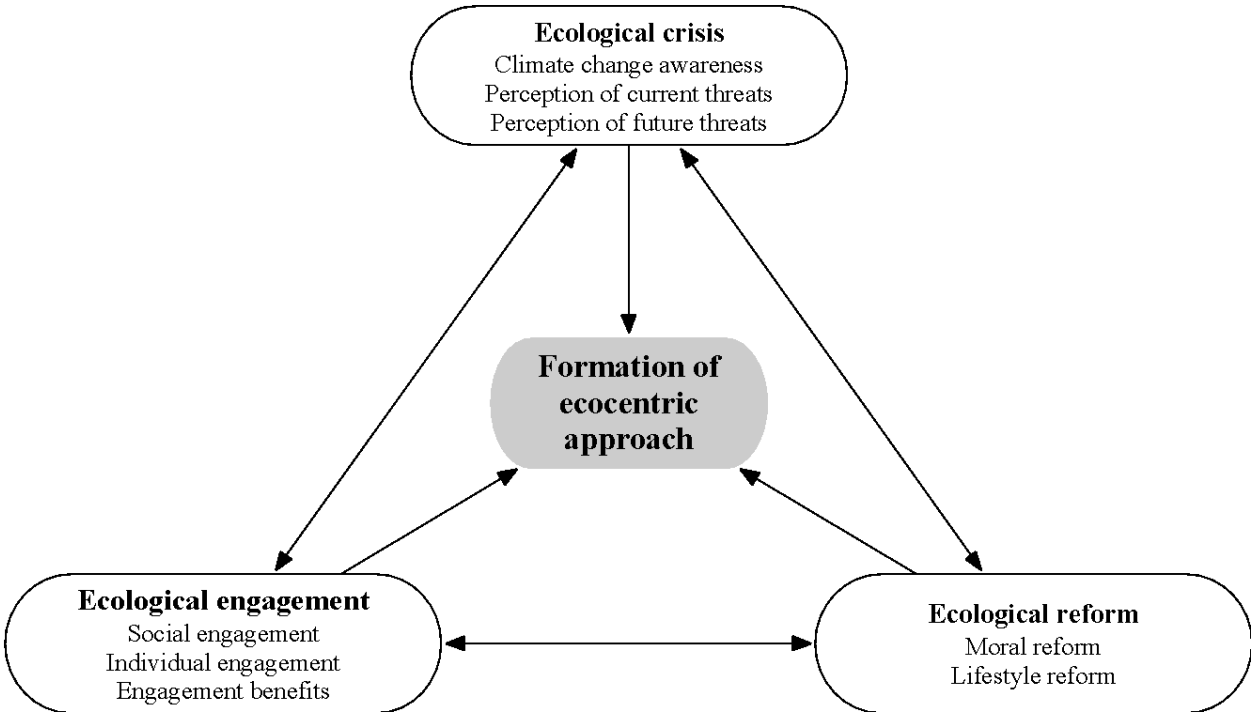

Figure 2: Maps on antecedents Ecocentrism

Ecological crisis refers to people's understanding of the causes and consequences of the eco-crisis as well as the reactions to it. Firstly, awareness of our climate changing, which carries degradation of ecosystem services and depletion of biodiversity and potentially a shortage of critical resources (Steffen et al., 2015; Lewis & Maslin, 2015; Molles, 2018). Secondly, expressions of concern as to what an ecological crisis means for people's current and future well-being, which evolve into perceptions of threat.

Muñoz and Dimov (2017) argue that such perceptions influence business-related environmental action, as they increase moral commitment to act in the face of the crisis, becoming drivers of pro-environmental thinking and action. In entrepreneurial contexts, both Patzelt and Shepherd (2010) and Hanohov and Baldacchino (2018) argue that entrepreneurs are more likely to discover sustainable development opportunities the

greater their knowledge of the ecological crisis becomes, which is further augmented by perceptions of environmental threat.

In a different vein, literature suggests that environmental training and efforts to strengthen environmental awareness regarding ecological crisis can improve participation in environmental initiatives (del Brío et al., 2007), leading to longer-lasting commitments (Cook & Seith, 1992; Perron et al., 2006; Rahman & Hughes, 2020). Environmentally-aware consumers also play a role, as they demand businesses to be more environmentally-aware, triggering in turn pro-environmental initiatives, transparency and stronger links between environmental and financial performance (Diehl et al., 2016; Rahman & Hughes, 2020; González-Rodríguez & Díaz-Fernández, 2020). These are recognized as LOHAS consumers (Lifestyle of health and sustainability) who are more aware of human-nature relationships (Pícha & Navrátil, 2019). Borlu and Glenna (2020) complement this argument by pointing towards the role of environmentally-aware local markets and producers, where organizations and communities work together not only undertaking concrete actions to tackle climate change locally, but also visualizing a more sustainable future.

Pressure from stakeholders, legislation and environmental groups also encourage the development of greater environmental awareness. This has induced business managers, particularly in small organizations, to gradually move toward an ecocentric perspective, changing their business processes and environmental strategies (Gadenne et al., 2009). Perron et al. (2006) argue that environmental concern and awareness are at the core of pro-environmental action in business contexts, which derive from organizations that sense, dream, and transform the climate crisis into new purposes and

ideas. If this is grounded in a more critical view on growth and productivism, environmental action can move beyond and reform anthropocentrism (Heikkurinen et al. 2019). This takes us to the next set of antecedents.

Ecological reform in ecocentrism involves the envisioning of philosophical and moral changes, propelled by a new environmental worldview (Zelenski & Nisbet 2012). In ecocentrism, Tyburski (2008) argues, moral values represent a key driver regulating the relationships between humans and nature. Ethical principles and values as well as a sense of environmental responsibility are crucial for undertaking actions that lead to sustainability (Tur-Porcar et al. 2018; Bakos et al. 2019). Nordlund and Garvill (2002) emphasize that environmental values and personal norms, combined with problem awareness, positively influence pro-environmental behavior. This combination is important since solving ecological dilemmas require higher forms of moral reasoning (Kortenkamp & Moore, 2001). In Nordlund and Garvill's view, people who give priority to collective or self-transcendent values are more willing to engage in different forms of altruistic, cooperative, or pro-environmental behavior than people who give priority to individual or self-enhancement values. In a different study, Karpiak and Baril (2008) corroborated that indeed moral principles and values, central to ecocentrism, strongly predict respectful behavior.

Hay (2010) advances these ideas by connecting ecocentric philosophy to elements of personal development and transformational leadership, which involves the formation of an ecocentric worldview and a sense of ecological justice aiming at societal renewal (Washington & Maloney, 2020). These are essential elements in the formation of an ecocentric identity (Hay, 2010). This involves meaning creation through ecological

imagination, which in turn fosters an ecocentric orientation and novel sustainability goals (Payne, 2010). Batavia et al. (2020) bring these elements together linking the strength of ecological envisioning and beliefs of inclusion to moral attitudes, intentions and pro-environmental behavior.

Envisioning is part of new environmental movements that promote changes in lifestyle, particularly around consumption and (un)healthy living. Demands for deep reforms in lifestyle are signs of new ecological thinking that advocates in favor of a new ecological lifestyle of responsible consumption of locally-sourced environmental products (Cholette et al., 2013). More radical consumers reject the materialistic and reductionist lifestyle promoted by markets (Meissner, 2019) and consumption (Harris & Dacin, 2019). Their ecological convictions and consumption patterns shape new identities based on consciousness, gathering, negotiation, stabilization and sharing. Manifestations include organic consumption, transformative pro-environmental behaviors, promotion of ecological activism and a green identity (Van Huy et al., 2019; Saraiva et al., 2020). Lifestyle reform ultimately involves an impulse for change in our understanding of natural resources (Sun et al. 2020), aging in synch with nature (Zheng & Yang, 2019) and an new ecological identity (Smith, 2019; Longo et al., 2019) that embraces biospheric egalitarianism, anti-consumption and limits to growth, all constitutive parts of ecocentrism and an deep ecology approach.

Ecological engagement refers to actions for change, social support guiding actions and a perception of benefits linked to such actions, so that action is not merely symbolic and a non-conducive revolution. Engagement is strongly related to individual awareness of local ecological problems (Cecconello & Koller, 2019), environmental attitudes and

nature orientation (Otto & Kaiser, 2014). Ernst et al. (2017) found that indeed changes in the levels of environmental attitudes strongly predicts concrete environmental actions. The latter involves decisive initiatives relating to e.g. environmental protection, environmental conservation and the adoption of ecological practices at organizational and industrial levels (Yen, 2012; Zhang et al., 2015), which can eventually mobilize structural changes in institutions and markets (Hirst & Brown, 1990). This in turn can improve the performance of individual organizations and entire industries via inter-organizational collaborations (Kartadjumena & Rodgers, 2019). In this sense, individual engagement can have beneficial impacts at an aggregate level, particularly since it can guide long-term business objectives and influence social engagement (Mitra & Gaur, 2020).

The relationship with social groups and norms move in both directions. As individual engagement mobilizes collective actions, social support also enables individuals to engage and act. O'Neill et al. (2009) argue that social context and culture are conducive to the creation of sustainable value in small firms. Unwritten rules of conduct can have an impact on the creation of environmentally-oriented new firms (Meek et al. 2010). Likewise, consumption patterns and norms of conformity can affect decision-making of small businesses towards engaging in environmentally-responsible activity (Meek et al. 2010). Kornilaki and Font (2019) expand these ideas by arguing that socio-cultural and industrial norms firmly influence environmental behaviors toward ecological engagement and even ecocentrism.

Engagement through decisive initiatives and social support are thought to deliver benefits. Environmental actions significantly influence ecological performance, consumer perception and subsequent purchase intentions (Li et al., 2017). Not surprisingly,

evidence suggests that small businesses invest in environmental initiatives under the conviction that these can improve working conditions, compliance and help redirect the business toward an ecocentric strategy (Masurel, 2007). In their study of small manufacturing firms, Andersén et al. (2020) found a strong relationship between green purchasing and growth, given the CEO's environmental orientation. Ren et al. (2020) also found a similar beneficial relationship. They show that CEO's ethical leadership and environmental commitment have an impact on green human resource management, ecological engagement and environmental performance. Likewise, green HR practices can reinforce the organization's engagement to business strategy, green recruitment, green training and its positive effects on sustainability (Yong et al., 2019). The list of studies showing a positive relationship between environmental performance and economic performance is endless. In one way or the other, they all confirm that firms that are proactive, or have already taken environmental action, believe that environmental protection can be an important source of competitive advantage objectives (Lau et al . 2019).

4.5 Methods and data

4.5.1 Configurational approach

This complex scenario calls for a particular methodological approach, capable of addressing causal complexity. In understanding the conjunctural relationship between antecedents and materialization of ecocentrism, we use configurational comparative methods, in its fuzzy-set variant: fuzzy-set qualitative comparative analysis - fsQCA (Ragin, 2008). FsQCA is a set-theoretic method that allows for observing and analyzing

complex causal relationships involving outcomes resulting from many possible potential antecedents. It enables making causal inferences based on the notions of causal sufficiency and causal necessity and is particularly well-suited for addressing research questions dealing with complex causal relationships (Misangyi et al., 2017).

4.5.2 Data

Our data stems for Chile's IV National Survey on the Environment and Climate Change 2018[3], used by the Ministry of the Environment to assess and map the perception of citizens regarding the environment, their environmental behavior and their main environmental concerns. The survey informs policy around environmental responsibility, which involves minimizing the effects of people's behaviors on the environment and encouraging actions for environmental protection and recovery. The survey design for the IV edition draws on the American Environmental Values Survey, the Canadian Households and the Environment Survey and the EU's survey on Attitudes of European citizens towards the environment.

4.5.3 Sample

Chile's 2018 survey includes a random selection of 7,600 participants (18 years of age and older) across the country, including students, pensioners, blue-collar workers, CEOs, board members and founders of large corporations and active small business owners and managers. Our study focuses on the latter group, which comprises 1,229 individuals. We

[3] Methodological information and data is available at: https://mma.gob.cl/encuestas-nacionales-del-medio-ambiente/

focus on small business managers and owners since they have more steering capacity than their counterparts in large corporations, which are mostly driven by shareholders' interests and professional boards. To capture the views of individuals with interest in the environment, we applied a second selection criterion to create a sub-sample of 192 individuals who think that the environment is (or should be) an aspect of national concern. Since our method is sensitive to missing data, we had to discard 32 cases for a final sample of 160 individuals.

To reduce the risk of confounding effect at the level of the firm, we corroborated that the businesses involved are not addressing environmental issues directly. We explored the managers' responses regarding the role of SMEs in tackling climate change, in terms of how effective they think the actions of SMEs can be in tackling climate change. This under the assumption that if the sample comprises solely environmentally-driven firms, the vast majority of the participants will answer positively to this question, which in turn is likely to influence both the outcome and the other causal conditions. In line with our expectations, we observe strong variance, with 53% considering they can be effective or very effective, 27% considering they can be ineffective or very ineffective and 20% of the participants are undecided.

4.6 Measurement and calibration

4.6.1 Outcome condition

While measurement of environmental behavior has advanced significantly in recent years, most of the measures available draw on traditional conceptions of environmental management. Our outcome measure for the *formation of an ecocentric approach* seeks

to capture something different, which is the presence of strong ecocentrism consistent with two deep ecology principles: 1. the inherent worth of living beings regardless of their instrumental utility to human needs, and 2. the need of restructuring modern human societies in accordance with such ideas. To capture these principles, we aggregated the answers to two questions regarding the extent to which the participant believes that *1. the needs of other animal species to be equal or more important than those of human beings* and that *2. some individual freedoms must be limited to care for the environment*. Both questions use a 4-point agreement Likert scale. As a formative measure, we gave a score of 2 to those answers where the participant is in agreement or strong agreement with both statements, a score of 1 to those answers where the participant is in agreement or strong agreement with one of the statements and 0 if the participant is in disagreement with both statements.

4.6.2 Causal conditions

Ecological crisis comprises two questions, pertaining to climate change and perception of threats. *Climate change awareness* assesses the extent to which the participants believe that climate change is presently happening. It gives the respondent four options: 4. Yes, it is occurring in the present, 3. It might happen in the future, 2. It already happened, 1. it never will. The assumption is that the higher the score, the higher the awareness of the climate change situation. To capture *perception of current environmental threats*, we inverted the scores to the question: *how would you assess the quality of the environment in your regio*n, with 5 being excellent and 1 being very poor. So that, the higher the score, the higher the perception of environmental concern in the

present. To capture *perception of future environment threats* we inverted the scores to the question: *how do you feel about the future of the environment in your region*, with 5 being very optimistic and 1 being very pessimistic. So that, the higher the score, the higher the perception of future environmental concern.

Ecological reform comprises two questions, pertaining to changes in moral values and views on necessary lifestyle changes. Our measure of *Moral reform* uses a 4-point Likert scale to assess the extent to which the participant agrees with that engaging in actions to protect the environment is a moral duty. *Lifestyle reform* uses a 4-point agreement Likert scale assesses the extent to which the participant believes that reducing the consumption of goods is necessary to take care of the environment.

Finally, ***Ecological engagement*** comprises three questions pertaining to individual and collective engagement as well as benefits of such engagement. In terms of *Individual engagement*, we used a 4-point Likert scale to assess the extent to which the participant believes that s/he can execute concrete actions to protect the environment. Our measure of *social engagement* uses a 4-point Likert scale to capture the degree to which climate change is important to his/her friends and family. *Engagement benefits* uses a 4-point Likert scale to assess the perceived benefits of engaging in environmental actions and solutions. Since our study looks at small business management, we frame the benefits in the context of markets and economic benefits and ask the participant the extent to which s/he believes that taking care of the environment (in relation to their own contexts) can grow the economy.

4.6.3 Calibration

Calibration is essential in configurational comparative studies as it enables systematic comparison, ensuring that the different measures conform to dependably known standards. Using theoretical knowledge and distribution of raw scores, the research team specifies the score that would qualify a case for full membership in the sets of social enterprises with formalized impact measurement practices, as well as in the set of each of the causal conditions. Also, the score that would completely exclude the cases from each of the sets. It does so by using an estimation technique, automated in QCA 3.0 (Ragin & Davey, 2016) that transforms raw scores into set measures (Ragin 2007), rescaling the original measure into scores ranging from 0.0 to 1.0. Given the nature of our measures, both 4-item and 5-item scales were calibrated using 2 as threshold for full exclusion, 3 as cross-over point and 4 as threshold for full inclusion. For the calibration of the 5-item scales we used scale distribution setting crossover points in the middle of the scale, whereas for the 4-item we prioritized strong membership setting the crossover point above the virtual 2.5 middle point. Full calibration table is available from the authors upon request. Table 1 reports descriptives and correlations for our calibrated measures.

Table 3: Descriptives and correlations

		Mean	Std. Dev	1	2	3	4	5	6	7	8
1	Engagement benefits	0.67494	0.24157								
2	Current threat	0.37367	0.284246	-0.088							
3	Future threat	0.45001	0.382213	-.172*	0.035						
4	Moral reform	0.7139	0.25256	.509**	-0.015	-0.041					
5	Individual engagement	0.65533	0.219808	.470**	0.053	-.164*	.429**				
6	Social engagement	0.73623	0.298889	0.132	-0.047	-.174*	0.05	.160*			
7	Climate change awareness	0.90191	0.18751	-0.01	-0.025	0.072	0.003	0.058	-0.049		
8	Lifestyle reform	0.55624	0.276365	.444**	-0.027	-0.027	.314**	.336**	0.09	0.027	
9	Ecocentrism	0.74499	0.28455	0.153	-0.07	0.011	0.1	0.103	0.125	-0.019	.182*

* 0.05 ** 0.01

4.7 Data analysis and results

4.7.1 Necessary conditions

The analysis of necessary conditions in fsQCA looks at which individual factors may be necessary or mostly necessary for the outcome to occur. It examines whether one of the configurational enablers is individually enough to enable a formation of an ecocentric approach. In this analysis we test the subset relationships between the eight conditions and the formation of an ecocentric approach. As seen in Table 2, the analysis evaluates the degree to which instances of an outcome agree in displaying the causal condition thought to be necessary (consistency) and the empirical relevance of each causal condition (coverage). A condition can be deemed necessary when it surpasses the 0.95 consistency threshold while exhibiting a relatively high coverage (~>0.8). Results of the necessity analysis are shown in Table 2.

Table 4: Analysis of necessary conditions

Conditions tested	Consistency	Coverage
Climate change awareness	0.950528	0.785157
Perception of present threat	0.446187	0.889575
Perception of future threat	0.501775	0.830685
Moral reform	0.811190	0.846521
Lifestyle reform	0.674930	0.903964
Social engagement	0.826089	0.835929
Individual engagement	0.770208	0.875588
Engagement benefits	0.785242	0.866747

Our analyses reveal three conditions with stronger fuzzy subset relationship (>0.8) with ecocentrism and its two component parts: Climate change awareness, social engagement and moral reform. Yet, none of them are necessary for the outcome to occur. Worth noting the low consistency levels in the role of perception of present and future threat, which is counterintuitive in light of current thinking.

Alongside revealing degrees of necessity, this analysis allowed us to retain the six causal conditions with higher consistency levels (marked in grey shading) to be used in the subsequent configurational analysis. All conditions selected are also empirically relevant, which means that the constraining effect of each condition may be great. The use of six conditions in intermediate-Ns studies, Marx and Dusa (2011) explain, allows for balancing parsimony and explanatory richness. To corroborate the robustness of our selection of variables, we run a complementary test using hierarchical cluster analysis, which shows that indeed the six selected conditions are closely connected (Appendix A).

4.8 Complex antecedents of ecocentrism

Once the measures are calibrated, fsQCA 3.0 constructs a *truth table* listing all 64 (2^6) logically possible combinations of causal conditions along with the cases conforming to each combination. In order to reduce the truth table to simplified combinations, we used a frequency threshold of one and a consistency threshold of 0.94. These two thresholds specify the minimum number of cases to be considered in the analysis (frequency) and the minimum acceptable level to which a causal combination is reliably associated with the outcome (consistency). Based on the truth table analysis, fsQCA applies counterfactual analysis and logical minimization to reduce the truth table rows to a set of simplified combinations of conditions, which constitute the main results shown in Solution Table 3.

Table 5: Solution table for the formation of ecocentrism

	Ecocentric approaches			
Configurations	**1a**	**1b**	**2**	**3**
Climate change awareness	●	●	●	⊗
Moral reform	●	-	●	●
Lifestyle reform	●	●	-	-
Social engagement	-	●	●	●
Individual engagement	●	●	●	●
Engagement benefits	-	●	⊗	●
Consistency	0.93	0.94	0.94	0.96
Raw coverage	0.602	0.557	0.340	0.1002
Unique coverage	0.057	0.015	0.030	0.023
Approaches	*Market reformist*		*Legitimated decouplist*	*Self-centered activist*
	Internally-driven	*Externally-driven*		
Overall consistency	0.92			
Overall coverage	0.672			

Table 3 shows the different combinations of conditions that are linked to the formation of an ecocentric approach in terms of causal sufficiency, as well as the strength of the causal relationships between the combinations of conditions and the outcome. The Solution Table distinguishes core and peripheral conditions. This is based on how causal components are causally connected to a specific outcome. Core conditions are decisive causal ingredients that distinguish configurations, and peripheral conditions act as complementary ingredients that only make sense as contributing factors. In fsQCA, large black circles represent core conditions with small black circles being a reflection of peripheral conditions. Circles with an X are used to indicate the absence of condition. No circle indicates that the condition is irrelevant for explaining the outcome of interest.

The overall solution is highly consistent (0.92) and empirically relevant with a 0.672 of coverage (superior to the 0.65 standard), with individual solution terms exhibiting equally consistent results ranging from 0.93 to 0.96. Our configurational analysis reveals the salience of individual engagement across solutions and three distinct combinations of antecedents or unique recipes for the formation of ecocentrism, yielding three distinct approaches: we label: *Market reformist, Legitimated decouplist and Self-centered activist.*

Market reformist (Solutions 1a/b). This approach is driven by ecological reform, particularly by the need to change our modern consumption-driven lifestyle in order to achieve environmental sustainability. Overall lifestyle reform is particularly relevant to ecocentrism, because of its nature as a paradigm-changing perspective. This type highlights the centrality of modern human life to the development of ecocentrism and the fundamental changes required to the prevailing economic-centric view. This type challenges the essential core of environmental management, decoupling, ecological

modernization and other manifestations of eco-efficacy, where current markets, technology and consumption patterns are still seen as reconcilable with environmental protection and restoration. Interestingly, there is no negation of the role and contribution of markets, but a different kind is required. A ***Market reformist*** can be either internally driven (1a) or externally driven (1b). Solution 1a, within the S1 superset, shows three internally-driven factors: presence of climate change awareness, moral reform and individual engagement as peripheral conditions accompanying lifestyle reform. Here, the market reformism underlying ecocentrism is mostly driven by environmental values and commitment to individual action. On the other hand, Solution 1b brings the presence of social engagement and engagement benefits to the fore, replacing moral reform and individual engagement. It is equally aware of climate change, but the approach is informed by cultural norms and the perception of collective benefits derived from individual action. In essence, we observe two distinct push and pull effects. While solution 1a pushes values toward ecocentrism through market reformism, solution 1b embraces the context to mobilize market reformism.

Legitimated decouplist (Solution 2) is driven by social engagement and the conviction that environmental protection is indeed decoupled from economic growth. This type is likely to embrace the ideas of the degrowth community, since cultural norms appear as central in the formation of ecocentrism. As with deep ecology, the idea of degrowth is value-driven yet largely criticized by traditional economics and management due to its radical nature, unrealizable to most contributors. It is a challenger movement (Bertels et al. 2014) and, as such, collective support and legitimacy are necessary to encourage and mobilize individual engagement and action.

Self-centered activist (Solution 3) is unaware of ecological crisis and the need for market reforms, yet it is actively engaged in actions to protect the environment as these are seen as the right thing to do and derive benefits to the individual. While this approach defies the norm in terms of the absence of the two key factors (climate change and consumption reform) that ecocentrism seeks to counteract, our analyses show that oblivious idealism can also lead to the formation of a new ecological thinking. It is possible that ecocentrism is not necessarily triggered by the causes and consequences of environmental degradation but can exist as an ecological philosophy, simply inherent to human beings as the new biophilia hypothesis postulates (Van den Born et al. 2001).

The salience of individual engagement. While peripheral, individual engagement appears as a constitutive factor of all three solutions. This suggests that ecocentrism might be less naïvely idealistic and more action-driven than previously thought. The fact that those who have formed ecocentric convictions overwhelmingly believe that they can do something to protect the environment and execute concrete actions offers clear evidence in that direction. This resonates with Zhang et al. (2014), in the sense that the closer we get to nature, the stronger the connection and the engagement to it becomes. Closeness, relatedness and engagement with nature are essential yet underexplored aspects of sustainable behavior.

4.9 Discussion

Ecocentrism has grown in importance within business sustainability, in theoretical and practical terms, but so far we have failed to explain what triggers its formation. Our attempt to explain comes with a dual challenge. First, current theoretical frameworks and

measurement seem ill-equipped to capture the key principles of ecocentrism and the complex set of antecedents that can lead to it. In response, we turned our attention to deep ecology to conceptualize and construct an outcome measure, mapped out potential antecedents and developed an explanatory framework with three pillars pertaining to sensing, envisioning and enacting ecocentrism: *ecological crisis, ecological reform and ecological engagement*. Given the nature of ecocentrism, we grounded the development of our framework in Gosling and Case (2013)'s ecocentric ethics and the ideas of social dreaming and future imagining. To tackle the complexity of the phenomenon, we leveraged a novel configurational method to uncover what lies under ecocentric thinking across a large sample of small business managers.

Our analyses reveal three configurations of conditions explaining ecocentrism in small business management, forming three ecocentric approaches: *Market reformist, Legitimated decouplist and Self-centered activist.* Combined, these three types give us a more fine-grained understanding of how ecocentrism can be formed in small business management. It allows us to decompose and go deeper into our understanding of more radical ecological thinking, as applied to business sustainability. It also allows us to evidence counterintuition and that outliers can exist even within approaches that are conceived already as outliers. In particular, it allows us to reflect on how ecological reform, as a forward-looking dimension, interacts with ecological engagement in its outwards-looking state. This suggests that ecocentrism is less value-centric and anchored in nostalgic idealism than traditionally considered. Our results suggest that this unique ecological philosophy can exist in the outskirts of management and has the possibility of

inspiring eco-action within small businesses, though they also imply that the chances of finding ecocentrism fused with mainstream management is fairly minimal.

As we look under the ecocentric hood, we make two interesting discoveries. First, the salience of climate change awareness in the necessity analysis, despite playing a peripheral role in the sufficiency analysis. This suggests that climate change is deeply integrated into ecocentric logic, but no longer a decisive factor in triggering ecological thinking. Second, the irrelevance of the perception of present and future threats, which seems to work alongside the surprising role of climate change awareness. Sustainable behavior research emphasizes that increasingly personal concerns about the environment will increase environmental engagement (Eom et al., 2016; Eom et al., 2018). However, against our current understanding of pro-environmental behavior, our results show that these perceptions are neither necessary nor sufficient for the formation of ecocentrism.

This also challenges our current understanding of what triggers the recognition of sustainability opportunities in small businesses and entrepreneurship, which is pro-environmental in essence. For example, Patzelt and Shepherd (2010) and Hanohov and Baldacchino (2018) place ecological disturbances and perceptions of environmental threats front and center in the decision to pursue sustainability-oriented business opportunities. Likewise, Muñoz and Dimov (2017) empirically show that perceptions of threat trigger moral commitment which in turn increases the intention to act. More recently, Eller et al. (2019) found that awareness of adverse consequences and entrepreneurial attitude do indeed influence the process of sustainable opportunity

identification. Evidence so far seems to support the idea that perception of threat is a relevant condition triggering sustainable enterprising behavior.

While it is possible that some people might have already overcome fears of ecological catastrophe, we believe that our results capture and explain a different type of environmental logic. Ecocentrism appears as less alarmist than other environmental movements, take the extinction rebellion for example. The call for attention and action seems to be informed, on the contrary, by understanding, conviction and desires of change, rather than by voiced concerns about ecosystem collapse. A veil of doubt nevertheless prevails, because we might be either witnessing a leap forward in pro-environmental behavior, liberating anthropocentric individuals from their mind-forged manacles, or a definite neglect of the seriousness of the current situation.

Our work makes several contributions to business sustainability literature. First the paper offers a multi-dimensional framework grounded in ecocentric ethics and a systematic characterization of ecocentric thinking in business sustainability, which lay the ground for a new understanding and conceptualization of sustainable decision-making. We conceptualize, organize and operationalize a set of antecedents and outcomes regarding ecocentrism, which contributes to the reconciliation of previous efforts whilst filling important gaps in the literature. The conceptual apparatus developed can inspire and guide future research efforts in this area.

Second, leveraging our framework, we provide an empirical typology capable of accommodating distinct ecocentric approaches. They reveal that ecocentrism is indeed different, exposing three unique ways in which it materializes and how it distinctively departs from traditional anthropocentric environmental thinking and decision-making. We

show what matters and when for the formation of a more radical ecological approach in small business management, thus providing insight into how “deep ecology radicality” might look like in a business context. In this sense, the multi-dimensional framework and typology can assist the development of new areas of research, for example regarding how change makers and entrepreneurs make decisions in regenerative organizations (Branzei et al. 2017; Vlasov, 2019; Quarshie et al. 2019). It will also allow for an expansion of our understanding of purpose-driven behavior in sustainable enterprises (Muñoz et al. 2018), which has dominated the debate of the forces underlying sustainable business development, as in benefit corporations and community interest companies (Stubbs, 2016; Cho, 2017; Moroz et al. 2018).

Drawing on arguments of causal necessity and sufficiency, our work also provides counterintuitive evidence on the irrelevance of causes so far deemed essential to ecocentrism and untap causally-relevant conditions, and combinations thereof, largely ignored in the literature. Most notably, the effect of perception of environmental threats, so far assumed to be central to mobilize pro-environmental action. We offer empirical evidence that reinforces the uniqueness of ecocentrism as part of a larger set of environmental approaches.

Limitations and future research. Inevitably, there are limitations to our research, which also open up a number of opportunities for future research. A first limitation pertains to the context of study. While ecocentrism conveys relatively universal ideas regarding equal rights and radical change, unique social and cultural realities can influence both how people understand their relationship to the environment and the scope of the change needed. Over the past decades, individualization, consumption and competitive markets

have expanded in Chile, forming a western socio-economic model that is closer to the USA's capitalism than Europe's welfare states. It has the highest per-capita GDP in Latin America, yet exhibiting highly strong inequalities, which seat at the core of the explosive social unrest experienced at the end of 2019. The rate of environmental degradation and pollution levels can also play an important role, as these are also context-specific. These are important boundary conditions, as responses to a similar survey might look different under other social, cultural and economic realities. This calls for cross-country comparisons, where new studies can test the role of context in the formation of ecocentrism.

A second limitation involves the selection of our outcome measure, since we opted to use a formative, internally-conceived measure of ecocentrism, instead of an externally-validated reflective proxy. Current approaches to measuring pro-environmental approaches focus mostly on ecocentric-anthropocentric distinctions at the level of attitudes and values (e.g. Thompson and Barton, 1994), environmental ethics (e.g. Mikkelson and Chapman, 2014), pro-environmental behavior itself (e.g. Markle, 2013), or the degree of relatedness to nature (e.g. Nisbet et al. 2008; Zelenski, and Nisbet, 2012). These have been extensively used, but do not capture biospheric egalitarianism, restriction of human rights in favor of non-human living systems and radical change, all inherent to ecocentrism and deep ecological thinking. Our measure, while not reflective, captures these two essential elements. This also constitutes an opportunity for future research and scale development, one that allows us to capture and assess in a reflective manner these key ecocentric principles.

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5 Chapter 3: Beyond Environmental Protection: Human-Animal work in Regenerative Organizations[4]

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5.1 Abstract

Interest in environmental protection has grown in business sustainability research and management scholarship more broadly. The emphasis on regulation, market incentives and the business case, however, has moved the focus away from the natural world, restricting our capacity to understand how environmental protection is seen, experienced and enacted on the ground by organizations interested in looking after nature. In this paper, we report an ethnographic study of Fundo Panguilemu - a regenerative farming enterprise in Southern Patagonia - to show how a unique collaboration is formed between the organization and non-human animals to restore and protect nature, we call: human-animal mutualism in environmental protection work. This unique symbiotic collaboration is organically formed and actively maintained by the enterprise and is characterized by mutual rewilding, relational ambivalence, and task interdependence. Our findings highlight the importance of understanding meaningful human-animal relationships to

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advance our knowledge of environmental protection and business sustainability more broadly.

5.2 Introduction

Interest in environmental protection (EP) has grown significantly in recent years, because it is seen as central to advancing business sustainability. In broad terms, EP refers to the effort of institutions and organizations to protect, safeguard and restore the environment (Kong et al., 2019; Chapman et al., 2020). As such, it is thought that EP has the potential to counterbalance anthropocentric tendencies (Lewis & Maslin, 2015). It can potentially increase environmental awareness and motivate organizations to address climate change, and in consequence repair and sustain ecological systems (Loreau et al., 2001; Lau et al., 2019). Two approaches dominate EP thinking and practice: government-push and business-led protection. The former is centered on command-and-control regulation and market-based incentives, whereas the latter focuses on voluntary industry agreements and self-regulation (Khanna, 2001; Stewart, 2001).

Despite their predominance and relevance within the business sustainability debate, they have been widely criticized as being too rigid, inefficient, harmful to competitiveness, and unlikely to actually produce effective environmental protection (Kim et al., 2017; Aragon-Correa et al., 2020). Government-push protection is too bureaucratic and systematically ignores functional ecological interdependencies (Stewart, 2001; Gunningham & Holley, 2016; Tian et al., 2019), while business-led protection only works if it is good for business; in terms of efficiency, differentiation, investment opportunities, and non-competitive strategies (Lyon & Maxwell, 1999; Blackman et al., 2010; Howard-Grenville et al., 2017). In doing so, they have moved the focus away from the natural world, neglecting the micro-

level interactions through which organizations engage with ecosystems in their attempts to repair and protect them (Restall & Conrad, 2015; Fios, 2019). This has been surprisingly overlooked by organizational scholars. As a result, the valuable relationships formed and enacted by organizations, as well as the drivers and mechanisms of environmental protection remain hidden away.

This, we argue, is a missing opportunity. Looking under the hood of businesses committed to protecting nature, in terms of how they form and maintain intimate relationships and interactions with nature, could potentially reveal radically different protection practices and mechanisms (Huber et al., 2020) and eventually bring to the fore novel forms of organizing with and around them. In this paper we ask: how is environmental protection seen, experienced and enacted on the ground by organizations interested in looking after nature?

To answer this question, we conducted an ethnographic study of Fundo Panguilemu in Southern Patagonia, Chile. Fundo Panguilemu is a regenerative farming business that approaches sheep farming, small agriculture and tourism using Holistic Management philosophy and practices. As a regenerative business Panguilemu seeks to enhance, and thrive through, the health of social-ecological systems (Hahn and Tampe, 2020). Data was collected between July 2019 and December 2020. Our approach draws on the work of Whiteman (2010) and Guthey et al (2014), who emphasize that to truly understand interactions in socio-ecological contexts, first-hand situated knowledge is essential. By bringing together sense of place and live experience, we were able to develop a deeper, more grounded understanding of environmental protection.

We discover a unique form of collaboration, which is formed between the enterprise and non-human animals to restore and protect nature, we call: human-animal mutualism in environmental protection work. The idea that the development of mutual dependencies between humans and non-human animals, and purposive collaborative work between species, are necessary to restore and protect the immediate natural environment. Here, mutualism is used to describe the ecological interaction between species, where each of them seem to benefit from the collaborative work and ecosystems are restored and protected as a result of mutual benefit. As an active behavioral choice, this unique symbiotic association is organically formed and actively maintained by the enterprise through mutual rewilding, relational ambivalence, and task interdependence.

Human-animal mutualism explains how environmental protection is seen, experienced and enacted by a regenerative business. To make sense of our discovery, animate the discussion and open up new avenues for theoretical development, we engage with three conceptual spaces: environmental protection work, natural relatedness and human-animal work. Through this discovery, we contribute to literature in at least three ways. First, we contribute to business sustainability literature by revealing a new approach to environmental protection and three micro-level mechanisms. Through them, we offer an alternative, grounded view of management for environmental protection. This is engrained in the life of an organization as a form of ecological work that does not rely on rational instrumentality or a business case, rather one that is felt, experienced and co-enacted by different species. Our discoveries re-direct the "business-led" approach to protection towards a "with-nature " approach, which changes the "how", "what" and "why"

of environmental protection and ecosystem restoration. We also contribute to the growing literature on regenerative organizing and sustainability-as-flourishing.

5.3 Approaches to Environmental Protection

Environmental Protection (EP) refers to the efforts of organizations or individuals to protect, safeguard, and restore the environment (Kong et al., 2019; Chapman et al., 2020). Stakeholders seeking to improve environmental quality and/or natural resource management have adopted several approaches to protect the environment, which have evolved along "government-push" and “business-led” protection. In consequence, research has been focused mostly on explaining whether and how policy incentives, enforcement, voluntary action and self-regulation can set limits and reduce harm whilst creating economic benefits.

‘Government-push’ protection involves mandatory, command-and-control regulation. This approach has mainly used market instruments based on macro-regulations, compensations, and penalties to encourage the adoption of environmental protection systems (Fisher et al., 2003; Anton et al., 2004). They usually set up limits on the amount of emissions and polluting practices (Stavins, 1995); and use market instruments, e.g. taxes and tradable permits, to direct action. (Lemos & Agrawal, 2006). Regulation has been the dominant tool for controlling negative environmental externalities in many developed and developing countries (Segerson, 2013). Through institutions and agencies, e.g. the United States Environmental Protection Agency (EPA), or China's 13th Five-Year Plan for Ecological Environmental Protection, the regulatory approach has attempted to parameterize business performance, its ecological impact, and increase the

mitigation potential of climate change (Romero et al., 2018; Ficko & Bončina, 2019; Mao et al., 2020). On the other hand, “business-led” protection has sought to protect through voluntary action and self-regulation. This approach encourages businesses and organizations to achieve consistent environmental performance with ecological sustainability practices and protection and ecosystem conservation policies (Khanna & Brouhle, 2009; Carraro & Lévêque, 2013). The objective is to set flexible and consistent goals according to the organization’s own restrictions and wills (Bu et al., 2020). Lyon & Maxwell (1999) identify three mechanisms: i. unilateral commitments by industrial firms, or business-led corporate environmental programs, ii. public voluntary schemes, in which firms adopt standards that have been developed by public environmental agencies, and iii. negotiated agreements created out of a dialogue between government authorities and industry. Following the adoption of voluntary practices, many organizations have seen improvements in legitimacy, savings in administrative and transaction costs, and new opportunities to consolidate competitive advantages (Segerson and Miceli, 1998; Annandale et al., 2004; Džubáková, 2019; Wang et al., 2019).

Despite their benefits, current approaches to environmental protection have been widely criticized, mostly due to that they take natural environments as resources or contextual containers at best. Although mandatory approaches have been widely adopted, and seem consistent with policy objectives, from an environmental economics viewpoint they seem inconsistent as they provide little flexibility with respect to ecological interdependencies, and in turn, are cumbersome and costly to implement (Segerson, 2013). Some argue that the government-push approaches are incapable of delivering environmental protection since policies remain detached from reality and driven by two, arguably misleading,

questions: What is the acceptable level of pollution/ deterioration? And what kind of legal norms will be the most adequate to reduce pollution/ deterioration to that level? (Lazarus, 1992). Business-led approaches have also been criticized, because they tend to frame the environmental protection problem as a problem of maximization of aggregate welfare, which is solved by maximizing profits minus the costs of protecting the environment. Thus, it is seen as an economic/mathematical problem rather than an ecological one (Hahn & Stavins, 1992; Stavins, 2019), which results in a problematic detachment from the object of protection. Through this approach firms neglect the undeniable connections, interactions and relationships they have with nature.

In sum, neither of those place emphasis on nature nor explain how protection happens on the ground. Here lies a problem in management scholarship, but also an opportunity, because we know very little about micro-level interactions and relationships, i.e. how businesses and nature interact and work together in the act of protection. We thus ask: how is environmental protection seen, experienced and enacted on the ground by organizations interested in looking after nature?

5.4 Research setting and methods

To answer our question, we conducted an ethnographic study of a regenerative farming business in Southern Patagonia (Chile), called Fundo Panguilemu. Regenerative organizations are unique businesses that enhance, and thrive through, the health of social-ecological systems in a co-evolutionary process (Hahn and Tampe, 2020). At the core of these businesses, there is the basic assumption that the human economy is a subsystem of natural ecosystems. As such, environmental protection should be looked

at, assessed and promoted from the ground up following ecological, rather than economic criteria (Costanza et al., 1997; Harris & Roach, 2017). The underlying rationale is that through a regenerative approach, businesses, which are part of overarching social and natural systems, can enhance the health and functioning of natural ecosystems while at the same time thrive as a business (Hahn and Tampe, 2020). These enterprises tend to follow nature's principles and mechanisms (Muñoz & Cohen, 2017), and have begun to develop innovative practices of ecological protection and restoration (Branzei et al. 2018). Regenerative businesses can open a new conceptual space and expand our limited understanding of environmental protection, and the organizational micro-level practices that nurture it.

> Fundo Panguilemu is dedicated to regenerative farming with the goal of emulating nature. We work to maintain and improve the health of soil and water, increasing biodiversity, respecting all life forms, and sharing the magnificence of nature. Our land management practices result in a significant amount of carbon sequestration, which is vital to climate change remediation. We are a lighthouse inspiring people, demonstrating innovation in good business practices, production of healthy food, and preserving local culture.

Fundo Panguilemu is located in a remote area in the Aysén Region, 8 miles from Coyhaique. Panguilemu estate is 1,064 hectares; 500 of which are destined to pasture and the rest is kept as Native Forest (Nothofagus). Panguilemu was co-founded by Jose and Elizabeth, both with extensive experience in regenerative sheep farming. Jose is a veterinarian with more than 20 years working as international consultant in sheep/beef farming, regenerative farming and farm business development. Elizabeth has international farming experience in New Zealand, Canada, Sweden, USA and Patagonia. Before founding Panguilemu, she managed Sección Río Grande Cameron, with 30,000

sheep in Tierra del Fuego. Jose and Elizabeth met in 2010 in Tierra del Fuego, got married and co-founded Panguilemu in 2014 as their life project. They use Holistic Management to guide farming and environmental restoration and protection practices. Holistic Management is a decision-making framework for livestock management and the development of regenerative projects.

> Holistic grazing is the idea that by mimicking the rotational patterns of wild grazers and intensively grazing large numbers of animals we can reverse desertification, increase the health of soils and sequester carbon[5].

Jose, Elizabeth and Domingo (farm foreman) and a group of volunteers look after 1,800 sheep, 50 beef cattle and 300 breeding heifers and a small family-run farm. They offer a range of products and services including organic produce, organic grass-fed beef and sheep, regenerative sheep & fine wool, firewood and also ecotourism, training and Holistic Management education. At Panguilemu, they seek to promote a change in the agri-food model, focused on sustainable, and responsible production. They are advancing a novel land to market model for families, small stores, restaurants and lodges. In the context of Holistic Management, Panguilemu is considered as a demonstration farm, given the advanced ecological practices and the results they have achieved in terms of environmental regeneration and protection.

> Do we want a model that makes our planet sick, or destroys, or a model in which the regeneration of the earth is central, along with the quality and safety of the food produced? We live and work to regenerate nature, the global economy and people's hearts while inspiring more people to do the same.

[5] https://www.surgeactivism.org/allansavory

In terms of protection and restoration, their approach has proven successful, increasing pasture productivity and carrying capacity by 300 % in 3 years, improving biodiversity and carbon capture capacity in almost 100 % of the soil. Improvements have been captured using Ecological Outcome Verification (EOV).

> We demonstrate and inspire others with a successful business, strong ethics, supporting the health of the land, capturing carbon, increasing quality of life and giving dignity and hope to rural activity.

5.4.1 Data collection

Our data collection was inspired by Whiteman's (2010) and Guthey et al.'s (2014) work on sense of place. We were interested in gathering first-hand knowledge of localized actions and interactions, between the firm, the family and nature in the pursuit of protection. Such an approach is central to discovering how nature and sensemaking interact with each other in the act of protection, as the organization understands and makes sense of the problems at hand and formulate decisions to tackle them.

Our data was collected from July 2019 and December 2020. First, the first author spent one week at Panguilemu in July 2019, experiencing the farm and getting to know the founders. We conducted ethnographic interviews that encouraged Jose and Elizabeth to share their experiences as conversations, but we did not guide the conversation towards our research questions. Through these interviews we captured personal experiences, the founding of Panguilemu, approaches to environmental regeneration and protection, relationships and interactions with nature, and farm management practices. Several of these conversations were recorded. We also engaged in more casual conversations while walking around the estate with both of them, which also included repairing fences and

sheep herding. These were not audio recorded, instead we collected evidence using field notes, video recording and photos. These can be seen in the exhibits below.

During interval 1, between July and October 2019, we kept close and frequent contact with the family and began to make the arrangements for the second, more extensive, data collection effort. Over that period, we talked with them on a weekly basis.

In November 2019, the second author traveled to Panguilemu to work as volunteer for 35 days, living with the founders for such a period. We collected a large amount of data and from a variety of sources, including participant observation, field notes, formal interviews and casual conversations. Participant observation was done mostly during working hours. To give the reader a broad understanding of the context of data collection, we offer in Table 1 a narrative of a typical day working at Panguilemu. The story is part of the notes taken by the second author, therefore it is written in first person. The story revolves around an electrical fault in the fences separating grazing spaces. We (Domingo and the second author) had to identify where the fault was, quickly, because the sheep were crossing under the fences and thus interrupting the regeneration process.

Table 6 A typical day of work in Panguilemu: Data collection context

I started the day cleaning the entrance to the bathrooms (they are separate from my room). I had the pleasure of meeting Don Domingo. He is like the "foreman" of the farm. He offered me a welcome "Mate" (typical Patagonian drink) and I accepted without hesitation. Elizabeth gave us today's job: finding the solution for the electric fence and moving some sheep because some areas of the field had to rest. We started our journey with Don Domingo. While we were walking, I took advantage of talking with him. Don Domingo has been working at the farm for approximately 4 years. He has worked in the fields all his life. He came to work with Elizabeth on carpentry matters. He has only one son. He lives in Aysén and works in mechanics and welding. He told me that the field is not like before. In the beginning, he worked with 3 more people and about seven volunteers who rotated constantly. “Nowadays it is too much work for Elizabeth and José, since now I am partially working here,” Don Domingo commented to me.

Traveling this immensity also generates a cost, mainly physical. Don Domingo usually resents his right knee. Why is Don Domingo still here? ask. "You see that mountain at the end" ... Not much, but I can distinguish some things, I replied. "There is a group of sheep hidden, wait, and you will see them move" ... To tell the truth ... I only partially saw something very far away and white. Only a few minutes passed and a group of sheep moved just as Don Domingo said. I looked at him in surprise and asked, How did you know? He looked at me very kindly and laughed. He mentioned to me that the field gives him peace, it gives him tranquility, that it is one of his favorite places and that he could not work in the city. Take advantage of that confidence to keep asking what the field was for him, what nature means. He replied that nature is something that we cannot control, that it will always be upon us. "We will leave this world, and nature will continue to advance generation after generation," he mentioned. "Our job is to try to help where we can, and above all adapt to it" [referring to nature].

I had the privilege of seeing how Don Domingo was able to change horses and sheep without lashing or violence, only with hissing and his shepherd dogs "Gaucho" and "Corral". I was able to record it, so I look forward to reviewing those videos in more detail. Don Domingo teach me how to test the voltage on electric fences since he had to keep moving animals. I started walking around the field trying to find the fault in the fences. I was tired, and I wondered on more than one occasion if it was "so important" that a specific fence did not have the necessary current. These fences divide the immense fields. They have three strands of current, and the machine that tests the voltage level only returns the error and the possible direction of this. This means that the error can be 1 km or 10 km, but we will not know specifically where the error is. To find the error you have to go testing -in theory- "fence by fence". After a long journey, I managed to find the "possible" problems. Luckily for me, these were right on the field called “El Mirador”. It has a view of the valley that is truly amazing. The farm has 1,064 hectares and is divided by multiple fields. I still do not know all the names, I know that this "El Payaso"; "Los Faisanes"; "Las Chivas"; "El Mirador" and others. While you were waiting for Don Domingo to arrive to solve the problem, take some pictures. When Don Domingo arrived, we realized that there were "multiple" problems with the fences. We tried to repair each one of them, and apparently, we had a bit of luck because the machine that tests the current level stopped marking "error". We walked a long way back home. Once at Elizabeth's house, she asked us if we solved the problems. At that moment she asked why fences were so important. Elizabeth looked at me very seriously, and she replied: “Fences are vital for regeneration. Maintaining care allows the animals not to cross to other farms. When they cross, they mistreat and interrupt the regenerative process of that sector. If that field is not 100% regenerated, the damage caused even contributes to climate change. That is why I am so strict with fences”. At that time, I think I understood a little more about Panguilemu's work.

In the second part of the day, I took care of Elizabeth's children. She needed help as clients were coming for an agritourism hike. Elizabeth mentioned to clients that some horses are more "gentlemen" than others (I think she meant safer). Don Domingo prepared the horses and they went out to tour the field. This hike ends with a picnic dinner at Elizabeth's home. I saw her very happy, and she told me that everything went well.

We share a beer with Don Domingo. He tells me more stories from his life. He did not have the possibility to study. However, he possesses a lot of field knowledge that is not taught in the classroom. He regards Elizabeth as his friend. I commented on my thesis very generally, "I am glad that there are still people

like this, the young people of today do not care about our resources, about our water and our fields, they only care about technology and making money," he exclaimed. We continued talking for a few minutes and I went to my room.

This day I went to rest thinking about the fences, the meaning for Elizabeth, and the importance of the farm. I wonder what our fences are.

We also captured information during Holistic Management training and grazing planning sessions and through conversations with Jose, Elizabeth and Domingo, at different times of the day. We paid attention to how the memories, experiences and daily interactions with nature relate to their identities and potentially influence their attitudes and behaviors towards restoration and protection. Both notes and conversations were focused on the daily ecological work carried out by the organization. We also included reflections around emotions and physical work in isolation. This information was gathered in a shared digital diary, which included notes, audio recordings of casual conversations, videos and photos. As with the first round of data collection, we also conducted semi-structured interviews with all of them, to have more structured accounts of their views, practices and experiences. During both visits, we collected over 800 photos, 502 minutes of audio recording, and 300 minutes of video recordings.

In interval 2, during 2020, we remained in contact with founders, and engaged in casual conversations on a regular basis, at least once a month. We talked with Elizabeth directly via WhatsApp and used Facebook and Instagram to engage with their posts and news. We talked about the farm, weather conditions, and the stubborn sheep. We talked about their kids, how fast they have grown since we last saw each other. We talked about the animals, how their dogs ‘Tato’, ‘Judas’ and ‘Morita’ are doing (see dogs in action in Exhibit 4). We also often talked about their horses, ‘Morena’ and ‘Ali’, particularly about ‘Ali’, as

this was the horse that helped the second author to get the work done during his/her visit. We also talked about personal projects, and how exciting it would be to see each other again. Elizabeth and Jose have invited us many times to return and live and work with them in Panguilemu. We look forward to seeing them again, once the COVID restrictions are lifted.

5.4.2 Data analysis

We analyzed the data in an iterative, inductive manner, and consisted of three main overlapping stages: sensemaking, initial coding and the development of conceptual categories.

Sensemaking and reflexivity between authors. This stage started after our first visit in July 2019 and continued until early 2020. Using the digital diary, we shared our experiences with each other during and right after the data collection period. During data collection, we remained in touch via WhatsApp, sharing daily experiences and insights from fieldwork. This was instrumental to gain familiarity with each other's experiences and enable a more fluid collective sensemaking. We did not focus on any particular research question, we just let the experience and emotions guide the materialization of empirical insights. While we included observations and personal reflections, we explicitly differentiated them with the aim of not reinterpreting the observations twice.

We immediately noticed the relevance of environmental restoration and protection, not just as part of Holistic Management but how central it was to the founders and the operation of Panguilemu more broadly. After reviewing literature on environmental restoration, it became clear to us that what they were doing was different from what we

knew. We noticed that environmental protection was a key facet of organizational life, with clear protective duties and restoring responsibilities. We were also impressed by their connections to their animals and the degree to which they rely on each other. Also to nature, not only in terms of closeness to it and depth of interaction, but also in terms of the emotions triggered by the aggressiveness and cruelty of nature, as interpreted by humans. Also, how they were letting things go, to allow nature to do its work. This collection of insights guided our coding procedure.

Initial coding. In early stages of coding, we noticed that verbal accounts were guided by a particular view on natural ecosystems and their role in them, which seem to emerge from their experiences and the relationships they have formed within the farm. Through our coding, we discovered a number of affective, cognitive and experiential connections with nature. First, relationships are described as meaningful, long-lasting and mutually beneficial, expressions such as ‘When you know the place, you understand why you want to be part’, ‘Restore, and the native trees reappear” and ‘In my free time I go to the forest, I leave oxygenated’.

Embedded in those relationships, we discover an interesting presence and acceptance of ‘emotional ambivalence’, which was surprising given the predominant idyllic view of nature. For example, when they reflect on the positive and negative aspects of being too close to nature. They seem to like the links they have formed with non-human species, noting for example that ‘The birds help them build the forest” or that “Nature was giving them the wisdom they needed’ to protect and restore. But at the same time, we noticed expressions of dislike, when nature was ‘fighting against’ them, because ‘it does not want to be looked after’. Particularly facing harsh weather conditions, or the sheep’s natural

predators. Then, nature was being ‘harsh’ and animals ‘cruel’ and ‘cunning’, yet they knew that that was the ways of nature.

We also coded their ways of ‘thinking’ nature, and the relationships humans have established with it, which have been to a large extent, damaging. They think ‘nature had everything under control’, then ‘humans came with a linear thinking’ and ‘began to destroy the natural behavior of animals’. It did not make sense to them that ‘The earth is 70% water and we have drought’. They call for a ‘change to the traditional paradigm’ (i.e. economic extraction model), and they see themselves ready to take on the challenge, because they “are trained (cognitively and emotionally) for other priorities’. In many instances relationships were described from an experiential point of view, such as ‘doing regeneration is more rewarding than talking about it’. Upon reflection, we noticed that these affective, cognitive and experiential connections with non-human animals converge around a sense of belonging to that place and search for purpose: environmental restoration and protection. This led us to derive a pivotal empirical insight in our research, the idea that they constantly work together with animals, forming a deep and mutually beneficial relationship with them, to restore and protect their surrounding ecosystem.

Developing conceptual categories. In a third stage, we proceeded to play with the empirical insights, cluster codes and explore areas of meaning. We moved from initial coding sticking close to observations towards more aggregate dimensions in search for conceptual categories (Gioia et al., 2013), looking particularly for distinct elements within the relationships formed with their animals. There were many overlaps between affective, cognitive and experiential connections between animals, so discriminant validity became central in our analytical work. Our analysis converged around three distinct themes, which

we believe are central to both environmental protection and the way this organization was conducting its business: ‘Mutual rewilding’, ‘Relational ambivalence’ and ‘Task interdependence’. In Table 2 we provide illustrative evidence for each of the themes.

Table 7 Dimensions of human-animal mutualism

Dimensions	Illustrative quotes*
Mutual rewilding	This for me was like, of course, nature had everything under control, and we as human beings and our way of thinking so linear, those are my cows, my sheep, my horses, and those are yours, and we put a fence, so, they cannot move, they are in a paddock, still, and how I spent my money to buy that little sheep, ***(Nature had everything under control and then us came with a linear thinking)*** and a cougar comes, and I will kill him so that he does not eat my sheep, and with those two decisions we have destroyed the natural behavior of the animal, and the same happens with plants, the same in the soil, and the same in the water cycle, we have not understood, and how we are so linear and square, and the economic part, because I have to protect what is mine, has made us destroy everything ***(We have destroyed the natural behavior of animals).***
	Even the most traditional medicine is beginning to understand that we are beings who need nature *[Nature’s wisdom gives you what you need]*, that which you describe, and you feel good because you are returning to your simpler being, and in connection with other simple beings in nature, and we all need that ***(Return to nature)***
	I am not going to be here forever, the only thing I can do is leave the soil better, and leave them [their children] with a love for the same, after what they do is their thing, but they know where the food comes from, they do not think that the milk comes from a box, or the eggs from the supermarket, I feel that I can leave them a space that is in much better condition than when we arrived, and an understanding of what is real and important under our values ***(Transitory care-taking)***
Relational ambivalence	We are not using chemicals, the animals are doing well, the fields are doing well, the plants are doing well […] there were a thousand things we can improve, but here I am doing something I can be here and be well ***(benevolence).*** [But] I had never earned so little money, I had lived in such harsh conditions, can you understand, there were many things that were crude ***(harshness)***, but deep down, it was fine, and that hooked me, right now, well I am still here [beyond] the three months that I was supposed to be to take care of the newborn sheep.
	For me, having the possibility of living in such a beautiful place, where I can raise my children, in nature, you have already seen it ... but, what most leaves me satisfied is seeing the children outside, with the dogs, horses, finding insects, not being afraid, and bringing me insects, saying: "Look, mom, we found a new one" [...] and we send the photos to Mauricio [a friend who studies the behavior of insects], and ask him: What is this insect called? It is the most important thing for me (***Loving non-human animals)***.
Task interdependence	Next to the river, that was sand, with some lupines, and I went with my dog, I went over there, I would gather all the animals that were in that pasture, gather them, and move them down there, and with my dog I would keep them there, until it was night and then I would return home. The next day I would take them to another side, and thus, playing with the tools, and today in that pasture you do not find any bare ground, all that part is green, and with grass with clover, grass, noble species, the cows did that (***The animals help me build forest)***

	My dog is 'Tato'. The first day I said, I like this dog…because the connection between you and your dog. Tato came to the airport in Punta Arenas to pick me up. That is love at first sight, because of his personality he is hardworking, strong, but very friendly. Tato works (with me) until today and he is old. Whatever I do, it is always with Tato ***(Working together).***

*Empirical insights in brackets

Combined, these themes offer an empirically-grounded view of environmental protection, as performed by a running regenerative enterprise. We discovered that when taken together, they construct an interesting form of collaborative relationship between the organization and non-human animals, in pursuit of environmental protection and business performance. We call this: human-animal mutualism in environmental protection work. Our aim is to present our discoveries, grounded in data and experience, which we unpack in the following sections

5.5 HUMAN-ANIMAL MUTUALISM

> The animals are working together with us, there is no violence between them, it is their own desire, to support each other, that we go as a team, we have to move the sheep from here to there, something that neither of us (human, horse or dog) can do by itself, all three are needed, they are one thing. I don't know how to describe it, but it is the coolest thing there is. Elizabeth.

Human-animal mutualism is a unique form of environmental protection work. The idea that the development of mutual dependencies between humans and non-human animals, and purposive collaborative work between species, are necessary to restore and protect the immediate natural environment. Here, mutualism is used to describe the ecological collaboration between species, where each of them seem to benefit from it, and the surrounding ecosystems are restored and protected as a result of the actions that derive

mutual benefit. It is worth noting that while Holistic Management promotes regeneration through livestock management, it does not provide guidance on how relationships between humans and animals should be formed and maintained.

Mutualism is different from cooperation or symbiosis. In natural ecosystems, cooperation involves improvements in fitness through within-species interactions. Symbiosis does involve two species living in close physical contact, but the relationship is not always mutualistic; it can be parasitic as well. In this sense, cooperation does not capture inter-species collaboration and symbiotic relationships are not always mutualistic, and mutualistic interactions are not always symbiotic. In reflecting about desertification of Patagonia, Jose explains why working with animals is central to any regeneration effort, against the traditional belief in conservations that animals (humans and non-humans) need to be removed from the ecosystem for it to flourish. This idea is alive in Exhibit 1.

> Nothing can match them (animals), what is the point of using genetics or other fancy stuff, if we are destroying what sustains everything. So, the thing is that the key tool to recover Patagonia from desertification is the sheep. Patagonia needs more sheep, not less. The tendency is always to ‘off-load’ the land. No, that’s not it […] (we should have) large herds of herbivores moving together. That enables faster recovery of the grassland.

Exhibit 1: Human-animal mutualism

Watch video 1: More animals

We need more animals, moving together, not less.

We discover that this is an active behavioral choice. In running the business, they seem constantly aware of all forms of life, starting with their family, dogs, sheep, insects, the foods of the vegetable garden, and the microorganisms that inhabit there. Awareness, interaction and reciprocity appear as inherent to organizational life, which is interestingly thought of as an active game between humans and animals, and natural systems.

Human-animal mutualism is linked to environmental restoration and protection. The collaborative actions in Panguilemu, according to Elizabeth and Jose, directly influence the restoration of grasslands, which contributes to the revitalization of the soil, increasing biodiversity, whilst reducing animal stress.

> Our animals are calm, they walk and take care of each other, when they walk in herds the grasses begin to crush, this creates a "cushion" of grass. When it rains, the water is not lost in the same way that it is lost on bare ground, this mattress cushions, and allows to keep the water longer in that place until the ground is able to absorb it. The more containment there is, the better, the less water is lost in the rivers and nutrients of our land.

Exhibit 2 shows Jose reflecting on the effects of human-animal mutualism on environmental restoration and protection. He talks about how Panguilemu has begun to transform as a result of the multiple relationships formed between them and the existing and incoming animals. He talks about the health of the soil and animal well-being at Panguilemu, in comparison to the neighboring farms. In the video, he emphasizes:

> So if you also look at here, look, these, for example, here, these [pointing to the soil] are armadillos or Chingues [Chilean skunk] that have been here, and there you see horse footprints, then many more bugs here, the fauna is here, because obviously (this is) a biologically active soil, this is a hole that… is full of worms, so the bugs are here. Look, that's an Aguilucho [Red-backed Hawk]

Exhibit 2: Effects of human-animal mutualism: Regeneration and protection

Watch Video 2: regeneration

Video 7 shows Jose reflecting on the results of their work, in comparison to the neighboring farm. He comments: "imagine this old man's [his neighbor] cows here, shitting with hunger. In other words, the only option that they have is to forage them because otherwise they go to the neighbor's estate [Jose's estate]. If you look at it, look, well now it is not so noticeable, but, here, if you look at the slope it seems "bare" like dirt and here it is all with grass, both sides were the same, obviously it is still difficult to regenerate uphill, but down the slope, but this is going to be all covered, so in the end, in the long run ... So obviously the water that falls here does indeed run [neighboring farm], here [Jose's farm] the water penetrates the soil.

Likewise, video 3 Golondrinas (exhibit 3) shows Domingo and one of the authors talking about the effects of the collaborative work on both the attraction of new species, hence increasing biodiversity, and the restoration of the ecosystem. After that brief encounter with the swallows and moths, Elizabeth commented:

> Do you know why they are there? Holistic management has surprisingly generated a significant increase in the biodiversity of the field. Many insects and animals have appeared that we have never seen before. A friend who works at the Universidad de Aysen, has found multiple insects that he has not been able to find elsewhere.

This unique inter-species collaboration is organically formed and actively maintained by the enterprise through three mechanisms: mutual rewilding, relational ambivalence, and task interdependence.

5.5.1 Mutual rewilding

Rewilding is about letting nature take care of itself, enabling natural processes to repair damaged ecosystems and restore degraded landscapes. For our conceptualization, we borrow from conservation rewilding, which seeks the reestablishment of missing animals in the wild, as well as ecological processes (Biermann & Anderson, 2017). As species retake their roles, it makes nature wilder, restoring migration, predation and grazing. “Through rewilding, wildlife’s natural rhythms create wilder, more biodiverse habitats”. In Human-Animal Mutualism, Mutual Rewilding refers to the shared experience and action of returning to nature, so that both can re-connect with their wild behaviors, re-arrange relationships with each other and re-orient their roles in a way that is conducive to environmental restoration and protection. We observed that Mutual Rewilding starts with the recognition that humans have betrayed the natural world. Elizabeth feels that we have destroyed the animal’s natural behavior, because “previously nature had everything under control” and then “us came with our linear thinking”. They think that reverting that human betrayal is essential: “We changed their natural behavior and we need to heal that relationship so that the animal behaves like an animal and each can perform their roles.” Only by stepping back from contemporary human rationality, (human and non-human) animals can return to wild behavior and the process of environmental restoration and protection begin. In Exhibit 3, we present the connection between Elizabeth and Domingo with their horses.

Exhibit 3: Mutual Rewilding

Photo 1: Domingo and Gaucho

"You wouldn't believe it, but the connection between the human and the horse is surprising. Many times that connection begins when you both see and look at each other. I have prepared coaching with horses on more than one occasion, and it is fascinating and wonderful when you manage to see the human connecting with the origin, with a pure animal, without evil."

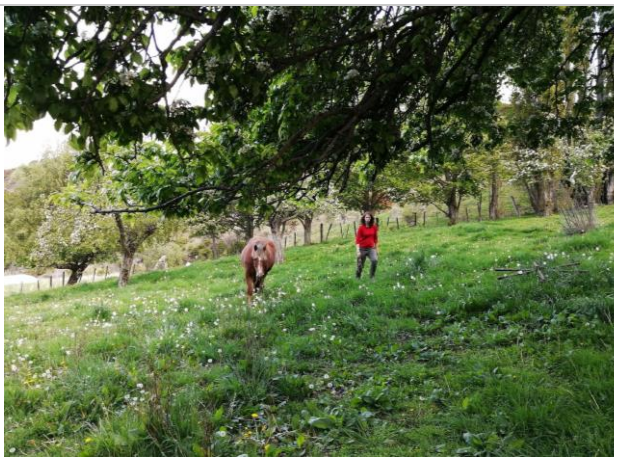

Photo 2: Elizabeth and Ali

Elizabeth is talking about the connection with her horse Ali: "It was a very deep feeling, on more than one occasion I felt that we were one with Ali."

Watch video 3: Golondrinas

Video 2 shows the effects of mutual rewilding on environmental restoration. "Look at the swallows! […] Do you know why they are here? There are loads of new moth, that came to live in the grasslands. They [the swallows] fly be and with their wings they scare the moth. Wow!"

Exhibit 3 also shows the new interactions resulting from a mutual rewilding. Video 3 shows Domingo talking to one of the authors about the amount of swallows flying around. They explain that the swallows appeared when the moth came back, which happened because the sheep began to move together as a wild herd enabling a faster recovery of the grassland.

Key aspects of their belief system change alongside Mutual Rewilding. We notice that, as Mutual Rewilding unfolds, the organization begins to disregard linear thinking, renounce its ownership over ecosystems, retreat its agency, and embrace transitory interventions and care-taking. This is somehow a return to a rare form of nomadic behavior. In that sense, mutual rewilding involves scaling down and stepping back. Against the grandiose narratives of sustainability, they see the process of "going back to being together" as a humbling one where humans are back to 'being little", do not own anything and can do very little by themselves.

> When I was a child (I understood that) you cannot be the owner of the land, you are a little thing here, a small drop of time, we can take care of the land here, I take care of this space, but you are not the owner, it is stupid.

They believe that generally, people keep things apart and live in different worlds: the family and values world, the natural world, and the business world, where people can do things in a completely different way. The problem, they argue, is that people can be happy in one world, but unhappy in the other one. Through mutual rewilding, these worlds begin to merge with each other: "Your family, your animals, your work are part of the same". As species reconnect, the founders believe that nature takes a leadership role, giving the organization the wisdom they need to conduct its business and restore and protect.

> One of the recipes he gives you is a forest bath, so that you can go and be connected with nature for an hour, because many of our problems that we have today in the psychological and health part, is due to complete disconnection with nature.

Mutual Rewilding also reconstructs what counts as 'real'. Elizabeth and Jose describe the presence of life (post rewilding) as something 'real', and the absence of it (post rewilding)

as something ‘false’. They seem to use that conception as a kind of reconstruction of reality. They both stare when they touch the ground or a tree, they say this is ‘real’. The rebuilding of the real in Panguilemu is fundamentally experiential, but also affects cognitive and emotional aspects of the organization.

> Everything is real to me, there is nothing plastic, there is nothing false, the connection is very beautiful […] Here I am part of something that is real, that is working well, we are not using chemicals, animals are doing well.

5.5.2 Relational ambivalence

As Mutual Rewilding unfolds, we notice a counterintuitive form of relationality, characterized by ambivalence. It is counterintuitive because nature tends to be idealized and experiences in nature are seen as inherently positive and pleasant. They seem to reject the idyllic view of nature, that tends to dominate narratives in environmental protection. We observe the founders loving but also hating nature. “We care about it and nature does care about us, but nature is cruel.” Here we notice two types of relational ambivalence.

First, the simultaneous embracement of beauty and cruelty in nature. During our fieldwork, we noticed that comfort, benevolence, pain and ferocity coexist. “Nature always provides what you need, and that is why we must take care of it” Elizabeth often mentioned. However, “Nature can be very cruel”, she kept reminding us. Throughout the day, we could hear Elizabeth, José and even Domingo referring to their horses as “noble beings”, very sensitive species, in fact, they say, “you have to be sensitive to notice it”, Elizabeth emphasizes. Jose worked with ‘Morita’, his dog; Elizabeth with ‘Tato’; and Domingo with ‘Gaucho’. They describe the relationships with their animals as love at first

sight. We also noticed the joy that came with finding new insects or new birds, which are returning as a result of regeneration. “By working with the animals on the ground, we can connect more with nature”, can be frequently heard in Panguilemu. However, along the emotional connection, we also noticed expressions of anger, regret and frustration with some natural processes. We witnessed Doming and Elizabeth, affected when scavenger birds were attacking and feeding on newborn sheep. ‘Birds cornered the sheep that were out of our reach, and we seldom managed to interfere.’ Facing Elizabeth’s anger and helplessness, we observed José reacting with a “This is nature” or “this is natural selection” … “and we should not disturb or intervene in that process.”

Human-animal mutualism is then experienced as a form of conflicting entanglement, seen as both ‘beneficial’ and ‘harmful’ for the organization, which we believe is at the core of ambivalence. We (the authors) reflected on why do they need cruelty? And why do they care about and even embrace cruelty? being a source of harm. We found that, in the complex emotional tissue of Panguilemu, they have learned that death is a condition for life in regeneration, which necessarily combines kindness and cruelty, as judged by humans. Because of that, they need to remain open to learn the cruel side of nature. In Exhibit 4, we show how Panguilemu embraces the beauty but also the cruelty of nature. Video 4 shows how caring and cruel the sheep dog appears to be, he would eat the lamb he has been looking after for days, and that is beautiful and painful to witness; but neither Jose nor Elizabeth would intervene. Photo 4 shows two foxes hunting lamb. Elizabeth shows ambivalence in her relationship with them, loving them, admiring them and also hating the fact that they are likely to eat the new-borns: “Foxes… they are very cunning”:

On our way there we saw two foxes. We were in the pickup truck, and Elizabeth stopped so I can try to take some pictures (of them). It was amazing, because the foxes stopped, looked at us, and it seems they even posed for the camera. I think they feel confident, I told Elizabeth. She replied: “it looks like they are boyfriend and girlfriend. They are smart, and they must be waiting for the opportunity to hunt. They are very agile, and they know how to camouflage (in the bushes)”, she mentioned as she looked at them in amazement”. Field note.

Exhibit 4: Relational ambivalence: Loving and accepting cruelty in nature

Watch video 4: Accepting cruelty

In video 4, the sheep dog is looking after a lamb that stayed behind, who has so far been unable to keep up with the herd. The dog will stay with the lamb for days, day and night, but if the lamb is too weak to continue, the dog will eat the lamb so that it can continue looking after the rest of the herd. Neither Jose nor Elizabeth would intervene, however cruel it might seem and how costly losing a lamb it might be.

Photo 3: Chicken coop destroyed by wind (After talking about their love for nature)…we couldn't talk much more. A chicken coop was blown away by strong winds and had to be removed from the site (Field note). Then Elizabeth says: "We always laugh when things are hard, and there are challenges, one after another, since there were a lot, with José we say, well, there is another chapter for the book, we are in a story, but one cries, you have to laugh because, there are a thousand moments, and reasons, excuses to give up, it has not been easy at any time."

Watch video 5: Pain and wounds

In the following *field note*, the second author reflects on video 4: "Today was an incredible experience. Very crude, I felt very tired, I was very cold at times, I was wet and with ripped jeans, I was hungry and sore. However, I managed to understand the abysmal difference between writing about regeneration and experiencing it. It is not easy, not at all. 'Sir Domingo' has been doing this for a long time. He told me about the pain in his bones, his muscles…the wounds, and even so, he calmly mentions that all of this is his life."

Photo 4: Foxes hunting lamb

"Foxes… they are very cunning"

Second, embedded in the embracement of beauty and cruelty in nature, we noticed a simultaneous like and dislike of non-human animals, a simultaneous like and dislike of the ecosystems that are being restored and protected. They argue “Nature is not a passive recipient of interventions, and sometimes nature does not want or does not need to be looked after.” Also, a simultaneous like and dislike of the pains and wounds inflicted by working with animals in environmental protection.

From our field notes we can explain how this form of ambivalence is felt, where we reflect on the ways in which nature has shown itself before us since arrival. Panguilemu is in an isolated area of Southern Patagonia, so even if we were close to summer we did not have many sunny days. The rain was very intense and we had to work with the animals regardless of how harsh the weather conditions were, as experienced by us. We had to also help a sheepdog, who lives with the sheep permanently since he was injured after a wild cougar attacked him (judging by the marks on his head) whilst protecting the herd. The strong winds that destroyed the chicken coops (Photo 3 in Exhibit 4) also destroyed the fences that keep the animals working together. This was deeply problematic as the restoration process was interrupted, but it was nature’s work, so there has to be a reason for it. As Elizabeth reflects: “there were many things that were crude, but deep down it was fine.” Nature triggers frustration and fatigue and leaves the founders wondering about the functionings of nature (despite almost 100 years of collective experience). They say: “We are not so important, there is something else.” Yet, those events are taken as a source of knowledge, so they can learn how to work with nature. They can overcome their own limitations and discover more animals and their roles, such as native owls and foxes, and ultimately understand the way in which nature makes us part of it.

> There are a lot of Jotes (Chilean vultures) flying around the place. Elizabeth tells me about the anger that she feels because of them, on many occasions, they attack newborn sheep. However, she says, we can't do anything about natural selection. Field note

5.5.3 Task interdependence

The work of humans and animals conduct at Panguilemu is deeply intertwined. Protection through human-animal mutualism involves working closely together and looking after each other, daily, which we call task interdependence. We observe this in their routines, which are embedded in their worldview. Reflecting on the latter, founders refer to nature as a spiritual being, that sustains human life and also that of all living beings that inhabit there. In talking about it, we frequently heard them describing joint actions as: "needing nature", "connecting with nature", "following the wisdom of nature", "imitating nature" and "taking care of nature". It is an interesting sequence from needing to imitating to looking after, reflecting co-dependencies at work. In videos 6 and 7 (Exhibit 5), it was wonderful to witness Domingo and Jose working with their dogs, relying on each other to execute the tasks at hand. They have created their own forms of communication, different types of whistling, different commands. Dogs, however, know when to stay down and quiet, and Domingo and Jose trust their instinct, which they see as a conscious judgment and wisdom in the execution of the task.

Exhibit 5: Task interdependence: Supporting each other and working together

Photo 5a

Photo 5b

Photo 5 (sequence): Relationship with sheep

This sheep has an opportunity in his life, to destroy the soil, or to regenerate the soil, and that sheep [photo 5a] regenerated the soil. Then, the meat that we eat can either damage our health [referring to a sheep that destroyed the soil], because we would have injected it with antibiotics, anti-parasitic, steroids… there are a thousand things that the sheep would have taken under 'conventional management'.

This one [photo 5b] here (on the contrary), it first regenerates the soil, and then improves our health [5c].

Photo 5c

Watch Video 6: Domingo and the dogs

Video 4 shows how Domingo and the sheep herding dogs are working together. They must guide the cattle to their corresponding area. Due to fence failures, cattle are out of place. The weather is adverse, and the only form of communication is the language created between Domingo and the dogs. Through sounds, short words (slow down, give it, watch out, etc.), whistles, and signs, the dogs understand what their job is, and Domingo must direct them in the most efficient way and thus not waste time or energy.

Watch Video 7: Jose and the dog

Video 6 shows Jose and the sheep herding dog working together. It is a different language, unique between José and his dog. José uses sounds and expressions like "uyuy"; "aaah"; and while he whistles, his dog understands that they must lead the sheep. No sheep can be left outside the herd. They remain quiet, move slowly, and do not flee quickly. There is mutual trust, they know this is joint act, between José and his dog.

This is salient in the relationships they have formed with their working animals – herding dogs, sheep dogs and horses – where task interdependence is active and visible. But we also noticed it with other species that seemed irrelevant to us on the surface. Our encounter with swallows and moths was revealing to us, in terms of how mutual rewilding facilitates the emergence of task interdependence. As we explain above, swallows appeared when the moth returned, after the recovery of the grassland that resulted from human-animal interaction. Now, we can see more species needing each other and working together. From our fieldwork, we noted:

> On our return from repairing fences, Domingo noticed that many swallows began to fly around us. Domingo mentioned that they are there because of the large number of insects that live there, while Elizabeth mentions that it is an essential characteristic of holistic management. They return only when the ecosystem is abundant, and Elizabeth mentioned that in recent times they have seen many more, and even new insects. The interconnected dynamics between swallows and the insects, plants, fungi, and bacteria, work and conduct a natural regeneration of the soil's trophic web, its quality and fertility, while capturing carbon and creating new organic matter to keep this network healthy. Field note

Task interdependence also was visible with minor species, where they seem to recognize indistinctly the value of all life forms that inhabit in Panguilemu, from ground microorganisms to seasonal insects. During a horseshoe change, a worker stepped on a spider. Elizabeth was immediately upset, and she spent time explaining in detail the importance of that spider for their ecological balance. She says:

> Do not do it again […] with the animals, we work together, there is no violence between us. It is their own motivation, (we) support (each other), we go as a team.

Elizabeth stresses that they need their team [dogs, horses and animals] to work together in a satisfactory and complementary way. In doing so, they look after each other and protect nature together. She saw her explaining that “the animals helped (her) build the forest”. She explains that regeneration depends on that connection, and the co-dependencies and trust species develop with each other. It is seen as a natural process, which materializes when each species plays its role and trusts that the other will do its part. Reflecting on how they get together to perform the tasks, Jose says:

> I am trying to live holistic management. It is incredible how it (working with the animals) changes the water cycle, improves the plants, improves the ground, improves biodiversity…

5.6 Discussion

The environmental protection debate has been driven by two approaches: command and control and business case. Neither of those place emphasis on nature nor explain how protection happens on the ground. Here lies a problem in management scholarship, but also an opportunity, because we know very little about micro-level interactions and relationships, i.e. how businesses and nature interact and work together in the act of protection. In this study we set out to explore: *how is environmental protection seen, experienced and enacted on the ground by organizations interested in looking after nature?*

We discover a unique form of collaboration, which is formed between the enterprise and non-human animals to restore and protect nature, we call: human-animal mutualism in environmental protection work. It is organically formed and actively maintained by the enterprise through mutual rewilding, relational ambivalence, and task interdependence.

Before explaining how our work contributes to literature, let us elaborate on novel theoretical spaces that our research opens up for management and organizational scholars.

5.6.1 Opening new territory for research

Research on environmental protection work. By looking at the actions of a regenerative organization, we discover an array of micro-level activities and relationships enacted by the business in collaboration with nature. This opens a fascinating new world for those interested in advancing business sustainability and environmental management research. We define environmental protection work as the broad category of purposive action aimed at creating, maintaining and evolving relationships with other living organisms so that natural ecosystems can be restored and protected. It shifts the focus away from the traditional business case for sustainability, whereby protecting the environment makes sense only to the extent that it benefits the business. Instead, it focuses on how the active work of individuals, in collaboration with nature, affects natural ecosystems, whether it benefits the organization or not. Our research opens a door into rewilding, as a mechanism for environmental protection. Rewilding is a conservation approach that puts emphasis on the (re)introduction of megafauna, such as large grazers or large carnivores, with the goal of restoring ecosystem processes (Root-Bernstein et al. 2018). Such (re)introductions seek to restore top-down trophic interactions, return habits to a pre-human status and allow natural processes to regain dominance (Corlett, 2016). With a growing number of firms committed to stronger forms of sustainability, we wonder what organizational rewilding might look like; organizations re-engaging with a wilder natural world. Also, there is a space in our management theories for novel approaches

where humans, in their role as managers or entrepreneurs, take a step back and seek business flourishing by letting nature do its work.

Research on natural relatedness. A focus on environmental protection work calls for a different understanding of human-nature relationships, which can have a significant effect on the study of business sustainability. Facing the challenges of further understanding and theorizing environmental protection on the ground, natural relatedness offers a way forward. Nature Relatedness (Nisbet et al., 2009) argues that humans have an innate need to connect with other living beings, with a deep level of involvement (Kals, Schumacher, & Montada, 1999; Kals & Maes, 2002). Nature Relatedness covers the affective, cognitive, and experiential aspects of individuals' connection to nature. It thus encompasses the internalized identification with nature through feelings and thoughts, an external worldview, and a physical familiarity with the natural world. It is not simply about love or attraction to the most pleasant aspects of nature, but also an understanding of the aspects that are not even aesthetically appealing (Nisbet et al., 2009).

Natural relatedness can capture an alternative dimension of environmentally responsible behaviors. As a multi-dimensional construct that leverages the biophilia hypothesis (Wilson 1984; Kellert & Wilson, 1993), it allows us to observe how people treat and engage with the environment (Schultz et al., 2004; Nisbet et al., 2009; Nisbet & Zelenski, 2013). The emotional side is normally under-appreciated. Emotions can trigger engagement with nature but also concerns for nature, which opens a dual new space for the examination of environmental protection work (Schultz, 2000).

In our findings, we show human-animal mutualism having positive benefits for the species involved and, as a result, for the restoration and protection of the environment. Another

research avenue that natural relatedness opens, particularly in the context of human-animal mutualism, relates to protective behaviors and well-being, which can be relevant to organization scholarship also. Capaldi et al. (2014) found noticeable differences between those who strongly relate and identify with the natural world, compared to those who do not. It improves psychological health and reduces cognitive anxiety (Nisbet & Zelenski, 2013; Martyn & Brymer, 2016) Zelenski and Nisbet (2014) argue that the higher the degree of relatedness with the environment and the time we spend in nature, improves our sense of subjective well-being, and drives us to protect and preserve nature (Nisbet et al. 2011; Tam, 2013).

Research on human-animal work. Human-animal relationships are part of our daily lives, not just with our pets, emotional support animals or farm animals. They have recently begun to play an interesting role in the workplace. Theories of management however have proven insufficient to understand this understudied domain (Hannah & Robertson, 2017). Our findings provide insights into unique relationships and shed light on how they might form and evolve as a collaborative work. As such, they open a new territory for research, which is relevant to scholars interested in business sustainability, but also to those interested in settings where humans and animals already interact (e.g. zoos, breeding, horseracing, veterinary practice, and beekeeping) and workplace dynamics more broadly.

Hannah & Robertson (2017) argue that human-animal interaction is deeply entangled in several dimensions, “belonging uniquely to the organizational and institutional realm of formal organizations”. Yet, human-animal interaction is absent from organization studies, as is the presence of animals in general (Hannah and Robertson, 2017; Labatut et al.,

2016). Given the relevance of natural ecosystems, it is more surprising its absence from business sustainability research. This is a new and exciting space for theoretical development, which can benefit greatly from embracing human-animal studies (DeMello, 2012; Hosey & Melfi, 2014; Shapiro & DeMello, 2010).

We want to go one step further in our invitation to engage with human-animal work. Literature on human-animal work tends to focus on the anthropomorphizing of animals, where humans treat animals like other humans (Asquith, 2010; Dotson & Hyatt, 2008). This is interesting, and novel already. Our research, however, sheds light on human-animal relationships where both see each other as distinct species. In opening a new research territory from the perspective of human-animal mutualism, we invite management scholars to avoid studying this relationship within organizations from the perspective of the humans "who constitute and are constituted by them" (Michel, 2014). Non-human animals are living beings that also develop profound bonds with humans (Nagasawa et al., 2009) and whose "points of view" are relevant in making sense of the human world and human-animal relationships (Bensky et al., 2013).

5.7 Contributions

We now consider how our findings contribute to an enhanced understanding of organizations and the natural environment. First, we contribute to business sustainability literature by revealing a new approach to environmental protection and three unique micro-level mechanisms connecting humans and animals. Through them, we offer an alternative, grounded view of management for environmental protection. This is engrained in the life of an organization as a form of ecological work that does not rely on

rational instrumentality or a business case, rather one that is felt, experienced and co-enacted by different species. In doing so, we open the door to interdisciplinary and transdisciplinary research focused on environmental work, i.e. the collaborative purposive actions enacted by organizations and animals in pursuit of ecosystem restoration and protection. In our reflection above, we argue that conservation rewilding, natural relatedness, biophilia, and human-animal studies can become important allies in our efforts to bring diversity into (and rock the boat of) management studies. By paying serious attention to the latter, we can potentially get business sustainability researchers to collaborate with researchers in other disciplines. This, in Bansal's (2019) view, is needed to introduce inter-disciplinary dialogue into management scholarship, in a meaningful and impactful way. In his 2020 AMJ editorial, Laszlo Tihanyi (2020) reflects on the need to move the focus from 'interesting' to 'important' in management research. Our findings respond to his call as we offer a pre-theory that challenges our current views of managerial behavior and organizational actions and invites a rethinking of self-fulfilling theories.

Our discoveries re-direct the 'business-led' approach to protection towards a 'with-nature' approach. Our discoveries emerge from the examination of interactions and interdependencies 'with nature', which is what Bansal (2019) argues is urgently needed in the study of sustainability. We took her invitation at heart as we sought to recognize the interconnection among natural and social systems not just in the moment, but over time.

Instead of focusing on environmental strategy, we look at the interactions with and impact of organizations on the natural environment, responding to Sharma's (2020) call. We

contribute to our understanding of what triggers corporate ecological responsiveness. Bansal and Roth (2000) uncover three drivers: competitiveness, legitimation, and ecological responsibility. We advance that knowledge by introducing human-animal mutualism. This opens up a new level of analysis for environmental protection, beyond firm, industry, regulation or country (Madsen, 2009). Through this, we also add to the effort of understanding novel types of sustainability strategies (Hengst et al. 2020) and how tensions, contradictions, and dualities emerge in the process. We identify a unique type of ambivalence that emerge in the collaborative work between humans and animals in the name of sustainability. As we expand business sustainability research, our findings begin to change the how, what and why of ecosystem restoration and environmental protection.

We also contribute to the growing literature on regenerative organizing and sustainability-as-flourishing. Regeneration is a relatively new area of research in organization studies (Branzei et al. 2017). Being regenerative means having the capacity to bring into existence again, or allow something to grow or being grown again. It is a primary attribute of all living systems and allows for restoring the capacity of system to continuously self-reproduce, self-organize and evolve, at the time it builds healthy human, organizational, and natural networks (Dias, 2018). Hahn and Tampe (2020) define regenerative business as those that enhance, and thrive through, the health of social-ecological systems in a co-evolutionary process. They conceptually explore the principles of regenerative business and seek to operationalize regeneration strategies. We add to their work by explaining the process of the enactment of regenerative practices in business organizations.

Substantially, we provide an explanation of environmental protection, grounded in rationalized interpretations, but also in emotions and experiences. Whiteman (2010) argues that nature can and should be an intrinsic part of a qualitative research on organizations and natural environment. She emphasizes that “first-hand situated knowledge of the local ecology is an essential requirement of effective qualitative inquiry in social–ecological contexts.” (p119). Our work resonates with her call, as we embrace the ecological location and the many ecological interactions and processes governing Panguilemu. Our focus on Southern Patagonia is also relevant for knowledge development in our domain, as most research continues to concentrate on organizations in North America and Northern/Western Europe.

Through our work, we also respond to recent calls for more phenomena-driven research in business sustainability. Sharma (2020) argues that work like ours, felt and experienced by the authors, can bring together different theoretical streams, which results from focusing on a problem domain rather than restricting ourselves to the “hounds of a discipline or a theory”. Inter- and transdisciplinary are the key to unlock novel solutions to our current problems of “rapid environmental destruction and climate change.”

In closing, we believe our work echoes and further expands the efforts of Howard-Grenville et al. (2019) in their editorial for AMD on ‘Sustainable development for a better world’. They argue that “management researchers cannot just continue business as usual.” We believe our work makes such an attempt to go beyond the business case and explore what can make the world a better place.

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6 Conclusion of the thesis

This thesis investigates and explores an ideological phenomenon at the organizational level grounded on the restoration, regeneration, and protection of ecosystems, as contraposition to notions and economic foundations clinging to growth and productivism.

Through the building of a conceptual framework, the use of qualitative data from environmental studies, and ethnographic research work to derive ecological first-hand knowledge, the two proposed articles, plus a robust explanatory framework, lead and analyze the formation of aptitudes, values, principles, and mechanisms, in the build and adoption of an ideology that we call regenerativism, since it intercedes in the restoration of the ecosystem, in the protection of human and non-human life organisms, and guides the business spirit towards community and resilient development.

The proposed studies especially shed light on how human systems and organizations can emancipate economic activity from productivism, which in turn responds to impulsive and meaningless consumer demands, and transit towards logics and processes that allow the safeguarding of essential conditions for the thriving of life, and biophysical equilibriums.

The interrelated building blocks identified as the explanatory foundation in the regenerativism formation, underlie unique micro-characteristics that distance this ideology from disciplines and counter-movements that also criticize and address the underlying consequences of cycle production-consumption and its ecological impact. How human systems and organizations satisfy needs in a mutualistic way, they engaging with the place, and develop in it, they trigger micro-foundations that are usually complex

to make visible in alternative economic or environmentalist approaches, since human systems and organizations that recognize "being in place", and consequently "doing in place", they see in the restoration and protection towards nature, a contribution towards the restoration and protection of themselves.

Overall, the thesis offers evidence and exploratory findings on how organizations and ecologically-embedded businesses, raise an elusive ideology have so far and limited by dominant economic constructs, notions, and beliefs, where the formation of ecocentrism, and ecological ethics contribute in a novel way to the growing debate on sustainability-as-flourishing, nature-based organizing, and ecosystems protection.

After researching those emerging phenomena, we highlight two interrelated dimensions that ground regenerativism, and that we were able to address in greater depth. In the first place, the "Care" dimension addressed in paper one, intercedes for an ecocentric ecological ethic to maintain and protect living systems, their needs, intrinsic value, their manifestation, and those properties that allow guaranteeing conditions conducive to their development, restoration, and thriving. And secondly, the "Protecting" dimension that we address in paper number two, and which refers to the effort in which human systems and their organizations protect and safeguard species, structures, properties, and conditions that allow the restoration and regeneration of an ecosystem or nested subsystems.

While we do not address each exposed dimension in-depth, each of them is inherently and deeply interconnected to each underlying building block. Further, if we recognize that each living system has unique and specific dimensions and building blocks, it is very likely that we still do not know unique dimensions, relationships,

principles, and mechanisms that could also be explaining regenerativism in multiple socio-ecological systems.

Figure number 1 proposes 6 building blocks from a holistic perspective, and that could be ground, according to us, the regenerativism. The general approach of each dimension is proposed and adjusted from systemic gears, sustainability principles, and living systems properties. This allows us to venture and argue about two aggregate dimensions that we call "Being in place" and "Doing in place", and which could firmly represent a common argument to derive new and novel blocks in the formation of regenerativism in several socio-ecological systems.

The main results of this thesis contribute on the one hand to elucidate ecocentrism and how it materializes for decision-making in business sustainability. When considering a radically different management philosophy and eco-care ethic, such as deep ecology, and strong sustainability values, the inherent value of biodiversity, ecosystem services, and vegetation structures are evaluated under ecological change, sustainable, and regenerative approaches, rather than anthropocentric, dualistic, and productivist approaches.

The moral attitude of the organizations, the ecocentric values, and the ethics of ecological care grounded in responsible business decision-making, and in virtue of the needs and thriving of the earth's biotic community.

The thesis also provides empirical and relevant evidence on unique forms of collaboration that are born from mutualistic work between humans and non-humans to restore and protect nature. Neither regulatory approaches nor economic instruments have been able to explain how environmental protection occurs on the ground. The mutualistic

and co-evolutionary dependence between human and non-human systems allows us to show how organizations interact and work in socio-ecological systems given a local ecological succession.

Based on active restoration, regenerative organizations, and ecological protection, the thesis finally suggests paying attention to those dimensions and building blocks that could be explaining regenerativism, and which are not the only ones. Ecocentrism formation, human-animal work, and the identification of affective, cognitive, and experimental relatedness that derive from involving human systems, organizations, and natural systems, are establishing innovative, respectful, and business sustainability models, according to the latent need for ecological restoration, and protective behaviors that can counteract the Anthropocene force, and lead to a fulfilling and satisfying human search.

7 Summary of contributions to Literature & Practice

The following summary of contributions provides a useful and specific description of the main literary and practical contributions of the conceptual framework and both papers. We subtly extend each contribution made, and connect its main arguments with the conceptual development proposed in chapter one.

Table 8 Table with contributions of research papers

	Conceptual Development	**Paper1**	**Paper2**
Title	From productivism to regeneration in socio-ecological systems: an exploration of tensions, trade-offs, and ways forward.	The antecedents of Ecocentrism in small business management	Beyond Environmental Protection: Human-Animal work in Regenerative Organizations
Research Questions	● Conceptual framework	● What enables the formation of ecocentrism in small business management? ● What ecocentric approaches emerge as a result?	● How is environmental protection seen, experienced, and enacted on the ground by organizations interested in looking after nature?
Theoretical Framework	● Regenerative Development ● Regenerative Organizations ● Living systems	● Ecocentrism ● Deep Ecology ● Qualitative configurational analysis	● Environmental protection ● Ecological mutualism ● Nature relatedness ● Regenerative organizations ● Ethnographic work
	● Empirical evidence	● Conceptual framework and systematic characterization of	● The novel perspective of environmental protection "with nature".

Contributions to literature	• Conceptual proposal of ideology that we call Regenerativism • A conceptual framework with six building blocks that explain Regenerativism.	ecocentric thinking and decision-making in business sustainability. • We provide an empirical typology comprising three distinct approaches to ecocentrism in small business management.	• Introduction of the concept of human-animal mutualism for ecological work. • Three unique interactions at the micro-level: mutual rewilding, relational ambivalence, and task interdependence. • New research spaces in environmental protection work, research on human-animal work, and research on natural relatedness. • Pre-theory research channels.
Practical contributions	• New research spaces in business sustainability. • Conceptual framework to guide the adoption of regenerative approaches.	• Promote and build ecocentric management profiles. • Adopt and identify with ecocentric management profiles for sustainability decision-making.	• Moving towards the adoption of new methodologies for the restoration and protection of ecosystems. • Address interconnected sustainable development goals. • Take advantage of natural conditions and non-human systems, to carry out a socio-economic purpose.

			● Less expensive and long-term sustainable practices

7.1 Contributions to literature

This thesis contributes in a holistic and detailed way to the growing field of nature-based organizing and nature-based solutions, the emerging literature on regenerative organizations and regenerativism, ecocentrism, human-animal mutualism, and two business sustainability practices focused on restoring and protecting the environment.

The exploration of regenerativism constitutes a more generalized contribution at the valuable intersection between management sciences, business sustainability, ecological and systemic foundations of sustainability, and natural sciences (Whiteman et al., 2013). When exploring and analyzing emergent ideological changes proposed mostly by movements, disciplines, and organizations, allows us to understand principles, values, and mechanisms that bring forward the explanation of radical phenomena, new building blocks, and transformative changes in conventional paradigms and dualistic thoughts.

While there is a broad ideological consensus in areas such as ecological economics, corporate sustainability, or environmental management (and other disciplines involved) to question not only the unsustainability of productivism and insatiability in consumption, but also the limits recognition, environmental overshoot, and the degree of responsibility and involvement of business and organizations in environmental concerns, seem that they are still insufficient and/or ambiguous contributions to create the necessary radical

transformation of organizations, industries, and societies towards a sustainable, genuine and substantive development (Schaltegger et al., 2016).

In general, the thesis offers explorations, constructs, and the examination of a promising ideology that arises in the slippery intersection between management sciences and environmental sciences, that see in emulation and nature-based solutions a new conception outside of standardized notions and approaches in business sustainability and environmental management.

The results of the research work provide foundations, routes, and initial concepts that can advance regenerativism, explain it from new building blocks, materialize new philosophies of ecological management, and adopt novel methodologies to restore, regenerate and protect ecosystems. In the following, we derive three contributions to the literature and practice in general that can be extracted from the research articles, and that can expand and broaden significantly the field of study.

Firstly, the conceptualization of regenerativism proposed by chapter one constitutes the basis for the search and analysis of gaps, spaces, dimensions, building blocks, and nature-based solutions that can explain and contribute to the foundation of an ideological belief place-based, on the ecological engagement, and in the restoration and protection of ecosystems.

The application of these principles suggests recognizing the coevolutionary mutualism between human systems, their organizations, and natural systems, to guide and explore a substantially different socio-economic purpose in productive activity and dominant business spirit.

This ideological base does not ignore significant and relevant contributions in sustainable, circular, or socio-ecological business models (Wilson & Post, 2013; Bocken et al., 2014; Linder & Williander, 2017), on the contrary, it prioritizes and reorders ethical and moral principles and values in business activity, belief systems, and ways of seeing the world.

Regenerativism emerges precisely from movements, disciplines, and organizations that have sought nature-based solutions to reconcile their productive activity, generating outstanding contributions in the regeneration of their socio-ecological systems, the capacity for resilience in the face of climatic shocks, a considerable increase of biological biodiversity, vegetation structures and healthy work networks between humans and animals.

Chapter one invites, explores, and contributes to expanding the understanding of the nature-based organizing as a living system, which through an ideological phenomenon interrelates with different living beings and ecosystems, dynamically affecting distribution, abundance, communities, and physical and chemical properties of its environment. It proposes processes and nature-based solutions and specifically of the place, on the ground, suggesting and recommending not to generalize responses or aggregated approaches, which may neglect the unique conditions and properties of an ecosystem.

The analysis of those building blocks proposed to explain regenerativism, allows to guide, explore, and discover principles, values, support mechanisms, and beliefs that can shed light on real and transformational changes in new organizations, institutions, and businesses that intercede and they act on equity, equality, nature incorporation, and actively shape new and novel ecosystems.

Second, the blocks proposed above allow to reveal and unpack gears and novel practices in the development of new arguments for both research articles.

Deep ecology, and strong sustainability, constitute principles and radical foundations such as human beings in harmony with its environment, biocentric equality, inherent value, ecological ethic, and irreplaceability of resources and functions, that shape the "care" building block, and guide consistent and compatible contributions to try to explain regenerativism. By exploring and disaggregating this building block, we anchor our arguments to Ecocentrism, as it defies the linear, anthropocentric, isolated, and dualistic compression of human and natural relatedness, and that still prevails in environmental management and business sustainability more broadly (Heikkurinen et al. 2019).

The results of the first article help to elucidate ecocentrism, and rethink the current understanding of human needs and liberties faced by ecological equilibriums. These results shed light on how to modify strategies grounded on business sustainability "nature-based", to prevent and/or mitigate critical environmental aspects, and thus manage the systemic and multidimensional dilemma inserted in cultural and social bases. In doing so, we propose three configurations of conditions that could explain ecocentric thinking and decision-making in management. We elaborate a model that organizes possible explanations in this formation, trying to reflect the ecological sensing, envisioning, and enacting. These results provide valuable contributions to defy modern lifestyles based on consumption and productivity, the role of markets, their main instruments, and business seeking sustainability strategies and ambitions.

We call those configurations market reformist, legitimated decouplist, and self-centered activist. Each of these configurations, even the absence of factors that compose it,

contributes radically to the ethical, philosophical, and moral understanding of corporate sustainability and ecological business spirit.

This typology contributes directly to reordering principles and characteristics of a puzzle hitherto uncertain and unknown, which could limit profiles to encourage environmental behaviors and adopt ecological identities in business sustainability and environmental management.

Each approach that constitutes the dimension "care", and that belongs in the constitution of "being in place", requires and demands the feedback of interrelated building blocks. For example, the market reformist approach is driven by ecological reform, a radical lifestyle change, increased environmental awareness, and an individual commitment to environmental sustainability.

This approach not only contributes to the formation of an ecological ethic, to materialize ecocentrism and to ground regenerativism, but also to the business sustainability literature by denoting preferences, behaviors, and attitudes that are sustainable in the long term, and that can bring back the obligation of firms to make intertemporal trade-offs to safeguard intergenerational equity (Bansal & DesJardine, 2014).

Likewise, it requires principles and values that come from the "engaging" block, which in turn try to explain regenerativism since "doing in place". The same happens with the legitimated decouplist and self-centered activist approaches, which impose social commitment and the protection of the environment, independent of the ideas related to economic growth, and the environmentalist and macro-political approaches to protection.

This derives the third point. This thesis also contributes to exploring how ecologically-embedded businesses go beyond dualism in environmental protection, and concentrate

their efforts on developing unique interactions and relationships between the organization and non-human life systems, to emulate nature and advance in ecological regeneration.

The results of the second article allow us to contribute towards a broader understanding of what we usually consider business sustainability and self-fulfilling management theories. The "with-nature" approach to protection, and three unique mechanisms at the micro-level, are capable of connecting humans, animals, and natural systems in daily environmental work, a work that allows preserving favorable living conditions and unusual ecological dynamics in the theoretical and empirical evidence of business sustainability and environmental protection.

This ecological worldview goes beyond a rational instrumentality and allows making sense thanks to experimentation, affection, and co-evolutionary mutualism that recognizes the benefit between the organization and non-human systems of mutually protecting each other. By introducing human-animal mutualism, mutual rewilding, relational ambivalence, and task interdependence, we also contribute to the effort to understand new types of sustainability strategies. Our findings respond to the call to interconnect functions and disciplines from systems thinking, and the nexus between diverse, complex, and intensive interrelationships. This in turn makes it possible to contribute and demonstrate the need for interdisciplinary and transdisciplinary research focused on environmental work and sustainability, that is, collaborative actions that allow integrating and strengthening knowledge networks in pursuit of active restoration, conservation, and protection of ecosystems.

The perspective "with-nature" also allows us to interweave innovatively the dimensions of "being in the place" and "doing in the place", an approach little explored from the

business sustainability. Guthey, Whiteman, and Elmes (2014) argue that all human experience is inserted in places and is linked to them. To understand how protection occurs on the ground, the interaction with living systems, sense-making, and decision-making in sustainability, being and doing in place would then be the main motivation to advance in exploratory and ethnographic methodologies.

Finally, the incorporation of novel methodologies and methods, such as ethnographic work, and the audio-visual complement, contributes to significantly enhancing exploratory research and qualitative designs in general. On the one hand, ethnographic work allows deriving first-source knowledge, such as the context, the organization, its culture, and its interaction with the environment. In socio-ecological contexts, it is vital to explore this knowledge if the objective is to study an ideological phenomenon that is materialized in actions of engaging, restoration, and protection of ecosystems (Whiteman, 2010). On the other hand, audio-visual methods allow capturing evasive knowledge, perceptions, explicit evidence, tacit aspects, and practice strategies directly in contact with the organization and the context (Toraldo et al., 2018; Shortt & Warren, 2019). These methods contribute to elucidate the research phenomenon, to improve information processing, communication, and the subjectivity that often underlies these methodologies (Akhtar & Falk, 2017).

7.2 Contributions to practice

Since this thesis studies the ideological phenomenon underlying organizational sustainability practices, it naturally offers multiple contributions to management practices, business sustainability, and policies that aim to promote sustainable entrepreneurship

and/or environmental management. The contributions to the practice are especially relevant in light of the novelty of principles, mechanisms, and practices of regenerative sustainability that can transform our belief system, and how we satisfy needs, while recovering conditions of stability, self-organization, and resilience in highly degraded, fragmented, or destroyed ecosystems as a consequence of excessive aspirations and productivist business.

At the organizational level, the ideological formation can induce profiles, organizational identities, or business behaviors that can be encouraged, built, or sought by organizations and institutions that pursue practices and ambitions beyond the more traditional sustainability paradigm. A new generation of organizations, businesses, and institutions are applying nature-inspired designs, plans, and investments in eco-design, regenerative agriculture, permaculture, community planning, smart cities, and ecosystem regeneration.

As more organizations begin to witness the biophysical limits to growth, new thinking models are appearing on the radar and finding a regenerative path to long-term strategic thinking.

Ecocentric management profiles can effectively lead efforts aimed at fostering regenerative leadership (Storm & Hutchins, 2019) or a regenerative organizational culture (Wahl, 2016). In doing so, we open space with a strong accent on the restoration, protection, and regeneration of ecosystems, so that the business community develops transformational solutions rather than incremental solutions.

In the same line, regenerative practices allow us to design like nature, maintain the integrity of the ecosystem, safeguard diversity, nurture systemic health, and strengthen

the planetary life support system on which we depend. Organizations could be perfectly capable of creating conditions conducive to life, and therefore, for a profitable, scalable, and replicable socio-economic activity. Regenerative models oriented towards soil regeneration such as Holistic Management; higher yield per hectare and biological composition of food thanks to syntropic agriculture; or, climatize highly congested cities through "living buildings" presents regenerative business opportunities that can drive business purposes and community development.

At the political level, the institutions began to advance drastically on plans for the restoration and protection of terrestrial, marine, and coastal ecosystems. The Action Plan for the Decade on Ecosystem Restoration agreed during the Forum of Ministers of the UN Environment Program, and the United Nations Food and Agriculture Organization (FAO), ambitious work routes not only for the conservation, restoration, sustainable use of biodiversity and ecosystems, but also to prevent future pandemics. Environmental policies are not only moving towards a greater degree of understanding and flexibility to meet sustainable development goals but are also allocating new financing funds to carry out regenerative initiatives. By discovering hidden principles and mechanisms that underlie the formation of ecocentric profiles, and mutualistic practices in ecological work aimed at restoring and protecting nature, political agents can reorient efforts and develop incentives, and policies that advance the building of regenerative societies, and foster promising new entrepreneurship and sustainability approaches to halt and reverse the loss of ecosystems around the world.

8 Limitations and Opportunities for Future Research

Although the present dissertation offers various contributions to theory and practice, there are inevitably some limitations. These limitations can open opportunities to advance, promote, and investigate from the exploratory results presented in this thesis. While methodological and specific limitations were discussed for each particular article, this section focuses on general limitations that underlie the general objectives and research questions. These limitations, to a certain extent, are the typical limitations of exploratory research, therefore, they would open up new paths for future interdisciplinary and transdisciplinary research focused on environmental work.

In the first place, although this thesis investigates a wide variety of dimensions that allow us to explore an ideological phenomenon, we use only general aspects of critical discourse analysis, semiotic theory, or audio-visual methods to build a holistic vision of the normative set of emotions, ideas, principles, and collective beliefs that are compatible with each other, and are especially related to human organizational behavior. Given that our study was limited in terms of observations, addressing these methodologies in depth would allow us not only to dive into those aspects blurred by the general vision of the phenomenon, in the representation of the system and an action program as essential components, but also in the materialization of new dimensions and ideological forces that seek to naturalize codes and postulates, so that dominant cultural and historical values, attitudes, and beliefs appear natural, self-evident and common sense.

A similar problem arises when limiting an ideological phenomenon to six building blocks that could be explaining it. In practice, it is a multidimensional and much more complex phenomenon. Proposing six dimensions to explore Regenerativism is a risky

move. Especially if the consistency and validity were proposed in a theoretical and conceptual way. However, we believe that the exploratory results and propositions of this thesis can be used to overcome these limitations in the future. Some of the proposed dimensions have scales, measures, and specific research methods. Nature Relatedness (Nisbet et al., 2009) for example, is a scale that evaluates the affective, cognitive, and experiential aspects of the connection of individuals with nature. Future studies could directly investigate the scale in organizations and businesses, and explore and discover new building blocks that could be explaining this, or new phenomena related to environmental work and ecological impact of organizations in the Anthropocene framework.

Second, although this thesis investigates the phenomenon that underlies business sustainability practices, the study does not directly or quantitatively analyze the adjustment and adequacy of these practices in applied ecological sustainability measures, nor in organizations outside the natural context (urban organizations for example). Our findings allow a holistic approach to practices related to the restoration, regeneration, and protection of ecosystems. However, the focus of the study is presented on the ideology that drives the transition of change, from behavior, belief system, and human behavior, and not the effect in terms of index, parameter, or measure of environmental sustainability. This, we argue, is a valuable future research opportunity that explores qualitative and quantitative measures in a hybrid way, and shapes a broader view of sustainability by combining behavioral indicators, beliefs, and the parameterization of regenerative sustainability measures in ecosystems and nested subsystems.

In the same way, our findings focus on organizations that are closely coupled to natural systems. Therefore, future studies could address the valuable opportunity to explore regenerative principles or mechanisms in centric, or urban organizations, that do not present first-hand contact with natural ecosystems, and yet still manifest valuable and unique micro-foundations for business sustainability.

Third, this thesis also does not analyze the impact of ideological phenomena and the constructs used in a broader socio-cultural context. Although ideological phenomena directly influence the belief system and ways of seeing the world, economic, social, and cultural realities can influence both how people and organizations actively shape Ecocentrism, or Regenerativism, its scope, and materialize principles of equality, eco-justice, or ecological ethics. This should motivate future research to address historical, socio-demographic, and socio-cultural challenges to understand how the context acts and directly influences the formation and building of ideologies. While this thesis provides ideological approaches using principles at the intersection of management and environmental sciences, broadening the horizon is a valuable opportunity to achieve a broader understanding of sustainability and consequently regeneration. Finally, although exploratory methods and studies are often debated by the generality of the assumptions and/or conclusions, we advance in these limitations responding to the call to change the focus in research on the measurement of environmental strategy, to the measurement of the environmental impact of organizations on the natural environment (Sharma, 2019). Exploratory research would allow theorizing and building on current phenomena and realities, which through qualitative data, offers the opportunity to explore events and transactions instead of focusing on cause and effect (Bansal, 2019). Action research

methods, grounded theory, ethnographic fieldwork, audio-visual methods, even quantitative exploratory analysis, and modeling, demonstrate that the understanding of current socio-ecological problems does not have to be limited to a certain type of data or analytical approach (Howard-Grenville et al., 2019). This type of research, driven by this type of phenomenon, has the potential to collect diverse theoretical currents, encompass functional areas, and cross levels of analysis by focusing on a problem domain rather than limiting itself to the limits of a discipline or a theory (Sharma, 2019). Organizations and researchers related to natural ecosystems have the opportunity to continue expanding their methodological approaches beyond the orientation of a single case study, mainly conceptual, to approaches of ecological change, exploratory and ethnographic (Rawhouser et al., 2019). Sustainability researchers have a valuable opportunity to present explorations and new conversations that can shed light on the implications of ecosystem disruption for society and the prosperity of future generations (Bansal, 2019).

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