© *Academy of Management Review*
2014, Vol. 39, No. 4, 463–487.
http://dx.doi.org/10.5465/amr.2012.0341

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

TOBIAS HAHN
KEDGE Business School

LUTZ PREUSS
Royal Holloway University of London

JONATAN PINKSE
Grenoble Ecole de Management

FRANK FIGGE
KEDGE Business School

Corporate sustainability confronts managers with tensions between complex economic, environmental, and social issues. 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—that is, 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, differences in issue interpretations in terms of sense of control and issue valence, and 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 it develops the underlying cognitive determinants of the stance that managers adopt on sustainability issues. This argument offers a cognitive explanation for 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.

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

We thank associate editor Peer Fiss for his clear guidance throughout the review process, as well as three anonymous reviewers for their most constructive feedback and suggestions.

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. In contrast, our aim is 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—that is, 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. In contrast, with their awareness of multiple and conflicting economic, environmental, and social aspects of sustainability issues, managers with a paradoxical frame develop more ambivalent interpretations of sustainability issues; as a consequence, they adopt a prudent stance, where they consider more comprehensive responses, but because of their higher awareness of risk and tensions, they 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 for why managers—owing 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. We first 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 article 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.

Because 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, thus, is 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 since 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 suggested 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" (1983: 274). 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, since 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 multidimensional 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. Because of 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 and 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, in press).

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—that is, 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.

The two frames represent ideal types (Doty & Glick, 1994) in the sense of accentuated abstractions of how managers conceive of the relationship between and among the economic, environmental, and social aspects of sustainability. Representing the end points of a continuum, the two ideal-type frames conceptualize this relationship by either aligning environmental and social aspects with the economic dimension (business case frame) or by accepting and accommodating the interrelated yet contradictory nature of all three aspects (paradoxical frame). Since ideal types rarely exist in pure form, the actual frames of decision makers will lie between the end points and resemble the ideal types to different degrees (Doty & Glick, 1994). Actual frames thus consist of different combinations of the underlying constructs—that is, 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

[1] Alignment can be based on different rationales, depending on which kinds of attributes dominate the content of a cognitive frame. Conceptually speaking, an ecological case frame or a social case frame, where environmental or social attributes dominate, respectively, would also follow an

TABLE 1
Characteristics of the Business Case Frame and the Paradoxical Frame

Frame Characteristics	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

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)—that is, the ability "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 the frames' 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. Integration is also low because, owing 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 &

alignment logic. These are likely to be of great relevance for decision making in nonprofit organizations. Because of our focus on for-profit firms, however, we exclude ecological or social case frames from our discussion here.

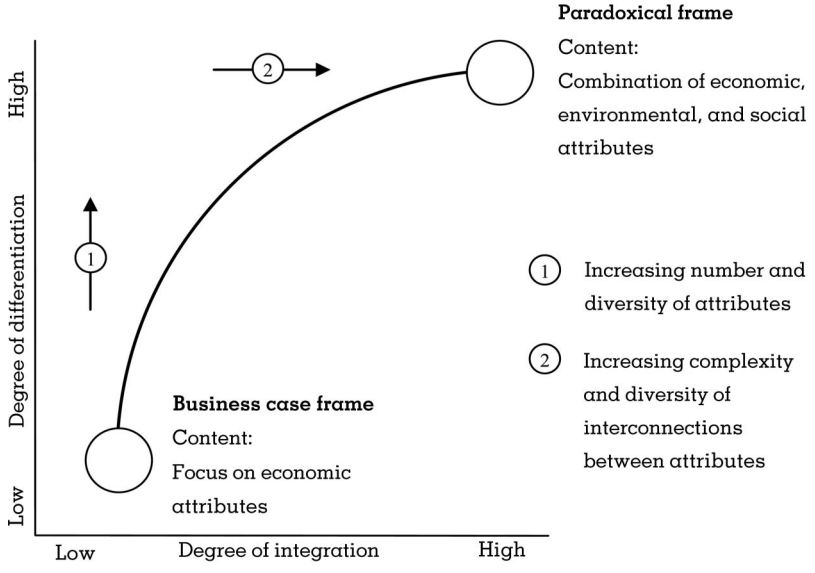
Lewis, 2011; Weick, 1995) and to reduce complexity and ambiguity of the issue (Levinthal & Rerup, 2006; Porac & Rosa, 1996). A paradoxical frame has a more complex structure. The inclusiveness of this frame results in a higher degree of differentiation since it accommodates frame elements covering all 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 and among 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 end points of a continuum, with 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. In contrast, the more a frame uses paradoxical thinking (paradoxical frame), the higher its complexity but the lower its focus.

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).

FIGURE 1
Relationship Between the Business Case Frame and the Paradoxical Frame



SENSEMAKING OF CORPORATE SUSTAINABILITY WITH THE BUSINESS CASE FRAME AND THE PARADOXICAL FRAME

Sensemaking occurs as a sequence of three core processes: scanning, interpreting, and responding (Daft & Weick, 1984; Thomas et al., 1993). Below 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, 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). Assigning more or less relevance and specific meaning to the information then has consequences for the managers' strategic response.

Scanning

"Scanning involves information gathering; it usually is considered an antecedent to interpretation and action" (Thomas et al., 1993: 240). Because of 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). Owing 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 found that "the more restricted the observational goals of decision makers, the more selective their perceptions will be" (1997: 720). 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 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 Review" 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).

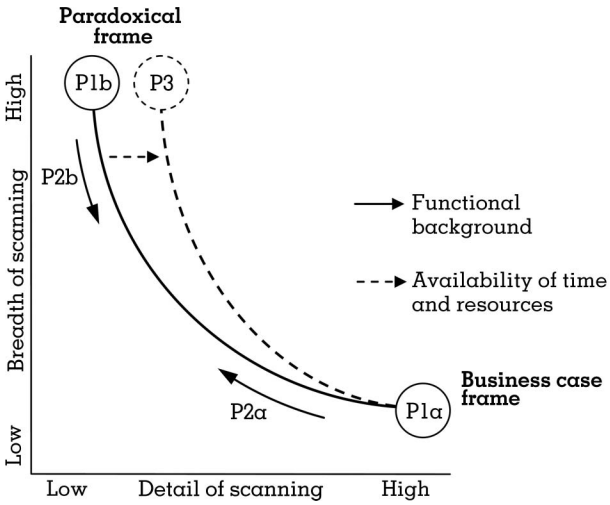
Decision makers with cognitive frames of low complexity also tend to collect information from fewer selected sources (Karlins, 1967; Stabell, 1978). Accordingly, managers with a business case frame will limit their attention to sustainability-related claims of stakeholders closely related to the market environment, since these will be perceived as more powerful and relevant for business (Mitchell, Agle, & Wood, 1997). People tend to stereotype information depending on its source (Kiesler & Sproull, 1982), so decision makers with a business case frame will attend less to environmental and social issues brought forward by stakeholders having no direct im-

pact 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 decision makers tend to perceive issues only once these 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, managers 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.*

FIGURE 2
Effects of the Business Case Frame and the Paradoxical Frame on Scanning



The paradoxical frame does not direct decision makers toward 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 argued, decision makers with complex frames will 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" (1997: 720). Decision makers with a paradoxical frame will thus gather more diverse information on sustainability issues—that is, information related to economic, environmental, and social aspects—irrespective of immediate financial implications (Byrch et al., 2007). Because they hold a more complex conceptualization of their business (Crilly & Sloan, 2012), they will gather quantitative and qualitative, as well as financial and nonfinancial, 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 imme-

diate 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 will be more likely to notice redundant and inconsistent information. Their information collection will be less structured and less formalized, because 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 life cycle, and managers struggle with 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, the paradoxical frame does not emphasize one sustainability dimension over any other, so it does not provide an unequivocal direction for information collection. Scanning might be broad, but also rather vague, since 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). Owing 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.

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). According to previous research, functional background influences 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 unidimensional 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 therefore expect that managers with a background in externally oriented functions will tend to scan more broadly but in less detail, while those with an internally oriented functional background will tend to scan less broadly but in more detail (as indicated by the arrows in Figure 2).

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

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

Managers' perceptions of ambiguous cues from the organizational context are not only constrained by their cognitive capacities and personal characteristics but also by situational factors. When dealing with conflicting information and disparate stakeholder interests, managers usually do so under time pressure and resource limitations (Mann & Tan, 1993). Hence, scholars often argue 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 can provide the latitude to perform searches on aspects and issues that may not have an immediate payoff (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 nonfinancial, qualitative terms and that 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 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 those 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 from 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—that is, 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, since 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, in previous work on strategic issue diagnosis, researchers 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, how-

ever, 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).

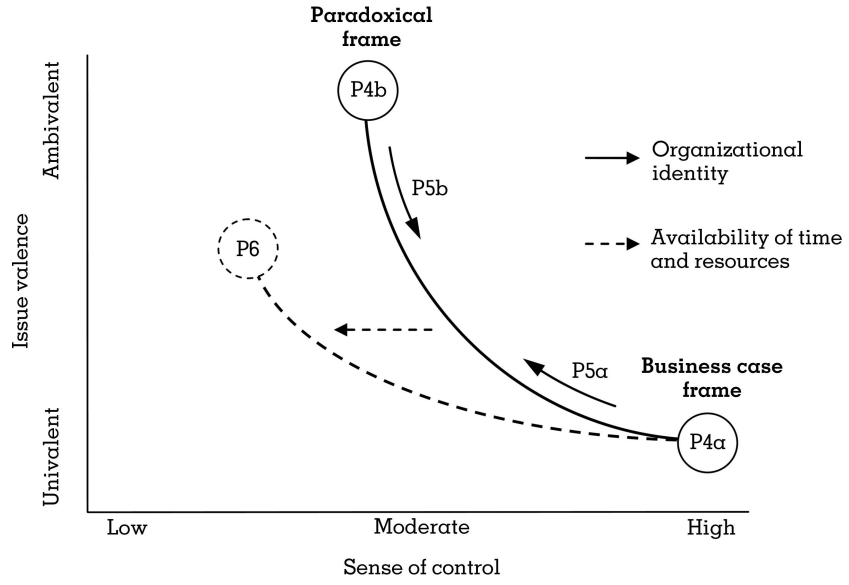
We argue that managers' cognitive frames will play an important role in their perceived sense of control and valence of sustainability issues. Their perceived sense of control depends on what information is available to them (Thomas et al., 1993) and how that information is collected (Das & Teng, 1999). "High 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 their sense of control will be (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 will have the clear goal of identifying and gaining 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 will 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 they have noticed against the categories of their cognitive frame (Petty, Briñol, & DeMarree, 2007). Rudolph and Popp (2007) found that individuals with strong directional goals tend to interpret issues univalently—that is, as either clearly positive or clearly negative. Because of the strong direction toward 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 a clearly positive or clearly negative interpretation of the issue (see Figure 3). This tendency to interpret issues univalently will be 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 will reinforce their reliance on routine assessments and reduce 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 managers defended their plans for oil drilling in the Arctic 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 managers argued that "at 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 "our 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 no-

FIGURE 3
Effects of the Business Case Frame and the Paradoxical Frame on Issue Interpretation



tice a wide range of aspects of a sustainability issue. This broad and inclusive approach will increase their 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, because of the more complex structure of their frame, decision makers will accept that there are tensions and conflicts between different economic, environmental, and social aspects that can never be fully resolved (Hahn, Pinkse, Preuss, & Figge, in press; Smith & Lewis, 2011). This heightened awareness of conflict will lower their sense of control over the issue (Das & Teng, 1999). Overall, then, we 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. "Ambivalent 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—for example, satisfaction about showing ecological behavior—and negative evaluations—for example, doubts about the overall effect of personal efforts when others do not recycle as well (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 therefore 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 will perceive issues to be beyond their own influence, which will lead 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.*

Since managerial sensemaking of strategic issues is embedded in an organizational context, organizational identity has been suggested as a critical factor affecting 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, shaping 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 seen as 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 nonbusiness aspects tend to be delegitimized. In 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 will weaken 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 will weaken 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). In 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 investi-

gate 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, decision makers' sense of control will be further reduced by resource constraints, since these individuals 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 owing 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 therefore 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 will further reduce their sense of control. In 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 will 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 toward an issue, which predisposes the individual 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 issue valence (Chattopadhyay et al., 2001; Plambeck & Weber, 2009) will result in different decision-making stances on sustainability issues—that is, 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 responses these managers consider will be limited in scope. This narrow focus on business routines will enable 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, not only the lower the perceived risk but also the greater the likelihood that risk will be underestimated and the more optimistic the forecasts managers will make about the outcomes of their responses to an issue (Durand, 2003; Kahneman & Lovallo, 1993). Consequently, these decision makers will be 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 they are able to master.

When responding to regulatory pressure in the European Union 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 required 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 was 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 consider not only 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 that are internally consistent, 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).

Because 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). During the search 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). This 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 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 do not underestimate the riskiness of potential responses because they lack established routines and have only 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 on sustainability issues in agribusiness—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). Yet at the same time Unilever's upper management pioneered novel sustainable agriculture practices (Whiteman et al., 2013). These have resulted in innovative practices for sustainable agriculture but have 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 on the part 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 will be 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 might 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

Our main objective in 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. In previous research scholars have 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 address-

ing 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 a 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. In previous research on the antecedents of managers' ambivalent interpretation of strategic issues, scholars have 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 perception of risk have been discussed as key determinants of the choice of different responses (George et al., 2006; Thomas et al., 1993) and of 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 (Clarkson, 1995; 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 in a radical fashion the immense challenges that sustainability presents (Whiteman et al., 2013) may thus be rooted in the cognitive predispositions and limitations inherent in both frames. Owing to their pragmatic stance, managers with a business case frame rarely consider deviating from established routines but rely instead on incrementalism; 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, since both business case and paradoxical frames have their role to play in bringing about change but may operate at different stages. Because 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 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 in 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 toward one of the two cognitive types, firms can make sure 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 body of 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 exploring 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—for example, private sector versus state (Matten & Crane, 2005; Reinhardt, Stavins, & Vietor, 2008). Other frame sets could relate to the discussion of different motivations to take action on sustainability—for example, altruism versus (enlightened) self-interest (Bansal & Roth, 2000; Jensen, 2001)—or could address the different time dimensions that are being discussed in the sustainability literature—for example, present generations versus future generations (Held, 2001; Slawinski & Bansal, 2012).

TABLE 2
Alternative Frames on Corporate Sustainability

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

We contribute to the discussion of alternative cognitive frames by going beyond a descriptive typology (Zietsma & Vertinsky, 1999) 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—for example, with the sense of control of paradoxically minded managers—resource constraints prevail over cognitive predispositions. The moderators we propose provide only an initial step toward 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, 2014; 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, researchers have argued that personality traits, such as need for closure (Webster & Kruglanski, 1994) and tolerance for ambiguity (Furnham & Ribchester, 1995), play an important role in 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 the antecedents of the business case frame and the paradoxical frame will help us 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, 1986). 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 among 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, has not been to advocate a specific cognitive frame but, rather, to pave the way for the consideration of different cognitive perspectives on complex and ambiguous issues, such as corporate sustainability.

REFERENCES

Albert, S., & Whetten, D. A. 1985. Organizational identity. ***Research in Organizational Behavior,*** 7: 263–295.

Andersson, L. M., & Bateman, T. S. 2000. Individual environmental initiative: Championing natural environmental issues in U.S. business organizations. ***Academy of Management Journal,*** 43: 548–570.

Angus-Leppan, T., Benn, S., & Young, L. 2010. A sensemaking approach to trade-offs and synergies between human and ecological elements of corporate sustainability. ***Business Strategy and the Environment,*** 19: 230–244.

Bansal, P. 2002. The corporate challenges of sustainable development. ***Academy of Management Executive,*** 16(2): 122–131.

Bansal, P. 2005. Evolving sustainably: A longitudinal study of corporate sustainable development. ***Strategic Management Journal,*** 26: 197–218.

Bansal, P., & Roth, K. 2000. Why companies go green: A model of ecological responsiveness. ***Academy of Management Journal,*** 13: 717–736.

Barr, P. S., & Huff, A. S. 1997. Seeing isn't believing: Understanding diversity in the timing of strategic response. ***Journal of Management Studies,*** 34: 337–370.

Barr, P. S., Stimpert, J. L., & Huff, A. S. 1992. Cognitive change, strategic action, and organizational renewal. ***Strategic Management Journal,*** 13(Supplement 1): 15–36.

Bartunek, J. M., Gordon, J. R., & Weathersby, R. P. 1983. Developing "complicated" understanding in administrators. ***Academy of Management Review,*** 8: 273–284.

Battilana, J., & Dorado, S. 2010. Building sustainable hybrid organizations: The case of commercial microfinance organizations. ***Academy of Management Journal,*** 53: 1419–1440.

Besharov, M., & Smith, W. 2014. Multiple logics in organizations: Explaining their varied nature and implications. ***Academy of Management Review,*** 39: 364–381.

Beyer, J. M., Chattopadhyay, P., George, E., Glick, W. H., Ogilvie, D., & Pugliese, D. 1997. The selective perception of managers revisited. ***Academy of Management Journal,*** 40: 716–737.

Bogner, W. C., & Barr, P. S. 2000. Making sense in hypercompetitive environments: A cognitive explanation for the persistence of high velocity competition. ***Organization Science,*** 11: 212–226.

Bourgeois, L. J., & Eisenhardt, K. M. 1988. Strategic decision processes in high velocity environments: Four cases in the microcomputer industry. ***Management Science,*** 34: 816–835.

Bowen, F. E. 2002. Organizational slack and corporate greening: Broadening the debate. ***British Journal of Management,*** 13: 305–316.

Brickson, S. L. 2005. Organizational identity orientation: Forging a link between organizational identity and organizations' relations with stakeholders. ***Administrative Science Quarterly,*** 50: 576–609.

Bundy, J., Shropshire, C., & Buchholtz, A. K. 2013. Strategic cognition and issue salience: Toward an explanation of firm responsiveness to stakeholder concerns. ***Academy of Management Review,*** 38: 352–376.

Byrch, C., Kearins, K., Milne, M. J., & Morgan, R. 2007. Sustainable "what"? A cognitive approach to understanding sustainable development. ***Qualitative Research in Accounting and Management,*** 4: 26–52.

Cacioppo, J. T., Gardner, W. L., & Berntson, G. G. 1999. The affect system has parallel and integrative processing components: Form follows function. ***Journal of Personality and Social Psychology,*** 76: 839–855.

Carroll, A. B., & Shabana, K. M. 2010. The business case for corporate social responsibility: A review of concepts, research and practice. ***International Journal of Management Reviews,*** 12: 85–105.

Castro, P., Garrido, M., Reis, E., & Menezes, J. 2009. Ambivalence and conservation behaviour: An exploratory study on the recycling of metal cans. ***Journal of Environmental Psychology,*** 29: 24–33.

Chattopadhyay, P., Glick, W. H., & Huber, G. P. 2001. Organizational actions in response to threats and opportunities. ***Academy of Management Journal,*** 44: 937–955.

Clarkson, M. B. E. 1995. A stakeholder framework for analyzing and evaluating corporate social performance. ***Academy of Management Review,*** 20: 92–117.

Costarelli, S., & Colloca, P. 2004. The effects of attitudinal ambivalence on pro-environmental behavioural intentions. ***Journal of Environmental Psychology,*** 24: 279–288.

Cox, T. H., & Blake, S. 1991. Managing cultural diversity: Implications for organizational competitiveness. ***Academy of Management Executive,*** 5(3): 45–56.

Crilly, D., & Sloan, P. 2012. Enterprise logic: Explaining corporate attention to stakeholders from the "inside-out." ***Strategic Management Journal,*** 33: 1174–1193.

Daft, R. L., & Lengel, R. H. 1986. Organizational information requirements, media richness and structural design. ***Management Science,*** 32: 554–571.

Daft, R. L., & Weick, K. E. 1984. Toward a model of organizations as interpretation systems. ***Academy of Management Review,*** 9: 284–295.

Das, T. K., & Teng, B.-S. 1999. Cognitive biases and strategic decision processes: An integrative perspective. ***Journal of Management Studies,*** 36: 757–778.

Denison, D. R., Dutton, J. E., Kahn, J. A., & Hart, S. L. 1996. Organizational context and the interpretation of strategic issues: A note on CEOs' interpretations of foreign investment. ***Journal of Management Studies,*** 33: 453–474.

Doty, D. H., & Glick, W. H. 1994. Typologies as a unique form of theory building: Toward improved understanding and modeling. ***Academy of Management Review,*** 19: 230–251.

Durand, R. 2003. Predicting a firm's forecasting ability: The roles of organizational illusion of control and organizational attention. ***Strategic Management Journal,*** 24: 821–838.

Dutton, J. E., & Dukerich, J. M. 1991. Keeping an eye on the mirror: Image and identity in organizational adaptation. ***Academy of Management Journal,*** 34: 517–554.

Dutton, J. E., & Duncan, R. B. 1987. The creation of momentum for change through the process of strategic issue diagnosis. ***Strategic Management Journal,*** 8: 279–295.

Dutton, J. E., & Jackson, S. E. 1987. Categorizing strategic issues: Links to organizational action. ***Academy of Management Review,*** 12: 76–90.

Edmondson, A. C., & McManus, S. E. 2007. Methodological fit in management field research. ***Academy of Management Review,*** 32: 1155–1179.

Ehnert, I. 2009. ***Sustainable human resource management: A conceptual and exploratory analysis from a paradox perspective.*** Berlin & Heidelberg: Springer.

Ekvall, G. 1996. Organizational climate for creativity and innovation. ***European Journal of Work and Organizational Psychology,*** 5: 105–123.

Elkington, J. 1997. ***Cannibals with forks: The triple bottom line of the 21st century business.*** Oxford: Capstone.

Epstein, M. J., & Roy, M. J. 2003. Making the business case for sustainability. Linking social and environmental actions to financial performance. ***Journal of Corporate Citizenship,*** 9: 79–96.

Financial Times. 2007. Another road to eco-heaven. October 27: 4.

Financial Times. 2011. Hybrid and electric vehicles: Technical advances failing to win over consumers. September 12: http://www.ft.com/cms/s/0/996b4bfe-d7c4-11e0-a06b-00144feabdc0.html.

Financial Times. 2012. Biodiversity: Valuation is vital to life support services, April 24(FT Report–Sustainable Business): 2.

Finkelstein, S., & Hambrick, D. C. 1996. ***Strategic leadership: Top executives and their effects on organizations.*** St. Paul, MN: West.

Fiol, C. M. 2002. Capitalizing on paradox: The role of language in transforming organizational identities. ***Organization Science,*** 13: 653–666.

Fong, C. T. 2006. The effects of emotional ambivalence on creativity. ***Academy of Management Journal,*** 49: 1016–1030.

Furnham, A., & Ribchester, T. 1995. Tolerance of ambiguity: A review of the concept, its measurement and applications. ***Current Psychology,*** 14: 179–199.

Gao, J., & Bansal, P. 2013. Instrumental and integrative logics

in business sustainability. ***Journal of Business Ethics,*** 112: 241–255.

George, E., Chattopadhyay, P., Sitkin, S. B., & Barden, J. 2006. Cognitive underpinnings of institutional persistence and change: A framing perspective. ***Academy of Management Review,*** 31: 347–365.

Gilbert, C. G. 2006. Change in the presence of residual fit: Can competing frames coexist? ***Organization Science,*** 17: 150–167.

Gioia, D. A., & Chittipeddi, K. 1991. Sensemaking and sensegiving in strategic change initiation. ***Strategic Management Journal,*** 12: 433–448.

Gioia, D. A., Schultz, M., & Corley, K. G. 2000. Organizational identity, image, and adaptive instability. ***Academy of Management Review,*** 25: 63–81.

Gioia, D. A., & Thomas, J. B. 1996. Identity, image, and issue interpretation: Sensemaking during strategic change in academia. ***Administrative Science Quarterly,*** 41: 370–403.

Gladwin, T. N., Kennelly, J. J., & Krause, T.-S. 1995. Shifting paradigms for sustainable development: Implications for management theory and research. ***Academy of Management Review,*** 20: 874–907.

Greenberger, D. B., & Strasser, S. 1986. Development and application of a model of personal control in organizations. ***Academy of Management Review,*** 11: 164–177.

Grégoire, D. A., Barr, P. S., & Shepherd, D. A. 2010. Cognitive processes of opportunity recognition: The role of structural alignment. ***Organization Science,*** 21: 413–431.

Griffith, T. L. 1999. Technology features as triggers for sensemaking. ***Academy of Management Review,*** 24: 472–488.

The Guardian. 2012. Shell rejects total warning over Arctic oil search. September 29: 35.

Hahn, T. In press. Reciprocal stakeholder behavior: A motive-based approach to the implementation of normative stakeholder demands. ***Business & Society.***

Hahn, T., & Figge, F. 2011. Beyond the bounded instrumentality in current corporate sustainability research: Toward an inclusive notion of profitability. ***Journal of Business Ethics,*** 104: 325–345.

Hahn, T., Figge, F., Pinkse, J., & Preuss, L. 2010. Trade-offs in corporate sustainability: You can't have your cake and eat it. ***Business Strategy and the Environment,*** 19: 217–229.

Hahn, T., Pinkse, J., Preuss, L., & Figge, F. In press. Tensions in corporate sustainability: Towards an integrative framework. ***Journal of Business Ethics.***

Halme, M. 2002. Corporate environmental paradigms in shift: Learning during the course of action at UPM–Kymmene. ***Journal of Management Studies,*** 39: 1087–1109.

Hambrick, D. C. 1982. Environmental scanning and organizational strategy. ***Strategic Management Journal,*** 3: 159–174.

Hambrick, D. C., & Mason, P. A. 1984. Upper echelons: The organization as a reflection of its top managers. ***Academy of Management Review,*** 9: 193–206.

Hamilton, A., & Gioia, D. A. 2009. Fostering sustainability-focused organizational identities. In L. M. Roberts & J. E. Dutton (Eds.), ***Exploring positive identities and organizations: Building a theoretical and research foundation:*** 435–460. New York: Psychology Press.

Hannaway, J. 1985. Managerial behavior, uncertainty and hierarchy: A prelude to a synthesis. ***Human Relations,*** 38: 1085–1100.

Hart, S. L. 1995. A natural-resource-based view of the firm. ***Academy of Management Review,*** 20: 986–1014.

Hart, S. L., & Sharma, S. 2004. Engaging fringe stakeholders for competitive imagination. ***Academy of Management Executive,*** 18(1): 7–18.

Heidmann, M., Schäffer, U., & Strahringer, S. 2008. Exploring the role of management accounting systems in strategic sensemaking. ***Information Systems Management,*** 25: 244–257.

Held, M. 2001. Sustainable development from a temporal perspective. ***Time & Society,*** 10: 351–366.

Herring, C. 2009. Does diversity pay? Race, gender, and the business case for diversity. ***American Sociological Review,*** 74: 208–224.

Hodgkinson, G. P., & Healey, M. P. 2008. Cognition in organizations. ***Annual Review of Psychology,*** 59: 387–417.

Hodgkinson, G. P., & Johnson, G. 1994. Exploring the mental models of competitive strategists: The case for a processual approach. ***Journal of Management Studies,*** 31: 525–552.

Imboden, C., Gross, D., Meynell, P. J., Richards, D., & Stalmans, M. 2010. ***Biodiversity management system—Proposal for the integrated management of biodiversity at Holcim sites.*** Geneva: IUCN.

Jackson, S. E., & Dutton, J. E. 1988. Discerning threats and opportunities. ***Administrative Science Quarterly,*** 33: 370–387.

Jay, J. 2013. Navigating paradox as a mechanism of change and innovation in hybrid organizations. ***Academy of Management Journal,*** 56: 137–159.

Jensen, M. C. 2001. Value maximisation, stakeholder theory, and the corporate objective function. ***European Financial Management Review,*** 7: 297–317.

Kahneman, D., & Lovallo, D. 1993. Timid choices and bold forecasts: A cognitive perspective on risk taking. ***Management Science,*** 39: 17–31.

Kaplan, S. 2008. Framing contests: Strategy making under uncertainty. ***Organization Science,*** 19: 729–752.

Kaplan, S., & Tripsas, M. 2008. Thinking about technology: Applying a cognitive lens to technical change. ***Research Policy,*** 37: 790–805.

Karlins, M. 1967. Conceptual complexity and remote-associative proficiency as creativity variables in a complex problem-solving task. ***Journal of Personality and Social Psychology,*** 6: 264–278.

Kiesler, S., & Sproull, L. 1982. Managerial response to changing environments: Perspectives on problem sensing

from social cognition. ***Administrative Science Quarterly,*** 27: 548–570.

Langer, E. J. 1975. The illusion of control. ***Journal of Personality and Social Psychology,*** 32: 311–328.

Levinthal, D., & March, J. G. 1981. A model of adaptive organizational search. ***Journal of Economic Behavior and Organization,*** 2: 307–333.

Levinthal, D., & Rerup, C. 2006. Crossing an apparent chasm: Bridging mindful and less-mindful perspectives on organizational learning. ***Organization Science,*** 17: 502–513.

Lewis, M. W. 2000. Exploring paradox: Toward a more comprehensive guide. ***Academy of Management Review,*** 25: 760–776.

Lüscher, L. S., & Lewis, M. W. 2008. Organizational change and managerial sensemaking: Working through paradox. ***Academy of Management Journal,*** 51: 221–240.

Mahon, J. F., & Waddock, S. A. 1992. Strategic issues management: An integration of issue life cycle perspectives. ***Business & Society,*** 31: 19–32.

Mann, L., & Tan, C. 1993. The hassled decision maker: The effects of perceived time pressure on information processing in decision making. ***Australian Journal of Management,*** 18: 197–209.

Maon, F., Lindgreen, A., & Swaen, V. 2008. Thinking of the organization as a system: The role of managerial perceptions in developing a corporate social responsibility strategic agenda. ***Systems Research and Behavioral Science,*** 25: 413–426.

March, J., & Simon, H. 1958. ***Organizations.*** New York: Wiley.

Margolis, J. D., & Walsh, J. 2003. Misery loves companies: Rethinking social initiatives by business. ***Administrative Science Quarterly,*** 48: 268–305.

Matten, D., & Crane, A. 2005. Corporate citizenship: Toward an extended theoretical conceptualization. ***Academy of Management Review,*** 30: 166–179.

Mazutis, D. D. 2013. The CEO effect: A longitudinal, multilevel analysis of the relationship between executive orientation and corporate social strategy. ***Business & Society,*** 52: 631–648.

McKenzie, J., Woolf, N., van Winkelen, C., & Morgan, C. 2009. Cognition in strategic decision making: A model of non-conventional thinking capacities for complex situations. ***Management Decision,*** 47: 209–232.

Mervis, C. B., & Rosch, E. 1981. Categorization of natural objects. ***Annual Review of Psychology,*** 32: 89–115.

Miller, D. 1993. The architecture of simplicity. ***Academy of Management Review,*** 18: 116–138.

Mintzberg, H. 1973. Strategy-making in three modes. ***California Management Review,*** 16(2): 44–53.

Miron-Spektor, E., Erez, M., & Naveh, E. 2011. The effect of conformist and attentive-to-detail members on team innovation: Reconciling the innovation paradox. ***Academy of Management Journal,*** 54: 740–760.

Miron-Spektor, E., Gino, F., & Argote, L. 2011. Paradoxical frames and creative sparks: Enhancing individual creativity through conflict and integration. ***Organizational Behavior and Human Decision Processes,*** 116: 229–240.

Mitchell, R., Agle, B., & Wood, D. J. 1997. Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. ***Academy of Management Review,*** 22: 853–886.

Nadkarni, S., & Barr, P. S. 2008. Environmental context, managerial cognition, and strategic action: An integrated view. ***Strategic Management Journal,*** 29: 1395–1427.

Newton, T. J. 2002. Creating the new ecological order? Elias and actor-network theory. ***Academy of Management Review,*** 27: 523–540.

Nickerson, R. S. 1998. Confirmation bias: A ubiquitous phenomenon in many guises. ***Review of General Psychology,*** 2: 175–220.

NRC. 2013. ***Douchen is een fijne verslaving [Showering is a fine addiction].*** September 28/29: E2–3.

Ocasio, W. 1997. Towards an attention-based view of the firm. ***Strategic Management Journal,*** 18: 187–206.

O'Leary, B., & Weathington, B. 2006. Beyond the business case for diversity in organizations. ***Employee Responsibilities and Rights Journal,*** 18: 283–292.

Pache, A.-C., & Santos, F. 2013. Inside the hybrid organization: Selective coupling as a response to competing institutional logics. ***Academy of Management Journal,*** 56: 972–1001.

Palich, L. E., & Bagby, D. R. 1995. Using cognitive theory to explain entrepreneurial risk-taking: Challenging conventional wisdom. ***Journal of Business Venturing,*** 10: 425–438.

Petty, R. E., Briñol, P., & DeMarree, K. G. 2007. The metacognitive model (MCM) of attitudes: Implications for attitude measurement, change, and strength. ***Social Cognition,*** 25: 657–686.

Pfeffer, J., & Salancik, G. R. 1978. ***The external control of organizations: A resource dependence perspective.*** New York: Harper and Row.

Plambeck, N., & Weber, K. 2009. CEO ambivalence and responses to strategic issues. ***Organization Science,*** 20: 993–1010.

Plambeck, N., & Weber, K. 2010. When the glass is half full and half empty: CEOs' ambivalent interpretations of strategic issues. ***Strategic Management Journal,*** 31: 689–710.

Porac, J. F., & Rosa, J. A. 1996. In praise of managerial narrow-mindedness. ***Journal of Management Inquiry,*** 5: 35–42.

Porac, J. F., & Thomas, H. 2002. Managing cognition and strategy: Issues, trends and future directions. In A. M. Pettigrew, H. Thomas, & R. Whittington (Eds.), ***Handbook of strategy and management:*** 165–181. London & Thousand Oaks, CA: Sage.

Prasad, P., & Elmes, M. 2005. In the name of the practical: Unearthing the hegemony of pragmatics in the discourse of environmental management. ***Journal of Management Studies,*** 42: 845–867.

Pratt, M. G., & Foreman, P. O. 2000. Classifying managerial

responses to multiple organizational identities. ***Academy of Management Review,*** 25: 18–42.

Pretty, J., Smith, G., Goulding, K. W. T., Groves, S. J., Henderson, I., Hine, R. E., King, V., van Oostrum, J., Pendlington, D. J., Vis, J. K., & Walter, C. 2008. Multi-year assessment of Unilever's progress towards agricultural sustainability. I: Indicators, methodology and pilot farm results. ***International Journal of Agricultural Sustainability,*** 6: 37–62.

Pugh, D. S., Hickson, D. J., Hinings, C. R., Macdonald, K. M., Turner, C., & Lupton, T. 1963. A conceptual scheme for organizational analysis. ***Administrative Science Quarterly,*** 8: 289–315.

Purdy, J. M., & Gray, B. 2009. Conflicting logics, mechanisms of diffusion, and multilevel dynamics in emerging institutional fields. ***Academy of Management Journal,*** 52: 355–380.

Reay, T., & Hinings, C. R. 2009. Managing the rivalry of competing institutional logics. ***Organization Studies,*** 30: 629–652.

Reinhardt, F. L., Stavins, R. N., & Vietor, R. H. K. 2008. Corporate social responsibility through an economic lens. ***Review of Environmental Economics and Policy,*** 2: 219–239.

Robinson, G., & Dechant, K. 1997. Building a business case for diversity. ***Academy of Management Executive,*** 11(3): 21–31.

Rosch, E. 1975. Cognitive reference points. ***Cognitive Psychology,*** 7: 532–547.

Rudolph, T. J., & Popp, E. 2007. An information processing theory of ambivalence. ***Political Psychology,*** 28: 563–585.

Salzmann, O., Ionescu-Somers, A., & Steger, U. 2005. The business case for corporate sustainability: Literature review and research options. ***European Management Journal,*** 23: 27–36.

Schwartz, M. S., & Carroll, A. B. 2008. Integrating and unifying competing and complementary frameworks. The search for a common core in the business and society field. ***Business & Society,*** 47: 148–186.

Scott, W. A., Osgood, D. W., & Peterson, C. 1979. ***Cognitive structure: Theory and measurement of individual differences.*** New York: Wiley.

Sharma, S. 2000. Managerial interpretations and organizational context as predictors of corporate choice of environmental strategy. ***Academy of Management Journal,*** 43: 681–697.

Sharma, S., Pablo, A. L., & Vredenburg, H. 1999. Corporate environmental responsiveness strategies: The importance of issue interpretation and organizational context. ***Journal of Applied Behavioral Science,*** 35: 87–108.

Shepherd, D. A. 1999. Venture capitalists' assessment of new venture survival. ***Management Science,*** 45: 621–632.

Slawinski, N., & Bansal, P. 2012. A matter of time: The temporal perspectives of organizational responses to climate change. ***Organization Studies,*** 33: 1537–1563.

Smith, W. K., Binns, A., & Tushman, M. L. 2010. Complex business models: Managing strategic paradoxes simultaneously. ***Long Range Planning,*** 43: 448–461.

Smith, W. K., Gonin, M., & Besharov, M. L. 2013. Managing social-business tensions: A review and research agenda for social enterprise. ***Business Ethics Quarterly,*** 23: 407–442.

Smith, W. K., & Lewis, M. W. 2011. Toward a theory of paradox: A dynamic equilibrium model of organizing. ***Academy of Management Review,*** 36: 381–403.

Smith, W. K., & Tushman, M. L. 2005. Managing strategic contradictions: A top management model for managing innovation streams. ***Organization Science,*** 16: 522–536.

Stabell, C. B. 1978. Integrative complexity of information environment perception and information use. An empirical investigation. ***Organizational Behavior and Human Performance,*** 22: 116–142.

Stern, N. 2006. ***Stern review on the economics of climate change.*** London: Her Majesty's Treasury.

Sutcliffe, K. M., & Huber, G. P. 1998. Firm and industry as determinants of executive perceptions of the environment. ***Strategic Management Journal,*** 19: 793–807.

Tesluk, P. E., Vance, R. J., & Mathieu, J. E. 1999. Examining employee involvement in the context of participative work environments. ***Group and Organization Management,*** 24: 271–299.

Thomas, A. S., & Simerly, R. L. 1994. The chief executive officer and corporate social performance: An interdisciplinary examination. ***Journal of Business Ethics,*** 13: 959–968.

Thomas, J. B., Clark, S. M., & Gioia, D. A. 1993. Strategic sensemaking and organizational performance: Linkages among scanning, interpretation, action, and outcomes. ***Academy of Management Journal,*** 36: 239–270.

Tikkanen, H., Lamberg, J.-A., Parvinen, P., & Kallunki, J.-P. 2005. Managerial cognition, action and the business model of the firm. ***Management Decision,*** 43: 789–809.

Tushman, M. L., Newman, W. H., & Romanelli, E. 1986. Convergence and upheaval: Managing the unsteady pace of organizational evolution. ***California Management Review,*** 29(1): 29–44.

Vandenbosch, B., & Huff, S. L. 1997. Searching and scanning: How executives obtain information from executive information systems. ***MIS Quarterly,*** 21: 81–107.

van Marrewijk, M., & Werre, M. 2003. Multiple levels of corporate sustainability. ***Journal of Business Ethics,*** 44: 107–119.

Walsh, J. P. 1988. Selectivity and selective perception: An investigation of managers' belief structures and information processing. ***Academy of Management Journal,*** 31: 873–896.

Walsh, J. P. 1995. Managerial and organizational cognition: Notes from a trip down memory lane. ***Organization Science,*** 6: 280–321.

Wartick, S. L., & Cochran, P. 1985. The evolution of the corporate social performance model. ***Academy of Management Review,*** 10: 758–769.

Wartick, S. L., & Mahon, J. F. 1994. Toward a substantive definition of the corporate issue construct: A review and synthesis of the literature. ***Business & Society,*** 33: 293–311.

WCED. 1987. ***Our common future.*** Oxford: World Commission on Environment and Development & Oxford University Press.

Weber, K., & Glynn, M. A. 2006. Making sense with institutions: Context, thought and action in Karl Weick's theory. ***Organization Studies,*** 27: 1639–1660.

Webster, D. M., & Kruglanski, A. W. 1994. Individual differences in need for cognitive closure. ***Journal of Personality and Social Psychology,*** 67: 1049–1062.

Weick, K. E. 1979. Cognitive processes in organizations. ***Research in Organizational Behavior,*** 1: 41–74.

Weick, K. E. 1995. ***Sensemaking in organizations.*** Thousand Oaks, CA: Sage.

Weick, K. E. 2010. Reflections on enacted sensemaking in the Bhopal disaster. ***Journal of Management Studies,*** 47: 537–550.

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. 2005. Organizing and the process of sensemaking. ***Organization Science,*** 16: 409–421.

Whiteman, G., Walker, B., & Perego, P. 2013. Planetary boundaries: Ecological foundations for corporate sustainability. ***Journal of Management Studies,*** 50: 307–336.

Wong, E. M., Ormiston, M. E., & Tetlock, P. E. 2011. The effects of top management team integrative complexity and decentralized decision making on corporate social performance. ***Academy of Management Journal,*** 54: 1207–1228.

Wright, J. P. 1979. ***On a clear day you can see General Motors: John Z. DeLorean's look inside the automotive giant.*** New York: Avon.

Zietsma, C., & Vertinsky, I. B. 1999. Shades of green: Cognitive framing and the dynamics of corporate environmental response. ***Journal of Business Administration and Policy Analysis,*** 27–29: 261–292.

Tobias Hahn (tobias.hahn@kedgebs.com) is professor of corporate sustainability at KEDGE Business School in Marseille. He received his doctorate in economic and social sciences from the University of Lüneburg. His research focuses on corporate sustainability strategies, corporate environmental and social performance, and stakeholder behavior.

Lutz Preuss (Lutz.Preuss@rhul.ac.uk) is reader in corporate social responsibility at the School of Management of Royal Holloway University of London. He holds a doctorate from King's College London. His research addresses managerial sensemaking with regard to a range of corporate sustainability issues.

Jonatan Pinkse (jonatan.pinkse@grenoble-em.com) is associate professor of strategy at Grenoble Ecole de Management. He received his doctorate in strategy from the University of Amsterdam. His research examines how firms deal with sustainability, particularly concerning issues such as climate change, green mobility, and renewable energy.

Frank Figge (figge@sustainablevalue.com) is professor of corporate social responsibility and sustainable development at KEDGE Business School in Marseille. He earned his Ph.D. from the University of Basle. His research addresses the generation and interaction of corporate economic, environmental, and social value.