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Growing Green: On the Moral Pluralism of Individual and Collective Ecological

Embeddedness

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Abstract

Prior research on sustainability suggests that ambitious sustainability strategies are often turned into “business-as-usual” practices. Although ecological embeddedness—i.e., actors’ physical and cognitive anchoring in their ecological environment—can help maintain sustainability ambitions, its collective dynamics and pluralistic moral foundations remain understudied. We rely on the economies of worth framework and the revelatory case of a biodynamic farm business experiencing sustained commercial growth to explore these blind spots by analyzing how ecological embeddedness was maintained despite this growth. We found that moral threats moved the organization away from its initial sustainability commitment and demonstrated how the farm maintained its ecological embeddedness through three mechanisms that involved multiple moral foundations: *nurturing ecological inspiration*, *networking green projects*, and *unifying a green ethos*. By inducing such mechanisms of moral recombination, our analysis advances sustainability studies by clarifying and bridging individual and collective dynamics of ecological embeddedness while revealing their multiple moral foundations; we also extend economies of worth research by demonstrating the role of ecological materiality in the alignment of organizations with the green world.

Keywords

corporate sustainability, ecological embeddedness, economies of worth, biodynamic farming, small and medium-sized enterprise

Confronted with ecological urgency, an increasing number of organizations are implementing sustainability strategies (Bansal & Song, 2017; Voegtlin et al., 2022). However, prior research suggests that these strategies often fail to address climate change or the continuous loss of biodiversity within finite planetary boundaries (Gayá & Phillips, 2016; Whiteman et al., 2013). Indeed, these strategies often generate tensions because they conflict with the search for profit (Demers & Gond, 2020; Slawinski & Bansal, 2015), so they are likely to be reframed through a “business case” approach (Carroll & Shabana, 2010) and turned into “business-as-usual” practices (Wright & Nyberg, 2017).

Consistent with calls for transitioning from a business case of sustainability to an analysis of how ambitious sustainability strategies are maintained (Barnett et al., 2018; Mazutis et al., 2021) and recognizing the need to build an “ecological case for business” (Ergene et al., 2021) that accounts for businesses’ impact on the ecological environment, in line with the notion of “double materiality” (European Commission, 2022), we investigate how sustainability strategies can resist business-as-usual-ism. We focus on how organizations address moral tensions and build on the concept of “ecological embeddedness”, which is defined as “the extent to which a manager is rooted in the land” and would allow managers to be more ambitiously committed to sustainable practices (Whiteman & Cooper, 2000, p. 1267). Based on the insight that ecologically embedded actors are more sustainability-focused than others (Gladwin et al., 1995; Whiteman & Cooper, 2000, 2011; Winn & Pogutz, 2013), we explore how organizations and their members remain ecologically embedded despite moral tensions and, in so doing, seek to clarify the plural moral foundations of ecological embeddedness. Specifically, we investigate how moral tensions and combinations of moral orders play out *within* and *through* ecological embeddedness in the context of AppleBioCorp, a farming business that is ecologically committed to a biodynamic mode of production and has been confronted with the threat of ecological disembedding in the context of growth. Our

inquiry was guided by the following research question: *How can an organization maintain its ecological embeddedness in the context of growth?*

To problematize how a plurality of moral orders are combined and may conflict within and through ecological embeddedness, we rely on the economies of worth framework (Boltanski & Chiapello, 2005 [1999]; Boltanski & Thévenot, 2006 [1991]; Lafaye & Thévenot, 2017 [1993]). According to this framework, organizations are, by definition, compromise devices that combine plural and sometimes contradictory moral orders (Thévenot, 2001). Unlike other frameworks that address tensions such as institutional logic (Thornton & Ocasio, 2008) or paradox theories (Smith & Lewis, 2011) that tend to focus on an overarching tension between sustainability and economic goals (Ansari et al., 2013; Hahn et al., 2018), the economies of worth framework conceptualizes a plurality of moral orders and their tensions (Boltanski & Thévenot, 2006; Lafaye & Thévenot, 2017) not only between but also within sustainability and ecological poles. The search for ecological sustainability or the pursuit of profitability may involve multiple moral orders. Thus, this framework, which is gaining traction in organizational theory and business and society studies (Gond et al., 2024; Grattarola et al., 2023; Shin et al., 2022), is a fitting lens for unpacking and closely analyzing the moral tensions triggered by ecological commitments in a growing farm.

Through a qualitative analysis of AppleBioCorp based on 30 interviews with key actors, field observations, and secondary data, we identified the moral foundations underlying this farm's ecological embeddedness in three higher-level moral orders—referred to as “worlds” by Boltanski and Thévenot (2006)—the *green*, *domestic*, and *inspired* worlds. Then, we analyzed how this combination of worlds was challenged in the context of organizational growth by the *market*, *industrial* and *fame* worlds in ways that threatened to ecologically disembed the organization by undermining its moral foundations. We found that AppleBioCorp resisted this disembedding by recombining its moral foundations with the *green*, *inspired*, and *project-based*

worlds. We induced three mechanisms that explain such a morally grounded maintenance of ecological embeddedness: *nurturing green inspiration* through individual physical anchorage in nature, *networking green projects* through the spin-off of small units centered on the materiality of nature and *unifying a green ethos* through collaborative decision-making. All three mechanisms rely on the *green*, *project* and *inspired* worlds to nurture and consolidate the moral foundations of ecological embeddedness; they demonstrate how ecological embeddedness operates through not only individual but also collective dynamics in ways that can support an ambitious sustainability strategy.

Our study provides two contributions to studies of ecological embeddedness (Baudoin & Arenas, 2023; Whiteman & Cooper, 2000, 2011; Winn & Pogutz, 2013) by shifting the focus from individual to collective dynamics of ecological embedding and by elucidating the moral pluralism that helps maintain ecological embeddedness. Additionally, we advance economies of worth research (Cloutier et al., 2017; Grattarola et al., 2023; Roquebert & Debucquet, 2024) by explaining how the ecological materiality of the green world operates through organizations.

MAINTAINING ECOLOGICAL EMBEDDEDNESS FOR SUSTAINABILITY

For Ecologically Embedded Sustainability Strategies

Extending prior approaches to embeddedness as the notion that social interactions and networks necessarily precede and shape exchange relationships (Granovetter, 1985; Polanyi, 1944; Uzzi, 1999) to consider social relationships themselves as being necessarily embedded in the ecological environment (Livingston, 1994; Shrivastava, 1994), Whiteman and Cooper (2000) define “ecological embeddedness” as “the degree to which a manager is rooted in the land—that is, the extent to which the manager is on the land and learns from the land in an experiential way” (p. 1267). Their study of indigenous Cree beaver trappers in James Bay (“tallymen”), Northern Québec, demonstrated that ecologically embedded managers have “to personally

identify with the land, to adhere to beliefs of ecological respect, reciprocity, and caretaking, to actively gather ecological information, and to be physically located in the ecosystem” (p. 1275). Ecological embeddedness enables managers to understand local peculiarities, the interrelated influences of landscape, climate, seasons, plants, and animals, and the impact of unexpected events such as insect infestations (Whiteman & Cooper, 2000). By elucidating the embeddedness of Western organizations in a broader ecological system, the ecological embeddedness construct—along with subsequent notions such as “ecological sensemaking” (Whiteman & Cooper, 2011) and “organizational ecosystem embeddedness” (Winn & Pogutz, 2013)—provides an approach for studying how organizations maintain their ambitious sustainability strategies.

Whiteman and Cooper (2011) first extend the ecological embeddedness concept by considering “ecological materiality”, the notion that “the natural environment consists of material and physical elements—for example, rocks, rain, fire, ice, volcanoes, water, trees, animals, birds, and so forth” (Whiteman & Cooper, 2011, pp. 889-890). Then, they argue that ecologically embedded actors do not merely interpret nature as a material object but rather relate physically and cognitively to their ecological context in ways that support forms of “ecological sensemaking” (Whiteman & Cooper, 2011).

Regarding sustainability strategies, Whiteman and Cooper (2000, 2011) assert that individuals who are ecologically embedded develop a greater sense of being in a place and are more ambitiously committed to sustainable practices than those who are not. In modern societies, human beings have tended to become separated from nature (Descola, 2013) and deprived of the fundamental skills that are needed to understand the coevolutionary and beneficial interplay between the species in an ecosystem; they have lost their “sense of place” (Livingston, 1994). Without this sense of place, actors experience spaces as homogeneous and uniform (Relph, 2009), lacking identity, unique meaning and any intrinsic value (Shrivastava,

1994). In contrast, ecologically embedded actors and organizations can defend highly sustainable values and practices, notably by resisting the instrumental valuation of a place and acknowledging its intrinsic value (Järvelä, 2022). By helping individuals and collectives recover a sense of place in the ecological system, ecological embeddedness explains how Western organizations can maintain ambitious sustainability strategies (Gladwin et al., 1995; McKnight & Linnenluecke, 2019; Shrivastava & Kennelly, 2013).

Exploring Individual and Collective Dynamics and the Moral Pluralism of Ecological Embeddedness

We argue that despite the usefulness of the ecological embeddedness concept for explaining the maintenance of ambitious sustainability strategy, its potential remains insufficiently explored because of (a) its theorization as an individual-level, localized construct and (b) the lack of exploration of the multiple moral orders that can promote or hinder it. In this article, we seek to address both of these gaps by further studying the individual *and* collective dynamics of ecological embeddedness and by exploring the plurality of moral orders involved.

Early studies of ecological embeddedness have focused mainly on individual ecological embeddedness (Baudoin & Arenas, 2023; Whiteman & Cooper, 2000, 2011). We believe that addressing organizational approaches to sustainability implies theorizing ecological embeddedness at the collective level to understand how individual ecological embeddedness can be transposed and maintained on larger scales to facilitate the implementation or maintenance of ambitious sustainability strategies at an organizational level. However, although Whiteman and Cooper (2011) asserted that their concept has collective implications for organizational research and empirically highlighted that “the need for ecological caretaking was displayed at both the individual and group level” among tallymen (p. 1272), they have acknowledged that little is known about how microlevel accounts of ecological embeddedness

can be translated across various places and scales. Responding to recurrent calls for a deeper study of the mutual dependence and impact of ecosystems and organizations (Gladwin et al., 1995; Starik & Kanashiro, 2013; Winn & Pogutz, 2013), recent research has leveraged ecological embeddedness to investigate how a sense of place can shape the sustainability frames of various organizations (Mazutis et al., 2021). Empirically, ecological embeddedness has also proven to be a useful concept for unpacking the *interorganizational* dynamics occurring during an ecological controversy in France (Baudoin & Arenas, 2023). However, Baudoin and Arenas' (2023) study focuses on the individual rather than the collective understanding of environmental problems to explain the *interorganizational* divergence of actors' viewpoints and does little to conceptualize how the tensions related to ecological embeddedness can be resolved through *intraorganizational* strategy. Extending such developments, we examine ecological embeddedness in a Western organization and seek to analyze how it operates not only at the individual level but also through collective dynamics to resist organizational ecological disembedding in the context of growth.

A second limitation of ecological embeddedness studies is their lack of exploration of the multiple moral orders that can promote or hinder it. While these studies mention singular beliefs, meanings, and values related to ecological embeddedness (Baudoin & Arenas, 2023; Järvelä, 2022; Whiteman & Cooper, 2000), the moral foundations involved in the consideration of ecological aspects mostly remain implicit. For instance, the original ethnographic account of Whiteman and Cooper (2000) focused on the Cree people's values and practices and was informed by prior studies of other native anthropological groups (Bastien et al., 2023; Shrivastava, 1994). The authors found that tallymen's ecological embeddedness is based on beliefs of respect, reciprocity and caretaking for ecosystems and nonhuman living beings. Later, Järvelä (2022) explained how individuals' ecological embeddedness also imbues places with meanings and values, and Banerjee et al. (2023) explored the resistance of Brazilian, Chilean,

and Indian communities when they are confronted with mining projects that are at odds with the meanings and values that they attach to nature and the land. Baudoin and Arenas (2023) found that ecological embeddedness can also take various forms in Western contexts depending notably on actors' expectations of what the world ought to be beyond the knowledge of the natural sciences (Sarewitz, 2004).

We believe that, just as ecological challenges have generated repeated conflicts and social movements involving a diversity of moral positions regarding the meanings of nature (Lafaye & Thévenot, 2017; Roquebert & Debucquet, 2024; Winn & Pogutz, 2013), the individual and collective dynamics of ecological embedding implicitly involve multiple moral positionings (Baudoin & Arenas, 2023). However, the role of moral pluralism in ecological embedding is empirically overlooked and undertheorized because the literature tends to assume that what is “better” or “worse” for ecosystems is unambiguous and that actions can be easily classified as “good” or “bad” in this regard (Baudoin & Arenas, 2023). We believe that this oversimplification of ecological issues may overlook the moral complexity underlying ecological embeddedness that we propose for further examination.

In this article, we aim to explore how tensions between competing moral orders and combinations of such moral orders are involved in the dynamics of ecological embeddedness. In doing so, we aim to not only elucidate the pluralistic moral foundations of ecological embeddedness and the way in which these moral foundations conflict with other moral orders in the context of growth (Lenz & Neckel, 2019) but also uncover the moral pluralism inherent to ecological embeddedness that enables individual and collective moral embedding beyond a single set of ecological values. We contend that the individual and collective dynamics of ecological embeddedness and moral pluralism need to be further examined in a world in which ecological values and proximity to the earth are continuously contested but are matters of survival. Western organizations are likely to experience tensions between moral orders and their

various combinations through ecological embedding that must be explored, especially as such tensions are likely to be exacerbated when ecologically embedded organizations scale up in the context of growth (Lenz & Neckel, 2019).

DEALING WITH MULTIPLE MORAL TENSIONS WHEN MAINTAINING ECOLOGICAL EMBEDDEDNESS: AN ECONOMIES OF WORTH PERSPECTIVE

Accounting for Moral Tensions and Combinations of Moral Orders in Ecological Embeddedness: Prior Theories and Their Limitations

Various frameworks can be used to analyze moral tensions and the moral pluralism inherent to ecological embeddedness. Among these frameworks, institutional logics (Thornton et al., 2012; Thornton & Ocasio, 2008) and paradox theory (Hahn et al., 2014; Smith & Lewis, 2011) feature prominently. We argue that even though both theories recognize pluralism and provide analytical devices for studying such tensions, their assumptions about morality limit their capacity to consider the moral pluralism underlying ecological embeddedness. In contrast, we contend that Boltanski and Thévenot's (2006) economies of worth framework offers a conceptual vocabulary that can be helpful for further exploring the combination of multiple moral orders that underlie ecological embeddedness and therefore explain the moral tensions taking place through ecological embedding, most notably because of its peculiar take on nature and nonhuman entities. Table 1 contrasts the key constructs and core assumptions of these three frameworks and describes their pluralism and ecological embedding. In what follows, we present the constructs and assumptions of the institutional logics and paradox and explain their limitations for our purpose before turning to the economies of worth framework.

INSERT TABLE 1 ABOUT HERE

Pluralism and tensions are central to institutional logic theorizing. Institutional logics

are “socially constructed, historical patterns of material practices, assumptions, values, beliefs and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality” (Thornton & Ocasio, 2008, p. 101). The coexistence of contradicting logics creates situations of “institutional complexity” (Greenwood et al., 2011) that organizations aim to navigate (Pache & Santos, 2013), notably by selectively adopting parts of different logics (“selective coupling”, see Pache & Santos, 2013), “hybridizing” them through organizational structures (Battilana & Dorado, 2010), or creating “elastic hybridity” (Gümüşay et al., 2020).

Despite the richness of these insights for studying the management of ecological embeddedness tensions and even though values are recognized as playing a key role in some recent logic studies, they have largely been sidelined as a specific subcategory of legitimacy (Cloutier & Langley, 2013), and studies of institutional complexity have overlooked the possibility that the coexistence of contradicting logics may expand individuals’ room for moral judgment (Demers & Gond, 2020). We believe that institutional logic studies do not offer a sufficiently precise theoretical basis to grasp the plurality of moral orders explaining the incompatibility between logics (Gabriagues & Garreau, 2023) since they instead assert that logics may present contradictions that are difficult to combine (Raynard, 2016).

Furthermore, despite the definitional openness of the institutional logic concept to materiality (Thornton & Ocasio, 2008), nonhuman beings that form the ecological environment are rarely considered in works on institutional logics. Although the existence of an “ecologizing logic” has been proposed in a few studies (Ansari et al., 2013; Frederick, 1992; Tashman, 2021; York et al., 2016), the form of ecological embeddedness inherent to this framework is best described as a *loose institutional ecological embedding*—actors and organizations adhering partially to an ecologically related logic that is derived from the constitution of a peculiar field.

The conceptualization of tensions and pluralism in paradoxical thinking constitutes one

step closer to a fitting perspective for unpacking the moral tensions that underlie ecological embeddedness (Hahn et al., 2015; Slawinski & Bansal, 2015), notably because it has partially integrated material entities. Paradoxes are “contradictory yet interrelated elements that exist simultaneously and persist over time” that imply tensions—i.e., “elements that seem logical individually but inconsistent and even absurd when juxtaposed” and responses that embrace tensions simultaneously (Lewis, 2000)” (Smith & Lewis, 2011, p. 382). Paradox theory offers a contradictory view of pluralism in which the presence of lasting tensions within and across organizations is recognized and a fine-grained categorization of organizational paradoxes is provided (Smith & Lewis, 2011). Paradox studies have theorized solutions to their management either in the form of individual responses to tensions (Hahn et al., 2015) or by showing how organizations create “guardrails” that enable constructive oscillations between contradictory goals and offer “structured flexibility” (Smith & Besharov, 2019).

Although morality does not feature as a central category in paradoxical theory, “normative tensions” underlie categories such as “performing paradoxes” (e.g., contradicting organizational goals) or “belonging paradoxes” (e.g., tensions related to the plural identities of actors) (Gond et al., 2017). Paradox scholars also recognized early on that objects may play a role in paradox management (Smith & Lewis, 2011), although their theorizing of sustainability focuses mainly on the cognitive level of analysis (Hahn et al., 2014). In sum, paradox theory sketches a *cognitive paradoxical view of ecological embedding* that recognizes the multilevel, multidimensional tensions underlying sustainability issues (Hahn et al., 2015) but only partially captures nonhumans and overlooks the moral aspects of tensions (Gond et al., 2017).

Accordingly, we turn to the alternative economies of worth framework (see the third column in Table 1), which shares a common underlying focus on pluralism and tensions but offers a morally pluralistic (Gabriagues & Garreau, 2023; Shin et al., 2022) and ecologically material perspective on tensions (Grattarola et al., 2023) that allows for a more refined analysis

of how moral orders, their combinations and their tensions are involved in individual and collective dynamics of ecological embeddedness.

The Moral Foundations of Ecological Embedding: An Economies of Worth Perspective

According to the economies of worth framework proposed by Boltanski and Thévenot (2006), organizations are “compromising devices” (Thévenot, 2001), striving to conciliate contradictory moral orders that are referred to as worlds. Worlds equip individuals with a “repertoire of cultural-cognitive and normative resources” to address moral tensions (Cloutier & Langley, 2013, p. 371). Far from being embedded in one logic, actors have the latency to mobilize all worlds to critique a situation they judge to be unfair or to justify their position in the context of a dispute (Boltanski & Thévenot, 2006; Cloutier et al., 2017).

This framework provides us with a grammar that specifies which universal moral orders actors summon to justify or criticize situated organizational choices. By using this grammar, we can investigate the moral tensions and combinations of moral orders (Gond et al., 2017) involved in various forms of ecological commitments and other corporate goals. This grammar is especially well suited for investigating the coexistence of multiple moral orders underlying sustainability strategies (Demers & Gond, 2020; Shin et al., 2022). The economies of worth framework is able to propose an operational and universal grid for the analysis of the moral dimension of systems of meaning, including when they rely on references to market goals (Boltanski & Thévenot, 2006; Cloutier et al., 2017).

In their original framework, Boltanski and Thévenot (2006) distinguish six worlds that represent the grammar underlying actors’ critiques and justification in the capitalist system. The *civic world* values the collective search for the common good. The *industrial world* is dominated by the search for efficiency. The *market world* values commercial gains and self-interest. The *domestic world* values respect for traditions and hierarchy. The inspired world

values personal interiority or spirituality. Finally, the *world of fame* values public recognition. This grammar of justifications has been updated over the years to integrate the *green world*, which values harmonious relationships among humans, fauna, and flora (Lafaye & Thévenot, 2017 [1993]), as well as the *project world* (Boltanski & Chiapello, 2005 [1999]), which values connection and flexibility. Each world is based on a higher value and is characterized by specific tests to evaluate worth (e.g., passion in the inspired world), forms of proof (e.g., statistics in the industrial world), specific objects (e.g., organic products in the green world) and human beings (e.g., citizens in the civic world). This apparatus of worlds allows us to consider how nonhuman objects are involved in disputes, critiques, or moral tensions (Boltanski & Thévenot, 2006; Guggenheim & Potthast, 2012). Table 2 presents each world’s higher common principle and material manifestation as well as the meaning of worlds in our empirical context.

INSERT TABLE 2 ABOUT HERE

This “grammar” of worlds can account for the inherently moral nature of sustainability issues or “grand challenges” (Ferraro et al., 2015) and provides a way to investigate how competing or mutually supportive moral foundations interact during ecological controversies (Dionne et al., 2019; Gond et al., 2016, 2024; Patriotta et al., 2011) and within organizations in relation to sustainability strategies (Demers & Gond, 2020). Accordingly, higher common principles are highly relevant for illuminating the precise moral orders underlying ecological embeddedness beyond the univocal foundation of the green world. They have the capacity to operationalize rigorously the moral tensions and combinations that underlie ecological embedding or disembedding.

CONTEXT, METHOD AND DATA

Case Selection

As a concept, ecological embeddedness is especially relevant to managers and organizations whose professions lead them to interact with and depend on the natural environment, such as “forestry, mining, mountaineering, fishing, *farming*” (Whiteman & Cooper, 2011, p. 906). The agriculture industry is at the forefront of ecological tensions—it relies on the production of living organisms, contributes significantly to the impact of humans on nature, and, in return, is severely impacted by ecological disorders (McIntyre et al., 2009). Some businesses operating in this industry have started to pay closer attention to ecosystems and their functioning (Winn & Pogutz, 2013). This is the case for biodynamic farms that experience extreme tensions between market and ecological values (Roquebert & Debucquet, 2024).

Initiated in 1924 by Rudolf Steiner, an Austrian philosopher, biodynamics is an alternative model to conventional farming that bears on vehement criticism of chemical agriculture and relies on concrete practices to internalize “planetary boundaries” (Whiteman et al., 2013) by promoting biodiversity. Biodynamic farms are considered “autonomous living organisms” in which plants, animals and people feed and balance each other. Since 1932, biodynamic farms have been certified by the Demeter Association. Demeter explicitly refuses to accept that economic goals take precedence: “If one [...] wants to use these [*biodynamic*] standards [...] for economic advantage, one should practice agriculture in some other fashion” (Demeter International, 2020, p. 5). Instead, the goal of biodynamics is to create intimate relationships between humans and nonhumans (Roquebert & Debucquet, 2024) and could therefore be considered *de facto* ecologically embedded. However, biodynamics is controversial. Although its products benefit from a more positive market quality perception than organic ones, scientists vehemently criticize its “seemingly irrational methods” (Negro et al., 2015, p. 596). Starting in the 1960s, biodynamics started to spread within and outside Europe, fueled by rising ecological awareness and the development of the organic movement. Today, it is used in more than 50 countries worldwide, and its farming products are sold through

mainstream distribution channels, which brings significant growth opportunities to biodynamic farms.

Consistent with our focus on the maintenance of ecological embeddedness, we examined AppleBioCorp, a company from the agri-food sector that focuses on biodynamic tree production and has also developed processing, marketing, and sales activities. Nevertheless, the esoteric component of biodynamics is minimally present in the company, whose practices reflect ecological pragmatism rather than occult beliefs. Over the last 20 years, AppleBioCorp has experienced tremendous growth that has resulted in drastic tensions and fragile compromises between ecological ideals and market pressures. Table 3 provides figures that summarize this growth in terms of sales, size, and activity restructuring. Leaders, managers, and employees have tried to scale up their embedded approach to sustainability gradually. In the French context, within which biodynamic producers rarely include more than 120 employees, AppleBioCorp is especially large and successful, and according to a biodynamic expert, “this kind of company is very rare” (Demeter Association manager). It is therefore a highly revelatory case for elucidating the moral conditions for maintaining ecological embeddedness on a larger scale (Eisenhardt, 1989).

INSERT TABLE 3 ABOUT HERE

Data Collection

Since the organization is relatively small, we were able to interview a consistent proportion of its employees (22.5%); that is, we conducted 29 interviews with leaders, managers, factory, and agricultural employees and ended with one interview with two managers from the French Demeter Association ($n = 30$ interviews). Because of the duration of the data collection (from 2014 to 2020, see Appendix A) and the interviewees’ tenure (19.5 years on average, see

Appendix A), we could reliably cover the period of analysis (1999–2020) and understand how ecological embeddedness was threatened and maintained over time. We could secure first-hand memories about earlier periods, as we interviewed 7 out of the 22 employees working at AppleBioCorp in 1999 (approximately 30%), as well as the now retired founder of the organization. All of the interviews were transcribed. The data collection was complemented with six visits and two meetings on-site by the main author and an analysis of the company’s internal documents, website, and available media articles to triangulate key facts. Appendix A provides a list of our data sources; Appendix B details the use of these sources in our analysis.

Data Analysis

Our three-stage data analysis process followed an abductive approach (Mantere & Ketokivi, 2013), which led us to ultimately focus our inquiry on the maintenance of ecological embeddedness through a nonlinear process alternating between data collection and analysis and the refinement of theoretical dimensions. In the first stage, exploratory open coding highlighted the core tensions between an economic development perspective and the values and practices related to biodynamics. On the one hand, competitive pressures and the company’s growth and structuring shaped the initial ecologically embedded approach to sustainability into a more disembodied commitment. On the other hand, this trend was heavily criticized by respondents who built their discourse on the inspired ecological commitment of their company. Relying on this analysis and secondary sources, we reconstructed the chronology of the organization’s development over 20 years and found that “normative tensions” (Gond et al., 2017) could explain the evolution of the company’s ecological commitment, which prompted us to rely on the economies of worth framework.

In the second stage, we explored these moral tensions and related combinations of moral orders in a more deductive fashion using the consolidated grammar of economies of worth

(Patriotta et al., 2011). First, we coded all of our interviews and secondary data to identify all operational, organizational and field-related practices related to ecological commitment. In line with Patriotta et al. (2011), we used semantic indicators from the original economies of worth texts (Boltanski & Chiapello, 2005; Boltanski & Thévenot, 2006; Lafaye & Thévenot, 2017) to determine salient actors' moral postures related to their own or others' practices. We coded all discourse segments that correspond to one of the eight specific worlds of the consolidated framework, allowing the same unit of data (sentence, brief paragraph) to refer to several worlds and to reflect the pluralism of critique and justification (Demers & Gond, 2020; Dionne et al., 2019). We distinguished the *moral foundations of* and *moral threats to* ecological commitment to identify the moral conflicts at play in this growth context through internal discourses. Moral foundations relate to the use of moral worlds to justify practices—what actors stand for and what they aim to defend. For instance, the statement “For us, it is very important to preserve nature, to take care of it, to follow it through all these stages of seasonality” corresponds to a moral foundation in the green world. In contrast, moral threats point to critics of moral orders that can undermine ecological commitment. For instance, the following statement was coded as a moral threat coming from the industrial world: “Today, everything must be quantified, but I wouldn't want those [*ecological practices*] to be quantified. Because the day we put a figure on it, if the situation gets worse, we'll cut back on those.” Appendix C provides supplementary illustrations of the moral foundations or threats in relation to distinct practices.

Combining the chronology of AppleBioCorp with this second step of analysis helped us understand how moral orders and threats shaped the firm's sustainability over time and the farm's capacity to maintain ecological embeddedness despite its growth. We found that the initial moral foundations within which ecological commitment was grounded—the green, inspired, and domestic worlds—had been threatened by alternative moral bases—the market, industrial and fame worlds—since 1999.

The third stage of analysis focused on how the farm addressed moral threats and enabled us to further explore the practices and associated mechanisms that maintained ecological embeddedness. We found that actors aimed to avoid a compromise-making process with external expectations by circumventing external pressures while solidifying the plural moral foundations of ecological embeddedness. Our data showed that the farm has either reinforced preexisting practices or implemented new practices to maintain ecological embeddedness since the 2000s. All AppleBioCorp practices used to resist moral threats focused on establishing the materiality of nature as core to individual values, operational management, and organizational strategy and consisted of enhancing the physical proximity of individuals and collectives to this materiality to preserve ecological embeddedness. Intrigued by this moral side of ecological embeddedness, we refocused our analysis on the moral foundations of practices underlying the farm's ecological embeddedness.

To further theorize the relationships between practices ecologically embedding the farm and their moral foundations, we looked for “social mechanisms”—i.e., “bits of theory about entities at a different level (e.g., individuals) than the main entities being theorized about (e.g., groups), which serve to make the higher-level theory more supple, more accurate, or more general” (Stinchcombe, 1991, p. 367). Moving back and forth between practices and moral worlds, we induced three social mechanisms by which AppleBioCorp recombined moral worlds to manage contradictory moral pressures: *nurturing green inspiration* by physically anchoring actors in nature, *networking green projects* through the spin-off of small farming production units, and *unifying a green ethos* through collaborative decision-making. Together, these three mechanisms show the recombination of moral worlds by which individuals and organizational units remained embedded in physical nature and highlight the moral pluralism of ecological embeddedness. Figure 1 presents an overview of our results. The first two sections on findings introduce the initial moral foundations of AppleBioCorp's ecological embeddedness and show

how alternative moral pressures created a threat of disembedding. Our third findings section presents the three social mechanisms by which AppleBioCorp recombined its moral foundations to maintain ecological embeddedness through individual and collective dynamics.

INSERT FIGURE 1 ABOUT HERE

UNPACKING THE DYNAMICS OF THE MAINTENANCE OF ECOLOGICAL EMBEDDEDNESS THROUGH GROWTH

Laying the Moral Foundations for Ecological Embeddedness

A green purpose. AppleBioCorp, a small family farm, was created in 1943. When AppleBioCorp's founder met Mr. Lemaire and Mr. Boucher, the founders of organic farming in France, in the 1960s, "something clicked", and the organization "moved towards organic production" in the late 1960s (Founder). From 1970 to 1999, the founder confirmed his value-driven ecological posture, anchoring the farm's agricultural practices in the green world; AppleBioCorp converted to organic farming in 1970 and to biodynamics in 1995. All AppleBioCorp production was certified AB (French organic certification) in 1991 and Demeter in 1997. This shift to organic farming led to AppleBioCorp losing 80% of its production (Secondary data 7) in the first year it stopped using chemical treatments. In the following year, 60-80% of apple production was dewormed due to attacks by the codling moth. Multiple varieties of fruit trees were cultivated to ensure the presence of wild plants and animals and enhance orchard biodiversity (Secondary data 3). Biodynamic preparations were spread in the orchards to create circular autonomy on the farm, which fostered autosufficiency and avoided waste. The choice to autonomize the farm facilitated the adaptation of production to natural variations.

In our activity, [...] we are at the mercy of nature. We are accompanying this production. We are completely linked, available to nature at key moments, that's clear. It is not us, unlike [*conventional*] agriculture, who will inflict things on nature. [...] You have to

adapt. And this is not easy. (Farming manager)

An inspired driver. The inspired world drove AppleBioCorp's focus on sustainability. All of the people who were recruited by the founder after the farm's conversion shared deep ecological convictions that were fostered by physical proximity to nature and pointed to a form of individual ecological embeddedness. The recruits had rural profiles, were ecologically committed, and had "to be ecologically sensitive" (orchard employee) to accept the working conditions imposed by biodynamic farming, which are more difficult than those of conventional agriculture. Before 2009, all employees, even those in charge of calibrating or support functions, were based on the same site in the countryside, next to the main orchard. Managers and employees valued this proximity to nature, which helped them appreciate the challenges inherent in working with living organisms.

Before, they [*AppleBioCorp employees*] saw the fruit every day. To access the offices, we went past the area where we saw the people who were working in the factory. We could see the fruit that was stored. [...] When you have physical contact with nature, you know how difficult it is to produce a living. (Quality and R&D manager)

A domestic management. Managers' and employees' ecological convictions converged to create a collective form of ecological embeddedness that was characterized by family-type relationships grounded in the domestic world. The physical proximity of employees and the small size of the farm created a relational proximity reinforced by regular convivial events. As a result of this situation, jobs were not strictly delineated, and all members shared a common moral background aligned with the leaders' values.

We had a family atmosphere. Human proximity is still very important to me. It's not an obligation; I need it because I need to know how people feel before being operators. (Factory main assistant)

This ethos laid the foundation for a small-scale, collective ecologically embedded approach to sustainability motivated by personally imbued values (inspired world), expressed through family-like management (domestic world), and aimed at preserving ecological biodiversity and respecting variations in ecological life through biodynamics (green world).

Moral Threats: A Drift Toward Ecological Disembeddedness in the Context of Growth

The growth of the organization between 1999 and 2020 and the accompanying competitive pressure threatened the ecological embedding of AppleBioCorp. The configuration of tightly related dominant worlds (green, domestic and inspired) was challenged by the market, industrial, and fame worlds and was pressured to move toward the ecological disembedding of the organization. The interviewees understood this as threats and deviances.

Challenges from the market world: Threatening the core green purpose. The most fundamental tension faced by AppleBioCorp involved its core purpose: defending a model of biodynamic production instead of making profit. The company's ecological embedding through biodynamics means that adaptation to ecological variations and the preservation of biodiversity define the company's mission. Since the conversion of AppleBioCorp, agricultural production has indeed been seen as the core activity:

The priority is above all to be a producer. In addition, it is agricultural production that has to manage the rest. And not the other way around. (Farming manager)

However, the green purpose of the organization was challenged by market objectives, as variations in production became less accepted by external stakeholders. The standards for processed products imposed on the company became increasingly restrictive, supermarkets and some organic stores started imposing penalties in the event of stock shortages or extended delivery times, and some clients started placing very short-term orders.

If the delays are not respected, we are charged penalties! [...] Customers [*supermarkets*], they don't understand why [*we ran out of orders*]! Well, there are no apples, there are no apples! We're not going to manufacture them! (Sales assistant)

This threat was experienced by orchard employees who were subjected to unprecedented time and economic pressures:

I think that after a while, they [*supermarkets*] had to separate the economic balance sheets and ethics from the earth. [...] After a while, there will be a problem. We start skipping too many essential things here in the orchards. (Orchard manager)

Although the biodynamic ecological ethos remained central in internal communication,

it was challenged by the development of professional activities related to marketing, sales and purchasing, as well as the bureaucratization accompanying the organization's growth, a trend that legitimized the fear that "the whole administrative structure absorbs the rest of the company" (Quality and R&D manager). Ecological commitment was increasingly valued economically, but this merging of the green and market worlds was perceived as diluting ecological practices in line with customers' expectations rather than fostering ecological practices embedded in nature's needs.

Challenges from the industrial world: Transforming domestic management. The growth of AppleBioCorp led to a deep restructuring of its operations and daily activities. Indeed, the changing scale of AppleBioCorp's operations threatened employees' proximity to nature and the associated family-based management. After 2000, managers spent less time in the field and became physically distant from the production process as the administrative burden increased. The specialization of jobs led to the creation of silos inside AppleBioCorp.

Over time, we know each other less and less, we meet each other less and less... It's a pity. But it's not the same structure anymore. (Orchard manager)

Two subcultures emerged, as employees working in agricultural jobs were distinguished from those in charge of office or factory jobs. The relocation of the new factory and office activities to the nearest city in 2009 amplified this trend, as this led to the recruitment of urban employees, while rural profiles had thus far been dominant. As one of our urban interviewees reflected, "for those who work in orchards, we are aliens" (Purchasing manager). The relocation of decision-making centers away from the field further disconnected decision-making from "the reality of orchards".

Although the domestic way of functioning could increase individual inspirations into collective-ecological embeddedness, the search for the efficiency, bureaucratization, and urbanization of AppleBioCorp—which aligned with the principles of the industrial world—was seen by the leaders, managers and employees as undermining the ecological embeddedness of

the organization, refocusing it toward external and managerial requirements rather than deepening its ecological anchoring.

Challenges from the fame world: Eroding the inspirational motivation for sustainability. In the early 2000s, new external requests, such as a sustainable development audit of one of the supermarket customers, necessitated the development of an official CSR policy. From its first implementation in 2014, a formalized CSR strategy progressively made AppleBioCorp commitments explicit and more visible externally.

Today, we have clients asking us ‘how are you doing in your CSR?’ So, we’ll have to write it down. It will be easier to communicate perhaps. But what I want is for it not to take anything away from us. (Factory manager)

This formalization, together with the growth of the company, turned AppleBioCorp into a highly visible figure of the French organic industry. Recognized as a ‘CSR champion’, the farm received numerous prizes and trophies. However, managers and employees feared that such reputational benefits could take precedence over a selfless sustainability commitment. This showcasing of sustainable practices was seen as lacking authenticity and humility.

It [CSR] has to respect values like those that existed initially in organic farming, which were transparency and truth. If through CSR, it’s only about making a showcase, it’s not interesting. [...] It must not become *Les 3 Suisses!* [*one of the mainstream French retailing catalogs*] (Quality and R&D manager)

Organizational actors feared that strategically reframing ecological commitment as CSR in a top-down way could further disconnect AppleBioCorp from the reality of orchards.

CSR, I don’t actually see it in the field. It’s a concept; it seems very good but concretely in the field you don’t feel it. After maybe it’s already set up, maybe we were already a little bit in before we finally put a word on it with the name CSR. (Farming main assistant)

AppleBioCorp’s growth, along with the positive media coverage of other ecologically friendly yet less committed competitors, were regarded as potentially harmful developments leading to AppleBioCorp’s ecological disembedding through the focus on a market purpose, industrial operational management, and fame-driven motives. In this context, maintaining the

organization's ecological embeddedness became a challenging task.

Recombining Moral Orders: Three Mechanisms of Ecological Embeddedness Maintenance

Threatened at the core of its ecological commitment, AppleBioCorp refocused on practices that solidified its ecological embeddedness, which enabled the organization to maintain its ambitious sustainability strategy. These practices were both top-down, driven by the company's leaders and implemented by the managers, and supported by employees who wished to maintain an ambitious ecological commitment. Bottom-up practices resulted from the interaction between the individual agency of organizational members, who used their reflective–critical competence to interpret and connect the local conditions of “their microdaily activities and the macrostructures of their organizations and their environment” (Denis et al., 2007, p. 180) to creatively adapt organizational practices and suggest new ones to organizational leaders (Grattarola et al., 2023). These practices were gradually implemented or reinforced in a relatively disparate way, at least until AppleBioCorp relocated to the countryside.

Although diverse, these practices were all grounded in a shared belief that a sound understanding of, and adaptation to, nature requires personal physical proximity to nature; they supported three core mechanisms. The first mechanism consisted of *nurturing green inspiration* through actors' physical anchorage in nature; it leveraged *green* and *inspired* worlds to continuously maintain individuals' physical proximity to nature. The second mechanism, *networking green projects*, combined principles of the *green* and *project* worlds to enable the scaling-up of actors' experience of proximity with nature by connecting farm units that were kept small and human-sized and materially embedded in nature. The third and final mechanism—*unifying a green ethos*—involved collaborative decision-making to raise individual inspirations and embed ecology as a key driver of organizational strategy.

Nurturing ecological inspiration. The first mechanism consisted of continuously

activating the *inspired world* as a moral basis for sustainability practices. It contributed to ecological embeddedness by cultivating organizational actors' personal attachment to and understanding of nature by calling for actors' physical relations with nature to be cultivated. Several practices demonstrate how this mechanism operates. While the ecological sensitivity of orchard employees and managers was preserved, as these actors could always enjoy physical proximity to nature through biodynamic practices despite organizational growth, the farming manager confronted an increasing administrative workload and managerial distancing from the field and was keen to maintain his weekly walks and observation time in the orchards to nurture his ecological sensitivity and focus his decision-making toward natural requirements.

I need to feel things. Anyway, I don't want to do anything without going to the orchards. [...] The best result I can get is when I go for a walk alone in the orchards. (Farming manager)

Because they feared that organizational members' ecological values would be diluted through the urbanization of profiles and concomitant distancing to nature, organizational leaders and managers decided to change recruiting strategies for office and factory employees just after they moved to the city in 2009. They refocused on candidates with profiles that were aligned with an embedded green ethos to ensure that AppleBioCorp's sustainability strategy remained rooted in its members' personal values, despite an increased diversity of green sensitivities. Indeed, in contrast with employees who have an urban ecological mentality and "have the awareness of zero waste, of organic consumption", traditional AppleBioCorp factory employees "think of it [*organic consumption*] as too expensive in relation to their purchasing power but at the same time grow their own vegetables" (CSR and communication manager).

When I was in charge of recruiting people, I favored people who already had a connection to nature, either through family or through their professional experience... This is important because it then makes it possible to understand the variabilities of the plant, for example. (Quality and R&D manager)

Since 2010, new employees have spent one day working in the orchards to become socialized with nature. The goal of this practice is to keep new employees "as close as possible

to agricultural production” and to maintain their “awareness of the difficulty of producing the living” (Quality and R&D manager).

Organizational communication processes were also redesigned accordingly; internal communication insisted on agricultural identity (e.g., orchard-focused activities presented in newsletters [Secondary data 4], pictures of the orchards on office walls [Observations 2]). During the interviews, newly recruited employees observed that working in biodynamics, which reconsiders how humans and nature should relate to each other, strengthened their green engagement. For the farming manager, “it is necessary to provoke in them [*the employees*] wealth or sensitivities.”

However, these human resource practices were deemed insufficient to fully restore individuals’ ecological embeddedness stemming from direct interactions with nature. Thus, motivated by the reluctance of earlier members of the organization to work in the city, AppleBioCorp leaders took an even more radical step in 2017 by relocating all activities to the same countryside site to bring employees closer to nature (Observations 8). This relocation was decisive for maintaining the ecological embeddedness of AppleBioCorp. Although this relocation was at first reluctantly embraced by some urban employees, it received excellent feedback after three years. All employees ultimately felt closer to nature and valued spending time in the orchards and being involved in outdoor activities. Since their relocation to the countryside, AppleBioCorp’s managers and employees have purposively designed spaces and regular times in nature to foster their personal relationships with nature.

When our colleague from the vegetable garden needs team reinforcements, we create a morning ‘live my life’ where the office staff will come for two-hour sessions to plant vegetables to reiterate our connection to the land. (CSR and communication manager)

In sum, through initiatives that enable “physical proximity to nature”, the *nurturing ecological inspiration* mechanism helped actors cultivate “a personal relationship with the living” (Quality and R&D manager) that enhanced their ecological attachment and

understanding, ultimately reinforcing their ecological embeddedness. This mechanism nurtured embedded authentic individual ecological values by combining inspired and green worlds and helped curb external pressures focused on reputational motives for sustainability (fame world), but it was still insufficient to preserve collective forms of ecological embeddedness. Therefore, AppleBioCorp faced the challenge of realigning the organization's strategy with individual ecological values to shift from individual to collective forms of ecological embedding.

Networking green projects. The second mechanism consisted of *networking green projects* through the spin-off of small farming units centered on biodynamic production. This mechanism builds mainly on the *project world* to increase ecological embeddedness at the professional rather than the individual level, despite organizational growth. It consists of connecting professional units that are deliberately maintained at a small scale so that they can remain centered on the materiality of nature and focused on biodynamic production, leading to the avoidance of the detachment of nature resulting from industrial modes of management. Therefore, the mechanism of *networking green projects* enables the preservation of physical proximity with nature for each unit, despite the shift in the scale of the organization's relevant operations due to a growth of agricultural production, through a systemic reorganization centered on biodynamic production.

Whenever it [the farm] got too big, we recreated several farms and unities, so that it remains on a human scale and connected to nature. Our strength is that we are able to remain centered around the orchards. (Farming manager)

Successive changes at AppleBioCorp activated this mechanism. First, in line with “the [*biodynamic*] principle of individuality of the farm”, according to which the farm must be self-sufficient, AppleBioCorp has always integrated its value chain as much as possible while growing and diversifying. From agricultural production to (partly direct) distribution, including the processing of products in the factory, the organization adopts a “farm to fork” approach that fosters organizational versatility and autonomy from external pressures. Resisting temptations

to outsource agricultural production and concentrate on processing activities that are economically more valuable, AppleBioCorp strategically chose to maintain the integration of value chain activities from production to distribution. With this approach, the company was able to mitigate external pressures while maintaining the valuable ecological sensitivity needed to produce living organisms.

Companies that only process and don't produce agricultural products lose a lot, they lose a *soul*. [...] When you know what production is, when you have physical contact with nature, [...] you know how difficult it is to produce living things. In addition, that's important. So that's part of our values. (Quality & R&D manager)

In relation to the growth of production, the farming manager decided to successively acquire seven small agricultural plots run by different autonomous teams rather than expanding to a single plot. For him, this network form enables the proximity of each unit to the orchard to be preserved despite growth, facilitates the acquisition of localized ecological knowledge while distributing and thus reducing climatic and disease risks, and enhances biodiversity by encouraging people to pay attention to the specificities of each terroir.

AppleBioCorp looks big, but in reality, it's seven small farms. From the outside, people say 'but it's not possible that they can do biodynamics!' But they're teams, added to each other. People find themselves better in small working groups. (Farming manager)

In orchards, we are all a little connected and at the same time independent. There is the orchard manager, but each orchard is autonomous, operates at different times and really adapts to the employees and nature. There is still a connection and, at the same time, a certain freedom. (Farming main assistant)

In sum, the *networking green projects* mechanism combines the project and green worlds through operational management that became or remained (small-scale) project-based rather than (large-scale) industrial. This mechanism enables AppleBioCorp to mitigate the problematic professional distancing from nature that results from its growth. By aligning each unit of work with nature-related constraints and biodynamic production goals, the *networking green projects* mechanism complements that of *nurturing ecological inspiration* by maintaining nature-focused production and decision-making processes in ways that nurture an ecologically embedded approach to sustainability that is rooted in core rather than peripheral farm practices.

Beyond these two mechanisms that contribute to the individual and professional ecological embedding of AppleBioCorp, our analysis revealed a third mechanism that sustains a common embedded strategic orientation: *unifying a green ethos*.

Unifying a green ethos. The third mechanism we induced relies on the implementation of a collaborative form of decision-making—i.e., inclusive and focused on consensus-seeking—to align and connect leaders’, managers’, and employees’ ecologically embedded values so that personal ecological sensitivities become central to the farm strategy, despite organizational growth. This mechanism extends individual and professional ecological embedding by forming a unified and embedded collective “green ethos” that guides organizational strategy.

Networking green projects and nurturing ecological inspiration facilitate the maintenance of physical proximity to nature for all the company’s members despite organizational growth. However, while the personal convictions of its founders naturally fueled the intrinsic sustainability of an SME, communicating and sharing such personal embedded sensitivities across a larger organization is challenging. The relocation of AppleBioCorp’s activities to the countryside clearly signaled the collective defense of ecological embeddedness and initiated the integration of the disparate practices that made it up into an ambitious sustainability strategy for the organization. Confronted with the challenge of maintaining ecological embeddedness in a growing company, leaders and managers resisted setting up a pyramidal organization. Rather, they empowered employees, involving them in strategy-making so that their personal, embedded ecological values could remain a key strategic driver.

Since the 2017 relocation, leaders, managers, and employees have developed a model of collaborative decision-making to maintain a consistent and unified green ethos that could integrate the diversity of ecological sensitivities held by AppleBioCorp members. Since the appointment of an internal communication and CSR manager in 2018, all employees and

managers can voluntarily participate in strategic decisions and projects through five working groups that meet four times a year: (a) responsible sourcing, (b) eco-conception and innovation, (c) biodynamics and the environment, (d) well-being at work, and (e) pedagogy and knowledge transmission. This mode of decision-making enables “every employee to make a contribution” (CSR & communication manager).

In addition, since 2018, pair-working teams have been set up for each formal job, from the bottom to the top, to enrich jobs and stimulate horizontal interactions while enhancing multiskilling and adaptability. This shift from a paternalistic to a more open, flexible, and collaborative style of management has enabled employees to inform and support strategy while enhancing their own individual ecological embeddedness.

If someone is absent, another person can take over business continuity. [...] It allows you not to be locked into your job, and to open up to the rest of the company, it invites you to be truly multitasked and to be at the service of everyone. (CSR and communication manager)

Through these practices, “management with relays, a distributed management” has emerged (New CEO, former HR & accounting manager). Together, these participative and collegial decision-making practices facilitate the alignment of the farm’s activities with the diverse but deeply embedded ecological sensitivities of its members, resisting the influence of external commercial requirements centered on the market world.

In sum, the *unifying a green ethos* mechanism combines the project, inspired and green worlds with the aim of merging diverse individual ecological values into a collective green ethos that supports the organization’s ecological embeddedness. Thus, it enables the maintenance of an ambitious sustainability strategy. The three mechanisms complement each other by embedding individual actors, professional units, and the whole organization within a shared green moral ethos that supports its practices. Together, the three mechanisms materially embed actors within nature by influencing core individual values, operational management, and the strategic orientation of the organization. By maintaining individual and collective ecological

embeddedness, the mechanisms have at least temporarily ensured a balance of “opposing forces between biodynamic production and economic development” (Farming manager). Despite these mechanisms, AppleBioCorp leaders regularly debate the need to grow and the lack of compatibility between substantial ecological change and the capitalist system.

DISCUSSION AND IMPLICATIONS

We have examined how ecological embeddedness can be maintained in a growth context, focusing on the moral dynamics underlying this process at the individual and collective levels. Relying on the economies of worth framework and the case of AppleBioCorp, we identified three mechanisms recombining the green, inspired and project worlds that explain how the ‘green’ moral integrity of the organization was preserved by embedding ecological actors through individual and collective dynamics: *nurturing green inspiration*, *networking green projects* and *unifying a green ethos* (see Figure 1).

These results advance prior analyses of ecological embeddedness (Baudouin & Arenas, 2023; Whiteman & Cooper, 2000, 2011) by specifying and bridging its individual and collective dynamics of embeddedness and by evidencing its underlying moral pluralism; the findings also contribute to studies of economies of worth (Grattarola et al., 2023; Roquebert & Debucquet, 2024) by explaining how the ecological materiality of the green world operates through organizations. More broadly, our contributions provide insights for reconsidering assumptions about morality in institutional logic (Thornton et al., 2012; Thornton & Ocasio, 2008) and paradox theory (Hahn et al., 2014; Smith & Lewis, 2011) to better account for the moral orders underlying ecological embedding and examine the tensions inherent to this process. By combining these frameworks, future analyses of ecological embeddedness could draw on our insights to question how the individual dynamics of material relations to nature lead organizations to purposively embed in their natural ecosystem, defend ambitious sustainability

strategies, and resist competing logics or paradoxical tendencies through mechanisms founded on individually driven and collectively shared moral orders.

Conceptualizing the Individual and Collective Moral Dynamics of Ecological Embeddedness

Our first contribution, which is twofold, is to the growing stream of studies dedicated to ecological embeddedness (Baudouin & Arenas, 2023; Mazutis et al., 2021; Whiteman & Cooper, 2000, 2011). On the one hand, by adopting the economies of worth perspective to account for the diverse moral foundations at play in the organizational context, our analysis demonstrates the importance of moral pluralism in robust ecological embedding and extends the moral foundations of the ecological embeddedness concept beyond the unique green world. This highlights that an ecologically embedded sustainability strategy involves multiple moral orders to avoid turning sustainability ambition into the mundane and disembodied concerns of business as usual (Wright & Nyberg, 2017). On the other hand, our results extend prior studies of ecological embeddedness (Baudouin & Arenas, 2022; Whiteman & Cooper, 2000, 2011) by showing how three morally based mechanisms of ecological embedding operate not only at the individual level but also at the collective level.

In relation to the *moral foundations of ecological embeddedness*, our results show how, in a growth context, a type of operational management (domestic, industrial or project-based) and a core set of motivations for sustainability (fame or inspiration) orient a company toward either market purposes or the purpose collaboratively defended by organizational actors (Lenz & Neckel, 2019)—in our case, a green purpose. Consistent with prior empirical insights into ecological embeddedness (Whiteman & Cooper, 2000, 2011), we found that actors' personal experience of physical proximity to nature was key to preserving a deep understanding of ecological processes and provided a ground for inspired-based, noninstrumental approaches to sustainability. Although our results confirm the importance of individual values for grounding

ecological embeddedness and fostering ambitious ecological commitment (Järvelä, 2022; Winn & Pogutz, 2003), they advance prior theory by showing the pluralism of the moral system sustaining collective ecological embeddedness and by advancing mechanisms that dynamically recombine initial moral orders to preserve a green ethos despite moral threats. In our case, this resistance to the predominance of market, industrial and fame worlds involved the recombination of moral orders derived from the green, inspired and project worlds.

Our case study suggests that multiple scales should be considered to maintain ecological embeddedness. Our mechanisms show that the organizational ability to rebuild or preserve collective ecological embeddedness at larger scales depends on individuals' ecological embeddedness, which enhances their resistance (Järvelä, 2022) and then motivates them to draw on their *green*, *inspired* and *project* values to implement practices that preserve ecological embeddedness at collective scales. While the mechanism of *nurturing green inspiration*, by providing actors with space and time to experience “ecological materiality” to nurture their intimate ecological embedding and then compete with fame motivation for sustainability, points to individual-level dynamics that are consistent with prior research (Whiteman & Cooper, 2000, 2011), our other two mechanisms of moral recombination suggest shifting the scale of analysis by uncovering intertwined individual, collective, and organizational dynamics that sustain ecological embeddedness.

Indeed, the *networking green projects* mechanism involves transferring a shared ethos from individuals and the immediate group (family firm) to a larger and more diverse set of individuals in the context of growth (e.g., new business units). In our case, this change in scale operated horizontally and was resistant to an industrial mode of management. It took the form of spin-offs of autonomous and interconnected subunits, based on the project moral order, which valorizes autonomous and flexible forms of organizing (Boltanski & Chiapello, 2005). This capacity of the organization to grow horizontally and collaboratively—rather than

vertically through the consolidation of hierarchical and industrial lines—played a key role in preserving physical and close relationships between humans and nonhumans within small professional groups and in grounding professional ecological embedding. This mode of growth promotes the flexibility and adaptability of the organization, responding to Hoffman and Jennings’s (2021) call for incorporating “notions of shifts, variation, complexity, and the consequent need for adaptation” (p. 64) to sustain authentic ecological values and promote an awareness of ecological materiality (Whiteman & Cooper, 2011). Future studies could further explore such a “rhizomatic” mode of growth, considering ecological embeddedness.

The collective dynamics underlying ecological embeddedness were also reinforced by *unifying a green ethos*, which bridged and transcended individual and collective forms of ecological embedding. Collaborative decision-making (*project world*) combined with individual-level inspired ecological values (*inspired world*) ensures the implementation and maintenance of a more sustainable organizational strategy (*green world*) that avoids market prioritization. These multilevel, intertwined dynamics sustained ecological embedding at the organizational level.

This “moral pluralism” (Shin et al., 2022) centered on the *green world* that underlies ecological embeddedness is not solely an individual mechanism based on the *inspired world*; it also operates through professional and organizational scales, thanks to enhanced horizontality, autonomy, and flexibility (*project value*) that enable resistance to the instrumentalization of ecological commitment in a growing organization. Together with the *domestic world*, which can help ground collective ecological embeddedness within small organizations, the inspired, project and green worlds formed an ethos that can explain how ecological embedding emerged individually and was maintained across collective dynamics and how it supported ambitious sustainability. Future research could explore whether distinct or similar combinations of worlds are involved in the maintenance of ecological embeddedness across a variety of industrial and

organizational settings.

Experiencing the Ecological Materiality of the Green World

Our study also contributes to organizational studies of the economies of worth framework (Cloutier et al., 2017; Demers & Gond, 2020; Grattarola et al., 2023; Lafaye & Thévenot, 2017; Roquebert & Debucquet, 2024) by specifying how the ecological materiality of the “green world” involves considering a full set of living and material “beings” beyond human beings. Our results show that ecological materiality played a key role in the process of maintaining the farm’s focus on the green world. Although the economies of worth framework allows us to consider how nonhuman objects are involved in critiques (Boltanski & Thévenot, 2006; Guggenheim & Potthast, 2012), few works have analyzed how materiality relates to moral tensions beyond the context of tests (Finch et al., 2017; Patriotta et al., 2011).

The mechanisms that we conceptualized can be used to start addressing this gap and extending the original framework conceptually by approaching nature both as a ‘material’ *and* ‘living’ entity in the moral dynamics of justification, in line with insights from actor-network theory (Latour, 2004). Consistent with Whiteman and Cooper’s (2011) emphasis on the relevance of physical proximity to local ecosystems, our study confirms that ecological objects are more than “ready-made” elements available to actors for building justifications (Demers & Gond, 2020). Rather, these objects enable individual experiences of ecological materiality that support actors’ cognitive and material embedding in the green world and ultimately help maintain the organization’s green commitment. This suggests that “green objects” (Lafaye & Thévenot, 2017) operate differently from objects belonging to other worlds, as the degree of proximity and interaction of social actors with ecological materiality shapes their ability to listen to, interpret, and give meaning to the natural environment, therefore influencing the adoption of sustainable practices that promote ecological resilience (Whiteman & Cooper,

2000, 2011; Winn & Pogutz, 2013).

By showing how the physical experience of the local natural environment fosters deep green values by providing actors, beyond ecological knowledge, a sense of place, and a form of identification with the land (Järvelä, 2022; Whiteman & Cooper, 2000), our study extends the economies of worth framework through the recognition that nonhuman living beings and ecosystems exist in their own right (Roquebert & Debucquet, 2024; Whiteman & Cooper, 2011). Indeed, actors' situated, physical experiences with ecological materiality raise their awareness that nonhuman living beings and ecosystems are endowed with dignity in the same way as human beings, confirming the distinctive status of the green world. Future research could further analyze the "existential" dimension of these "tests" in the sense of Boltanski (2011), during which individuals become aware of the impossibility of living beings adapting to forms of organization where market, industrial and fame purposes take precedence and actively resist Westernized approaches to nature (Järvelä, 2022; Roquebert & Debucquet, 2024). Such insight also calls for Boltanski and Thévenot's (2006) assumption of "common humanity" to be reconsidered or broadened to include all natural beings and ecosystems in the community of reference, thus challenging the nature-culture dualism (Descola, 2013) that has been assumed in this framework and in most management science theories (Roquebert & Debucquet, 2024). This insight also invites further study of whether and how the vision of common goods advanced by different "worlds" can contribute to the maintenance of a "green world" that conditions the sustainability of our ecosystems.

Boundary Conditions, Limitations and Future Research

Although AppleBioCorp's growth provided us with an ideal case for capturing the combinations of moral orders and dynamics of moral tensions underlying ecological embeddedness, our focus on a single case calls for an evaluation of the transferability of our

conceptual insights. First, our case firm operates in the agricultural industry, which is subjected to sustainability pressures that make tensions salient. The sustained growth of the demand for organic farming products may explain its capacity to maintain ecological embeddedness due to available organizational slack, even though this market is becoming highly competitive and could therefore advance the market, industrial and fame worlds. Future studies could contrast our case with other firms to evaluate whether such factors, together with the mechanisms we identified, contribute to slowing down, preventing, or accelerating a shift from ecological embeddedness in the context of SMEs' growth while considering the initial sustainability orientations of these businesses.

Second, AppleBioCorp has idiosyncrasies that make it interesting for our research purpose but could partially limit the generalizability of our findings. For instance, its early commitment to biodynamics makes it a pioneering entity, and family-based and ecologically focused leadership, two factors that played a key role in the activation of our mechanisms, may not necessarily be present in competing organizations in the agricultural sector. Future studies could analyze the trajectories of farms that commit to biodynamics later or with less dedicated leadership to evaluate how the tensions surrounding ecological embeddedness are addressed in such contexts. Studying distinct cases would also elucidate the diversity of forms of organizational ecological embeddedness and the way in which collaborative mechanisms make them coexist in competitive fields (Baudoin & Arenas, 2023).

Finally, capitalizing on the insights from our study, future research could further investigate the joint constitution of the material aspects of human and nonhuman processes (Battel, 1996) by mobilizing, along with organizational analysis, perspectives from biology or ecology to better understand human organizations in their natural environment (Winn & Pogutz, 2013) and to jointly explore the biophysical and social issues inherent to their ecological embedding.

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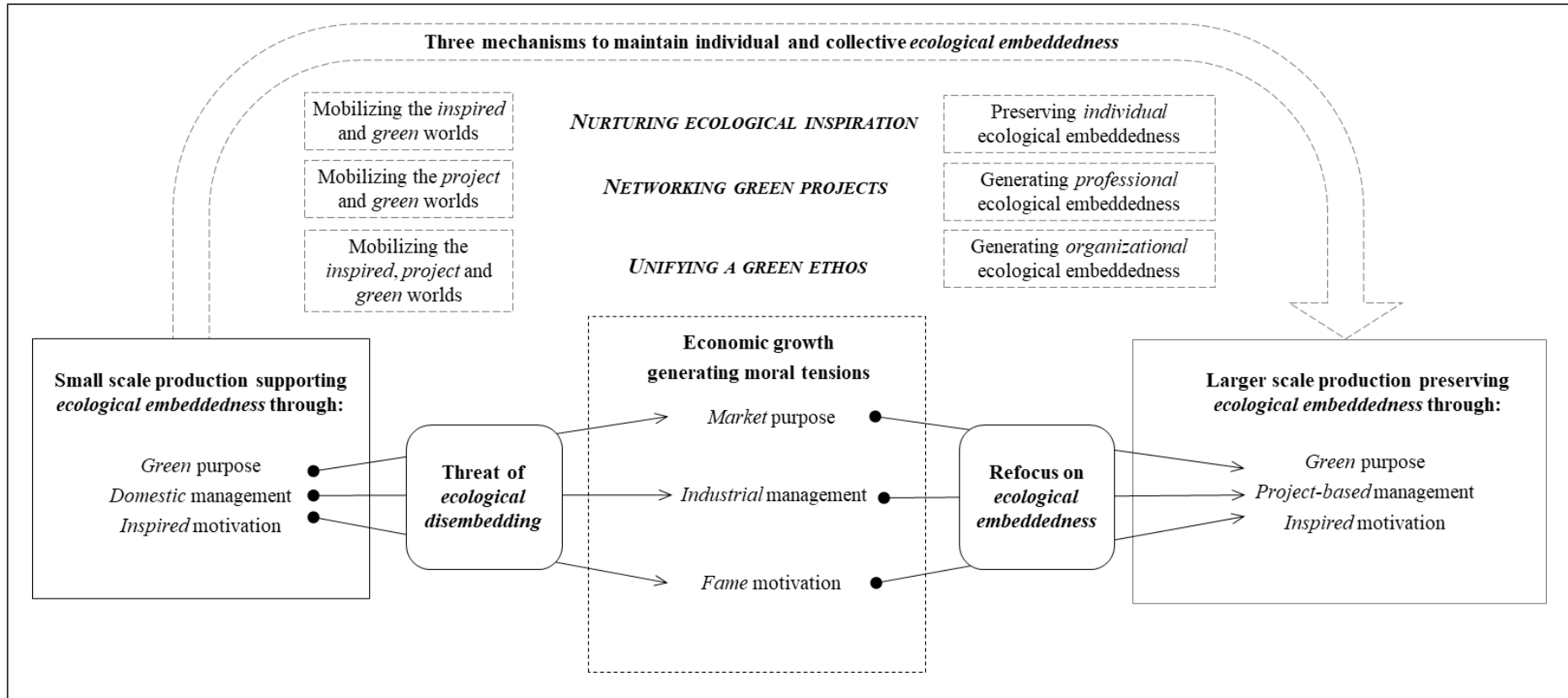


Figure 1. Three Mechanisms for the Maintenance of Ecological Embeddedness

Table 1. Contrasting Institutional Logic, Paradox, and the Economies of Worth Theories*

	INSTITUTIONAL LOGICS	PARADOX	ECONOMIES OF WORTH
Key constructs	Institutional logics are “socially constructed, historical patterns of material practices, assumptions, values, beliefs and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality” (Thornton & Ocasio, 2008, p. 101).	Paradoxes are “contradictory yet interrelated elements that exist simultaneously and persist over time” that imply tensions – i.e., “elements that seem logical individually but inconsistent and even absurd when juxtaposed” and responses that embrace tensions simultaneously (Lewis, 2000)” (Smith & Lewis, 2011, p. 382).	Worlds (“orders of worth”) are ordering principles based on shared definitions of the “common good” that form a repertoire of cognitive, symbolic, and material elements that can be used by actors to evaluate things and beings, to justify perspective in public disputes, and to reach an agreement (Boltanski & Thévenot, 2006).
Pluralism and tensions	Institutional pluralism: Complexity created by contradictory institutional logics <ul style="list-style-type: none"> - Institutions are inherently fluid, recursive, and based on a plurality of norms and beliefs. - Organizations face contradictory claims aligned with distinct logics that create “institutional complexity” (Greenwood et al., 2011). - Studies of institutional emergence and change are “rife with conflict, contradiction and ambiguity” (DiMaggio & Powell, 1991, p. 28). Solutions: <i>hybridization</i> (Battilana & Dorado, 2010) or <i>selective coupling</i> (Pache & Santos, 2010)	Contradictory pluralism: Experience of lasting tensions from organizational and external forces <ul style="list-style-type: none"> - Actors navigate in a complex world filled with tensions that result from persistent, contradictory, and dual social forces. - Persistent forces in organizations and society fuel tensions that actors have to live and thrive with. - Despite the potential consideration of multiple paradoxes, paradox studies mainly focus on how actors and organizations deal with dualities. Solutions: <i>guardrail</i> or <i>structured flexibility</i> (Smith & Besharov, 2019)	Normative pluralism: Coexistence of multiple approaches to the common good <ul style="list-style-type: none"> - Multiple common worlds coexist in society and bring about inevitable tensions but can coexist in the form of “arrangements” or “compromises”. - Organizations are by definition “compromising devices” combining contradicting worlds. - In contexts of controversies or disputes, actors debate about which moral criteria to use, and how criteria should be applied to evaluate worthiness. Solutions: <i>compromise</i> (Boltanski & Thévenot, 2006) or <i>justification work</i> (Jagd, 2011)
Morality	Recognize yet sidelined <ul style="list-style-type: none"> - Morality is one of the motivators that explain why actors endorse a particular logic over another (DiMaggio & Powell, 1991). - However, much of institutional literature equates legitimacy with conformity to normative, regulative, or socio-cognitive elements of a given institutional field. “Moral legitimacy” is sidelined as a specific subcategory of legitimacy (“separation thesis”). 	Implicit <ul style="list-style-type: none"> - Paradox theory tends to keep moral dimensions implicit, even though “normative tensions” (Gond et al., 2017) underlie categories such as “belonging” or “performing” paradoxes (Smith & Lewis 2011). - Little or no focus on moral dimensions behind the consideration of tensions between values or goals. No specific strategies or responses for dealing with moral or normative tensions. 	Explicit and reflexive <ul style="list-style-type: none"> - Each world (even the “market” or “industrial” worlds) is derived from a take on the common good, and is explicitly morally grounded. - Any organizational decision or action is therefore morally grounded (no “separation thesis”). Emphasis is put on the moral foundations underlying legitimacy struggles as well as the capacity of actors to sense the appropriateness of justifications in context.
Ecological embedding	(Loose) Institutional ecological embedding <ul style="list-style-type: none"> - Actors and organizations are cognitively embedded in organizational fields dominated by multiple, potentially contradictory logics. - Some logics reflect ecological issues (e.g., “climate change logic”) and may enable collective action (see: Ansari et al., 2013). 	Paradoxical (cognitive) ecological embedding <ul style="list-style-type: none"> - Sustainability tensions result from the contradictions between economic, environmental and social dimensions (Hahn et al., 2015) at the individual, organizational and systemic levels. Actors adopt distinct frames (e.g., “business case” or “paradoxical”) to make sense of sustainability (Hahn et al., 2014), these frames may contradict ecological 	Normative and material ecological embedding <ul style="list-style-type: none"> - Conceptualization of the “green world” (Lafaye & Thévenot, 2017) as one element of the repertoire of worth, ongoing discussions about the overarching status of this world (Roquebert & Debucquet, 2022); humans and nonhumans are inherent parts of the green world.

* Our comparison of the institutional logic and the economies of worth theories is derived from Cloutier and Langley (2013); the comparison of paradox theory and the economies of worth theories builds on from Gond, Demers and Michaud (2017). Please, see the original sources for fully-fledged comparative analysis.

Table 2. Economies of Worth Worlds’ Higher Common Principles, Material Manifestations and Meanings in our Empirical Case*

World	Common principle	Material manifestations	Meanings in our empirical case
Inspired	Inspiration	<ul style="list-style-type: none"> ▪ <u>List of subjects</u>: Visionary, child, artist woman, fairy, crank. ▪ <u>List of objects</u>: Spirit, body, dream, the unconscious. ▪ <u>Harmonious figures of the natural order</u>: The imaginary, the unconscious. 	Inspired motivation for ecological embeddedness based on personal relationship with, and physical experience of, nature, threatened in the context of growth which generates individuals distancing from nature.
Domestic	Tradition, hierarchy	<ul style="list-style-type: none"> ▪ <u>List of subjects</u>: Father, king, superiors, inferiors, boss stranger, chief. ▪ <u>List of objects</u>: Good manners, etiquette, titles, rank, gifts. ▪ <u>Harmonious figures of the natural order</u>: The home, the family, customs, conventions, principles. 	Small-collective ecological embeddedness based on family-type management before growing.
Fame	Public opinion	<ul style="list-style-type: none"> ▪ <u>List of subjects</u>: Star, fans, spokesperson, thought leader ▪ <u>List of objects</u>: Media, brand, campaign, message ▪ <u>Harmonious figures of the natural order</u>: Public image, the audience 	Reputational motivation for sustainability as a threat for ecological embeddedness in the context of growth.
Civic	Civic duty	<ul style="list-style-type: none"> ▪ <u>List of subjects</u>: Elected officials, the party, members, representatives. ▪ <u>List of objects</u>: Elections, law, committees, lists, criteria, decrees, codes. ▪ <u>Harmonious figures of the natural order</u>: The state, democracy, electorates, parliament. 	Relative tension between the willingness to defend the common good (the ‘community’ being extended to all living beings within ecological embedding) and the tendency to narrow the notion of collective good to a matter of regulatory compliance in the context of growth.
Market	Competition	<ul style="list-style-type: none"> ▪ <u>List of subjects</u>: Competitors, client, buyer, seller. ▪ <u>List of objects</u>: Wealth, luxury objects. ▪ <u>Harmonious figures of the natural order</u>: The market. 	Market purpose of sustainability considered as a threat for ecological embeddedness.
Industrial	Efficiency, performance	<ul style="list-style-type: none"> ▪ <u>List of subjects</u>: Professionals, experts, specialists. ▪ <u>List of objects</u>: Tools, resources, methods, plans, norms, tasks. ▪ <u>Harmonious figures of the natural order</u>: The system. 	Industrial management of sustainability seen as a threat to ecological embeddedness as it creates distance with nature and between employees.
Green	Ecological balance	<ul style="list-style-type: none"> ▪ <u>List of subjects</u>: Natural beings: humans, animals, plants, minerals, ecosystems. ▪ <u>List of objects</u>: Scientific, agricultural, technical, or regulatory tools that help measuring and preserving an ecological balance (e.g., compost, carbon tax). ▪ <u>Harmonious figures of the natural order</u>: The global ecosystem and its subsystems (e.g., the soil, a forest, farms considered as living organisms). 	This world defines the ultimate purpose of ecologically embedded sustainability, which is at the origin of the biodynamic project and is individually and collectively defended in the organization under study.
Project	Connexion, flexibility	<ul style="list-style-type: none"> ▪ <u>List of subjects</u>: Autonomous teams, partners, mediators, project leaders. ▪ <u>List of objects</u>: Communication tools, technologies and media, agreements, partnerships. 	Project-based management for growing collectives to maintain ecological embeddedness.

**The first six worlds’ descriptions of material manifestations are derived from Cloutier and Langley (2013), those of the green are adapted from Lafaye and Thévenot (2017) and Roquebert and Debucquet (2022), and those of the project worlds are based on Boltanski and Chiapello (2005).*

Table 3. Quantified Indicators of the Growth of AppleBioCorp from 1970 to 2020

Year	1970	1999	2017	2020
Workforce				
Total workforce	4	22	129	150
Farming workforce		13	26	30
Factory workforce		6	39	44
Logistics workforce		0	30	36
Support function workforce		3	34	40
Turnover	n.a.	€880,000	€18,800,000	€20,500,000
Sites				
Building surface	n.a.	3 800 m ²	14 500 m ²	14 500 m ²
Farm surface	20 hectares	39 hectares	105 hectares	105 hectares
Farm parcels	2	4	7	7
Products				
Apple varieties	n.a.	21	44	44
Pear varieties	n.a.	5	9	9
Grocery product lines	0	35	242	245

Appendix A. Details of the Data Sources

APPLEBIOCORP INTERVIEWEES						OBSERVATIONS AT APPLEBIOCORP		
Interviewee	Function	Level	Tenure (@2020)	Date(s) of interview	Length	Designation	Description	Date
Founder of the company (retired)	Support function	Executive officer	78 years	02/2016	1h	Observations 1	Study launch meeting with the CEO and the purchasing manager	07/2014
Chief executive officer (CEO) and associate	Support function	Executive officer	21 years	10/2014	1h	Observations 2	Visit of offices in town	10/2014
Factory manager and associate	Factory & logistics	Executive officer	42 years	10/2014	1h	Observations 3	Visit of the calibration site	10/2014
Farming manager and associate	Farming	Executive officer	40 years	11/2014, 11/2015, 06/2017	4h40mn (in total)	Observations 4	Visit of an orchard	11/2014
Purchasing manager	Support function	Manager	18 years	07/2014	1h30mn	Observations 5	Study progress meeting – Feedback of the exploratory analysis to the CEO	07/2015
HR and accounting manager until 2019 – New CEO from 2019	Support function	Manager and Executive officer	18 years	07/2014, 04/2020	2h10 (in total)	Observations 6	Visit of an orchard and storage rooms	11/2015
Quality and R&D manager	Support function	Manager	21 years	11/2015	1h10mn	Observations 7	Visit of an orchard	12/2015
Quality and R&D assistant	Support function	Manager	8 years	12/2014	1h10mn	Observations 8	Visit of the new rural gathering place & of an orchard	06/2017
Sales assistant	Support function	Employee	24 years	11/2015	1h	TOTAL 8 visits over 3 years		
CSR and communication manager	Support function	Manager	2 years	04/2020	1h10	SECONDARY DATA SOURCES FROM APPLEBIOCORP		
Commercial manager until 2019 – New CEO from 2019	Support function	Manager and Executive officer	7 years	04/2020	1h	Designation	Description	
Factory main assistant	Factory & logistics	Manager	24 years	10/2014	1h	Secondary data 1	AppleBioCorp website (Sections ‘AppleBioCorp’, ‘Live from our orchards’, ‘Our commitment’, ‘Our fruit’ and ‘Grocery store’)	
Second factory assistant	Factory & logistics	Manager	6 years	11/2014	1h	Secondary data 2	Functional organization chart	
Pasty factory employee	Factory & logistics	Employee	19 years	12/2014	40mn	Secondary data 3	Biodynamics pedagogical document for the company’s sales representatives	
Liquid factory employee	Factory & logistics	Employee	11 years	11/2014	30mn	Secondary data 4	Internal newsletters from 2012, May to 2015, October (n°2 to 12)	
Logistics manager	Factory & logistics	Manager	20 years	10/2014	1h	Secondary data 5	Results of the internal employee survey on the company’s vision, job and work environment assessment - 2014, September	
Logistics employee	Factory & logistics	Employee	9 years	11/2014	35mn	Secondary data 6	Article about AppleBioCorp in Biodynamis n°55 – 2006, October	
Logistics employee	Factory & logistics	Employee	13 years	11/2014	30mn	Secondary data 7	Article about AppleBioCorp Greenweez Magazine – 2015, September 1 st	
Logistics employee	Factory & logistics	Employee	8 years	11/2014	25mn	TOTAL	7 secondary data sources	
Farming main assistant	Farming	Manager	12 years	12/2015	1h10mn			
Orchard manager	Farming	Manager	18 years	11/2014	1h			
Orchard manager	Farming	Manager	32 years	11/2014	1h			
Orchard manager	Farming	Manager	21 years	11/2014	40mn			
Orchard manager	Farming	Manager	11 years	12/2015	1h			
Orchard mechanic	Farming	Employee	44 years	11/2015	40mn			
Orchard employee	Farming	Employee	6 years	11/2015	1h			
OTHER INTERVIEWEES								
AppleBioCorp interviews were completed by one interview with 2 managers of French Demeter Association				02/2016	1h			
TOTAL		30 interviews with 28 people			30h			

Appendix B. Data Sources and Analysis

	DATA SOURCES	USE IN THE ANALYSIS
Interviews	<p>26 interviews with AppleBioCorp retired founder, CEO, managers & employees conducted between 2014 and 2017.</p> <ul style="list-style-type: none"> ➢ Interviews were conducted face-to-face, lasted between 25 minutes and 1h30 mins, and all of the interviews were recorded and transcribed for analysis. ➢ Interview topics: Personal background of interviewee, history of the company, ecological commitment of the company, impact of biodynamics impacts on daily practices, tensions related to the growth of the company, approach to dela with tension <p>One interview with two managers of French Demeter Association in 2016</p> <ul style="list-style-type: none"> ➢ Face-to-face, one-hour long, analyzed based on note-taking. ➢ Interview topics: Biodynamic principles and practices, Demeter criteria, Description of the different types of certified farms, organization of controls, definition of specifications, discussion of the position of AppleBioCorp in this field. <p>3 follow-up interviews with AppleBioCorp new CEOs and the new CSR and communication manager in 2020</p> <ul style="list-style-type: none"> ➢ The interviews were conducted by phone due to Covid-19 constraints and lasted about one hour. All were recorded and transcribed for analysis. ➢ Interview topics: Evolution of the company since 2017, issues related to ecological embeddedness maintenance, governance, effects of the relocation, transmission, management of the Covid-19 crisis. 	<ul style="list-style-type: none"> ▪ To learn about the history of the company and its key changes. ▪ To obtain qualitative, in-depth descriptions of its sustainable practices. ▪ To get a sense of the tensions generated by the growth of the company ▪ To identify the mechanisms used to maintain an ecologically embedded approach to sustainability. <ul style="list-style-type: none"> ▪ To understand biodynamic practices, their impact on agricultural organizations and field, and on ecological embeddedness. ▪ To confirm and clarify AppleBioCorp’s unique and unusual place as a growing medium-sized company clearly committed to biodynamics – most biodynamic farms are very small sized. <ul style="list-style-type: none"> ▪ To confirm and clarify the analysis of the mechanisms ▪ To update the evolution of the company ▪ To evaluate retrospectively the mechanisms of ecological embeddedness maintenance in the context of severe crisis.
Observations	<p>2 meetings and 6 visits of AppleBioCorp from 2014 to 2017 (see details in Appendix A). During and at the end of these meetings and visits, notes were recorded based on observations of places, settings and behaviours.</p>	<ul style="list-style-type: none"> ▪ To validate and triangulate emerging insights from the interviews and to precise and confirm some data after the interviews. ▪ To understand the spatial organization of activities between the different jobs (orchards, calibration, processing, office), on the different parcels and locations. ▪ To observe the impact of sites on employees’ contact with nature. ▪ To identify the presence of nature in ‘non-natural’ places, to identify hierarchical proximity through the layout of offices and individual behavior.
Secondary data	<ul style="list-style-type: none"> ▪ 86 pages of public and private internal data, and 2 media articles (see details in Appendix A). These secondary data were either provided by the company or collected autonomously and can be classified as: <ul style="list-style-type: none"> ➢ Official data about the company (e.g., organizational charts; history; varieties of products, brands & sales channels, geographical locations). ➢ Internal communication (e.g., pedagogical documents about biodynamics; newsletters, documents for briefing salespersons; results of employee surveys). ➢ External communication (e.g., information about ecological adaptation practices; website tool to understand biodynamics). ➢ External information: Media reports portraying of the company as a champion. 	<ul style="list-style-type: none"> ▪ To validate and triangulate emerging insights from the interviews. ▪ To precise and confirm some data after the interviews. ▪ to confirm the unique and unusual place of AppleBioCorp in the agricultural and biodynamic fields.

Appendix C. Supplementary Illustrations of Practices, Moral Foundations and Moral Threats

PRACTICES	MORAL FOUNDATIONS
<p>Operational practice: Sometimes on Saturdays, we are forced to intervene on certain things, because climatology means that if we do it on Fridays, it makes no sense, it is even worse. It's unnatural. (Farming manager)</p>	<p>Green world: Adapting to the natural hazards, it is necessary to understand it, it is part of the work and our choice in biodynamics. (Orchard manager) Green world: For us, it is very important to preserve nature, to take care of it, to follow it through all these stages of seasonality. (Farming manager)</p>
<p>Operational practice: Here we make purees that have different colors everyday, that have different tastes. (Factory main assistant)</p>	<p>Green world: We have chosen to have products with variable characteristics, because we integrate the variations that the plant can have upstream. There are things that we do not measure because we know that there are variations and we accept them. It's part of our initial choice. (Quality and R&D manager)</p>
<p>HRM practice: An integration program is also offered to all new employees, including an apple-picking day. (CSR and communication manager)</p>	<p>Inspired world: When you have physical contact with nature, you know how difficult it is to produce the living. (Quality and R&D manager)</p>
<p>Governance practice: A pyramidal direction was not too much for us, so every time there are binomials, on each post. Even a vinegar worker will have a binomial. (New CEO, former HR & accounting manager)</p>	<p>Project-based world: What is done in our orchards in biodynamics can be applied to human organization. [...] Collaboration favors the expression of nature, because if we manage to decide together, we are in the mimicry of nature: in nature it is not a single organism that decides. Collaborative energy is more important and stronger than individual energy. (New CEO, former commercial manager)</p>
PRACTICES	MORAL THREATS
<p>CSR practice: Our ecological and social commitments are listed today. This is the first thing we did, we said: we are going to review what we are actually doing. (HR & accounting manager)</p>	<p>Industrial world: Of course, we need documents, we need follow-up, but there is so much written material that after a while I think there are things that risk being forgotten, essential values: values between people, passion, communication, that all people can participate in making decisions. (Farming manager) Industrial world: Today, everything has to be quantified, but I wouldn't want those [ecological practices] to be quantified. Because the day we put a figure on it, if the situation gets worse, we'll cut back on those. (Factory manager)</p>
<p>Supply chain practice: Now we're working more with mass distribution. Customers are more demanding in terms of quality and deadlines. Some order at the last minute. If we're out of order, they charge us penalties. [...] The small organic shop, which is really organic, understands and doesn't charge penalties. (Sales assistant)</p>	<p>Market world: If we go on like that, we're going to focus more on economics than on biodynamics. After a while, there will be a problem. (Orchard manager)</p>