Exploring The Role of Leadership in Enabling Contextual Ambidexterity

Liselore A. Havermans, Deanne N. Den Hartog, Anne Keegan, and Mary Uhl-Bien

Abstract

Sustainable success calls for contextually ambidextrous organizing. According to theory this entails enabling simultaneous high levels of exploration and exploitation within a subsystem. The practices involved in enabling contextual ambidexterity form a major and relatively unexplored leadership challenge. Our main aim is to draw on a combination of ambidexterity and complexity theory insights to understand how contextual ambidexterity emerges in dynamic contexts. We contribute to the literature on the role of leadership in enabling contextual ambidexterity by exploring the daily practices leaders enact to stimulate exploration and exploitation as well as to shift dynamically between them to (re)gain contextual ambidexterity. We present the results of two qualitative studies exploring leadership in project-based organizations where the pressure for contextual ambidexterity is relevant. We show that in responding adaptively to environmental stimuli, leaders shift between practices to emphasize exploitation or exploration in order to (re)gain the needed high levels of both and their enactments are bounded by the conditions of keeping exploration and exploitation simultaneously high. We discuss the implications of these findings for understanding of contextual ambidexterity as a dynamic accomplishment that emerges in everyday interactions, the role of leaders in enabling contextual ambidexterity, and the need for HR managers to support leaders in enacting this dynamic form of leadership.

Keywords: Leadership, contextual ambidexterity, requisite complexity, qualitative studies

Correspondence to: Liselore Havermans, Assistant Professor in HRM-OB, Department of Management and Organization FEWEB, VU University Amsterdam, Main Building HG 4A-64 De Boelelaan 1105, 1081 HV Amsterdam, The Netherlands, Ph: +31 (0)20 5982293, l.a.havermans@vu.nl.

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Introduction

The challenge for organizations to respond effectively to requirements to be flexible and at the same time efficient has been at the forefront of organizational theorizing for many years. Successful, sustainable organizing is held to be a function of being able to exploit current strengths as well as explore new possibilities (March, 1991) and to pursue new knowledge while at the same time using existing knowledge optimally (Levinthal & March, 1993). A growing number of theorists have conceptualized the dilemmas organizations face in the simultaneous pursuit of exploration and exploitation under the banner of organizational ambidexterity (Duncan, 1976; Gibson & Birkinshaw, 2004; Tushman & O'Reilly, 1996). In organizational theorizing, ambidexterity is defined as the capacity of an organization to be 'aligned and efficient in their management of today's business demands while simultaneously adaptive to changes in the environment' (Raisch & Birkinshaw, 2008, p 375).

In line with a paradox perspective, the ambidexterity literature indicates that both exploration and exploitation should be pursued (Eisenhardt, Furr, & Bingham, 2010; March, 1991; Smith & Lewis, 2011). However the extent to which this should be done, or how, in order to reach the ultimate balance between the two, remains unanswered (Birkinshaw & Gupta, 2013). In this paper we draw on research informed by the complexity sciences to clarify the role leaders' actions play in continuously (re)attaining this balance between exploration and exploitation. Specifically, we use the concept of requisite complexity, i.e. that the complexity of external stimuli has to be matched by the complexity of internal responses by an organization (Boisot & McKelvey, 2010), to argue that while ambidexterity requires high levels of both exploration and exploitation, the emphasis on one or the other continuously shifts in response to the complexity

of stimuli from the environment perceived by, among others, an organization's leaders. In other words, the emphasis is on the ongoing attaining or regaining of concurrent high levels of both.

While in the past, theorists have argued that it is difficult for organizations to meet the needs for both exploration and exploitation (Hannan & Freeman, 1984), recent approaches are characterized by attempts to specify the different ways in which organizations can achieve the required balance between these two (Lavie, Stettner, & Tushman, 2010). Ambidexterity has, for example, been studied as structurally or temporally separated processes of balancing exploration and exploitation (Jansen, Tempelaar, Van den Bosch, & Volberda, 2009; Tushman & O'Reilly, 1996) in which the balancing challenge is set at the organizational level (Lavie et al., 2010). Ambidexterity has also been identified with attempts to manage simultaneous exploration and exploitation *within* a subsystem (Gibson & Birkinshaw, 2004). This has been referred to as 'contextual ambidexterity' (Gibson & Birkinshaw, 2004). Here, we also focus on contextual ambidexterity.

Building on the approach of Gibson and Birkinshaw (2004) and Adler, Goldoftas, & Levine (1999), research on contextual ambidexterity focuses on contextual factors that encourage or enable a behavioral orientation or capacity for the simultaneous pursuit of exploration and exploitation. The challenge, in order to achieve contextual ambidexterity, is to enable individuals and groups to deal with the inherent tension between the processes of exploration and exploitation (Gibson & Birkinshaw, 2004). Contextual ambidexterity is thus conceptualized at the individual and group level (Lavie et al., 2010), rather than at the organizational level. This form of ambidexterity has the advantages that adaptation of the entire sub-system is facilitated and that individuals are encouraged to use their own judgment in combining alignment-oriented and adaptation-oriented activities (Gibson & Birkinshaw, 2004).

Although the advantages of contextual ambidexterity over structural or temporal separation of exploration and exploitation are becoming more widely recognized, achieving contextual ambidexterity is a major challenge, and research on how to achieve such ambidexterity is still limited (Wang & Rafiq, 2014). In addition, as most research has focused on ambidexterity at organization and unit level, understanding of ambidexterity at the level of the individual is still limited (Mom, Van Den Bosch, & Volberda, 2009). More research is needed that explores how ambidexterity is achieved through individuals as well as whether, and how, the success of processes for achieving ambidexterity is dependent upon the context (Wang & Rafiq, 2014).

Despite the crucial role attributed to leadership in managing organizational paradoxes in general (e.g. Smith & Lewis, 2011), and ambidexterity specifically (e.g. Boumgarden, Nickerson, & Zenger, 2012), the role of leadership in contextual ambidexterity has only received limited attention to date (for exceptions see, Gibson & Birkinshaw, 2004; Nemanich & Vera, 2009; Rosing, Frese, & Bausch, 2011). Leadership for ambidexterity has mostly been studied in the form of relatively stable features of leaders or groups such as transformational leadership, behavioral integration, and trust and discipline among followers (Adler et al., 1999; Cao, Simsek, & Zhang, 2010; Jansen et al., 2009; Jansen, George, Van den Bosch, & Volberda, 2008; Lubatkin, Simsek, Ling, & Veiga, 2006; O'Reilly & Tushman, 2008). Thus research has been called for which takes the role of the context, specific leadership practices, and dynamics of leadership into account in achieving ambidexterity (Boumgarden et al., 2012; Carmeli & Halevi, 2009). In line with these calls, we explore leadership for contextual ambidexterity as a dynamic process of dealing with complexity (Uhl-Bien, Marion, & McKelvey, 2007) and we ask how

leaders in the pursuit of contextual ambidexterity try to influence how others think and behave (Stacey, 2010) in response to the complexity of environmental stimuli.

We theorize how concurrently high levels of exploration and exploitation might be achieved through leaders' actions that lead to shifting combinations of, or a shifting emphasis on, exploration and exploitation. We present the results of two qualitative studies that aim to show how *conflicting leadership practices* are used to dynamically achieve contextual ambidexterity. We discuss the implications of our findings for the dynamic process of leading for contextual ambidexterity, and we underline the importance of the ever changing point of balance leaders strive to achieve in attempting to attain concurrently high levels of exploration and exploitation.

Ambidexterity and Complexity

In their meta-analysis Junni, Sarala, Taras and Tarba (2013) find that ambidexterity is positively and significantly related to performance and also that it appears to be important to harness both exploration and exploitation simultaneously within a sub-system (Gibson & Birkinshaw, 2004). However, the question remains whether both exploration and exploitation need to be engaged in equally at all times (Carmeli & Halevi, 2009). The optimum point in achieving ambidexterity is often seen as equal exploration and exploitation (e.g. He & Wong, 2004). For example, Boumgarden, Nickerson and Zenger (2012) show how higher levels of both exploration and exploitation are assumed to lead to higher performance, and that the optimum point is equal exploration and exploitation. However, as exploitation is more important in stable environments and exploration is more important in unstable environments (Burns & Stalker, 1961; Hannan & Freeman, 1984), it is plausible that the optimum balance may at least in part depend upon the environment (Davis, Eisenhardt, & Bingham, 2009; Sidhu, Volberda, & Commandeur, 2004).

Although the overall relationship between ambidexterity and performance has been shown in Junni et al. (2013) to be positive and significant, their work also shows that this is strongly moderated by context (Junni et al., 2013; O'Reilly & Tushman, 2013). This suggests that even when both are high, changes in the environment might call for changes in the balance between exploration and exploitation (Auh & Menguc, 2005). The appropriate point of balance could be dependent upon, for example, industry conditions (Lavie et al., 2010). Depending on the industry studied, either having relatively more exploration or exploitation could be more important for performance (Junni et al., 2013). More generally, this indicates that the optimum point of balance between exploration and exploitation may depend upon environmental conditions and may be influenced by dynamism therein. This suggests that it is important to study the roles of dynamism and complexity more closely in research on ambidexterity (Junni et al., 2013).

One way to explain the need to shift emphasis between harnessing exploration and exploitation while stimulating high levels of both simultaneously is Ashby's law of requisite variety. It states that 'Only variety can destroy variety' (Ashby, 1970, p 207). More recently Boisot and McKelvey (2010) conceptualize variety as a proxy for complexity and propose a focus on requisite complexity instead of requisite variety. The concept of requisite complexity posits that the complexity of external stimuli has to be matched by the complexity of internal responses by an organization (Boisot & McKelvey, 2010). The complexity of stimuli can be defined as the range of environmental contingencies or levels of variation among elements in the environment (Ashmos, Duchon, & McDaniel, 2000; Boisot & Child, 1999). The complexity of responses can be defined as the variety of representations of the context and the range of behavioral responses to this perceived context (Ashmos et al., 2000; Boisot & Child, 1999). With environments and thus the complexity of stimuli continuously changing, organizations likely

need to adapt the complexity of their responses in order to continue approaching requisite complexity.

In line with these insights from complexity theory we conceptualize the process of exploration as increasing of the complexity of responses and the process of exploitation as decreasing of the complexity of responses. More specifically, exploration involves increasing the complexity of responses, in the form of multiple representations of the context and a range of behavioral responses to this perceived context is needed (Ashmos et al., 2000; Boisot & Child, 1999). Exploitation involves decreasing the complexity of responses, in the form of moving towards a single representation of the context and a single response to it (Ashmos et al., 2000; Boisot & Child, 1999). This conceptualization is in line with March's (1991) description of exploration as involving variation, discovery and experimentation, and exploitation as involving selection, choice, and refinement. In a similar vein, Rosing et al. (2011) equate processes of exploration with increasing variance in behaviors and exploitation with reducing variance in behaviors.

Linking this conceptualization of exploration and exploitation back to the concept of requisite complexity suggests that the higher the complexity of stimuli in the environment, the greater the need for exploration, and the lower the complexity of stimuli the higher the need for exploitation. This further suggests that the processes of achieving concurrently high levels of exploration and exploitation co-evolve with the complexity of stimuli and have dynamic tendencies. The question that then arises is how the optimum combination of concurrently high levels of exploration and exploitation might be achieved. We propose that leadership processes play a key role there. Depending on the situation, the appropriate balance between simultaneously

high levels of exploration and exploitation shifts, which in turn calls for adaptive leadership behaviors to steer the group in the right direction.

Leadership for Ambidexterity

Leadership is considered a crucial process in achieving ambidexterity. Gibson and Birkinshaw (2004) examine the role of leaders in creating stretch, discipline, support and trust to build a supportive context for contextual ambidexterity. Nemanich and Vera (2009) focus specifically on the role of transformational leadership in promoting contextual ambidexterity. These authors suggest that we can consider leadership for contextual ambidexterity to be comprised of relatively stable features such as a transformational leadership style or the facilitation of discipline and trust. Similarly, in studies that have addressed the factors that enable structurally separated exploration and exploitation, leadership has been identified as a crucial factor and has mainly been studied as a stable role (Adler et al., 1999; Cao et al., 2010; Jansen et al., 2009; Jansen et al., 2008; Lubatkin et al., 2006; O'Reilly & Tushman, 2008). These authors again point to the importance of executive director's transformational leadership (Jansen et al., 2008), as well as network extensiveness (Cao et al., 2010), and top management team behavioral integration (Jansen et al., 2009; Lubatkin et al., 2006), shared vision (Jansen et al., 2008; O'Reilly & Tushman, 2008) and management of interfaces between sub-units (O'Reilly & Tushman, 2008). In prior research, the facilitation of ambidexterity is thus mostly treated as the achievement of a stable set of leadership styles and outcomes, be they transformational leadership, behavioral integration, or trust and discipline among followers.

An alternative view we want to advance here is that ambidexterity is a dynamic accomplishment and therefore attention should also be focused on how leaders achieve ambidexterity in dynamic ways. This contrasts with a focus on specific outcomes or the use of a

single particular leadership style (Raisch, Birkinshaw, Probst, & Tushman, 2009; Raisch & Birkinshaw, 2008). Our perspective fits, for example, with the work on the behavioral complexity of executives and top management teams (Carmeli & Halevi, 2009; Denison, Hooijberg, & Quinn, 1995). In that line of work, authors propose that executives should be able to enact contradictory and conflicting behaviors in order to deal with the complex and paradoxical demands in their environment (Denison et al., 1995). In addition, Patel, Messersmith, and Lepak (2012) stress the importance of practices that enable the development of resource flexibility, focusing on the flexibility in the behavioral choices for human resources within the organization, to support processes of ambidexterity.

Other work that fits with the perspective of ambidexterity as a dynamic accomplishment, is that of Rosing et al. (2011) who propose that leaders stimulate exploration by using what they label 'opening behaviors' such as stimulating thoughts in a new direction to increase the variance of follower behaviors. They also discuss leaders' use of 'closing behaviors', behaviors that stimulate efficiency and decrease the variance of follower behaviors thus fostering exploitation as opposed to exploration (Rosing et al., 2011). These ideas dovetail with earlier work by Kotter (2001), who states that in order to deal with complex and changing contexts it is necessary to both aim for some level of order and consistency, as well as to accomplish change. Most recently Smith (2014) has shown the leadership practices of senior managers to be dynamic and inconsistent when dealing with complex and paradoxical demands such as exploration and exploitation.

Though their work is grounded in the literature on transformational leadership, the link between exploration and exploitation and the variance of follower behaviors described by Rosing et al (2011) also resonates with the literature on absorbing and reducing complexity (Ashmos et

al., 2000; Boisot & Child, 1999). Viewing leadership as a dynamic process of dealing with complexity (Uhl-Bien et al., 2007) provides insights for considering leadership processes or practices aimed at dynamically achieving contextual ambidexterity. From the dynamic perspective proposed by complexity theory, leaders can be seen as adapting to the complexity of environmental stimuli to influence what others think and do through their interactions with them (cf. Stacey, 2010) and as having an important role in enabling contextual ambidexterity.

Exploring Leadership Processes for Contextual Ambidexterity

A coherent understanding of the micro level mechanisms enabling ambidexterity at the individual and social level in practice, such as relational- and task- focused leadership, taking initiative and individuals creating and supporting the context for ambidexterity, is currently lacking (Turner, Swart, & Maylor, 2013). Calls have been made for empirical exploration of the specific leadership behaviors needed to accomplish ambidexterity and how these behaviors emerge over time and in relation to the context (Carmeli & Halevi, 2009). Boumgarden, Nickerson and Zenger (2012) propose that the crucial role of ambidextrous leadership should be further explored taking the dynamics of leadership practices for achieving ambidexterity and sustainable success into account.

To that end, in study 1 and study 2 we qualitatively explore the role of day to day leadership practices in dynamically enabling contextual ambidexterity. This fine-grained focus on everyday leadership practices can contribute to our understanding of the aspects of leadership that enable achieving and maintaining contextual ambidexterity. A focus on specific everyday practices highlights the interactions and interpretations through which complex phenomena emerge (Jarzabkowski, 2003). We focus on direct leadership practices, that is those practices that involve social influence when leaders interact with others, as opposed to indirect leadership in

which leadership occurs through intermediate structures, such as developing planning (Yukl, 2009). In addition, we focus on the ways in which these leadership practices are enacted dynamically over time in order to explore how these practices are used to most effectively react to changes in the environment when aiming for contextual ambidexterity. Turner et al. (2013) argue that research should explore critical incidents in the form of discontinuities that require managerial action to offer insight into the micro-practices that enable ambidexterity. So, in study 2 of this paper, we focus our interviews on emergent complex issues facing leaders and explore the shifts in leaders' emphasis from exploration to exploitation made in response to perceived increasing and decreasing complexity of environmental stimuli.

The context of this study is project-based organizations. This is a context commonly characterized by high pressure for contextual ambidexterity (Lee, DeLone, & Espinosa, 2007). Project-based organizations thus provide an opportunity to observe leadership in a context in which leadership is likely to be aimed at achieving and maintaining contextual ambidexterity. Our premise, based on current theorizing on project-based organizing (Swart and Kinnie, 2014; Bakker, Boros, Kenis, & Oerlemans, 2013; Geraldi, Maylor & Williams, 2011) is that pressures for simultaneous pursuit of exploration and exploitation are generally pronounced in this context. Projects are set up to accomplish new tasks (Keegan & Turner, 2002; Sydow, Lindkvist, & DeFillippi, 2004), which implies they are explorative in nature. However, projects are also usually managed within tight resource and time constraints calling for a simultaneous emphasis on exploitation of current strengths (Lindkvist, 2008). These paradoxical demands in project-based organizations are related to the complexity and newness of project assignments, pushing for exploration, and the finite nature of projects, pushing for exploitation. Project leadership can likely therefore provide valuable insights on practices for achieving contextual ambidexterity.

This context also provides opportunities to study how leaders try to achieve concurrently high levels of exploration and exploitation while also being faced by constantly changing levels of environmental complexity. Similar to the conceptualization of Geraldi, Maylor and Williams (2011), we explored project complexity as experienced by the people involved in projects and investigated how leaders responded to changes in the complexity of stimuli they perceived as emanating from the environment (Cooke-Davies, Cicmil, Crawford, & Richardson, 2007; Geraldi et al., 2011).

Our study therefore tries to answer the following research question: How do direct leadership practices help create and sustain contextual ambidexterity in project-based organizations? This main research question is divided into two sub-questions which are answered in two explorative studies. Study 1 addresses the question: What leadership practices are used to stimulate exploration and exploitation in order to create contextual ambidexterity? Study 2 follows up on study 1 to address the question: How and when do leaders shift between leadership practices to stimulate either exploration or exploitation in order to respond to perceived changes in the level of environmental complexity and to sustain the appropriate balance of exploration and exploitation? In study 2 we are therefore interested in exploring not just practices for achieving exploration and exploitation but also evidence of any shifts in the emphasis on specific leadership practices to enable (re)gaining concurrently high levels of both in response to triggers from the environment.

Method Study 1

In study 1 we used qualitative research methods to explore whether leadership practices enabling contextual ambidexterity could be identified in project-based organizations and to examine their uses. Through snowball sampling we conducted 42 interviews with team members

and line and project managers in project-based organizations (see Table I for a summary of the interview participants). Participants were asked to focus on a specific project in answering questions on leadership, and they discussed 17 different projects in a wide range of project-based organizations in the Netherlands. The focal projects were either recently finished or approaching completion at the time of the interviews. In order to approach the project settings from multiple perspectives individual interviews were held with project team members, project managers and line managers involved with the projects. Including these three perspectives allowed us to triangulate the descriptions of the project context and leadership practices and enhance the internal validity of our results (Miles & Huberman, 1994).

Insert Table I about here

As our focus is on leadership practices, the interviews dealt with the everyday leadership activities in the focal project. During the interviews open and probing questions were used to elicit responses about the background and role of the interviewee, the way in which work in the focal project unfolded, and leadership practices in the project. The interview protocols included questions such as: 'Describe the focal project', and 'How would you describe your role in this project'. The interviews with project managers and line managers continued with questions such as: 'How do you get your employees to do what you want?', 'How do you influence them?', 'Do you always do this in the same manner, or is this dependent upon the situation?'. Whereas the interviews with project team members continued with questions such as: 'How does your project manager ask you to do something?', 'How does he/she lead you?', 'Does he/she always do this in the same manner, or does this depend upon the situation?', 'What effect does the way in which

your project manager leads you have on you?'. The interviews lasted an average of 1 hour and 20 minutes, and were all recorded with the consent of the interviewees. Interviews were transcribed verbatim (resulting in 1099 pages of transcript) and imported into NVivo 9 for analysis.

Data Analysis Strategy

After importing all transcripts into NVivo 9, the initial analysis of each interview began by writing up a contact summary sheet (Miles & Huberman, 1994), containing the key points made by the interviewee as well as issues to take into account when analyzing the data. In step 2, we coded coded all utterances of relevance to leadership practices used to stimulate exploration and exploitation. During the process of coding the data in iterative cycles and moving back and forth between the whole interview and the detail relating to practices, multiple types of memos were written about emerging themes across all interviews as well as relating to the fine detail within each interview. We developed overarching themes and explored these through inter-interview and intra-interview analysis to develop codes that represented leadership practices mentioned by each individual as used to stimulate exploration and exploitation as well as to compare and contrast different practices used by different leaders.

When we were sure we had saturated our coding framework (Guest, Bunce and Johnson, 2006), that is when repeated analysis revealed no new codes referring to leadership practices for stimulating exploration and/or exploitation, or no new detail on existing codes, all interviews were subsequently re-coded line by line to explore leadership practices we identified from the data as being used to stimulate exploration and exploitation. These were subsequently clustered according to the ways in which they impacted the complexity of responses. First, we identified that the leadership practices enacted to enable exploration stimulated a higher complexity of

responses, whereas the leadership practices enacted to enable exploitation stimulated a lower complexity of responses. Second, we saw from our analysis of the data that the leadership practices had an impact on different aspects of the complexity of responses, clustering around the complexity of beliefs or the complexity of actions (see Table II for an overview of the leadership strategies and practices identified in the analysis). While we did not confine our analysis to leadership practices enacted by those in a formal management role (line or project managers), the vast majority of the identified leadership practices were enacted by those who are in formal leadership roles and we thus refer to the ones enacting these practices as 'leaders'.

Insert Table II about here

Results Study 1

The results of study 1 show a range of leadership practices that were enacted by leaders in project-based organizations to enable contextual ambidexterity. Every leader we interviewed enacted leadership practices to both enable exploration and exploitation and aimed to stimulate concurrently high levels of both. Our analysis also revealed that the higher the perceived complexity of stimuli from the environment, the more the leaders did to enable exploration. For example, in the following two quotes a project manager and a line manager explain that projects that were perceived to have a high level of complexity called for a focus on enabling exploration in the form of stimulating interaction:

'And generally they all have that they search for connection, because in the end you are all very dependent upon the other. That is because of the complexity, is almost tied to it one on

one, that everything responds to each other, so well, then you also become dependent upon each other.' (Project manager 1, project 11)

'There have to be seven thousand homes and the ambition (…) is to do that as sustainable as possible. And that means that they have become separated from all standard ways of how things usually go. Actually, what they said like "independently from that, we have to sit down with a lot of people, in different forms, different forums, different tiers, just talk like, what do we want in this neighborhood.' (Line manager, project 10)

Leadership Practices to Enable Exploration

The results show a wide variety of leadership practices used to enable exploration in project-based organizations. These practices were directed at enabling exploration by stimulating a higher complexity of responses and can be divided into two different pathways, namely stimulating this through their impact on the complexity of beliefs or through the complexity of actions (see Table III for an overview). Leadership practices aimed at stimulating a higher complexity of beliefs enabled the development and inclusion of multiple representations of the context and a variety of perspectives and ideas on the process of dealing with the perceived complexity from the environment. Leadership practices aimed at stimulating a higher complexity of actions enabled experimentation with a range of behavioral responses to deal with the perceived complexity from the environment.

Insert Table III about here

A first way in which leaders stimulated the development of a higher complexity of beliefs is by *involving others* in a task and stimulating discussion (see Table III). By involving more people in a project or the accomplishment of another type of task, especially people with different backgrounds and beliefs than those already involved, leaders aimed to enable the group to take into account a wider variety of beliefs. *Stimulating discussion* played a major role in this process because discussion could surface conflicting beliefs and enabled people to work through the tension this brings with it. For example, one project team member explained how a more senior member of his project team sensed conflicting beliefs between him and another team member and enabled them to bridge their differences:

> 'She gets up and says "you and you, come with me now!". So we go into that meeting room and start cursing and shouting and emotionally drawing stuff on a whiteboard, (…) but that is our way of working, that's how we work with each other and that takes 10 minutes and then all of a sudden one says like "Oh, right" (…) "That way you kind of have a point".' (Team member, project 5)

Another way in which leaders stimulated the development of a higher complexity of beliefs is by *encouraging boundary spanning*. They motivated team members to interact with others outside their own team, increasing the chances of picking up new perspectives and developing new solutions to issues. Leaders also stimulated an increase in the complexity of beliefs by *encouraging the individual development of others*. This individual development stimulated the complexity of beliefs held by that person by making sure they took a step back and

reflected on their work to see it in a new light. In addition, leaders stimulated a higher complexity of beliefs by simply *being available, listening to others, and suggesting solutions* to current issues. This enabled others to share their ideas and problems with the leader, and get new ideas from him or her (see Table III for sample quotes that illustrate these leadership practices).

The leadership practices discussed above do not, by themselves, guarantee successful exploration. The last type of leadership practice the leaders in our sample used to enable a higher complexity of beliefs is *stimulating the adoption of values related to exploration*. Stimulating a high complexity of beliefs lead to difficulties in bridging these differences. When project team members shared values related to exploration such as *embracing diversity*, this enabled a process of constructively exploring a high complexity of beliefs, without differences turning into irresolvable conflict and diminishing understanding and respect for each other. Leaders thus tried to increase the salience of values related to exploration, such as *transparency in interaction, connectedness among individuals* and *valuing the diversity* among these individuals. For example, in one of the projects the two project managers explicitly tried to refocus the values of the project they joined halfway to increase the salience of transparency in order to cope with communication and coordination problems within and especially outside their team. In the following quote they explained the advantages of sharing the value of transparency.

> 'We involve them in what we do. So we make it all very transparent, which has a number of advantages. One, they know exactly what's happening. Two, they can influence what we produce. On the other hand that means that if we've produced something they can't say 'yeah but we can't use that at all', so we commit them. Plus, with each other, they see a part of reality and we see a part of reality, if we put those images together we see as much as possible, so it also improves integral quality.' (Project manager, project 11)

A second way in which leaders enabled exploration is by stimulating a higher complexity of actions. A leadership practice used to accomplish this is *giving others freedom* in the accomplishment of their tasks. This allowed everyone to solve problems in their own way leading to a high complexity of actions taken. One line manager explained he thinks getting freedom in task accomplishment is motivating and leads to unexpected, but generally positive outcomes:

> 'Well, you motivate, that is my opinion, by giving them lots of freedom and because of that let go, because of which things arise spontaneously that you did not expect and neither did they. But in general the experience is that these turn out to be positive.' (Line manager, project 13)

Leaders gave freedom to others by accepting ways of thinking and acting that were not fully in line with their own, as opposed to redirecting others when this occurred. In the following quote a team member describes how his manager followed through with the consequences of giving his team freedom by accepting other ways of thinking and doing and in the process how this leader gained the confidence of the team in ways that would not have been possible if his manager would have intervened to direct action and responses:

> '[He] is a manager who can delegate very nicely and dares to give you responsibility for it. (…) That, as I said, you don't have to be continuously afraid that he intervenes or that you don't do it the way he wants it. I mean, that will happen regularly, that does happen regularly, that he says "well I would have done it differently, but well this is also a good way". So it gives you a lot of confidence'. (Team member, project 12)

Another leadership practice used to enable exploration through a higher complexity of actions was *encouraging people to work together*. Motivating people to work together instead of

individually helped them to adjust their actions to those of others in an iterative way (see Table III for further examples of these practices).

Accepting mistakes is a last leadership practice we identified that was used to enable exploration. This practice helped create a sense of safety that enabled people to show initiative and proactively experiment with new actions. A project team member illustrated the leadership practice of accepting mistakes by explaining that his project manager will back team members up in case their initiatives don't turn out to be successful:

> 'At the moment things go wrong, (…) he will never say (…) "Yeah, but that's not your task", or "you shouldn't have interfered with that", or, so he never goes back on you'. (Team member, project 7)

Leadership Practices to Enable Exploitation

The analysis of our material also reveals a number of leadership practices used to enable exploitation (see Table IV for an overview). Similar to the leadership practices used to enable exploration, these practices used to enable exploitation can be categorized into two distinct pathways, namely those directed at beliefs and those directed at actions. Leadership practices aimed at stimulating a lower complexity of beliefs enabled the development and inclusion of a single representation of the context and a shared perspective and idea on the process of dealing with the perceived complexity of the environment. Leadership practices aimed at stimulating a lower complexity of actions enabled a move towards a single behavioral response to deal with the perceived complexity of the environment.

Insert Table IV about here

The first pathway through which leaders enabled exploitation was by stimulating a lower complexity of beliefs. Our results show that leaders often did this by *stopping a discussion* or by *not involving others in the conversation*. *Stopping discussion* was often done when a leader perceived that the downsides in terms of the time that was spent on discussion outweighed the benefits of further discussion. In our sample it was often the project manager specifically who took the initiative to stop discussions or limit the amount of people involved in such discussions. Formal project leaders often saw it as their responsibility to make sure their team members were not dragged into every discussion, or as one of them put it: 'I actually keep them out of the wind of that difficult client' (Project manager, project 7). Leaders also stimulated a lower complexity of beliefs by *stimulating the adoption of values related to exploitation*. The values related to exploitation that some leaders in our sample tried to make more salient at times include *wariness* or *taking calculated risks* and *sticking to agreements* (for examples of the quotes that illustrate these leadership practices see Table IV).

A second approach through which leaders stimulated others to reduce the complexity of responses was by stimulating a lower complexity of actions. These leadership practices included *making decisions, enforcing rules,* and *redirecting effort to fit management expectations*. Leaders reduced the complexity of actions by *making decisions* and *enforcing rules* as these decisions and rules gave guidance to people's actions. The more detailed the decisions and the rules that were enforced, the lower the complexity of actions possible that still fit within the boundaries that were being developed (see Table IV).

Another frequently mentioned leadership practice that was directed at reducing the complexity of actions was *redirecting effort*. This involved either changing the course of someone's actions to fit management expectations or trying to limit the complexity of actions to a smaller bandwidth. Explaining the first route of *redirecting effort*, one team member described how his project manager tried to change his course of actions: 'We have a certain goal and it can then be the case that I drift a little and that he says like "Hey, back on the track, we have to go straight, that way".' (Team member, project 5). Explaining the second route of redirecting effort a line manager described how he tried to limit the bandwidth of the complexity of actions in his team: 'What I also tried to get across is that you shouldn't endlessly continue with thinking of new possibilities, new variants and that you especially have to look at what is being asked, and deliver that.' (Line manager, project 9).

Overview Results Study 1

Summarizing, the results show that leaders in project-based organizations enact a range of leadership practices to stimulate both exploration and exploitation in order to create contextual ambidexterity. These leadership practices either enable exploitation by stimulating a lower complexity of responses, or enable exploration by stimulating a higher complexity of responses. As these leaders in project-based organizations all enact both leadership practices that stimulate exploitation and those that stimulate exploration, these leaders are potentially enabling contextual ambidexterity.

The leadership practices identified in this study have an impact on two aspects of the complexity of responses; the complexity of beliefs and the complexity of actions. The leadership practices used to enable exploration by stimulating a higher complexity of beliefs revolve around bringing together a more diverse set of people and ideas and bridging these differences through

values related to exploration such as transparency, valuing diversity and connectedness. Stimulating exploration through a higher complexity of actions mainly involves leadership practices that facilitate team members to work together. In contrast, stimulating exploitation through lowering the complexity of beliefs involves leaders' decreasing interaction and limiting the diversity of people involved in the process. It also entails enhancing the salience of values related to exploitation such as sticking to agreements and being wary of taking risks. Leaders generally reduce the complexity of actions by enforcing tighter constraints on ways of working and reducing the range of options people have for finding solutions to problems on their projects.

The analysis of the interviews in study 1 showed the different direct leadership practices enacted that can in combination stimulate both exploration and exploitation to create contextual ambidexterity. However, our analysis of the data from study 1 raised new questions on the ways in which these practices were combined to achieve contextual ambidexterity over time. The results from study 1 suggested the potential presence of shifts in leadership behavior and practices in response to changes in the environment and corresponding effects for emphasis placed by leaders on stimulating exploration and stimulating exploitation. However, these issues were not specifically addressed in the interviews and the data from study 1 was insufficient to analyze these aspects in enough detail. In order to explore how leaders combined these leadership practices to maintain contextual ambidexterity we conducted a second study.

Method Study 2

The first study illustrates that project leaders are able to use practices to stimulate both exploitation and exploration, but does not yet show how these practices are combined or when shifts in focus or emphasis occur to retain the optimum balance within the focus on high

concurrent exploration and exploitation. In the second study we thus explored how the leadership practices identified in study 1 were combined by leaders and if and when shifts in focus of leaders on stimulating exploration or stimulating exploitation occurred. We carried out and analyzed an additional 11 semi-structured interviews with project managers and program managers in the Netherlands (see Table V for a sample description of study 2). The interviews followed a semi-structured protocol focused on the complex emergent problems the interviewees faced in their current project or program. We probed the interviewees to talk about the problems they encountered and how they dealt with them in order to get detailed stories of developments in the perceived complexity of stimuli and responses initiated by leaders as perceived environmental complexity changed. This allowed us to explore how leadership practices to stimulate exploration and exploitation were combined within the projects and programs and what kinds of shifts occurred in terms of leadership behaviors and actions focusing on exploration and exploitation. The interviews lasted one hour and 20 minutes on average, and were all transcribed verbatim.

The interview protocol started off with introductory questions about the background of the interviewee, their role, and their project or program. In order to surface complex emergent problems the interviewees encountered in the project or program we asked ‘What types of issues did you encounter in this project with regards to leading the project and the people on the project?’, and ‘What types of issues did you encounter in this project with regards to managing complexity around the project?’. For each identified issue we asked ‘In what way were these issues resolved?’, with probing questions wherever necessary about the people involved, the process, the interviewees’ roles in the process, the final solution, and the issues left unsolved. The final broader questions included ‘How do you try to make sure everyone in the project can deal properly with the complexity they face in the project?’

Insert Table V about here

After importing all transcripts into NVivo 9, the analysis process for the data from study 2 proceeded in the same manner as described for study 1 and entailed multiple iterative coding cycles to identify all data where leaders referred to shifts or shifting between stimulating exploration and stimulating exploitation and all issues associated with these shifts. We first coded all interviews to identify the use of leadership practices to stimulate exploration and exploitation and how they were combined. Subsequently, we coded for instances where leaders indicated a switch between stimulating exploration and stimulating exploitation by coding for these switches in a first round, and coding for more detail of these instances by viewing the position in the interview transcripts where stimulating exploration and exploitation were discussed close to each other and seeing whether there was talk of a shift from one to the other. Nvivo 9 provides possibilities for moving between coded (clusters of) words to their broader text which enabled us to find these examples and explore them in detail. We then coded the data thematically to analyze when and why these shifts occurred.

Results Study 2

We found that leaders tended to shift their focus when they perceived a shift in the complexity of environmental stimuli but we also found that shifts were not from exploration to exploitation only, but rather represented a shift in emphasis towards one or the other whilst maintaining a concurrent focus on the other. Whereas the results of study 1 mainly showed the different direct leadership practices used to stimulate exploration and exploitation, the results of

study 2 show how leaders shifted between these leadership practices to adjust the complexity of responses to the complexity of stimuli from the environment (se Table VI for sample quotes).

The leaders enacted more leadership practices to stimulate a higher complexity of responses when they perceived the complexity of stimuli from their environment as increasing (see Table VI for sample quotes). This perception of an increasing complexity of stimuli resulted from social, technical and process issues that suddenly emerged or were previously unseen by these leaders. They adapted behavior to match this by emphasizing more exploration. For example, in the following quotation from the interview data a project manager explained that when a new issue asked for new solutions (and thus more exploration), he would start simply but then would continue to adaptively shift the complexity of responses step by step right up to the level where it matched the currently complexity of stimuli he perceived so the issue could then be resolved:

> 'Well if you look at the complexity of solutions, I have a very easy method. We have architects who solve that. And if you don't find a solution that way you organize a workshop with different parties who are involved in that solution and you start to see "how can we make this into something manageable that everyone can work with". And if you really can't find a solution you get into an escalation trajectory. If parties really do not want to cooperate, but then you are more towards the governance part of the complexity. Usually, with a few smart people, you find a good solution. The questions just remains whether everyone wants to make it.' (Project manager 5)

Another project manager explained the process of identifying an increase in the complexity of stimuli and as a result the need to then look at the newly arisen problem and

potential solutions from multiple perspectives. He defined his own role in this process as one of increasing the complexity of responses once this was needed, as 'head of asking questions':

> 'When the first wall came out of the box it just looked very strange. (…) And then an interesting question emerges (…). To what extent is this a technical problem? (…) First it goes through informal channels, they just call each other. Then, when it is an issue, it gets set on the official agenda. (…) Ask colleagues at [another program location] (…) and see what experiences they had. (…) They see it on the work floor. They are all professionals. It's more like "did you think of that?" (…). I call myself "head of asking questions".' (Project manager 2)

In addition to mentioning a response to already or newly perceived increased complexity of stimuli, some leaders talked of the importance of anticipating and explicitly stimulating exploration themselves even before the need arose in order to be prepared for a potential increase in the complexity of stimuli. In other words, stimulating higher levels of exploration also as a response to expected change in the environment. For example, a portfolio manager stated that bringing people from multiple programs together is important to make sure they have built the shared capacity to deal with the sudden changes that can occur within his context:

> 'What's important is that (…) they constantly have to be in constant consultation with each other, because if at a certain moment politicians would say "that's not such a good plan", then it will run aground here and they don't understand it anymore. (…) So it is of major importance that there is ongoing interaction between the leaders of an organization, the directors, and those professionals.'(Portfolio manager 3)

On the other hand, when leaders perceived a lower complexity of stimuli, they tended to shift the emphasis in their behavior towards enactment of more leadership practices to stimulate exploitation through stimulating a lower complexity of responses (see Table VI for sample quotes). A decreasing complexity of stimuli was often experienced when a richer understanding of the environment emerged and solutions to emergent issues were found. For example, leaders tried to move on or get back to the envisioned way of working after an issue occurred by letting unity of opinion emerge or forcing a decision. For example, below a project manager explains how the increased complexity of stimuli from a frustrated project partner forced him and his team to temporarily heighten exploration and search for new solutions to the issue, and that he then pushed for a quick move back to the original way of cooperating to continue exploiting that way of working:

> 'At a certain moment the division of roles between [the project partners] got under discussion, in which [one project partner] felt we were standing back too much and letting them walk point. Well, that's a difficult point because if you go with that you leave your own starting point and the role division you envision. (…) We can step up now and then the problem is solved, but if we step up now we do it for 25 years [the duration of the project]. (…) So if we diverge, let it be very clear that this has to be temporary, and that we always want to get back to the ideal position.' (Project manager 1)

Within the project and program, leaders iteratively shifted between increasing and decreasing the complexity of responses to keep matching the complexity of stimuli. One program manager described a three way process of moving from exploitation (wanting to stick to their current model), to exploration (a discussion and tryout of alternative models), to exploitation (clarifying where to go through outside help) related to one issue:

'In the beginning we had a strong preference for sticking to the current model [of governance]. Some people already said "Oh, it's really simple", but we all really went through a developmental process in our thinking on that issue in which we said no we should let it go and choose [an alternative model]. (…) In the summer time we were in the middle of this discussion, and we couldn't really find a way out anymore. (…) Looking back on it, that was a moment in which we got stuck and needed help from outside to get everything clear for ourselves again.' (Program manager 3)

Insert Table VI about here

These results suggest that leading for ambidexterity is a dynamic process involving leaders responding to the perceived complexity of the environment and using behavior and actions to produce shifts in emphasis on stimulating exploration and/or stimulating exploitation. These shifts are responses or adaptations in light of the complexity of stimuli that may increase or decrease the need for exploration (or exploitation) while the other is maintained and concurrently managed at a high level.

Discussion

In this paper we explored the role of leadership in enabling contextual ambidexterity in project-based organizations. Our findings provide insights on the many practices for achieving contextual ambidexterity as well as the dynamics of leadership efforts to (re)gain concurrently high levels of exploration and exploitation as the perceived complexity of the environment changes and leaders respond to these changes. Raisch et al. (2009; 2008) argue that while ambidexterity has been shown to be a dynamic accomplishment, it is still often studied as if it is a

stable characteristic of organizations. They suggest that the emphasis is mainly on the implementation of an ambidextrous strategy portrayed as a rational top down process in which the main challenges are for top management to set the right organizational structures in place and provide a fitting organizational context. In the context of structurally differentiated ambidexterity, the leadership role of the top management team is considered to be of crucial importance in bringing exploration oriented sub-systems and exploitation oriented sub-systems together. Current literature tends to portray this strategic bridging role as a stable style (e.g. Jansen et al., 2008; Lubatkin et al., 2006; O'Reilly & Tushman, 2008). Similar to top management teams in structurally differentiated ambidextrous organizations, leaders in contextually ambidextrous sub-systems also have to combine efforts to stimulate exploration and to stimulate exploitation. At this lower level however, previous literature has suggested that leaders are assumed to enact a stable style (e.g. transformational leadership) or create a stable culture that accommodates both exploration and exploitation (e.g. Gibson & Birkinshaw, 2004; Nemanich & Vera, 2009).

We contribute to the work on how ambidexterity is dynamically accomplished through addressing the day–to-day leadership practices aiming for concurrent exploration and exploitation. Our results suggest that contextual ambidexterity can emerge in interaction between leaders and their team-members and as a result of their dynamic interpretations of the environment and efforts to respond to perceived environmental changes. This highlights the importance of everyday practices that leaders and team members enact in interaction with each other and in response to their interpretations of the environment. These findings resonate with recent trends in the organizational literature that focus on how strategy and performance emerge through micro level practices (Eisenhardt et al., 2010; Feldman & Orlikowski, 2011; Jarzabkowski, 2003). More specifically, by exploring the leadership practices that are enacted

within organizational subsystems we start to show how contextual ambidexterity emerges in interaction between people and in response to their perceptions of the complexity of stimuli. In this way we further a perspective on leadership informed by the complexity sciences in which leadership is constructed as a dynamic and interactive process of dealing with complexity (Stacey, 2010; Uhl-Bien et al., 2007).

Our results also suggest that even though leaders strive for high exploration and exploitation concurrently, the optimum balance of exploration and exploitation is not always or continuously equal exploration and exploitation. Rather the optimum is in part dependent upon the demands of the context. We found that even while seeking to maintain both at concurrently high levels, leaders respond to changes in context by shifting their attention or emphasis towards either stimulating more exploration or more exploitation (Davis et al., 2009; Sidhu et al., 2004). More specifically, the optimum balance between exploration and exploitation seems to relate to the complexity of stimuli from the environment. This suggests that optimal contextual ambidexterity is dynamically achieved by continuously approaching requisite complexity by maintaining both exploration and exploitation at high levels while at the same time adjusting and adapting on the levels of each as perceptions of environmental complexity rise and fall. This means that the higher the complexity of stimuli, the higher the need for emphasizing exploration in the form of creating a higher level of complexity of responses, and the lower the complexity of stimuli the higher the need for emphasizing exploitation in the form of striving for a lower complexity of responses. Though clearly high levels of both exploration and exploitation are needed and stimulated by the leaders in our sample simultaneously, especially it would seem in project-based organizations as a context that continuously changes, the optimum level of each is also somewhat of a moving target and leaders adapt their approach to emphasize one or the other

accordingly. Our studies thus suggest that creating and sustaining ambidexterity in its optimal form is a dynamic process that requires continuous adaptation which can be enabled through leadership practices.

Our results also indicate that leaders tend to shift toward stimulating exploration through a higher complexity of responses when the perceived complexity of stimuli increases, and conversely, that they tend to shift towards stimulating exploitation through a lower complexity of responses when the perceived complexity of stimuli decreases. These findings on how leadership efforts seem to be used to match the complexity of responses to the complexity of stimuli coalesce with the idea of requisite complexity, which explains that organizations have to respond to complexity in the environment with an equal complexity of responses (Boisot & McKelvey, 2010). Our findings also contribute to current theorizing by providing a fine grained analysis of the ways in which leadership influences the complexity of responses in an organization, by distinguishing between the complexity of beliefs and the complexity of actions.

Theoretical Implications

The role of leadership in enabling ambidexterity and the dynamism of this process are not fully reflected in the current literature due to a paucity of empirical studies examining practices used by leaders to do this. A key theoretical contribution of this study us that we focus on how leaders achieve ambidexterity as a dynamic, ongoing accomplishment rooted in day to day practices. While the leadership practices identified in this study are not new in and of themselves, what is new is that we show how these leadership practices are used in concert with each other, sometimes as conflicting sets of simultaneous practices, and so enhance understanding of the role of leadership in enabling contextual ambidexterity in project-based organizations. Most importantly, our second study, although exploratory in nature, suggests that leaders dynamically

and intentionally shift their focus or emphasis between practices to continuously respond to anticipated or perceived changes in the context and to achieve contextual ambidexterity by approaching requisite complexity.

Taken together, we believe these results suggest an extension of the model proposed by Birkinshaw and Gupta (2013). Inspired by our exploratory results and the model of requisite complexity by Boisot and McKelvey (2010) we try to offer such an extension. In figure 1, the curved line (A) represents what Birkinshaw and Gupta (2013) call the efficiency frontier (following Porter, 1996). Organizations strive to operate at the curved line or beyond (above/right) for the optimum level of performance combining high levels of exploration, exploitation or both. The question that is raised by Birkinshaw and Gupta (2013) is: where on this line is the optimum point? If exploration and exploitation are equally important, as suggested by some models of ambidexterity, point X will be the optimum.

However, drawing on the concept of requisite complexity and in light of our results, the optimum balance may depend upon the perceptions of current and expected environmental complexity held by organizations' members and especially their leaders. This means that for a lower complexity of responses the optimum point moves more towards exploitation on the curved line (point Y), and for a higher complexity of responses the optimum point moves more towards exploration on the curved line (point Z). Crucially however, just as the literature on paradox and contextual ambidexterity has shown the importance of simultaneously keeping high levels of both exploration and exploitation, our results also suggest that leaders simultaneously stimulate both at high levels, while also shifting in the emphasis between them to match the complexity of environmental stimuli. Therefore, we expect that the optimum point of balance does not stray very far from the middle of the curve to avoid having low levels of either exploration or

exploitation which in a project-based setting would present problems due to the dual tensions posed by the concurrent needs for efficiency and flexibility in projects.

Insert Figure 1 about here

Our results show that in project-based organizations, a context in which finiteness and complexity are core characteristics of organizing that create a demand for contextual ambidexterity, individual leaders can enable both exploration and exploitation simultaneously through direct leadership practices. While in the ambidexterity literature, there are some debates about the ability of individuals to enable both exploration and exploitation simultaneously, and some authors doubt whether individuals are able to do both (Schreyogg & Sydow, 2010), our exploratory study starts to provide empirical support for the authors whose work indicates that people do have this capacity (Raisch et al., 2009). Highlighting how individual leaders push for both exploration and exploitation, our findings provide support for these latter claims by showing that individuals are able to, and do, stimulate both exploration and exploitation through their daily leadership practices. Our fine-grained empirical illustration of day-to-day leadership practices and how these are enacted in concert with each other in an adaptive way to create and sustain contextual ambidexterity provides insights in this emergent area of leadership and management studies.

Our studies suggest that leaders in project-based organizations play an active role not just in stimulating a higher complexity of responses to support exploration, but also in stimulating a lower complexity of responses to underpin a more exploitative orientation. These results show that a lower complexity of responses may not represent purely the result of drift, but may in fact

be linked with leadership efforts to intentionally actively and adaptively stimulate a lower complexity of responses in response to the perceived complexity of environmental stimuli. Thus as noted, while the role of leaders in enabling exploration and exploitation is still contested in the literature, our study supports the work of those authors stating that leaders can and should simultaneously support both exploration and exploitation (Smith & Lewis, 2011), rather than focusing on enabling exploration only on the basis of the claim that organizations inherently drift towards exploitation over time (Eisenhardt et al., 2010).

As both exploration and exploitation are important in creating and maintaining contextual ambidexterity, it is valuable to formulate preferences for processes supporting exploration and exploitation in more neutral terms. While exploration has a positive connotation and exploitation has a more negative connotation, suggesting leaders focus on one only may discursively favoring exploration over exploitation because of the positive connotations of the former. In the current study we have discussed these processes in terms of increasing and decreasing the complexity of responses, which can be seen as one way to use more neutral terms to conceptualize these paradoxical processes, the pressures they create for leaders, and how leaders respond to them.

Managerial Implications

To enable contextual ambidexterity, leaders can enact practices that support both exploration and exploitation. They can also continuously adapt these practices to achieve fit with the complexity of the context and within the bounds of maintaining high current exploration and exploitation. Our results suggest more broadly that leaders in project-based organizations, who face dual demands for exploitation and exploration, can use daily interaction based practices to manage responses to the perceived complexity of environmental stimuli. Explicit consideration of the role of leadership and specifically of daily leadership practices to enable ambidexterity can

improve awareness and visibility of these practices. A move towards more systematic incorporation of daily leadership practices in research on contextual ambidexterity could be valuable for improving leadership practice. We therefore see implications from our study for how leaders can enable contextual ambidexterity by reflecting more on whether and in what ways they seek to shape the complexity of beliefs and actions of others. This can perhaps lead to new insights on other daily leadership practices to both *attain* ambidexterity as well as to adapt leadership practices to the changing complexity of the environment in order to *sustain* ambidexterity. By placing daily leadership practices into such a dynamic context it can be shown that adaptive leadership strategies are not randomly shifting, but are consistently inconsistent in the service of attaining and sustaining contextual ambidexterity.

This is also where human resource managers can play an important role. By supporting the awareness and visibility of the kinds of consistently inconsistent daily leadership practices that support contextual ambidexterity, human resource specialists can create the appropriate context for leadership practices that enable ambidexterity. Their influence on both policy development and implementation of appropriate HR practices and HR systems can help build a social climate supportive of leadership for ambidexterity as well as facilitate resource flexibility and intellectual capital essential for achieving and maintaining ambidexterity (Kang, Snell, & Swart, 2012; Patel et al., 2012; Prieto & Pilar Pérez Santana, 2012). More specifically, HR specialists can create opportunities for discussion and reflection on organizing for ambidexterity and encouraging others to see ambidexterity as a leadership challenge that requires continuous attention, adaptation and development. HR managers can play a role in offering career experiences in which the demands for exploitation and exploration are pronounced. HR specialists can play a key role through discussions, coaching, mentoring, and/or training in

supporting leaders in their understanding and effective use of, the kinds of practices we have explored for adaptively enabling exploration and exploitation at concurrently high levels.

Limitations and Future Research

In the current paper we have argued that leaders in project-based organizations enable contextual ambidexterity through leadership practices that stimulate exploration and exploitation. As the extent to which people act ambidextrously is expected to depend on their organizational context (Raisch et al., 2009), future research is needed to both confirm our findings for project based organizations as well as explore the extent to which patterns in both types practices and approaches to dynamic adaptation are different in non-project based organizations.

A further, more detailed, focus on context can also show in what ways the context inhibits or strengthens the efforts and outcomes of leadership for contextual ambidexterity. For example, if the organizational culture does not allow for leaders to enact conflicting and shifting leadership practices because this is perceived as inappropriate leadership behavior, it might be especially difficult to enact the kinds of consistently inconsistent leadership practices we have identified in these studies for continuously approaching contextual ambidexterity. Questions to explore include whether leaders who have already gained trust and status within the organization might be more likely to gain support for operating in a way that at first sight might seem inconsistent, and might even challenge prominent views on how strong leaders should act. Another question is whether leaders communication competence to clearly explain why they are enacting conflicting practices in a dynamic way engenders more support and positive responses from peers and followers.

To date, fewer studies have focused on the relationship between ambidexterity at lower organizational levels, such as individual, team and project, and performance, than have focused on the relationship between ambidexterity at higher organizational and performance (Junni et al., 2013). Given that the relationship between ambidexterity at higher organizational levels and performance has been shown to be stronger than between ambidexterity at lower organizational levels and performance (Junni et al., 2013), more research is needed to gain a better understanding of how the processes and results of leadership actions scale up from lower organizational levels to higher organizational levels in the attainment of ambidexterity. In our study we have stressed the importance of behavior and resource flexibility stimulated by individual leaders to allow their teams to perform a broad range of activities to continuously adapt to changes in the complexity of stimuli. To gain a broader perspective on ambidexterity and human resources, and on the processes enabling and constraining scaling up ambidextrous capacities, future research should focus on the interplay between skills, behaviors and HR practices and both resource flexibility and coordination flexibility (Sarala, Junni, Cooper, & Tarba, 2014).

The list of practices for enabling contextual ambidexterity that we generated through our inductive analysis of interview data is likely not complete and future research might explore how leadership practices are used to enact leadership strategies in contexts with other interaction opportunities, as well as in other types of organizations. While we have shown how project managers and line managers in project-based organizations can play a role in leading for contextual ambidexterity, this does not mean that leadership for contextual ambidexterity is only enacted by leaders in management positions (e.g. Pearce & Sims, 2002; Pearce, 2004; Stacey, 2010; Uhl-Bien & Marion, 2009). Future research can assess whether leaders in non-managerial

roles enact the same portfolio of leadership practices as well as whether they have the same impact as those in formal leadership roles.

The complexity of stimuli is mainly conceptualized as stimuli from outside of the organization (such as market pressure or angry stakeholders). However the line between stimuli and responses is a thin one, and can shift depending upon the perspective you are taking at a specific time. It would be interesting to further explore perceptions of the (shifts in) complexity of stimuli and the complexity of responses. By distinguishing between leadership practices that are aimed at influencing the complexity of beliefs and those that influence the complexity of actions, we provide a more nuanced view of the ways in which leaders affect the complexity of responses to create and sustain contextual ambidexterity. However, we do not see this distinction as an end point, but rather as a starting point for getting to grips with the complexity of reactions, providing a spring board for more detailed classifications.

In this study we try to contribute to better understanding of how leaders in project-based organizations enable and sustain contextual ambidexterity. We focused on the everyday leadership practices through which leaders can play an important role in enabling contextual ambidexterity. We hope the current study opens up pathways for future explorations into the dynamic nature of ambidexterity and the role of leadership in its emergence.

Liselore A. Havermans is Assistant Professor of Human Resource Management and Organizational Behavior at VU University Amsterdam, the Netherlands. Her main research interests are leadership and development, especially in the context of project-based organizations. She is the coordinator of the Master courses Leadership and Diversity in Organizations. Liselore wrote her dissertation on leadership in project-based organizations at the University of

Amsterdam Business School, and was the principal researcher of a Project Management Institute funded study on the development of project managers.

Deanne N. Den Hartog is Full Professor of Organizational Behavior and the head of the HRM/OB section in the Amsterdam Business School of the University of Amsterdam, the Netherlands. Her research interests include leadership, HRM, proactive and innovative work behavior, culture, teams, and psychological states such as trust at work. She has written many academic articles in high-quality journals (e.g., the Journal of Applied Psychology and Journal of Management), as well as books and chapters on these topics; sits on several editorial boards; and has served as a board or executive committee member for several associations (e.g., the Organizational Behavior Division of the Academy of Management and the International Association of Applied Psychology).

Anne Keegan is Associate Professor of HRM and Director of the Graduate School at Amsterdam Business School, University of Amsterdam, the Netherlands. She is specialized in HRM and leadership in temporary and project based organizations and HRM discourses. Her academic work has appeared in journals including the Journal of Management Studies, Organization Studies and the Journal of Applied Psychology as well as several project management and HRM journals. She is on the editorial boards of Group and Organization Management, the German Journal of Research on HRM, and the International Journal of Project Management.

Mary Uhl-Bien is the BNSF Railway Endowed Professor of Leadership in the Neeley School of Business at Texas Christian University (TCU). Mary's research focuses on complexity leadership, relational leadership, and followership. She has published over 50 articles and manuscripts, 5 books, and a textbook on Organizational Behavior (John Wiley & Sons). Her papers on complexity leadership theory and followership theory were recognized with best paper awards. She is a founder of the Network of Leadership Scholars (NLS) in the Academy of Management, and is currently serving as OB Division Chair in the Academy of Management.

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Table I Summary Interview Sample

Project number	Project sector	Frequency of formal project team meetings	Percentage of time interviewed team member spent on project	Project manager works on X number of projects simultaneously	Interviews with project team member (TM), project manager (PM), line manager (LM)
1	IT	Daily	100	3	TM, PM, LM
2	Infrastructure	Every 2 weeks	>50	4	TM, PM, LM
3	Construction	Every 2 weeks	50	2	TM, PM
4	IT	Every 2 weeks	20	2	TM, PM
5	IT	None at lowest level	100	1	TM, PM
6	Consultancy/IT	None (single TM)	100	1	TM, LM
7	IT	Weekly	100	1	TM, PM, LM
8	Construction	Every 2 weeks	5	1	TM, PM, LM
9	Landscaping	Monthly	5	10	TM, PM, LM
10	Consultancy	Monthly	30	-	TM, LM
11	Infrastructure	Weekly	-	1	2 PMs
12	IT	Weekly	75	1	TM, PM, LM
13	Manufacturing	Twice a week	80	40	TM, PM, LM
14	Manufacturing	Twice a week	100	1	TM, PM, LM
15	IT	Monthly	30	40	TM, PM, LM
16	Policy development	Every 2 weeks	-	3	PM, LM
17	Consultancy	Weekly	25	1	TM, PM

Table II Leadership strategies and practices

Leadership strategies	**Impact on type of responses**	**Leadership practices; examples**
Enabling exploration by stimulating a higher complexity of responses	Stimulate a higher complexity of beliefs	Involve others
		Stimulate group discussion
		Encourage boundary spanning
		Stimulate personal development
		Be available, listen, and suggest solutions
		Stimulate the adoption of values such as; Transparency Connectedness Valuing diversity
	Stimulate a higher complexity of actions	Give freedom
		Work together
		Accept mistakes
Enabling exploitation by stimulating a lower complexity of responses	Stimulate a lower complexity of beliefs	Stop discussion
		Don't involve others
		Stimulate the adoption of values such as; Wariness (calculated risks) Stick to agreements
	Stimulate a lower complexity of actions	Decide
		Enforce rules
		Redirect effort to fit management expectations

Table III: Leadership practices to enable exploration

Enabling exploration by stimulating a higher complexity of responses through:	**Sample quotes**
Beliefs	Involve others: 'And that means that the moment we do new things with respect to prognosis or something like that, we involve the people that have to actually receive it, involve them in what we do.' (Project manager 1, project 11) Stimulate discussion: 'Sometimes it is just handy if you all engage in that debate and also come to a solution from different point of view.' (Project manager, project 18) Encourage boundary spanning: 'You notice that we have to coach some people on it. And you also see some people who just pick it up themselves. Just because they see model behavior. That has happened more often lately, that people say, like "yes, when you did it that way, something clicked with me and from then on I also started looking for some contacts".' (Project manager 2, project 11) Stimulate development: 'What I often do when we have setbacks like: "Gosh, look what is happening here, and what can you learn from that and how can you do that differently next time." Much more looking for, so to say, the continuous learning and development.' (Line manager, project 18) Be available: 'Keep doors open' (Line manager, project 1) Listen: 'Just listen … and be open to other arguments' (Project manager, project 7) Suggest solutions: 'You are expected to come with solutions. And then you can discuss with us about what are we going to do, and maybe you get one extra [solution] from us, but you can't just say "we just throw it all up" [for someone higher up in the hierarchy to solve it].' (Project manager 1, project 11) Stimulate shared values - Transparency: 'She is very open (…) about the things that are at play at [employer].' (Team member, project 10) Stimulate shared values - Value diversity: 'So those are actually the three pillars of: mutual understanding, appeal to expertise, and also just keep emphasizing, like, try to do it in proper consultation with the process that has to continue.' (Project manager, project 8) Stimulate shared values - Connectedness, value diversity & transparency: PM1: 'We believe in the power of connection between parties… and with that comes thinking about what the interest of another is. (..) PM2: So, with that also comes that you are very open about what moves you. Because then the other can also see your interest, also your concerns and see your doubts. In my opinion that is also that openness and transparency that's important there.' (Project managers 1 and 2, project 11)

Actions	Give freedom: ‘We just said to those five project leaders, uh, [the project manager] said, like “you have to involve who you need yourself”. And said to everyone, well “you go about it in your own way”. So those five, those are also five differently running projects.’ (Team member, project 10) Work together: ‘I really steer towards a team effort.’ (Project manager, project 12) Accept mistakes: ‘I think in a project, when you are project leader, there are always things that go wrong. So you have to bear that in mind anyway.’ (Project manager, project 17)

Table 4: Leadership practices to enable exploitation

Enabling exploitation by stimulating a lower complexity of responses through:	**Sample quotes**
Beliefs	Stop discussion: 'So during building meetings he can really pound his fist on the table and say "yes alright, but where does this all lead? I mean, a decision has to be taken and I want to get this on the table now".' (Team member, project 3) Don't involve others: 'What I hope is that they realize that I catch things for them and that I only give them those things that really need to get done.' (Project manager, project 1) Stimulate shared values - Stick to agreements: 'And I notice very clearly like: a deal is a deal. And I think that is very strong.' (Team member, project 20) Stimulate shared values - Wariness/taking calculated risks: 'Look, the moment you say that you think wariness is an important value, right? So taking calculated risks. (…) Then that only gets clear the moment a decision has to be taken. "Do we go for it or do we look into one more thing?" Well, at a moment like that it becomes clear, at a moment like that the line is created, also where the dividing line is.' (Project manager 1, project 11)
Actions	Decide: 'But some things you don't want and then you have to push them through, even though he says no.' (Line manager, project 1) Enforce rules: 'Time is time, for example. That mentality I really had to push through at first. (…) So first I just looked [as project team members came late for a meeting]. A second time I said something about it. And a third time it happens again. Then, after sitting still for two minutes, I packed my stuff and went back up [to my office]. Then I gave out tasks in a really directive manner.' (Line manager, project 1) Redirect effort to fit management expectations: 'Then, I read things and at a certain point I say, "no, it has to be different. It has to be like this, you should have asked this." And then you're being a bit corrective.' (Team member, project 1)

Table 5. Sample description Study 2

Project & program number	**Type of project**	**Interviewees**
1	Infrastructure	Project manager & program manager
2	Infrastructure	Project manager & program manager
3	Organizational change	Project manager, program manager & portfolio manager
4	Organizational change	Project manager & program manager
5	IT	Project manager & program manager

Table 6: Shifts between leadership practices to enable exploitation and exploration

Shifts in leadership practices from:	**Sample quotes**
Exploration to exploitation	What we try to do is agree on the framework. (…) We try to minimalize the period of uncertainty. (…) Let's form a temporary group, and that group will have to work together very intensively in a short period to make sure we get clarity as soon as possible and can make a choice. (…) So usually, when things get unclear or slow, we get together in a corner and make sure we develop clarity in the short term. (Project manager 1) Often it is about making sure that people with the right decision power are at the table so you can get those issues on the table and force decisions about them. (Program manager 1) What can we do to broaden the discussion? Because we also see ourselves mainly to let unity emerge in that. Because they all work on the same issues separately. (…) What we do is organize get-togethers. (…) Sometimes we end with voting with red and green cards (…) and in the end everybody raised their green card. So everybody voted for [the proposal]. (Portfolio manager 3)
Exploitation to exploration	We see a number of issues approaching that are really complex, so in which we'll have to cooperate really intensively, not just at the lowest level, but also at the highest levels. (…) In the future, we want to get together with an external expert around those types of problem areas, like what does that mean for the way in which we cooperate? (Project manager 1) It was about the relationship. (…) We tried to get them to do it, but they didn't want to. (…) If one doesn't want it, or the other resists you see that the process begins to unravel (…) and that positions harden. (…) So we get around the table with more people (…) You have try to bridge it. (…) So you can ask, you can explore "what is your problem?", "Why don't you want this?". The moment you start exploring you start the discussion again.' (Program manager 1) There are also contract managers who bring in a dilemma or like "Guys, this is what I experienced. Help me. Have you experienced this before?". Well then you always get response. (Program manager 2)

Figure 1: Approaching a moving target - the optimum balance between exploration and exploitation (Based on Birkinshaw & Gupta, 2013)