COGNITIVE FRAMES IN CORPORATE SUSTAINABILITY: MANAGERIAL SENSEMAKING WITH PARADOXICAL AND BUSINESS CASE FRAMES

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ABSTRACT

Corporate sustainability confronts managers with complex issues and tensions between economic, environmental and social aspects. Drawing on the literature on managerial cognition, corporate sustainability, and strategic paradoxes, we develop a cognitive framing perspective on corporate sustainability. We propose two cognitive frames – a business case frame and a paradoxical frame – and explore how differences between them in cognitive content and structure influence the three stages of the sensemaking process, i.e. managerial scanning, interpreting and responding with regard to sustainability issues. We explain how the two frames lead to differences in the breadth and depth of scanning, to differences in issue interpretations in terms of sense of control and issue valence, as well as to different types of responses that managers consider with regard to sustainability issues. By considering alternative cognitive frames, our argument contributes to a better understanding of managerial decision-making regarding ambiguous sustainability issues and develops the underlying cognitive determinants of the stance that managers adopt on sustainability issues. This argument offers a cognitive explanation why managers rarely push for radical change when faced with complex and ambiguous issues, such as sustainability, that are characterized by conflicting yet interrelated aspects.

Keywords: Cognitive frames, business case, paradoxical thinking, corporate sustainability, sensemaking

Corporate sustainability requires managers to simultaneously address widely diverging but interconnected concerns for the natural environment, social welfare and economic prosperity (Bansal, 2002; Gladwin, Kennelly, & Krause, 1995; Maon, Lindgreen, & Swaen, 2008). As a consequence, corporate decision-makers "face a great deal of ambiguity in understanding the issues, the implications of these issues for their organizations, and ways to respond to these issues" (Sharma, 2000: 683). The question of how managers make sense of such ambiguous cues from their organizational context has increasingly been addressed from a cognitive perspective (for overviews see Hodgkinson & Healey, 2008; Porac & Thomas, 2002; Walsh, 1995). Through cognitive frames, which act as "cognitive filters that admit certain bits of information into the strategizing process while excluding others" (Porac & Thomas, 2002: 178), managers imbue ambiguous cues with meaning which leads them to consider specific strategic responses (Weick, 1995).

Several authors have applied a cognitive lens to the analysis of corporate sustainability and related concepts, such as corporate social responsibility or corporate citizenship (Andersson & Bateman, 2000; Maon et al., 2008; Sharma, 2000; Sharma, Pablo, & Vredenburg, 1999). However, a detailed analysis of the effects that cognitive frames with different content and structure have on managers' sensemaking of the ambiguities around sustainability is still lacking (Angus-Leppan, Benn, & Young, 2010; Byrch, Kearins, Milne, & Morgan, 2007; Zietsma & Vertinsky, 1999). In particular, the strong focus on business case thinking (Carroll & Shabana, 2010) that permeates research on corporate sustainability (Bansal, 2005; Gao & Bansal, 2013; Hahn, Figge, Pinkse, & Preuss, 2010) has resulted in a situation where managerial responses to sustainability issues are conceptualized along an opportunity/threat dichotomy (Andersson & Bateman, 2000; Sharma, 2000) dominated by economic objectives of the firm. By contrast, our research aims to generate a better understanding of the underlying cognitive determinants of different responses to sustainability

issues that managers consider.

Drawing on the literature on managerial cognition, corporate sustainability, and strategic paradoxes (Smith & Lewis, 2011; Smith & Tushman, 2005), we develop a cognitive framing perspective on corporate sustainability. We propose two cognitive frames – a business case frame and a paradoxical frame – to explore how differences in cognitive content and structure influence the three stages of the sensemaking process, i.e. scanning, interpreting and responding (Daft & Weick, 1984; Thomas, Clark, & Gioia, 1993). The two frames are based on contrasting views of the relationship between the economic, environmental and social dimensions of sustainability and result in different decision-making stances on sustainability issues. We propose that managers with a business case frame focus on environmental and social aspects that align with economic objectives and thus interpret sustainability issues univalently as either positive or negative for their business; hence they adopt a pragmatic stance on sustainability issues with a propensity to pursue narrow but workable responses along existing routines and solutions. By contrast, with their awareness of multiple and conflicting economic, environmental and social aspects of sustainability issues, we expect managers with a paradoxical frame to develop more ambivalent interpretations of sustainability issues; as a consequence, they adopt a prudent stance where they consider more comprehensive responses, but due to their higher awareness of risk and tensions only move forward slowly and carefully.

As our main contribution, we advance theorizing about managerial decision-making by considering the effects of alternative cognitive frames on the sensemaking process of sustainability issues. Our examination of the differences in content and structure of managers' cognitive frames offers a more sophisticated understanding of the responses to sustainability issues they consider. We offer testable propositions on the effects of the two frames on managerial scanning, interpreting and responding with regard to sustainability issues. Our

argument results in a cognitive explanation why managers – due to the predispositions and limitations inherent in both frames – rarely push for radical change in the face of the immense challenges that sustainability presents. More generally, our plea to consider a greater cognitive diversity contributes to a better understanding of how managers make sense of ambiguous issues that are characterized by conflicting yet interrelated aspects.

We organize the article as follows. First, we develop the business case frame and the paradoxical frame with regard to their content and structure. We then develop propositions on how the two frames influence managerial sensemaking of sustainability issues as well as on the most important factors that moderate these effects. In concluding the paper, we discuss key implications and offer avenues for future research.

COGNITIVE FRAMING AND MANAGERIAL DECISION-MAKING

Decision-makers operate in turbulent organizational contexts with complex and ambiguous signals. According to cognitive categorization theory, individuals use cognitive heuristics to make sense of such complex situations (Mervis & Rosch, 1981; Rosch, 1975). As complexity increases, sensemaking shifts from being perception-based to being category-based since people's "cognitive processing becomes schema-driven […] and they […] assign a handful of their direct perceptions to types, categories, stereotypes, and schemas" (Weick, 2010: 541). Correspondingly, research on managerial cognition suggests that managers interpret and make sense of ambiguous and complex signals through cognitive frames (for overviews see Hodgkinson & Healey, 2008; Porac & Thomas, 2002; Walsh, 1995). A cognitive frame is a "mental template that individuals impose on an information environment to give it form and meaning" (Walsh, 1995: 281). These frames are produced and reproduced by individuals through labeling objects and situations according to observed attributes.

As human rationality is bounded, managers do not achieve a complete understanding of strategic situations; rather, they use cognitive frames to "develop subjective representations of

the environment that, in turn, drive their strategic decisions and subsequent firm action" (Nadkarni & Barr, 2008: 1395). Through cognitive frames managers reduce complexity and ambiguity by selectively organizing and interpreting signals from the organizational context (Dutton & Jackson, 1987). At the same time, cognitive framing occurs "on the basis of past learning and categorization" (Mervis & Rosch, 1981: 89) and is thus self-referring and retrospective, which results in a confirmatory bias that directs attention toward signals that fit existing frames and away from signals that are inconsistent with these frames (Palich & Bagby, 1995). Hence, cognitive framing can also limit decision-makers' understanding of a situation as it "may encourage stereotypic thinking; subvert controlled information processing; fill data gaps with typical but perhaps inaccurate information; prompt one to ignore discrepant and possibly important information; discourage disconfirmation of the existing knowledge structure; and inhibit creative problem solving" (Walsh, 1995: 282).

Following Walsh (1995), we distinguish between the content and the structure of a cognitive frame. Cognitive content "consists of the things he or she knows, assumes and believes", while cognitive structure denotes "how the content is arranged, connected or studied in the executive's mind" (Finkelstein & Hambrick, 1996: 57). The content of a cognitive frame relates to a particular domain, such as corporate strategy-making (Hodgkinson & Johnson, 1994) or entrepreneurship (Shepherd, 1999). Within a domain, frame content captures a person's ascription of attributes to objects and events, where an "attribute is any basis a person uses to distinguish or group objects and events" (Scott, Osgood, & Peterson, 1979: 36). Attributes that serve to differentiate objects and events into categories are said to have high cue validity (Dutton & Jackson, 1987). With regard to the structure of a cognitive frame, Bartunek, Gordon and Weathersby (1983: 274) suggest that the two primary dimensions are "differentiation – the ability to perceive several dimensions in a stimulus array – and integration – the development of complex connections among the

differentiated characteristics". Differentiation captures the number of elements within a frame and integration describes the degree of interconnectedness among these elements (Walsh, 1995). Taken together, structure and content of a particular cognitive frame lead to a particular interpretation of a situation and, in turn, to a particular managerial response (Tikkanen, Lamberg, Parvinen, & Kallunki, 2005).

COGNITIVE FRAMING IN MANAGERIAL DECISION-MAKING ON SUSTAINABILITY

Corporate sustainability "refers to a company's activities […] demonstrating the inclusion of social and environmental concerns in business operations and in interactions with stakeholders" (van Marrewijk & Werre, 2003: 107). Corporate sustainability deals with a multitude of demands and objectives at organizational and societal levels that appear desirable in isolation, but are "inextricably connected and internally interdependent" (Bansal, 2002: 123). It therefore produces a decision-making context with highly ambiguous signals where decision-making strongly depends on the frame managers use (Bogner & Barr, 2000; Hodgkinson & Johnson, 1994; Kaplan, 2008). First, from the perspective of sustainability, firms need to address economic *as well as* environmental and social outcomes, which have to be achieved *simultaneously* (Elkington, 1997; Gao & Bansal, 2013). This need to address various desirable but interdependent outcomes simultaneously leads to a risk of unintended consequences, as a solution to one issue could be detrimental to that of another (Newton, 2002). Second, sustainability suggests that "business firms are expected to improve the general welfare of society" (Schwartz & Carroll, 2008: 168). This reference to multi-dimensional outcomes at the societal level complicates the objective function of the firm (Jensen, 2001), because it comes in addition to financial performance goals at the organizational level. Due to a strong focus on intergenerational fairness (WCED, 1987), sustainability also "emphasizes the long-term nature of the benefit that business is expected to

provide to society" (Schwartz & Carroll, 2008: 163), as opposed to the oftentimes short-term focus of managerial decision-making (Held, 2001; Slawinski & Bansal, 2012). Third, sustainability involves the simultaneous recognition of various, often conflicting demands of a wider set of stakeholders (Clarkson, 1995; Maon et al., 2008), who apply decision logics that are different from those of managers and shareholders (Hahn, 2012).

Overall, sustainability confronts managers with situations in which they need to simultaneously address multiple desirable but conflicting economic, environmental, and social outcomes at firm and societal levels that operate in different time frames and follow different logics. At the same time, firms and managers are being criticized for their reluctance to adopt radical responses to address sustainability concerns (Whiteman, Walker, & Perego, 2013). To gain greater insights into corporate sustainability decision-making, it is therefore critical to understand which cognitive frames managers use to cognitively process these ambiguities (Andersson & Bateman, 2000; Maon et al., 2008; Sharma, 2000; Sharma et al., 1999).

Business case frame and paradoxical frame

Many of the ambiguities that surround sustainability stem from the interrelated yet conflicting nature of economic, environmental, and social outcomes (Margolis & Walsh, 2003). We develop two cognitive frames that reflect decision-makers' assumptions regarding the relationship of these aspects of sustainability on the basis of work by Smith and colleagues (Smith & Lewis, 2011; Smith & Tushman, 2005), who suggest two approaches for managers to deal with ambiguities. The first approach is based on an alignment logic and reflects the "belief in a unitary truth [which] means inconsistencies cannot fundamentally coexist" (Smith & Tushman, 2005: 525). It holds that managers deal with ambiguities by trying to eliminate tensions, i.e. they seek situations with a fit between various factors and look for contingencies that reconcile any inconsistencies (Smith & Lewis, 2011; Smith & Tushman, 2005). Such a need to eliminate tensions resonates with the business case for corporate sustainability, which

argues for an alignment of social and environmental outcomes with financial performance (Carroll & Shabana, 2010; Salzmann, Ionescu-Somers, & Steger, 2005). We therefore label the first cognitive frame the *business case frame*.

The second approach of Smith and colleagues stipulates that in complex organizational contexts tensions and inconsistencies are highly salient and cannot be eliminated (Smith & Lewis, 2011; Smith & Tushman, 2005). It emphasizes that by using paradoxical thinking managers accept tensions and accommodate conflicting yet interrelated economic, environmental and social concerns, rather than eliminate them (Gao & Bansal, 2013; Smith & Lewis, 2011; Smith & Tushman, 2005). Accordingly, we label the second cognitive frame the *paradoxical frame* (Miron-Spektor, Gino, & Argote, 2011; Smith & Tushman, 2005). Table 1 summarizes the main characteristics of the two frames.

Insert Table 1 about here

The two frames represent ideal types (Doty & Glick, 1994) of how managers conceive of the relationship of the economic, environmental, and social aspects of sustainability. Representing the endpoints of a continuum, the two ideal-type frames represent an accentuated abstraction of the relationship between economic, environmental and social aspects of sustainability, as either aligning environmental and social aspects with the economic dimension (business case frame), or accepting and accommodating the interrelated yet contradictory nature of all three aspects (paradoxical frame). As ideal types rarely exist in pure form, the actual frames of decision-makers will lie between the endpoints and resemble the ideal types to different degrees (Doty & Glick, 1994). Actual frames thus consist of different combinations of the underlying constructs – i.e. frame content and structure – of the two ideal-type frames.

Content. The content of the two frames is defined by the attributes decision-makers use when they make sense of ambiguous cues and differs with regard to the dominance and diversity of these attributes. As developed above, the business case frame follows an alignment logic which puts economic attributes first.[1] Social and environmental aspects are only taken into account when they can be aligned with financial performance. In line with the business case for sustainability (Carroll & Shabana, 2010), this frame is based on the belief that addressing environmental and social issues contributes to profit maximization (Andersson & Bateman, 2000; Byrch et al., 2007). Here, decision-makers will make sense of ambiguous sustainability signals by applying a singular focus on financial results at the organizational level and a hierarchical emphasis of financial outcomes over environmental and social concerns (Hahn & Figge, 2011). At the same time, given its unequivocal focus on economic attributes, the business case frame provides decision-makers with clear guidance on how to deal with the ambiguities of sustainability.

The content of the paradoxical frame is characterized by the juxtaposition of multiple, competing economic, environmental and social attributes to make sense of ambiguous sustainability issues. Paradoxical frames have been described as "mental templates in which managers recognize and accept the simultaneous existence of contradictory forces" (Smith & Tushman, 2005: 526). Here, decision-makers will use paradoxical thinking (Lewis, 2000; Lüscher & Lewis, 2008) – i.e. the ability of decision-makers "to effectively embrace, rather than avoid, contradictions" (Smith & Tushman, 2005: 533) – to accommodate competing yet interrelated economic, environmental and social concerns that reside at different levels and operate in different logics and time frames (Byrch et al., 2007; Gao & Bansal, 2013). However, since the paradoxical frame does not systematically emphasize one sustainability dimension over any other, it does not offer unequivocal guidance on which aspect of a sustainability issue to prioritize.

Structure. The differences in content and underlying logic between the two frames also influence their structure, both with regard to the number of salient frame elements (i.e. the degree of differentiation) and the complexity and multitude of connections between these elements (i.e. the degree of integration). For the business case frame, the strong focus on economic attributes results in comparatively low degrees of differentiation and integration. Differentiation is low because the economic focus limits the number of attributes represented in this frame. Integration is also low because, due to its emphasis on aligning environmental and social concerns with financial performance, this frame only considers connections between frame elements that are based on hierarchical means-ends relationships. Other, more complex relations, where social and environmental aspects do not align with financial performance, are not taken into account. However, the consideration of only a limited set of connections does allow managers with a business case frame to eliminate inconsistencies and tensions (Smith & Lewis, 2011; Weick, 1995) and to reduce complexity and ambiguity of the issue (Levinthal & Rerup, 2006; Porac & Rosa, 1996). Paradoxical frames have a more complex structure. The inclusiveness of this frame results in a higher degree of differentiation as it accommodates frame elements covering all three sustainability dimensions. While the high degree of differentiation refers to the inclusion of a wide variety of attributes, this frame also has a higher degree of integration since it takes into account different reinforcing, neutral and conflicting connections between sustainability dimensions.

Relationship between the two frames. As noted above, the business case frame and the paradoxical frame represent two ideal-type conceptualizations of how managers relate economic, environmental and social concerns to each other. They represent the endpoints of a continuum between a full alignment with economic objectives at the one end and a combination of interrelated yet conflicting economic, environmental and social concerns at the other end. Although as ideal types the business case frame and the paradoxical frame are

distinct, actual frames represent different combinations of content and structure of the two

ideal types (see Figure 1). Starting with the business case frame at the one extreme, once a

frame starts to include salient environmental and social attributes in addition to economic

attributes, its content gets more diverse and its structure more differentiated (upward move in

Figure 1). With the number of frame elements increasing, the number of possible connections

between elements grows disproportionately. The higher the number and the greater the

diversity of frame elements, the more complex and diverse the interconnections. Hence, the

cognitive frame has a higher degree of integration, which will eventually result in the

paradoxical frame at the other extreme (rightward move in Figure 1). The more a frame is

rooted in an alignment logic (business case frame), the greater its focus but the lower its

complexity. By contrast, the more a frame uses paradoxical thinking (paradoxical frame), the

higher its complexity but the lower its focus.

Insert Figure 1 about here

We propose that these two ideal-type frames are useful heuristic devices to understand

managerial decision-making in a sustainability context. We now develop the consequences of

each frame for the process of managerial sensemaking of sustainability issues. Exploring the

consequences of the two cognitive frames provides a more comprehensive understanding of

managerial cognition on ambiguities around sustainability (Walsh, 1995).

SENSEMAKING OF CORPORATE SUSTAINABILITY WITH THE BUSINESS

CASE FRAME AND THE PARADOXICAL FRAME

Sensemaking occurs as a sequence of three core processes, i.e. scanning, interpreting and

responding (Daft & Weick, 1984; Thomas et al., 1993). In the following, we develop the

differences in terms of managerial scanning, interpreting and responding with regard to

sustainability issues depending on whether decision-makers hold a business case frame or a paradoxical frame. In the scanning phase, decision-makers reduce the amount and complexity of information, and – depending on the frame they hold – they will notice different aspects of a situation, in turn leading to differences in their information processing and interpretation of the situation. In the interpretation phase, any given situation may be understood as relevant by some, but perceived as irrelevant or completely overlooked by others (Barr & Huff, 1997). Having assigned more or less relevance and specific meaning to the information then has consequences for the strategic response a manager takes.

Scanning

"Scanning involves information gathering; it usually is considered an antecedent to interpretation and action" (Thomas et al., 1993: 240). Due to their cognitive limitations, decision-makers are exposed to more information than they can process (Mintzberg, 1973), hence "executives can perceive only a selected portion of the environment" (Das & Teng, 1999: 764). Decision-makers scan information according to the relevance they assign to it based on their cognitive frames (Hambrick, 1982; Pfeffer & Salancik, 1978). Due to the confirmatory bias of cognitive framing, they selectively notice information that conforms to their cognitive frames and ignore information that contradicts these frames (Nickerson, 1998; Palich & Bagby, 1995). They also fill gaps with frame-consistent information and tend to miss extreme or highly surprising information because it escapes their cognitive categories (Kiesler & Sproull, 1982).

Important aspects of scanning refer to the depth and breadth of the information that managers collect (Beyer et al., 1997; Vandenbosch & Huff, 1997; Walsh, 1988) on sustainability issues (Mazutis, 2013). Information collection operates on a continuum between, at one extreme, focused search where decision-makers are looking for specific information with a clear purpose in mind, and, at the other extreme, general browsing through

information "without a particular problem to solve or question to answer" (Vandenbosch & Huff, 1997: 83). Regarding the breadth of perceived aspects, Beyer and colleagues (1997: 720) found that "[t]he more restricted the observational goals of decision makers, the more selective their perceptions will be". Similarly, the more managers attend to selected targets and previously formed hypotheses about the relationship between different aspects, the more "they might overlook information and evidence that may prove the opposite" (Das & Teng, 1999: 762). That is, a priori objectives and hypotheses selectively highlight particular cues from the organizational context (Bourgeois & Eisenhardt, 1988).

The business case frame, with its content built on economic attributes and its structure based on an alignment logic, provides managers with strong direction but at the same time restricts observational goals. We thus expect managers with a business case frame to perceive a rather narrow portion of the information on a sustainability issue. They will more easily absorb information that they perceive as having business relevance and that is structured similar to other business information, which is very often expressed in quantitative terms (Daft & Weick, 1984). For instance, the publication of the 'Stern Report' attracted managerial attention, because it presented monetary estimates of the economic damage caused by climate change. Crucially, the report presented climate change as a business opportunity, stressing the benefits of early action as a way to prevent the costs of remaining inactive (Stern, 2006).

Decision-makers with cognitive frames of low complexity also tend to collect information from fewer, selected sources (Karlins, 1967; Stabell, 1978). Accordingly, managers with a business case frame will limit their attention to sustainability-related claims of stakeholders closely related to the market environment, as these will be perceived as more powerful and relevant for business (Mitchell, Agle, & Wood, 1997). Since people tend to stereotype information depending on its source (Kiesler & Sproull, 1982), decision-makers with a business case frame will attend less to environmental and social issues brought forward

by stakeholders that have no direct impact on their business. For instance, in the 1970s General Motors' upper management did not consider many suggestions for smaller, less polluting cars, because they were brought forward by groups outside the scope of the executives' focus (Wright, 1979). Consequently, managers with a business case frame will not take full notice of the multitude of sustainability issues and claims that arise in their organizational contexts. The more the frames of decision-makers focus on economic attributes and an alignment logic, the more they tend to perceive issues only once they have progressed to later stages of the issue life cycle; that is, when actors with direct business relevance, such as regulators or competitors, have adopted the issue (Mahon & Waddock, 1992; Wartick & Mahon, 1994).

While the business case frame limits the breadth of managerial scanning, it enables managers to approach decision situations with known objectives (Das & Teng, 1999). Following an alignment logic, they probe the environmental and social aspects they notice for potential economic benefits. With this narrow focus, the business case frame provides clear direction and reduces uncertainties regarding which aspects managers should look for (Vandenbosch & Huff, 1997). The clear focus on the business relevance of sustainability issues allows managers to employ highly formalized and clearly structured search routines to collect detailed information (Das & Teng, 1999). Consequently, we expect that managers with a business case frame will be more likely to collect detailed information on how selected sustainability issues contribute to financial performance. Overall, we argue that the business case frame will lead managers to notice rather few sustainability issues, but to seek detailed information, based on readily available, quantitative information at advanced stages of the issue life cycle, on how selected aspects of these issues relate to financial outcomes (see Figure 2).

Proposition 1a: The more business case-oriented their cognitive frame, the more

likely decision-makers are to notice a narrow range of sustainability issues

based on focused search with little breadth, but with detailed information on how

these issues relate to economic objectives.

Since the paradoxical frame does not direct decision-makers towards clearly defined objectives and previously formed hypotheses about one specific type of relationship between different sustainability aspects. Rather, we expect managers with this frame to have a less selective perception of sustainability issues (Beyer et al., 1997). With their more complex frame structure and frame content comprising more diverse economic, environmental and social attributes, decision-makers will scan more broadly and attend to a wider range of aspects of sustainability issues, even if they are contradictory. Moreover, as Stabell (1978: 119) argues, decision-makers with complex frames tend "to combine the information from a wide variety of information sources as the individual is able to generate perspectives that can integrate such a diversity of information." Decision-makers with a paradoxical frame will thus gather more diverse information on sustainability issues, i.e. information related to economic, environmental and social aspects, irrespective of immediate financial implications (Byrch et al., 2007). As they hold a more complex conceptualization of their business (Crilly & Sloan, 2012), they will gather quantitative and qualitative as well as financial and non-financial information. They will also take note of opinions held by a wider range of stakeholders (Daft & Lengel, 1986; Wong, Ormiston, & Tetlock, 2011) and notice signals from diffuse sources with little or no immediate business relevance as well as from earlier stages of the issue life cycle (Halme, 2002; Wartick & Mahon, 1994). Since the structure of the paradoxical frame encompasses conflicting relations between different sustainability dimensions, decision-makers are more likely to notice redundant and inconsistent information. Their information collection will be less structured and less formalized, since increasing formalization "constrains the information that decision makers can take into account" (Heidmann, Schäffer,

& Strahringer, 2008: 246). For instance, biodiversity represents an issue that is still at an early stage in its lifecycle, and managers struggle how to make sense of it (*Financial Times*, 2012). Since biodiversity relates to many different ecological processes, managers need to scan beyond traditional business sources to comprehend the complexity of the issue. Hence, the CEO of global cement firm Holcim initiated a partnership in 2007 with the International Union for Conservation of Nature (IUCN), an environmental NGO dedicated to biodiversity, to collect independent expert opinion on the relevance of biodiversity for Holcim (Imboden, Gross, Meynell, Richards, & Stalmans, 2010).

However, since the paradoxical frame does not emphasize one sustainability dimension over any other, it does not provide an unequivocal direction for information collection. Scanning might be broad, but also rather vague as breadth comes at the expense of detailed information search (Das & Teng, 1999). With their complex and broad frame, managers may perceive too many issues and aspects as potentially relevant (Kiesler & Sproull, 1982). Due to their limited cognitive capacities (Kiesler & Sproull, 1982), decision-makers cannot collect, process and store detailed information on a wide range of sustainability aspects as well as on the complex interconnections between them; hence uncertainties will remain. While decision-makers can cope with tensions and uncertainties through paradoxical thinking, their scanning will remain inconclusive. Overall, we expect that the less their cognitive frame is focused on alignment, the wider the variety of aspects of numerous sustainability issues managers will notice, but the less they will be able to collect detailed information on the various aspects of these issues and their interrelations (see Figure 2).

> *Proposition 1b: The more paradoxical their cognitive frame, the more likely decision-makers are to notice a wide range of aspects of numerous sustainability issues based on broad browsing, but with a lack of detailed information.*

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Insert Figure 2 about here

Since cognitive frames are acquired and learned through a manager's career history (Hodgkinson & Johnson, 1994; Porac & Thomas, 2002), we expect that the functional background of decision-makers will influence their scanning of strategic issues (Beyer et al., 1997; Sutcliffe & Huber, 1998; Vandenbosch & Huff, 1997; Walsh, 1988). Functional background has been found to influence the breadth and depth of scanning, because managers with different functional backgrounds favor different search modes (Beyer et al., 1997). Managers with a background in internally-oriented functions, such as engineering, accounting and finance, have the tendency to be more task-oriented and to focus more on internal efficiency (Hambrick & Mason, 1984) as well as on uni-dimensional and clearly structured outcomes (Thomas & Simerly, 1994). They are thus more likely to perform focused search in a structured and formalized manner (Vandenbosch & Huff, 1997). Managers from externally-oriented functions, such as marketing, research, and product development (Hambrick & Mason, 1984), are more often exposed to situations where stakeholder demands are in conflict (Maon et al., 2008). Hence, they tend to be "more adept at recognizing the multiple demands of their stakeholders [and the] competing interests of their constituents" (Thomas & Simerly, 1994: 962). These managers are more familiar with collecting information through broad and less structured browsing (Vandenbosch & Huff, 1997). We thus expect that managers with a background in externally-oriented functions tend to scan more broadly but in less detail, while those with an internally-oriented functional background tend to scan less broadly but in more detail (as indicated by the arrows in Figure 2).

> *Proposition 2a: Decision-makers with a functional background in externally-oriented functions will scan more broadly but with less detail, which weakens the effects of the business case frame on scanning.*

Proposition 2b: Decision-makers with a functional background in internally-oriented functions will scan less broadly but with more detail, which weakens the effects of the paradoxical frame on scanning.

Managerial perception of ambiguous cues from the organizational context is not only constrained by decision-makers' cognitive capacities and personal characteristics but also by situational factors. When they deal with conflicting information and disparate stakeholder interests, managers usually do so under time pressure and resource limitations (Mann & Tan, 1993). Hence, it is often argued that a greater availability of resources will enhance managers' ability to collect more detailed and broader information on sustainability issues, since collecting and processing information on a broad range of sustainability issues is time consuming and costly (Bansal, 2005; Bowen, 2002; Sharma, 2000). Additional time and resources "can facilitate search activity which is not necessarily problem-related" (Bowen, 2002: 311) and provides the latitude to perform searches on aspects and issues that may not have an immediate pay-off (Levinthal & March, 1981). However, we argue that the effect of resource availability on managerial scanning of sustainability issues will not be categorical. The breadth of scanning by managers with a business case frame is not primarily limited by a lack of time or resources, but rather by the focus of the frame content on economic attributes and by its alignment structure. Even with abundant resources, these managers are not likely to perform a broader search. They will still fail to notice information on sustainability issues that is presented in non-financial, qualitative terms and has an ambiguous relation to financial outcomes. Conversely, the information search of managers with a paradoxical frame is limited by their capacity to collect and process detailed information on a broad range of sustainability issues. Part of this limitation will be due to their limited cognitive capacities to handle large amounts of information (Kiesler & Sproull, 1982). However, the availability of additional time and resources will allow these managers to collect more detailed information on the

broad range of sustainability issues they have noticed. We therefore suggest the following

relation between resource availability and scanning (see the dotted curve in Figure 2):

> *Proposition 3: The availability of additional time and resources will enable*
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> *decision-makers with a paradoxical frame to scan in more detail but will not*
>
> *increase the breadth of scanning of decision-makers with a business case frame.*

Interpreting

"Interpretation is the act of carving out meaning from ambiguous cues and is the very

core of the sensemaking process" (Porac & Thomas, 2002: 178). As research on strategic

issue diagnosis suggests (Dutton & Duncan, 1987; Dutton & Jackson, 1987; Thomas et al.,

1993), managers interpret strategic issues by assessing different aspects of these issues against

the categories of their cognitive frames. Individuals with different cognitive frames will attach

different labels to information in order to understand it and will interpret information

differently (Dutton & Jackson, 1987; Weick, Sutcliffe, & Obstfeld, 2005). Accordingly, we

expect that decision-makers with a business case frame will interpret the ambiguities of

sustainability issues differently than decision-makers with a paradoxical frame.

Managers commonly interpret strategic issues in terms of two dimensions, sense of

control over the issue and valence of the issue, i.e. their evaluation of the issue as positive or

negative (Dutton & Jackson, 1987; Plambeck & Weber, 2010). The perceived sense of control

reflects the extent to which a manager believes "in his or her ability to effect a change, in a

desired direction" (Greenberger & Strasser, 1986: 165). Sense of control is neither a stable

personality trait, as it can change over time and differ according to the issue or situation at

hand, nor is it objective (Greenberger & Strasser, 1986). Rather, it represents a subjective

perception and may even be an illusion (Langer, 1975). With regard to the valence of an issue,

previous work on strategic issue diagnosis tended to assume that decision-makers usually

classify an issue as either positive or negative (Chattopadhyay, Glick, & Huber, 2001; Dutton

& Jackson, 1987; George, Chattopadhyay, Sitkin, & Barden, 2006; Jackson & Dutton, 1988; Sharma, 2000; Thomas et al., 1993). More recently, organizational scholars have devoted attention to ambivalent interpretations of strategic issues (Fong, 2006; Gilbert, 2006; Plambeck & Weber, 2009, 2010). While univalent interpretations denote an issue as being clearly positive or negative, ambivalent interpretations attach competing positive and negative evaluations to various aspects of an issue (Plambeck & Weber, 2009, 2010).

We argue that managers' cognitive frames will play an important role for their perceived sense of control and valence of sustainability issues. Their perceived sense of control depends on what information is available to them (Thomas et al., 1993) and how that information is collected (Das & Teng, 1999). "[H]igh levels of information use among top managers will be positively related to their interpretation of strategic issues as controllable" (Thomas et al., 1993: 243). Moreover, the more managers believe they understand cause-and-effect relationships between different aspects of an issue, the higher will be their sense of control (Sharma et al., 1999; Thomas et al., 1993). With their frame content focused on economic attributes and frame structure based on an alignment logic, managers with a business case frame have the clear goal to identify, and gain a detailed understanding of, sustainability issues that contribute to economic objectives. Consequently, we expect managers with a business case frame to perceive a high sense of control over the few sustainability issues they have noticed. The sense of control will be heightened by their highly structured and formalized search and assessment routines which have a clear problem focus (Das & Teng, 1999). Since they will systematically probe into how sustainability issues relate to financial performance, they tend to be confident about their ability to understand the nature of this cause-and-effect relationship. Based on "a feeling that no stone has been left unturned" (Thomas et al., 1993: 243), they will have a high sense of mastery and control over sustainability issues.

Decision-makers assess issue valence by evaluating those aspects of an issue that they have noticed against the categories of their cognitive frame (Petty, Briñol, & DeMarree, 2007). Rudolph and Rupp (2007) found that individuals with strong directional goals tend to interpret issues univalently, i.e. as either clearly positive or clearly negative. Due to the strong direction towards the alignment with economic objectives that the business case frame provides, managers with this frame will base their interpretation of the issue on fewer and more similar aspects (Plambeck & Weber, 2010). Their interpretation will rely on those aspects of a sustainability issue that indicate either a clearly positive or a clearly negative contribution to financial performance, which leads to clearly positive or clearly negative interpretation of the issue (see Figure 3). This tendency to interpret issues univalently is enhanced by the strong sense of control these managers tend to have, because they are confident about their abilities to master the issue (Plambeck & Weber, 2010). This situation reinforces their reliance on routine assessments and reduces their willingness to integrate a wider range of aspects in the interpretation of an issue (Miller, 1993; Plambeck & Weber, 2010). Their propensity to interpret sustainability issues based on structured and formalized routines will further induce managers with a business case frame to settle on clearly positive or negative evaluations of sustainability issues. As an example, Royal Dutch/Shell defended its plans for oil drilling in the Artic against criticism from environmental NGOs and competitors by highlighting their positive evaluation in terms of business opportunities and their ability to control potential spills. Through a spokesperson, Shell's top management argued that "[a]t Shell, we believe the Arctic has significant untapped potential and will play an increasingly important role in meeting the energy challenge" and emphasized their sense of control by stating that "[o]ur experience working in rigorous and challenging conditions in the Arctic means that we are qualified to do the job right – to explore for offshore oil and gas in Alaska in a very safe and careful way" (The Guardian, 2012: 35).

Proposition 4a: The more business case-oriented their cognitive frame, the more

likely decision-makers are to perceive a high sense of control over selected

sustainability issues and to interpret these issues univalently.

The paradoxical frame's diverse content and complex structure will have two opposing effects on managers' perceived sense of control over sustainability issues. On the one hand, decision-makers with a paradoxical frame will notice a wide range of aspects of a sustainability issue. This broad and inclusive approach will increase managers' sense of control over sustainability issues, since they believe they will not have missed any important dimension of the problem (Das & Teng, 1999). On the other hand, due to the more complex structure of their frame, decision-makers accept that there are tensions and conflicts between different economic, environmental and social aspects that can never be fully resolved (Hahn, Pinkse, Preuss, & Figge, 2014; Smith & Lewis, 2011). This heightened awareness of conflict will lower their sense of control over the issue (Das & Teng, 1999). Overall, we thus expect decision-makers with a paradoxical frame to perceive a moderate sense of control over sustainability issues.

The greater diversity of the paradoxical frame also affects the valence of the evaluation of sustainability issues. "[A]mbivalent evaluations are likely to arise when executives examine more diverse aspects of an issue, which itself is in part driven by the [cognitive] frameworks employed in the process" (Plambeck & Weber, 2010: 692). Research in environmental psychology (Castro, Garrido, Reis, & Menezes, 2009; Costarelli & Colloca, 2004) shows that the multidimensionality of sustainability issues spurs ambivalent issue interpretations. For instance, domestic waste recycling has been found to simultaneously induce both positive evaluations (e.g. a satisfaction about showing ecological behavior) and negative evaluations (e.g. doubts about the overall effect of personal efforts when others do not recycle too) (Castro et al., 2009). With a paradoxical frame, decision-makers' positive or negative

evaluations of the wide range of aspects of the sustainability issue will not only depend on their business relevance, but also on environmental and social outcomes at the societal level. They will thus be more likely to integrate both positive and negative aspects in their overall evaluation of a sustainability issue. The paradoxical frame tends to amplify such ambivalence, because its structure does not follow an alignment logic; hence, it does not provide managers with unequivocal directional goals (Rudolph & Popp, 2007). Moreover, Plambeck and Weber (2010) found that a moderate sense of control is associated with ambivalent evaluations of strategic issues, while a very low or very high sense of control leads decision-makers to univalent evaluations. With a very low sense of control, decision-makers perceive issues to be beyond their own influence, which leads them to disengage from the issue and fall back on simpler univalent assessments. With a very high sense of control, decision-makers will also evaluate issues univalently, because they are overly confident that they can master an issue with existing routines and fail to consider alternatives (Miller, 1993). Overall, we expect managers with a paradoxical frame, and the resulting moderate sense of control, to experience enough control to handle diverse and competing aspects of an issue, but not enough control to rely excessively on routine evaluations. As a result, such managers will more likely apply distinct and competing positive and negative evaluations simultaneously (see Figure 3).

Proposition 4b: The more paradoxical their cognitive frame, the more likely decision-makers are to perceive a moderate sense of control over a wide range of sustainability issues and to interpret these issues ambivalently.

Insert Figure 3 about here

Since managerial sensemaking of strategic issues is embedded in an organizational context, organizational identity has been suggested as a critical factor that affects

interpretation (Bundy, Shropshire, & Buchholtz, 2013). Organizational identity represents the shared beliefs about the central, distinctive, and enduring features of an organization (Albert & Whetten, 1985). It guides and filters individuals' interpretation of strategic issues as it shapes the meanings given to an issue (Dutton & Dukerich, 1991; Walsh, 1995). Organizational identity defines what aspects decision-makers see as positive or negative and what are legitimate interpretations (Dutton & Dukerich, 1991). We therefore expect that the effects of the business case frame and the paradoxical frame on issue valence will be moderated by organizational identity.

A homogeneous identity leads to a single uncontested conceptualization of what is central, distinctive, and enduring about the organization. With its strong self-reinforcing dynamic (Fiol, 2002), a homogeneous identity keeps organizational members focused on organizational goals (Pratt & Foreman, 2000). In the case of a unitary 'business' identity (Albert & Whetten, 1985) the "competitive business model in which success is measured in terms of above-market returns and ever-increasing growth rates is more deeply ingrained in […] beliefs and practices" (Hamilton & Gioia, 2009: 448). Decision-makers are primed by such existing routines and are therefore less likely to integrate a diverse set of aspects in their interpretation of strategic issues (Plambeck & Weber, 2010). Ambivalent interpretations of sustainability issues that include non-business aspects tend to be delegitimized. By contrast, a heterogeneous identity (Gioia, Schultz, & Corley, 2000; Pratt & Foreman, 2000) admits more diverse aspects and thus makes ambivalent evaluations more likely (Plambeck & Weber, 2010). Organizations with heterogeneous conceptualizations of their central, distinctive, and enduring features accommodate multiple interpretations (Gioia et al., 2000) and tend to have more complex relationships with a wide spectrum of external stakeholders (Brickson, 2005). In such organizations, decision-makers are more likely to integrate conflicting sustainability aspects in their issue evaluations, because their organization's identity allows for attending to

a wide variety of competing stakeholder demands (Hamilton & Gioia, 2009).

> *Proposition 5a: Decision-makers in organizations with a homogeneous business identity are less likely to interpret sustainability issues ambivalently, which weakens the effects of the paradoxical frame on interpretation.*

> *Proposition 5b: Decision-makers in organizations with a heterogeneous identity are more likely to interpret sustainability issues ambivalently, which weakens the effects of the business case frame on interpretation.*

Given the role of resource availability as an important contextual factor in strategic issue diagnosis (Dutton & Duncan, 1987), we expect resource constraints to also moderate the influence of cognitive frames on the interpretation of sustainability issues. Resource constraints influence both managerial sense of control and issue valence. In cases where "resources are abundant, decision makers are more likely to feel a sense of control […] with respect to an issue, than when organizational resources are limited" (Denison, Dutton, Kahn, & Hart, 1996: 459), because they have the means available to deal with the issue adequately (Jackson & Dutton, 1988). By contrast, with limited resources decision-makers feel constrained by their context in the choices they can make and thus experience a loss of control (George et al., 2006; Jackson & Dutton, 1988). A lack of resources also makes ambivalent interpretations of strategic issues less likely, since managers tend to lack the time and resources to investigate a greater diversity of aspects of the issue (Plambeck & Weber, 2010).

We expect that resource constraints will particularly influence the interpretation of sustainability issues under a paradoxical frame. Having only a moderate sense of control to start with, resource constraints will further reduce the sense of control of decision-makers, since they lack time and resources to process the broad range of aspects they perceive. In addition, in times of economic distress, financial aspects are more likely to come to the fore due to increased shareholder pressure. This will reduce managers' leeway to consider a wider

range of environmental and social aspects that potentially conflict with financial performance. Managers will thus be forced to take sides and interpret sustainability issues less ambivalently. However, they will feel that this more univalent interpretation is imposed on them rather than being the result of their own reasoning, which further reduces their sense of control. By contrast, when managers with a business case frame operate under resource constraints, they will still seek univalent interpretations. Resource constraints tend to reinforce their reliance on routine procedures to ascertain the business relevance of sustainability issues in order to maintain control (George et al., 2006). Hence, resource constraints will affect such managers to a lesser degree. They will continue to settle univalently for either positive or negative evaluations, even with a low sense of control (Plambeck & Weber, 2009, 2010). We therefore suggest the following relationship between resource availability and managerial interpretation of sustainability issues (see the dotted curve in Figure 3):

> *Proposition 6: A lack of time and resources will induce decision-makers with a paradoxical frame to perceive a lower sense of control over sustainability issues and to interpret sustainability issues more univalently, but will not affect the interpretation of decision-makers with a business case frame.*

Responding

Once managers have interpreted ambiguous sustainability issues based on their cognitive frame, they act on that basis. While the cognition of an individual decision-maker alone will not determine organizational responses to sustainability issues, we expect that different cognitive frames will lead managers to adopt different decision-making stances. We define stance as a decision-maker's rationalized mental attitude towards an issue which predisposes her or him to act in certain ways. We argue that the different effects we expect for the two frames with regard to depth and breadth of scanning (Mazutis, 2013) and issue interpretation in terms of sense of control and issues valence (Chattopadhyay et al., 2001; Plambeck &

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Weber, 2009) will result in different decision-making stances on sustainability issues, i.e. either a pragmatic stance or prudent stance. We further characterize these two stances by discussing the scope, novelty, swiftness and riskiness (Plambeck & Weber, 2009) these different types of responses entail.

As developed above, managers with a business case frame focus in detail on selected aspects of sustainability issues to understand their relevance for economic objectives. Based on focused search routines, they develop a high sense of control over the few sustainability issues they perceive and tend to evaluate these issues univalently as either clearly positive or negative for their business. Consequently, we expect these managers to consider responses that either actively approach an issue – in the case of a positive evaluation – or actively avoid it – in the case of a negative evaluation (Cacioppo, Gardner, & Berntson, 1999). To develop these responses, they refer to existing solutions that have been successfully applied to similarly interpreted issues (Ocasio, 1997); they "access common solutions when faced with common situations that are clearly positive or negative" (Plambeck & Weber, 2009: 998). Being based on incremental adaptations of routine response patterns to positive or negative business issues, the scope of the responses these managers consider will be limited. This narrow focus on business routines enables decision-makers to simplify complex sustainability issues (Porac & Rosa, 1996) and to come up with swift responses once they have evaluated an issue as being relevant for economic objectives (Slawinski & Bansal, 2012).

The search for responses to sustainability issues that are in the vicinity of existing solutions also reduces the perceived riskiness and novelty of these responses (Plambeck & Weber, 2009). With their high sense of control based on formalized search and assessment routines as well as existing solutions (George et al., 2006), decision-makers with a business case frame tend to underestimate the risk of the responses to sustainability issues that they consider. By relying on established routines to ascertain the profitability of environmental and

social investments, such as formal investment appraisal procedures (Epstein & Roy, 2003), and by referring to known solutions, such as incremental improvements of existing technologies (Hart, 1995), they strongly believe in their ability to handle and control risk (Das & Teng, 1999). The higher their sense of control, the lower not only the perceived risk, but also the greater the likelihood that risk is underestimated and the more optimistic the forecasts managers make about the outcomes of their responses to an issue (Durand, 2003; Kahneman & Lovallo, 1993). Consequently, these decision-makers are willing to consider investments of considerable magnitude as long as these do not entail radical departures from established routines but rely on skills and solutions, which they perceive to be able to master.

When responding to regulatory pressure in the EU for lower carbon-emissions during the 2000s, top management of carmaker Volkswagen followed a pragmatic stance and developed the Bluemotion line of more fuel-efficient cars based on incremental improvements of its trusted diesel technology (*Financial Times*, 2007). This stance, however, came at the expense of developing alternative propulsion systems, such as electric vehicles, that require a departure from existing technologies. At the same time, the Bluemotion line was deployed swiftly across the entire model range, resulting in a large-scale response. Even if this reliance on incremental improvements of conventional technology is probably insufficient to meet more stringent emission regulations in the future, Volkswagen management seemed confident in its focus on responses with limited scope but high controllability (*Financial Times*, 2011).

Overall, we expect that holding a business case frame will induce a stance on sustainability issues that is characterized by pragmatism. With this stance, decision-makers prefer 'workable' solutions to sustainability issues based on strategies that remain within existing technological systems, producing as little disruption as possible (Prasad & Elmes, 2005). On the one hand, such a stance is rather parochial since managers only consider responding to those aspects of a sustainability issue for which they perceive immediate

business relevance; they will discard other aspects and fail to develop a comprehensive perspective of the issue. On the other hand, their focus on workable solutions is more likely to lead to concrete measures and responses that are actually implemented, thus "proposing working solutions for seemingly insurmountable problems" (Prasad & Elmes, 2005: 850).

> *Proposition 7a: The more business-case oriented their cognitive frame, the more*
> *likely decision-makers are to adopt a pragmatic stance on sustainability issues.*

Building on their broad but less detailed scanning on a wide range of sustainability issues, managers with a paradoxical frame experience a moderate sense of control and develop ambivalent interpretations of sustainability issues that integrate positive as well as negative evaluations with regard to economic, environmental and social outcomes. This ambivalence simultaneously activates response patterns for approaching positive and avoiding negative aspects (Cacioppo et al., 1999; Plambeck & Weber, 2009). Managers will not only consider environmental and social aspects that provide financial benefits, but also aspects where such benefits are unclear, or even unlikely. Their cognitive ability to accommodate conflicting aspects enables them to consider responses with a broader scope which are internally consistent within each response, but "may be inconsistent or contradictory across [responses]" (Smith, Binns, & Tushman, 2010: 449). However, the higher cognitive complexity associated with ambivalence impedes swift responses (Levinthal & Rerup, 2006; Porac & Rosa, 1996), since decision-makers take more time to assess and integrate more diverse and potentially competing aspects of a sustainability issue (Slawinski & Bansal, 2012).

Since ambivalence activates a broad set of positive as well as negative evaluations of a sustainability issue simultaneously, managers with a paradoxical frame tend to perceive issues as unique. Consequently, they feel that these issues cannot be adequately addressed through existing solutions and routines, and this triggers a search for alternative responses (March & Simon, 1958). When searching for alternative responses, the activation of different response

patterns increases the "likelihood of finding multiple [yet competing] responses that match the issue" (Plambeck & Weber, 2009: 998). It brings together response repertoires that are usually applied separately, for instance working with peripheral stakeholders, such as social activists (Hart & Sharma, 2004), while defending established business practices. While decision-makers with a paradoxical frame will perceive a greater novelty of the responses they consider, their tendency to see sustainability issues as unique problems also heightens the perceived riskiness of their responses (Kahneman & Lovallo, 1993). Managers with a paradoxical frame will not underestimate the riskiness of potential responses, because they lack established routines and only have a moderate sense of control. Rather, they accept that there is some uncontrollable risk. To handle risk, they avoid taking a stand on the issue too early and keep their options open (Das & Teng, 1999). Thus, while decision-makers with a paradoxical frame see the need to consider novel and unusual responses that go beyond existing routines, they are aware of the risk that is associated with such responses. In particular, they are aware that addressing sustainability issues comprehensively entails conflict and undesired side effects. As research in environmental psychology has shown, this awareness of ambivalent effects of more comprehensive responses to sustainability issues lowers the propensity to take concrete action (Castro et al., 2009; Costarelli & Colloca, 2004).

Recent debates of sustainability issues in the agribusiness, i.e. food security, biodiversity loss and genetically modified seeds, illustrate the impact of ambivalence on the types of response decision-makers consider. For example, Unilever's sustainability manager recently conveyed an ambivalent position on organic agriculture by emphasizing a reluctance to go fully organic because this would jeopardize food production on the usual scale (*NRC*, 2013). At the same time, Unilever's upper management has pioneered novel sustainable agriculture practices (Whiteman et al., 2013). These resulted in innovative practices for sustainable agriculture but had limited business impact, since "it was difficult (at the time) to translate the

treatments involving extreme reductions in fertilizers and pesticides into marketable stories" (Pretty et al., 2008: 57-58). Ambivalence of Unilever's management regarding organic farming led to innovative solutions going beyond using established routines, but these innovations were used on a small scale only.

Overall, we expect that holding a paradoxical frame will induce a stance on sustainability issues that is characterized by prudence. On the one hand, with their comprehensive view on sustainability issues, these managers will see the need to consider responses that break with established routines and business practices in order to achieve environmental and social benefits at the societal level. On the other hand, they are aware of "the massive uncertainty and unpredictability, nonlinear interaction between system components, unknown thresholds, and complex dynamics in ecological and social systems" (Gladwin et al., 1995: 879) and hence tend to approach sustainability issues by moving slowly and carefully (Das & Teng, 1999). Decision-makers with a paradoxical frame may even perceive sustainability issues as overly problematic, which would prevent them from envisaging workable solutions and assuming responsibilities for their practical implementation (Kiesler & Sproull, 1982).

Proposition 7b: The more paradoxical their cognitive frame, the more likely decision-makers are to adopt a prudent stance on sustainability issues.

DISCUSSION AND CONCLUSION

The main objective of this article is to develop a cognitive framing perspective on corporate sustainability. We advance theoretical understanding of the stance managers take on sustainability issues by proposing how two ideal-type cognitive frames, with their differences in content and structure, affect the stages of the sensemaking process of ambiguous issues. While previous research has underlined the importance of managerial cognition and sensemaking of sustainability (Andersson & Bateman, 2000; Byrch et al., 2007; Sharma, 2000; Sharma et al., 1999), we add to this literature by offering a more fine-grained

understanding of the role individual cognition plays in managerial decision-making on corporate sustainability. By addressing a wider variety of alternative cognitive frames we advance research in corporate sustainability, which so far has almost exclusively relied on business case thinking (Bansal, 2005; Gao & Bansal, 2013; Hahn et al., 2010).

As our main contribution, we advance theorizing about managerial decision-making on sustainability issues. Building on previous work on the role of interpretation of sustainability issues in explaining strategic choice (Sharma, 2000), we uncover the effects of differences in cognitive frames on the underlying sensemaking process that links cognition with the manager's decision-making stance. This cognitive framing perspective on corporate sustainability connects to a number of key aspects of the debate on managerial interpretations of and responses to sustainability issues. For instance, while the strategic management literature has recently drawn attention to the role of ambivalent issue interpretations (Plambeck & Weber, 2009, 2010), the corresponding debate in the sustainability literature has remained within an opportunity/threat dichotomy (Andersson & Bateman, 2000; Sharma, 2000). We advance this field of research not only by introducing ambivalent managerial interpretations of sustainability issues, but also by elaborating on the cognitive determinants of univalent and ambivalent interpretations. Previous research on the antecedents of managers' ambivalent interpretation of strategic issues has focused on organizational factors (Plambeck & Weber, 2010). Our cognitive framing perspective adds individual level factors to the picture. While Barr, Stimpert and Huff (1992) found that decision-makers' cognitive frames link cues from the organizational context to managerial decision-making, we explain *how* differences in the content and structure of a manager's frame act at the different stages of the sensemaking process.

As another important implication, we add to research on the different types of responses managers consider with regard to sustainability issues. In this context, a manager's sense of

control and perceived risk have been discussed as key determinants of the choice of different responses (George et al., 2006; Thomas et al., 1993) as well as with regard to associated decision-making biases (Das & Teng, 1999; Kiesler & Sproull, 1982). Our analysis of the effects of differences in frame content and frame structure sheds new light on the sometimes contradictory implications that have resulted from the application of different theoretical lenses to managerial risk and perceptions of control (Chattopadhyay et al., 2001; George et al., 2006). We suggest that with different cognitive frames managers' sense of control over an issue may stem from fundamentally different sources. Likewise, we expect managers to perceive and deal with the riskiness of potential responses differently, depending on which of the two frames they hold. These cognitively determined differences have important implications for managerial decision-making on ambiguous sustainability issues. The pragmatic and prudent stances that we expect to be associated with the business case frame and the paradoxical frame, respectively, suggest that commonly used classifications of issue responses along general classifications, such as the reactive, defensive, accommodative and proactive (RDAP) scale (Wartick & Cochran, 1985), may be too simplistic. Managers with a pragmatic stance favor responses of limited scope based on established routines and practices, which considerably limits their proactiveness; yet their propensity to develop workable solutions can potentially bring about large-scale change. Managers with a prudent stance may consider unusual and more radical departures from established routines; yet they are hampered in their ability to implement workable solutions, because of their ambivalence and higher awareness of risk and tensions. The often-bemoaned reluctance of firms and their managers to address the immense challenges that sustainability presents in a radical fashion (Whiteman et al., 2013) may thus be rooted in the cognitive predispositions and limitations that are inherent in both frames. Due to their pragmatic stance, managers with a business case frame rarely consider to deviate from established routines but rely on incrementalism instead;

paradoxically-minded managers may well see the need to consider bolder responses to sustainability issues, but shy away from such endeavors since they are hampered by ambivalence and prudence.

This argument highlights the need to address the interplay of the two cognitive types, as both business case and paradoxical frames have their role to play in bringing about change, but they may operate at different stages. Since they go beyond a focus on economic attributes alone, the relatively few managers with a more paradoxical frame might act as pioneers to propose comprehensive responses that depart from existing routines. However, the translation of these responses into practice may well require managers with a more business-case oriented frame, who are cognitively predisposed to reducing the complexity of sustainability issues to a level that enables the implementation of these novel practices at a large scale. Neither of the two frames alone will be sufficient to bring about managerial responses that measure up to the immense challenges that sustainability presents.

The interplay of different cognitive types has various practical and theoretical implications. With regard to managerial practice, in the nascent field of sustainable human resource management (Ehnert, 2009), the composition of teams of different cognitive types may play an important role for the management of sustainability issues. Mirroring findings on the combination of different cognitive styles in the composition of successful innovation teams (Miron-Spektor, Erez, & Naveh, 2011), teams dominated by either business-case minded or paradoxical types may be less successful in implementing innovative responses to sustainability challenges than mixed teams. By avoiding a strong bias in such teams towards one of the two cognitive types, firms can make sure that they remain aware of the complexity of sustainability issues (due to the presence of paradoxical types) without losing sight of the need to implement workable solutions (due to the presence of business-case types). Our argument also has theoretical implications for the growing literature on hybrid organizations.

While this literature conceptualizes conflicting financial and social goals in terms of competing institutional logics (Battilana & Dorado, 2010; Pache & Santos, 2013), our focus on the interplay of different cognitive types highlights the relevance of individual level factors when organizations face competing demands. Our argument suggests that the presence of decision-makers who accept competing financial, environmental, and social objectives through paradoxical thinking (Smith, Gonin, & Besharov, 2013) might not be sufficient. Rather, the coexistence and the interplay of different cognitive types, where some are aware of tensions but others are not, appear to play a critical role not only for the management of corporate sustainability in for-profit firms but also for the successful implementation of hybrid business models.

Finally, we believe that addressing a greater cognitive diversity of managers promises considerable further insights into the nature and contingencies of managerial responses to issues other than sustainability that are also characterized by conflicting yet interrelated aspects and where the debate is also dominated by a business case perspective. For instance, diversity in organizations represents a complex issue that scholars and managers alike often frame as having business value (Herring, 2009; Robinson & Dechant, 1997). Here too business benefits are unclear (Cox & Blake, 1991) and critical voices call for approaches that go beyond business case thinking (O'Leary & Weathington, 2006). We expect that considering alternative frames on such an issue will shed new light on how and why decision-makers approach diversity issues in different ways.

We propose two ideal-type cognitive frames through which individuals make sense of sustainability issues, based on different views on how economic, environmental and social dimensions relate to each other, a key debate in corporate sustainability (Margolis & Walsh, 2003). However, we acknowledge that frames can be based on various rationales (Zietsma & Vertinsky, 1999). Cognitive perspectives that correspond to other debates within the corporate

sustainability literature will result in alternative ideal-type frames and promise further insights into the effects of frame content and structure on managerial responses to sustainability issues. While not being exhaustive, Table 2 offers a starting point for the exploration of such alternative frames. One set of frames may form around governance issues, exploring the question of who is responsible for taking action to address sustainability concerns (e.g. private sector vs. state) (Matten & Crane, 2005; Reinhardt, Stavins, & Vietor, 2008). Other framesets could relate to the discussion of different motivations to take action on sustainability (e.g. altruism vs. (enlightened) self-interest) (Bansal & Roth, 2000; Jensen, 2001) or address the different time-dimensions that are being discussed in the sustainability literature (present generations vs. future generations) (Held, 2001; Slawinski & Bansal, 2012).

Insert Table 2 about here

We contribute to the discussion of alternative cognitive frames by going beyond a descriptive typology (Zietsma & Vertinsky, 1999) in order to address in detail the effects of differences in frame content and structure. However, we do not suggest that any particular frame automatically determines the sensemaking of decision-makers. Rather, we expect that the effects of managers' cognitive frames on their decision-making will be moderated by a range of personal, situational and contextual factors. We propose that the effects of the two frames on scanning and interpretation will be attenuated by the functional background of managers and by organizational identity, respectively. In addition, our argument on the availability of resources illustrates that not all frames are susceptible to contextual factors. Some cognitive constraints, as in the case of narrow scanning by business-case minded decision-makers, cannot be simply overcome by providing abundant resources, whereas in other instances, e.g. with the sense of control of paradoxically-minded managers, resource

constraints prevail over cognitive predispositions. The moderators we propose provide only an initial step towards understanding the various factors that influence the role of cognitive frames. We are aware that there are further relevant moderating factors beyond the individual and the organizational level factors we address, providing ample opportunities for future research into a cognitive framing perspective on managerial sensemaking of ambiguous issues. It would be particularly fruitful to address the moderating role of institutional factors since these prime and trigger cognitive frames (Weber & Glynn, 2006). Future research could thus investigate how multiple, competing institutional logics (Besharov & Smith, 2013; Jay, 2013) moderate the effect of cognitive frames on sustainability decision-making.

Another relevant question for future research refers to the origin of cognitive frames. Since managers' frames "do not spring up randomly, but rather are the encoding of their prior history" (Kaplan & Tripsas, 2008: 791), we would expect that a range of factors at personal, organizational and institutional levels will influence the formation of cognitive content and structure. With regard to personal background, personality traits, such as need for closure (Webster & Kruglanski, 1994) and tolerance for ambiguity (Furnham & Ribchester, 1995), have been argued to play an important role for sensemaking under conditions of uncertainty and ambiguity (McKenzie, Woolf, van Winkelen, & Morgan, 2009). With regard to the organization as a context for managerial decision-making (Gioia & Thomas, 1996; Weick, 1979), the influence of organizational structure on managers' cognition (Hannaway, 1985) may differ between centralized and decentralized organizations (Pugh et al., 1963). Moreover, since managers' cognitive frames are shaped by the particular institutional fields they have been exposed to (Weber & Glynn, 2006), dominant and contested institutional logics (Purdy & Gray, 2009; Reay & Hinings, 2009) may prime different cues and privilege certain frames over others (Weber & Glynn, 2006). Future research into antecedents of the business case frame and the paradoxical frame will help to understand *who* the managers are that are more

likely to adopt a pragmatic or a prudent stance on sustainability issues.

Our focus on cognition at the individual level raises the question of how different cognitive frames and the resulting decision-making stances relate to organizational action (Dutton & Jackson, 1987; Thomas et al., 1993). We see at least two key aspects at the interface between individual cognition and organizational action that merit further investigation, the activation of frames and the dominance of frames. A better understanding of the factors that trigger a stronger or weaker activation of the two frames promises relevant insights. Such factors may be found within the organization, for instance in an organizational climate of participation (Tesluk, Vance, & Mathieu, 1999) and creativity (Ekvall, 1996), or outside the organization, in major regulative, technological or economic discontinuities (Griffith, 1999; Tushman, Newman, & Romanelli, 1985). Moreover, since managerial cognition is a social process within an organizational context (Daft & Weick, 1984), individual frames will only translate into organizational action when they are transformed "into the organization's predominant collective frames" (Kaplan, 2008: 730). Collective cognitive frames are the outcome of a political process where organizational members compete over the dominant interpretation of an issue (Gioia & Chittipeddi, 1991). Future research could address the factors that enable decision-makers to translate their own cognitive frame into the dominant collective frame. Overall, further development of the cognitive framing perspective may result in a more comprehensive theory that establishes a connection between individual history, cognition and agency.

We believe that our cognitive framing perspective and our propositions provide ample opportunities for future empirical studies. Given the nascent state of research into tensions and cognitive diversity in sustainability, scholars may find it most fruitful to use both quantitative and qualitative methods (Edmondson & McManus, 2007). However, testing our propositions through quantitative research presupposes the development of measurement

scales for the business case frame and the paradoxical frame. To gain insights into the cognitive processes of decision-makers who use business case frames or paradoxical frames, (semi-)qualitative methods, such as interviews, content analyses, and exploratory case studies, will be particularly suitable (Grégoire, Barr, & Shepherd, 2010; Lüscher & Lewis, 2008).

In conclusion, we believe that a cognitive framing perspective offers a better understanding of managerial decision-making on sustainability issues by recognizing the importance of a greater cognitive diversity of managers with regard to the content and structure of their frames. Our goal in this research, therefore, was not to advocate a specific cognitive frame, but to pave the way for the consideration of different cognitive perspectives on complex and ambiguous issues, such as corporate sustainability.

FOOTNOTES

[1] Alignment can be based on different rationales, depending on which kinds of categories dominate the content of a cognitive frame. Conceptually speaking, an ecological case frame or a social case frame, where environmental or social categories dominate respectively, would also follow an alignment logic. These are likely to be of great relevance for decision-making in non-profit organizations. Due to our focus on for-profit firms, however, we exclude ecological or social case frames from our discussion here.

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TABLE 1

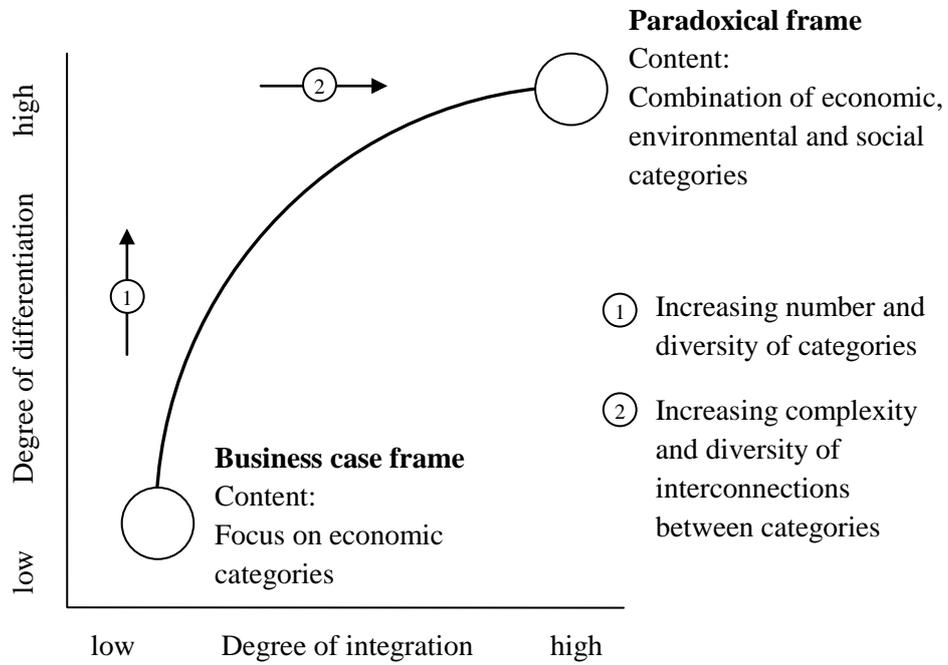## Characteristics of the business case frame and the paradoxical frame

	Business case frame	Paradoxical frame
Content	Exclusive focus on business attributes	Combination of multiple attributes with different rationales
Structure	Simple	Complex
Differentiation	Low number of frame elements	High number of frame elements
Integration	Low degree of connectedness with singular focus on economic means-ends-relationships	High degree of connectedness with a plurality of reinforcing, neutral and conflicting relationships
Implicit goal	Improve economic performance at the organizational level	Address economic, environmental and social concerns at organizational and societal levels
Underlying logic	Business case thinking: Alignment of environmental and social concerns with economic objectives	Paradoxical thinking: Juxtaposition of economic, environmental and social concerns even if contradictory
Treatment of tensions	Elimination	Acceptance

TABLE 2

Alternative frames on corporate sustainability

| Underlying rationale	Potential frames	Key references
Relationship between economic, environmental and social sustainability concerns	Business case vs. paradoxical	Carroll & Shabana, 2010; Smith & Lewis, 2011
Responsibility to act on sustainability concerns	Corporate citizenship vs. state regulation	Matten & Crane, 2005; Reinhardt, Stavins, & Vietor, 2008
Motivation behind commitment to address sustainability concerns	Altruism vs. (enlightened) self interest	Bansal & Roth, 2000; Jensen, 2001
Time horizon on sustainability issues	Present generations vs. future generations	Held, 2001; Slawinski & Bansal, 2012

FIGURE 1

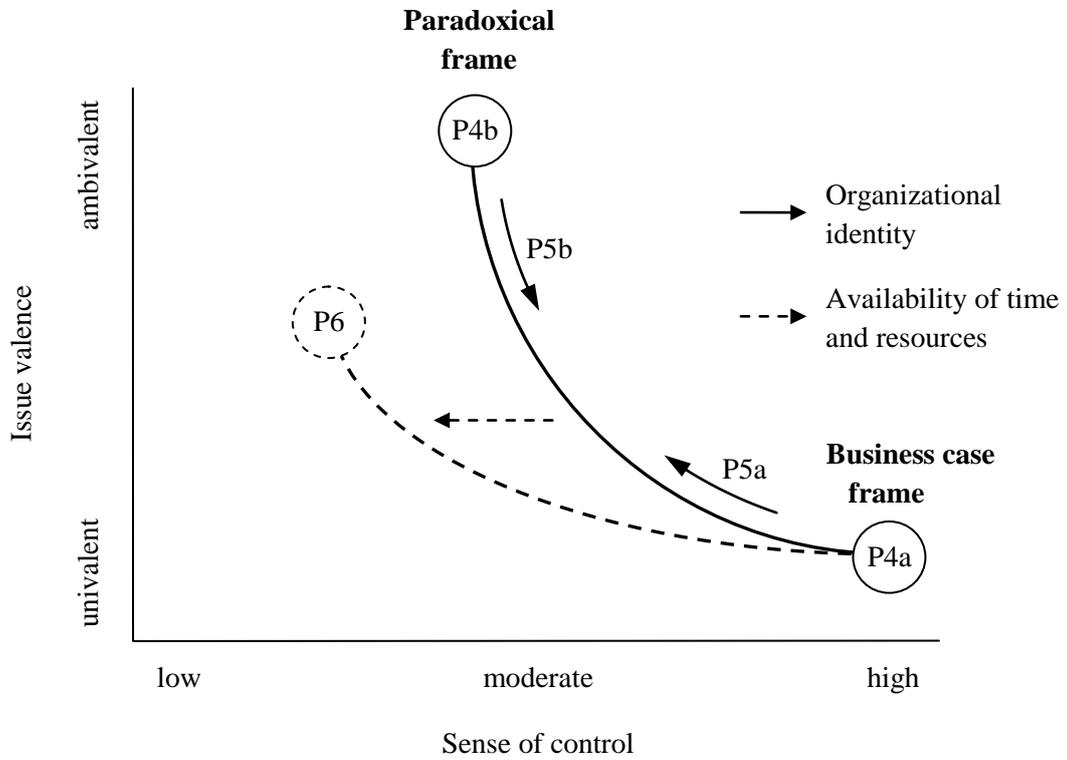**Relationship between the business case frame and the paradoxical frame**

FIGURE 2

Effects of the business case frame and the paradoxical frame on scanning
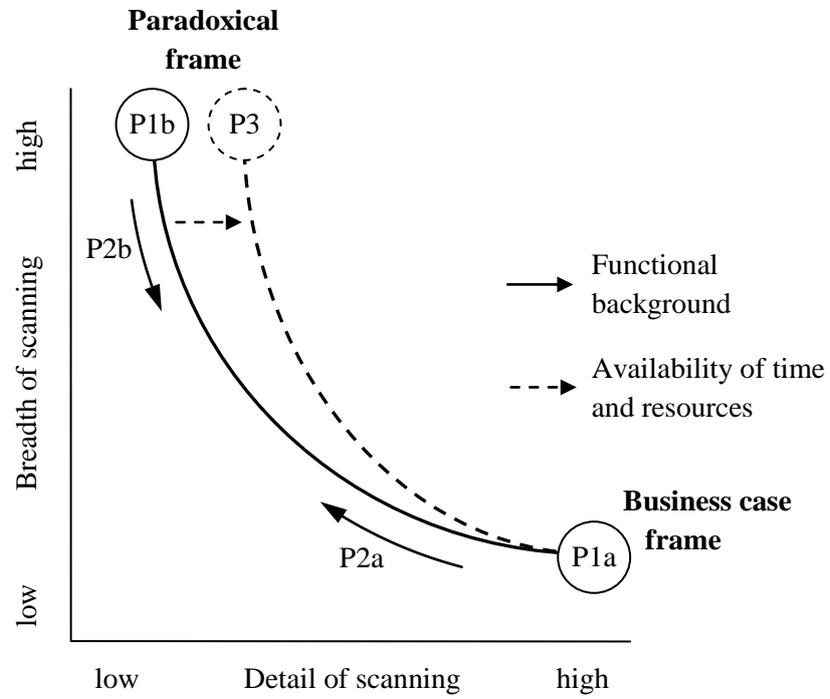
FIGURE 3

Effects of the business case frame and the paradoxical frame on issue interpretation

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