Resource-based view and natural Resources: Propositions for Sustainability[1]

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Abstract:

This article develops a model aimed at managing natural resources in a sustainable way. While the resource-based view of the firm has been the major strategy framework mobilized for the study organizational resources, it lacks explanatory power when it comes to natural resources as the assumptions that underpin the theory cannot lead to a sustainable management of natural resources. By building on theoretical models grounded in the field of strategy and on the research paradigms of the commons and of the Anthropocene, we offer a theoretical model aimed at structuring, bundling, and leveraging natural resources. We offer implications for management theory.

Keywords: Anthropocene, Commons, Natural resources, resource-based view, resource orchestration.

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INTRODUCTION

As natural resources, i.e., material and energy accessible in the natural environment that have not been transformed by human activity, are subject to depletion[2], managing them in a sustainable way has become one of the "grand challenges" of our world (George et al., 2015, 2016). While resource scarcity has been at the agenda of economists, politicians, and environmentalists for centuries, "management scholars have paid only scant attention to physical and natural resources and their idiosyncratic characteristics" (George et al., 2015, p. 1598). As we respond to calls for changing management and strategy scholarship to address "grand challenges" (Nyberg & Wright, 2020; Whiteman et al., 2013) and for "re-working" established theories to bring them into line with environmental realities (Hoffmann & Georg, 2012), we argue that the neglect of the study of natural resources from a strategy standpoint goes hand in hand with the hegemony of the resource-based view of the firm (RBV) to the study of resources (George et al., 2015; Priem & Butler, 2001). The theory assumes that firms develop a competitive advantage based on the heterogeneity of resources and their capacity to capture valuable, rare, inimitable and non-substitutable resources (Barney, 1991; Wernerfelt, 1984). These assumptions are however not compatible with the evaluation of natural resources: the theory overlooks physical resources, it defines rarity differently from scarcity of natural resources, and it assesses the value of resources from an internal/market perspectives.

However, other paradigms of research have specifically focused on conceptualizing natural resources. Among them, the Commons (Ostrom, 1990) and the Anthropocene (Crutzen, 2006) have conceptualized natural resources as being finite, unique and collective. Thus, to understand how to manage natural resources in a sustainable way, we suggest a model that we build on alternatives to resource-based theory (Aragón-Correa & Sharma, 2003; Fréry et al., 2015; Hart, 1995; Sirmon et al., 2007; Warnier et al., 2013) and on the research paradigms of

[2] See recent reports such as the *Global Biodiversity Outqlook 5* published in September 2020 by the United Nations, *Global Risk Rising* published in January 2020 by the World Economic Forum, etc.

the Commons (Ostrom, 1990) and the Anthropocene (Crutzen, 2006), and show how to structure, bundle, and leverage natural resources in a sustainable way.

The remainder of this article is organized in three sections. The first section introduces the resource-based view and its limits in regard to the study of natural resources, the alternatives grounded in the strategic management paradigm and in the research paradigms of the Commons and the Anthropocene. The second section makes propositions to structure, bundle, and leverage natural resources in a sustainable way. The final section summarizes our findings and discusses them with the literature in management, before offering a research agenda.

1. THE STUDY OF NATURAL RESOURCES THROUGH THE LENS OF THE RESOURCE-BASED VIEW AND ITS ALTERNATIVES

The RBV aims to understand whether a firm's resources and capabilities are sources of superior performance (Barney, 1991). The theory adopts as a primary unit of analysis the resources and capabilities controlled by a firm that are the tangible and intangible assets that firms use to conceive of and implement their strategies (Barney & Arikan, 2001). The assumption is that resources are subject to imperfect competition as they are unequally distributed across organizations (Barney, 1991). Thus, organizations develop a competitive advantage based on their initial allocation of resources: the scarcer the resource, the higher its contribution to the organization's competitive advantage.

Accordingly, resources must be valuable, meaning that they enable a firm to conceive or implement strategies that improve its efficiency or effectiveness. If firms were to implement a value-creating strategy that would not be simultaneously implemented by other firms, they would rely on a resources or a capabilities that is not exploited by the other firms; they must be rare. Barney (1991) estimates that the number of firms that possess the resource or the capability must be less than the number of firms needed to generate perfect competition dynamics in an industry. Then, to be a source of sustained competitive advantage, resources or capabilities must be inimitable. According to Barney, it comes from one or a combination of three factors: the unique historical conditions, causal ambiguity and social complexity. Finally, for resources to be sources of sustained competitive advantage, there must be no strategically equivalent valuable resources that are themselves either not rare or imitable.

1.1. THE LIMITS OF THE RESOURCE-BASED VIEW TO THE STUDY OF NATURAL RESOURCES

The study of natural resources from a RBV standpoint is hampered by three limits. First, RBV lacks focus on physical resources, whereas physicality is the major property of natural resources, as they are the material and energy accessible in the natural environment that have not been transformed by human activity. As RBV originates from the distinctive competition tradition that aims to explain whether general management is as a source of competitive advantage (Barney & Arikan, 2001), "virtually *anything* can be associated with a firm can be a resource" (Priem & Butler, 2001, p. 32 emphasis in original). This explains the over-emphasis of the theory on non-physical resources at the expense of physical ones (Bansal & Knox-Hayes, 2013; George et al., 2015).

Second, the definition of rarity set by the RBV hardly applies to natural resources' auto-consumption. Natural resources are depleted by use (Bastian et al., 2018). They are finite and scarce in an absolute sense as their use diminishes the natural resource reserves available in deposits over time. They are subject to planet boundaries and thus limited to ecosystem constrains (Schillebeeckx et al., 2018). In contrast, RBV is grounded on Ricardian economics according to which rarity reflects the potential to generate rents for the owner (Barney & Arikan, 2001). This does not seem compatible with a vision of natural resources apprehended as finite.

Third, the value of a resource within the RBV framework is set within the organization (Priem & Butler, 2001). This constitutes severe limits in a changing environment (Davidsson, 2019). In fact, RBV is grounded on Penrosian economics according to which firms are understood as a bundle of productive resources controlled by the firm (Penrose, 1959). In contrast, natural resources are perceived as bundles of property rights (Bastian et al., 2018). They are usually located in fixed locations (e.g. mines) and are vulnerable to ownership disputes which makes the exploitation of natural resources complex and subject to property rights and cost transactions (Bastian et al., 2018). Some actors such as farmers may appropriate some of them (Valiorgue, 2020, p. 124). In other words, while RBV assumes that resources are possessions that are "tied semi-permanently" to a company (Wernerfelt, 1984, p. 172), natural resources may be appropriated by companies but are not possessed by companies. Given these limits to the use of RBV to study natural resources, we turn to alternatives to the theory.

1.2. ALTERNATIVES GROUNDED IN THE FIELD OF STRATEGY

We review four alternatives to RBV, by focusing in turn on the natural resource-based view, the ordinary/junk resources, the contingent resource-based view, and the orchestration of resources framework. The natural resource-based view (NRBV) integrates the constraints imposed by the natural environment to conceptualize resources (Hart, 1995). The focus is put on pollution prevention to minimize harms to the environment; product stewardship to integrates stakeholders' perspectives and consider the voice of the environment into product design and development processes; and clean technology to build new competencies and improve organizations' competitive advantage (Hart, 1995). Recently, as the authors were invited to refine the theory, they also considered the populations at the base of the pyramid as they argue that it is a population that firms should consider (Hart & Dowell, 2011). However, while the NRBV increases the awareness towards "grand challenges" by encouraging firms to change the way they exploit their resources, it does not help conceptualizing natural resources. In fact, the assumptions of the RBV are not questioned: resources from a NRBV standpoint are either physical or non-physical, they must be rare to create value, and they are "tied semi-permanently" to the organization.

Prolonging the NRBV, the contingent resource-based offers a more generalizable consideration of the exogenous factors in resources (Priem & Butler, 2001; Schmidt & Keil, 2013). Accordingly, firm resources participate in developing proactive environmental strategy (Aragón-Correa & Sharma, 2003). The extent to which they lead to the development of a proactive environmental strategy as a dynamic capability is facilitated by the perceived state uncertainty and munificence of the general business environment and is hindered by the perceived organizational effect and decision response uncertainties and the complexity of the business environment. As with the case of the NRBV, the assumptions of the RBV are however not questioned.

Ordinary and junk resources are seen as alternatives to resources whose competitive advantage comes from their value, rarity, non-imitability, and non-substitutability (VRIN) (Fréry et al., 2015; Warnier et al., 2013). Ordinary resources comprise *'common resource[s] on the market, generally perceived as neutral in terms of performance, i.e. with an expected level of productivity equivalent to its cost (acquisition or development)'* (Warnier et al., 2013, p. 1369) while junk resources are *'generally perceived as negative in terms of performance, i.e. with an expected level of productivity lower to its cost (acquisition or development)'* (Warnier et al.,

2013, p. 1371). As resources are not deemed to fulfill the VRIN critera, this perspective questions the assumption that resources must be rare to create value. For instance, while IT resources are commonly apprehended as commodities, their combination with other resources can constitute a competitive advantage (Branzei & Thornhill, 2006). However, this perspective does not specifically address natural resources either, as it neither considers the physicality of natural resources, nor does it consider resources as not belonging to firms.

Finally, the orchestration of resources focuses on the management of resources over the long run (Sirmon et al., 2007). The perspective undermines the managers' role and considers environmental contingencies. Orchestration involves managing and organizing resources through *structuring* which involves using processes to obtain the resource, *bundling* which refers to processes used to integrate resources to form capabilities, and *leveraging* that involves the set of processes used to exploit capabilities to take advantage of specific markets' opportunities (Sirmon et al., 2007). Orchestrating resources improves their alignment with their context of use (Le Breton-Miller & Miller, 2015). However, as this perspective in anchored in the paradigm of the RBV, resources remain considered as either physical or non-physical, they must be rare to create value, and they are "tied semi-permanently" to the organization.

Overall, as we observed that for each of the alternative limits to RBV still apply, the next sub-section offers alternatives anchored in the research paradigms of the Commons and of the Anthropocene.

1.3. ALTERNATIVES GROUNDED IN OTHER RESEARCH PARADIGMS

Organizational studies have started looking at alternative theoretical lenses to focus on sustainable development in the organizational field. We develop in turn the commons and the Anthropocene. The literature on the "commons" takes natural resources' finitude as a starting point. In fact, in the *Tragedy of commons* Hardin (1968) shows that as individuals act independently in their own self-interest, they behave contrary to the common goods and deplete or spoil shared resources through their collective action. As humanity overexploits an increasing amount of natural resources, such behavior leads to their exhaustion. However, Ostrom (1999) questions the three core assumptions of Hardin's reasoning, according to which users maximize immediate gains and do not cooperate, participants behave based on incentives that are easy to construct, and organizations require a unique direction. According to her, it is possible to envision another governance of *"common-pool resources"* she defines as *'resources*

[that] are sufficiently large that it is difficult, but not impossible, to define recognized users and exclude other users altogether' (Ostrom, 2008, p. 11).

Pointing open access as the reason for common-pool resource exhaustion and monopolization, the literature dedicated to the commons has focused on alternative governance systems to control common-pool resources, what Ostrom (1990, 2009) has called the *"socio-ecological system"*. As such, private property, state or community-based governance could constitute viable governance systems (Feeny, Berkes, McCay, & Acheson, 1990). Interestingly, as the *"socio-ecological system"* has been developed for the preservation of natural resources, limits to RBV do not apply: the framework is specifically tailored for natural resources and thus considers the physicality of resources, it is anchored in a physiocratic thinking that puts the respect of nature at the core of its philosophy (Lalucq, 2013), and finally, it offers other governance systems that the only dependence of resources over organizations.

For its part, the Anthropocene movement gained momentum in all scientific communities and began when geologists declared that the world has begun its Anthropocene era, meaning that human beings' impact is visible in the Earth geology (Crutzen, 2002). In other words, human beings have had a critical and irreversible impact on the Earth ecosystem and humankind can no longer pretend not being embedded in the ecosystem because it has become its main actor (Crutzen, 2006). A shift has thus been suggested towards an ecocentric perspective to take real action for the non-human world (Purser et al., 1995): it requires shifting intrinsic value on all living organisms and their natural environment, regardless of their perceived usefulness or importance to human beings (Wright, Nyberg, Rickards, & Freund, 2018). Management scholars have thus suggested novels ways of doing business (Corvellec, 2019; Hoffmann & Jennings, 2015); considering non-humans in the same way as humans (Beacham, 2018), because each resource is unique and cannot be substituted with another (Heikkurinen, Rinkinen, Järvensivu, Wilén, & Ruuska, 2016); and looking for pragmatic and concrete actions (De Cock et al., 2019; Roux-Rosier et al., 2018), even if solutions are difficult to find given the impetus to rethink organizational modes (Wissman-Weber & Levy, 2018). Within an ecocentric paradigm, resources are physical, either human or non-human; the question of rarity is meaningless as there is no exploitation of non-human resources by humans; and for the same reason property rights do not apply.

1.4. PUTTING IT ALL TOGETHER

In this first section, we sought to make a literature review to find how research focused on the management of natural resources in a sustainable way. Table 1 summarizes how each of the alternatives grounded in strategy and in the Commons and the Antropocene considers the limits to RBV to the study of natural resources. Building on these different alternatives to RBV, next section offers a theoretical model for a sustainable management of natural resources.

Limits to RBV	Alternatives grounded in the field of strategy				Alternative theoretical lenses	
	Natural Resource Based View	Contingent Resource Based View	Ordinary and Junk resources	Orchestration of Resources	Anthropocene	Commons
Focus on intangible resources					x	x
Rarity as an economic rent			x		x	x
Focus on the inside of the organization	x	x		x	x	x

Table 1: Consideration of the limits of RBV for each of its alternatives

2. PROPOSITIONS FOR A SUSTAINABLE MANAGEMENT OF NATURAL RESOURCES

Building on the literature on the orchestration of resources (Sirmon et al., 2007), we suggest that the management of natural resources involves their structuring, their bundling, and their leveraging, as well as a transversal dimension, as developed below.

2.1. STRUCTURING NATURAL RESOURCES: CONTEXTUALIZING VALUE AND CHANGING VALUE CREATION FRAMEWORKS

To manage natural resources in a sustainable way, we suggest that firms structure their portfolio of resources by contextualizing the value of their resources, which involves changing the value

creation frameworks. Given the finitude of natural resources that both the Commons and the Anthropocene fight for, to manage natural resources in a sustainable way organizations that are willing to develop a competitive advantage can neither rely on a rent based on resources rarity as it would deplete resources. Then, valorizing resources involves building a competitive advantage in a different way. We argue that it involves building it depending on the context of use. Prior research considered that ordinary and junk resources can contribute to creating value for the firm (Warnier et al., 2013). Valorizing such resources can help organizations preserve natural resources by valorizing natural resources which are usually considered as not valuable. In fact, according to Penrose (1960), a firm's competitive advantage is not only based on highly priced natural resources but also on resources that are especially efficient or especially valued in some use. Thus, while natural resources can be found ordinary or junk in specific contexts, they can be found valuable in others.

Such perspective reframes the way value creation was previously envisioned. The refocus is put on the idea that to preserve value, what counts is the interdependence between the resource and its context (Le Breton-Miller & Miller, 2015). As a consequence, firms should structure their portfolio of resources by stopping focusing on a few natural resources and start considering a larger bundle of natural resources by focusing on the best natural resource depending on the context of use. As Exhibit 1 illustrates, structuring a portfolio of natural resources depending on their context of use puts less pressure on endangered natural resources. This leads to Proposition 1a and 1b:

Proposition 1a: To be managed in a sustainable way, organizations can structure natural resources depending on their context of use.

Proposition 1b: Organizations must reframe value creation by focusing on the interdependence between natural resources.

"To preserve marine resources, [the start-up] Poiscaille [in the fishing industry] does not limit its offer to the most common fishes (sole, sea bass, hake, etc.) but diversifies the number of species in its fish boxes by offering "forgotten" species (labrus, tacaud, etc.). Thus, the start-up releases the pressure over the most fishing fishes to avoid them to be extinct. There is no reason, according to [the CEO] Charles Guirriec not to eat fish like, tacaud, labrus or the black sea beams which have as subtle flavours as other fishes, especially when you cook them less than 48 hours after being fished!" (Parigot, & Carton, 2020)

Exhibit 1: Illustration of the context-dependent valorization of natural resources with the example of the fish

2.2. BUNDLING NATURAL RESOURCES TOWARDS A LONG-TERM PRESERVATION BY FAVORING NATURAL LIFE-CYCLES

Building on the assumptions of the Anthropocene according to which natural resources are finite as they are constrained by the Earth ecosystem and unique as each resource has an intrinsic value regardless of its utility to humankind, a strategic management of natural resources must integrate that in case of depletion, a natural resource cannot be substituted by another. For that purpose, the Antropocene suggest the preservation of natural resources by the respect of their natural life-cycle to secure their renewal.

While the natural-resource based view has focused on optimizing the use of natural resources through innovation (Hart & Dowell, 2011), we argue that this however does not prevent from resource depletion. Similarly, while orchestrating natural resources optimizes the alignment of natural resources with their context of use (Sirmon et al., 2007), it does not stop natural resource depletion. Thus, we turn to examples offered in the context of an ecocentric perspective on natural resources that favor long-term management models by respecting their natural life-cycle. For instance, the permaculture movement suggests technical design practice, a holistic life philosophy, and an intersectional social movement for long-term management of natural resources (Roux-Rosier et al., 2018). Exhibit 3 also takes the example of Poiscaille, a start-up that bundles fishes to favor their long-term management. This leads to Proposition 2a and 2b:

Proposition 2a: To manage natural resources in a sustainable way, organizations must bundle resources over the long run.

Proposition 2b: Managing natural resources over the long run involves respecting their natural life-cycles.

Poiscaille's founder not only wishes to sustain his activity, he also hopes his initiative will have a real impact on the management of the fish reserves. With the results of the first fundraising, Poiscaille hopes to quickly reach 30,000 subscribers within 5 years. At the end, the company would like to reach a critical size of 50,000 subscribers, which represents 15% of the French fishery, the equivalent of 30,000 tons of fishes. According to Charles Guirriec, it's this level Poiscaille must reach to have enough shares of the French fishery market and then to impose its norms and improve the health of fishery resources. (Parigot, & Carton, 2020)

Exhibit 2: Illustration of the bundling of natural resources over the long run with the example of the fish

2.3. LEVERAGING NATURAL RESOURCES BY ADOPTING A COLLECTIVE MANAGEMENT OF NATURAL RESOURCES

Building on the literature on the Commons, we argue that it is necessary to take a collective approach to the exploitation of natural resources. This goes against the assumptions of the RBV for which firms control their resources even if previous research based on the RBV already introduced such idea. For instance, the natural resource-based view called for the consideration of the stakeholders' perspectives by taking into account the voice of the environment into product design (Hart & Dowell, 2011) and the contingent resource-based view for considering the environment (Aragón-Correa & Sharma, 2003).

Thus, a collective approach to natural resources exploitation guarantee natural resources sustainability. For instance, Wigger and Sheperd (2020) show that it develops by being organized hierarchically, it relied on the establishment of standards, the negotiation of regulations, the implementation of guidelines and the influence of policies and it involved activities of legitimacy building, lobbying and engaging in government initiatives. In the case of circular economy, all actors of the value chain of the industry are also involved in the management of the natural resource (e.g. Micheaux & Aggeri, 2019). Exhibit 2 illustrates how it is necessary to adopt a collective perspective to develop the hemp textile industry in Occitanie. This leads to the formulation of proposition 3:

Proposition 3: To be managed in a sustainable way, natural resources must be leveraged through a collective management.

"The Virgocoop cooperative has given itself the mission to "propel the renewal of a 100% Occitan hemp textile industry: cultivation, spinning, dyeing, weaving and local manufacture". While investigating, the cooperative realized that the region already included a certain number of actors capable of integrating such an industry. Indeed, as the cooperative mentions, "The region has several actors (particularly in the Castres-Mazamet textile industrial basin) who know how to dye, weave and finish fabrics to produce high quality fabric." It also counts hemp producers." (Audrezet et al., 2021)

Exhibit 3: Illustration of the leveraging of natural resources in a collective way with the example of the hemp

3. DISCUSSION AND CONCLUSION

In this article, we argued that the anchoring of RBV in a Ricardian economics does not offer a sustainable management of natural resources. Thus, relying on the literatures on the Commons and on the Anthropocene, we offer an alternative paradigm to respond to different calls aimed at conceptualizing natural resources in strategy (Casarin et al., 2019; George et al., 2015; Shapiro et al., 2018). Our conceptualization differs from RBV. Rather than conceptualizing resources as being intangible, costly to acquire and valued within the organization, we consider natural resources as being finite, unique and collective owned. Thus we make propositions to manage natural resources in a sustainable way, which includes structuring natural resources in their context of use, bundling them within a long-term perspective, and leveraging them through collective action. Table 2 summarizes our findings that we discuss in turn.

Natural resources	**Theoretical grounding**	**Conceptualization**	**Structuring**	**Bundling**	**Leveraging**
Paradigm based on the RBV	Ricardian economics	Intangible, costly to acquire, inner perspective	Pricing	Maximizing short-term profit	Internal to the firm
Alternative research paradigm	Commons, Anthropocene	Finitude, uniqueness and collectiveness	Context-dependent	Respecting natural life-cycle	Collective exploitation

Table 2: Synthesis of our alternative proposition for the strategic management of natural resources

3.1. DISCUSSION

As research has questioned the ongoing paradigm of growth in light of the climate change and of the ongoing sanitary crisis (Banerjee et al., 2020), it has developed paths to move toward a better awareness of planetary boundaries (Banerjee et al., 2020; Pansera & Fressoli, 2020). As resources contribute to the constitution of a competitive advantage of the firm and thus contribute to the growth of the organization (Barney, 1991), we focused on this concept to offer intermediary steps to the reconceptualization of growth and show a necessary shift in how we perceive resources to apprehend them as being finite, unique and collective. In other words, we show that the value that a resource offers is not only economic. Such findings parallels Figge and Hahn (2020) who conceptualize competitive advantage in four different configurations – business-driven, capital-driven, volume-driven and environment-driven. Overall, by

questioning the concept of resource, we question the economic growth of firms and suggest other ways to apprehend the growth of firms in a sustainable way.

This article also focuses on how organizations can make use of natural resources without causing their depletion. Since George et al.'s (2015) highlight of the lack of research in the area, several studies have burgeoned. While a first strand of research reviewed how natural resources have been considered in some fields of research (Casarin et al., 2019; George & Schillebeeckx, 2018; Shapiro et al., 2018), others focused on how firms can manage in a sustainable way their natural resources (Figge & Hahn, 2020; Tashman, 2020). This research takes a middle-ground perspective by focusing on RBV and rethinking its use in light of natural resource depletion.

We argue that addressing the issue by questions strategy concepts allows to change the way natural resources are considered in strategy. As this work echoes Starik's (1995) work on stakeholder theory, it responds to recent calls to develop a scholarship aimed to tackle the environmental challenges (Nyberg & Wright, 2020; Whiteman et al., 2013). Offering an alternative research paradigm on natural resources offers implications in terms of systems of governance and functioning modes to better structure, bundle and leverage natural resources. Furthermore, such perspective is anchored in the way science works. As RBV is constantly questioned in light of the evolving environment (Barney et al., 2020), we think it is important to question it in light of natural resource depletion. Based on these contributions, next sub-section paves the way for a research agenda.

3.2. RESEARCH AGENDA

By offering a change of the ontology of natural resources, we have made propositions regarding their structuring, bundling and leveraging. We however think that more work could be done to strengthen our theoretical propositions. By detailing them more, we could make them more actionable both for management scholars and practitioners. We also think that empirical research could develop to better understand the valorization, exploitation and management of natural resources. For instance, studies could focus on how entrepreneurs or fields have put this into practice by focusing on the undertaken actions.

Finally, because of the hegemony of the RBV, we decided in this article to solely focus on the resource-based view of the firm. The arguments we raised can however be mobilized with other theories, such as resource-dependence theory (Pfeffer & Salancik, 1978) to show that alternatives to this theory must be mobilized to manage natural resources in a sustainable way.

In fact, also building on the Anthropocene, Tashman (2020) extends this theory to make arguments similar to ours. This shows the necessity to change the paradigm through which natural resources are currently studied to focus on sustainable ways to manage their depletion. Other concepts in strategy could similarly be deconstructed, as was done with stakeholder theory (Starik, 1995), or global value chains (Carton & Parigot, 2021).

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