

**Managing Strategic Ambidexterity:
Top Management Teams and Cognitive Processes to Explore and Exploit Simultaneously**

Wendy K. Smith
University of Delaware
Alfred Lerner College of Business
203 Alfred Lerner Hall
Newark, DE 19716
smithw@lerner.udel.edu

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Dear EGOS community –

I look forward to being in conversation with you about our research this summer. The attached paper is a first draft of a paper presenting qualitative research. I will be reframing this paper this summer, and look forward to your feedback. While I am eager to hear any feedback that you have, I am particularly focused on:

- 1) Framing - Rethinking how to frame the contribution of this research in the context of the existing literature
- 2) Presenting qualitative data – suggestions about how to do this more effectively

Again, I look forward to your suggestions to improve this piece of research.

Wendy Smith

ABSTRACT:

Organizational success depends on effectively exploring and exploiting, but we know little about how top management teams deal with the complexities of strategic decision making that supports both agendas simultaneously. Using in-depth qualitative data from 12 top management teams, this research identifies managerial frames and cognitive processes associated with balancing these inconsistent agendas. This research finds that teams are able to balance both agendas when they 1) adopt a superordinate frame for their organizational goals and 2) encourage senior team discourse to both differentiate – noticing novel distinctions between the existing product and innovation; and integrate – identifying synergies and shared resources. Furthermore, these data suggest a staged timeline by which these discussions emerge.

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Organizational performance depends on strategic ambidexterity - simultaneously exploring and exploiting; managing both innovation and existing products. Yet these agendas are often inconsistent and contradictory. Innovating involves experimenting, fast-paced learning, and divergent thinking to achieve long-term success, whereas managing existing products demands efficiency, slow change, and convergent thinking for short-term performance (Gibson and Birkinshaw 2004; March 1991; Tushman and O'Reilly 1996). To manage these inconsistent agendas, top management teams must be able to simultaneously host competing dominant logics (Prahalad and Bettis 1986), to look forward while looking backwards (Gavetti and Levinthal 2000), to create opportunity and threat frames (Gilbert 2006).

The purpose of this study was to explore managerial cognition associated with successfully hosting these competing logics. Success in managing a strategic agenda is associated with a top management team's frames and cognitive processes – the recognition and use of knowledge and information (i.e. Walsh 1995). Managerial frames focus the attention of the senior leaders and guide their discussion and discourse. Such discourse impacts strategic decisions and organization outcomes (March and Olsen 1976), both for the better (i.e. Barr et al. 1992; Kaplan et al. 2003) or for the worse (i.e. Tripsas and Gavetti 2000). Managerial cognition is particularly critical when leaders face the complexity and challenge associated with ambidexterity (Adner and Helfat 2002; Lubatkin et al. 2006; Michel and Hambrick 1992). Previous research has developed a conceptual model about the managerial frames and cognitive processes associated with more effectively exploring and exploiting simultaneously (Smith and Tushman 2005). This current study contributes to the literature by grounding and extending this previous theoretical work with qualitative data from 12 top management teams. The next section reviews the literature that suggests that top management teams' cognitive frames and processes impact organizational outcomes, and are particularly critical – and challenging – in managing the ambidexterity demanded by exploring and exploiting simultaneously.

Ambidexterity, Top Management Teams and Cognitive Frames and Processes

Organizational performance depends on the top management team's ability to host inconsistencies. Strategically, senior leaders face demands to be both global and local (Bradach 1997), financially successful and socially conscious (Margolis and Walsh 2003), as well as exploratory and exploitative (Benner and Tushman 2003; March 1991; Tushman and Smith 2002). Organizationally, these top management teams must host competing contexts of alignment and adaptation (Gibson and Birkinshaw 2004), flexibility and efficiency (Adler et al. 1999), employee-centric focus and customer-

centric focus (Gittell 2004). Being ambidextrous – that is hosting these inconsistent agendas *simultaneously* – allows organizations to be more successful in both the short term and the long-term (He and Wong 2004; Lubatkin et al. 2006). The research in this paper focuses on one of these many ambidexterities, the challenge of exploring and exploiting simultaneously (Lubatkin et al. 2006; Tushman et al. 2002).

This study contributes to the research on how top management teams host these competing agendas simultaneously. First, this study provides empirical evidence to ground the conceptual model about how top management teams manage both exploration and exploitation simultaneously proposed by Smith and Tushman (2005). They suggest that effectively managing strategic paradoxes is associated with 1) paradoxical framing, “a cognitive juxtaposition of the opposing forces in which actors embrace rather than avoid or deny these tensions” (p. 527) , and 2) cognitive processing involving both differentiating, “recognizing and articulating differences” and integrating “shifting levels of analysis to identify potential linkages” (p. 527). This research uses in-depth qualitative data comparing 12 top management teams to explore and extend Smith and Tushman’s (2005) model.

Second, this research contributes to the literature on ambidexterity by focusing on managerial cognition. While we know that managerial cognition is an important aspect of dynamic capabilities (Adner and Helfat 2002; Barr et al. 1992; Kaplan et al. 2003), the literature on managing ambidexterity had focused primarily on structural features. For example, Tushman and colleagues (2002) find that structurally differentiating exploration and exploitation at the subunit level is associated with increased organizational success. Gilbert (2006) further shows that the competing frames of opportunity and threat can more effectively co-exist in a top management team when there is structural differentiation in the organization. As well, top management teams are more successful if they divide responsibilities for exploring and exploiting to different members of the team (Smith and Tushman 2004). Expanding beyond this primarily structural perspective, this study contributes to the literature on managing exploration and exploitation by focusing on managerial cognition to host inconsistencies - the managerial frames and information processes associated with the competing logics of exploration and exploitation. While Gilbert (2006) focuses on competing cognitive frames, he considers these frames as an outcome, rather than an antecedent to managing complexity.

This current research also draws upon, and contributes to, the literature on cognition associated with processing inconsistencies at the individual and the group level. Previous research suggests that both cognitive frames and cognitive processes impact the ability to manage contradictions or paradoxes, yet offers differing perspectives on how they are able to do so. One way to frame these strategic agendas is to acknowledge them as inconsistent and recognize the paradoxes that this ensues – that is to recognize and embrace the tensions between them. Eisenhardt and Westcott (1988) find that paradoxical frames led to

innovation in the Toyota Production System. Toyota's leaders set goals for zero-inventory. They wanted to have no inventory, but always have access to necessary parts. The tensions between these paradoxical goals led to the innovative practices around just in time inventory. A second stream of research around framing inconsistencies proposes overarching or superordinate frame, a frame which demanded the contributions of both of the competing agendas in order to succeed. Early work in social psychology by Sherif and colleagues (1961) found that superordinate goals led to competition in otherwise competing groups. Additional organizational research has found that creating a superordinate frame around organizational goals enables innovation in a previously competitive environment (Levitt 1986), or to host an ambidextrous strategy (Tushman et al. 2002). This research therefore offers two different frames around how to frame the inconsistencies between exploring and exploiting.

The research on cognition further provides ideas about the information processing associated with exploring and exploiting. Two streams of research identify opposing cognitive processes associated with approaching inconsistent or paradoxical options – differentiating and integrating (Langer 1989; Suedfeld et al. 1992). Research on individual mindfulness (see e.g., Langer 1989) and organizational mindfulness (i.e. Weick and Sutcliffe 2001) finds that differentiating – that is noticing novel distinctions – leads to problem solving that is associated with more options, more creative solutions, and more integrative thinking. In contrast, Suedfeld and colleagues (1992) find that most people approach inconsistencies by noticing the differences and that doing so polarizes the differences between both options. This approach results in fewer possibilities for integration between the existing product and innovation. They argue however that more complexity is associated with more integrative thinking – the “development of conceptual connections among differentiation dimensions or perspectives. Such connections are inferred from references to tradeoffs between alternatives, a synthesis between them, a reference to a higher order that subsumes them, and the like” (Suedfeld et al. 1992, p. 394). This research draws from these ideas of frames and cognitive processes by illustrating the impact of such processes at the senior leadership level.

Finally, this study is grounded in two assumptions that are drawn from previous research. First, top management team behaviors and decisions impact organizational performance. Even as senior leadership decisions may be constrained by resource and path dependencies (i.e. Pfeffer and Salancik 1978), the quality and characteristics of the top management team is associated with variance in performance, particularly in highly complex organizational situations (Michel and Hambrick 1992). Second, the behaviors and decisions of the top management team are associated with variance in the team's managerial frames and cognitive decision making (Walsh 1995), which draws from an attention based view of the firm (March and Olsen 1976). Cognitive frames and managerial information processing have accounted for differences in organizational performance. These frames both focus attention and impact decision frameworks, and by doing so they impact decision making. For example, Tripsas and

Gavetti (2000) demonstrate how managerial cognitive commitments to previous strategies prevented Polaroid senior leadership from adapting to industry shifts to digital imaging. Kaplan and colleagues (2003) and Barr and colleagues (1992) each show how a shift of managerial frames to a new opportunity drove innovation and change in the biotechnology industry and the railroad industry respectively. These two assumptions that managerial cognition impacts strategic decisions, which influences organizational performance, underlie the current research study. Thus this research focuses primarily on the patterns of managerial frames and cognition associated with balancing exploration and exploitation.

METHODS

Overall Approach

The research in this paper is part of a larger research project exploring the nature of top management teams as they manage strategic ambidexterity. Other studies in this stream have focused on top management team structures to support both exploration and exploitation, whereas this research focuses more specifically on managerial cognition. Taken together, these findings can provide a more complete picture of the characteristics of top management teams to more successfully explore and exploit simultaneously.

This research used a cross case comparison methodology (Eisenhardt 1989) which takes advantage of both in-depth case descriptions within each case as well as comparisons across them. This overall approach allows for more direct observation of discourse and descriptions as well as interview data as a means of indicating cognitive frames and information processing (see e.g. Gilbert 2006).

Case Selection

In this research, a “case” includes a top management team’s attempt to both maintain or improve an existing product and develop one or multiple non-incremental innovations¹ during a time period in which they followed a particular strategy. This research focused at the strategic business unit/single product firm level of analysis, i.e. the lowest level of the organization where managers had profit and loss responsibility over a core product. For example, Ciba Vision is a strategic business unit of Novartis that sold hard contact lenses while experimenting with disposable lenses and a pharmacological product called Visudyne. Semiconductor, Inc. is an independent company that sold analog semiconductor chips and experimented with digital signal processors. Of the 12 organizations in this sample, eight are strategic business units within multi-product organizations and four are single product companies (see Table 1).

¹ A non-incremental innovation is defined by Gatignon, et.al. Gatignon, H., M.L. Tushman, W. Smith, P. Anderson. 2002. A Structural Approach to Assessing Innovation: Construct Development of Innovation Locus, Type, and Characteristics. *Management Science* **48**(9) 1103-1122. as any innovation in which the technology moves beyond a line extension of the existing product and/or the target markets move beyond the existing market.

In each of these cases the top management team articulated a strategy of balancing exploration and exploitation through their annual budget allocations or strategic planning process. These top management teams invested in incrementally improving to the existing product and commercializing between one and three non-incremental innovations. For example, Power Systems sold uninterrupted power supply hardware – surge protectors units. They developed an integrated product using their surge protectors and other products to install an entire protection system for a data center.

These cases were selected in two phases (see Table 1). The first phase involved data collection of six top management team from strategic business units within the same Fortune 500 company, which were all large units (revenues between \$.7 B- \$3.7B) and in high tech industries. The goal of this phase was to achieve similarity across the organizations contextual factors. These six business units were used to generate and explore initial constructs. The goal of collecting a second phase of data then was to expand the contextual variables to be able to generalize these ideas more broadly. The six organizations in the second phase of data included two business units and four organizations, a diversity of industries from high-tech (i.e. semiconductors) to low-tech (i.e. wood products), and a diversity of size (from \$100 M to \$1.6 B). Even as the cases were chosen from an opportunistic sample of organizations that enabled access to extensive top management team interviews and observations, the goal was balance depth and generalizability. Analysis of data from the second phase of data collections supports the first phase. The data is presented for all of the cases collectively, and does not describe distinct findings from each phase.

Data Sources and Data Analysis

Data were collected from three main sources: interviews, direct observation of top management teams, and archival materials (see Table 2).

Interviews. Each case included five to 24 interviews resulting in 125 interviews in total. Eighty-one of these interviews were conducted directly for the purpose of this study, while an additional 44 interviews were conducted for additional research and case studies, but were able to provide additional research to use in this study. These interviews included the general manager or CEO of the business unit (11 of the 12 cases), the meta-manager to whom the General Manager reported (7 of the 12 cases) as well as other top management team members. One case, Sisyphus, included interviews with 12 lower-level managers who reported to the top management team members.

The 81 direct interviews were semi-structured, and began by asking these senior team members to describe the existing product, the innovation, and the types of tradeoffs between the two products. These interviews also focused on the interactions that occurred around these tradeoffs, including inquiring about what issues were raised and what was discussed. Interviews lasted between 45 minutes and two hours. These interviews were typed and entered into a database.

Direct Observation. The 15 distinct opportunities to observe top management team meetings occurred in six of the 12 cases. These meetings were all strategic planning meetings for the senior leaders of the business units or organization. They lasted between a half day and a full day. The order of the agenda and the discourse during the meeting about each of the distinct topics was recorded. The notes from these meetings were typed and entered into the case data base.

Archival Material. Archival material from the companies included business plans, strategic documents and monthly agendas. In addition, these archival materials received from the company were supplemented with public documents such as analyst reports, public records. These documents provided an additional perspective on the challenges that the top management team faced and to triangulate the data from the interviews and observation. I particularly focused on documents which included the senior leader's articulation of the organization's goals to support the data about their framing.

I began data analysis by using all these data to write 5-10 page mini-cases describing how the executives managed existing products and innovations simultaneously. I shared these mini cases with key informants in the company to clarify the cases facts and begin to explore emergent themes, particularly focusing on how the senior executives understood and discussed the existing product and the innovation. Additional coding associated with each of the specific constructs is described in more depth below.

Balancing, Changing, and Sustaining – Categorizing Top Management Team Modes

While each of the 12 top management teams in this research committed to an ambidextrous strategy of exploring and exploiting simultaneously, only six of the teams enacted this ambidextrous strategy in their strategic decisions. The other six either maintained the status quo or focused only on innovation. To distinguish these different types of team, I drew upon research from Smith and Tushman (2004) who categorized teams as either balancers (supporting both the existing product and innovation), changers (supporting only the innovation), or sustainers (supporting only the existing product). This categorization proves valuable for this current research, as it allows us to determine the differences of managerial cognition between those teams that can balance, rather than those that are sustaining or changing. Following Smith and Tushman (2004), I identified the strategic tradeoffs that the top management team made which involved either shifts in organizational design or tradeoffs of resource allocation, and noted whether those decisions benefited the existing product, the innovation or both. In some cases, the top management team members discussed the need to make a strategic decision, but then avoided doing so. For example, Hera's Vice President responsible for the existing product moved to another position in the company, and although the Hera executives noted that they needed to fill this position, they did not do so for over 15 months. I noted this as well in this calculus of decisions as a negative decision. Balancing teams made decisions that at times supported the existing product while at other times supported the

innovation. Changing teams focused their strategic decisions purely on the innovation, whereas sustaining teams focused only on the existing products. In total, this sample includes six balancing teams, five changing teams, and one sustaining teams. The following analyses compare patterns of managerial frames and cognitive processes associated with either balancing, changing or sustaining.

Framing, Differentiating, and Integrating – Managerial Cognition to Enable Balancing

Framing of the Organizational Vision. The 12 top management team leaders in this research varied in the framing of their strategic goals. This research focuses on the frames articulated by the senior leader. While the leader's goals are not a reflection of the overall team's goals, they strongly influence team discussions and decision making. As an R&D executive stated, "We have great team dynamics, but in the end the discussion is still going to revolve around the boss. She has an opinion on this stuff." In each of the organizations that I spoke with, the team members reflected on their goals as described by the senior leader.

To assess the leader's goals for the team, I considered the leader's own articulation of their goals, as well as how other executives articulated the leader's goals. I was particularly interested in whether the general manager or CEO focused their goals on only one product, the existing product or the innovation, or whether they focused on the success of both the existing product and innovation. I was further interested in whether a joint articulation of goals was integrative and cooperative or not. In ten of the 12 top management teams I was able to triangulate data from the general manager and other top management team members. In each of these cases, the multiple informants agreed as to whether the leader was committed to the success of a single agenda or dual agenda. Table 3 summarizes these data, pointing out that senior leaders' goals can be characterized as embracing both products or shifting to the innovation. For example, the Titan General Manager's frame included embracing both products. She noted, "We are managing a portfolio which includes optimizing the existing business, the growth business, and the future growth business." Other executives agreed. As one manager said, the general manager is "really serious about the innovation process and also concerned to optimize the existing product."

Other leaders articulated goals to change to the innovation. Their goals reflected an investment in the new product. For example, the General Manager of Hera explicitly stated that her goals focused exclusively on the innovation. Despite pressure from the FORTUNE500 corporate executives, she was almost exclusively interested in the innovation. As she stated, "I have gotten pressure from others to expend the money on helping us shore up solutions that are more traditional conventional areas. It is not very difficult to say no... It is not strategic, not where the puck is moving." Even while these organizations had initially invested in both the existing product and innovation, the leaders adopted a set of goals in which they defined success by the performance of the innovation.

How the team leader articulates his or her goals is associated with the top management teams' mode of managing existing products and innovations – either balancing, sustaining, or changing. As Table 3 shows, the leader's support for both products is associated with teams making balanced decisions, whereas the leader's support for the innovation is associated with teams that are changing – switching to the innovation. Interestingly, the sustaining team's General Manager also articulated a goal which included supporting both products. While this sustaining team is only one data point, this finding suggests that while the leader's frames might have a substantial influence on the top management teams' decision making, this is not a sufficient condition for making balanced decisions.

Information Processing. This study focuses on the types of discourse that the top management teams use when they make their strategic decisions and identifies the characteristics of this discourse. In top management teams, information about different products is distributed across multiple senior executives. Different executives have information associated with the existing product or innovation that is relevant to making strategic tradeoffs. Therefore, in order to capture how these teams understand and use information, I focus on the social processing of information – the nature of conversations between different executives in one-on-one and small group discussions and/or in team meetings. In group meetings, I was able to identify how the team discussed the relationship between the two products and the results of these discussions. I also noted the nature of conversations between executives as reflected in the interview transcripts. Overall, the conversations regarding the relationships between the existing products and innovation can be grouped into 1) learning more about each product independent of one another 2) clarifying and discussing how the existing product and innovation are distinct from one another in strategy and/or structure, and 3) focusing on an overarching vision and 4) discovering shared resources and synergies. The first two types of discourse, learning about each product and clarifying distinctions, reflect information processing around legitimizing differences. The second two processes, focusing on an overarching vision and identifying synergies, reflect information processing around reinforcing integration. After reading through all of the interviews and team meeting notes, I categorized whether the teams primarily legitimized differences, reinforced integration, or engaged in both processes. Table 4 provides examples from the data of each of these different processes. I identified discussions between senior executives around strategic decisions, and coded them as either differentiating or integrating or both, and identified patterns that emerged over time.

Legitimizing Differences. Innovations can differ from existing products in their strategy or the multiple aspects of their organizational architectures. Whereas innovations are associated with experimentation, learning, existing products are associated with efficiency, certainty, and clarity. Because inertia drives a company to sustain the status quo strategy and structures, the innovation's success

depends on senior leadership's ability to move past this inertia, enable the innovation to emerge independent of the existing product and support both products. One way that the top management teams were able to overcome inertial forces was by engaging in learning and discourse that recognized and articulated the differences between the two products. These executives clearly spent time discussing each product independently, while also directly articulating how these products differed with one another. Legitimizing differences involves a set of learning behaviors which not only allow the executives to clarify the needs of each product independently, but also to compare and contrast the products.

In the case of Titan, executives differentiated between their core computer hardware technology and their emerging internet hardware. The Titan top management team included three executives each with line of business responsibility for either the existing product or one of two innovations. These executives identified a number of instances where they could discuss the nature of their product individually with the General Manager and as a group with other top managers.

The General Manager scheduled monthly meetings with top executives responsible for the existing product and innovation, probing into the development of each product, as well as being available to respond to critical issues that arose for each product. These meetings not only enabled constant learning about each product, but also reinforced the importance of each product to the overall agenda.

The General Manager and I sit down and set the goals that we are after. She says run the business. My job is to come back when we need help, or when I've screwed up. Then the GM will do deep dives every once in a while. At the end of the month, the GM and I have a half day booked, a one on one meeting, to make sure that we are heading in the right direction.... She [the GM] is really serious about the innovations.

Titan executives also approached one another to talk through the development and needs of both the existing product and the innovation. The innovation manager noted the conversations he held with other executives to prepare them directly for resource tradeoff decisions they faced.

I will go to the others in the unit to share with them my business plan and my development before I bring the plan to the GM. That way I can get their buy in before I go to the GM. I can get the tensions out on the table and then we will sit as a group. Portfolio reviews will happen twice a year. If everyone is in sync, then we will agree on it and then move on. But if not, everyone will have been briefed and we can get these ideas out on the table and discuss them.

The existing product manager also talked about his interactions with other executives to drive efficiency and customer satisfaction. He often updated the rest of the executives on the customer demands and decisions he had made as to whether or not to meet these demands based on the need to minimize costs. These discussions became particularly challenging when he needed additional engineering resources to meet time-sensitive customer demands and asked the R&D director to allocate additional resources.

The Titan General Manager's leadership and coaching encouraged executives to independently discuss each product. She structured executive meetings to probe into the development of each product. Moreover, if she thought that a product was not progressing, or was unsure of the product's progress, she pushed further to learn more. For example, in a senior team meeting, the General Manager was unsure about an aspect of the existing product. Titan had acquired a small company with a product to jointly sell with their hardware, but no progress was being made. The existing manager reflected upon possible losses of revenue associated with this new product. Later in the meeting, the General Manager returned to this point of view.

I'm a bit uncomfortable from this morning's conversation. Do you guys think that we have plans to get us where we need to go? I don't know what you guys think, but this is just a feeling? Are we taking actions that are really going to allow us to make progress? I've had this gnawing feeling all morning. Unless there is a lot more to the plans than what I've seen, I'd say that we are missing something.

This set of questions by the General Manager launched an hour long discussion by the entire team to uncover, understand, and provide solutions to support the product. At some point, the General Manager turned to the existing product manager and asked him directly, "Are you asking for help from one another? In what way can we all help you?" The General Manager sent a clear message here, highlighting both the importance of updating one another about each product and seeking help from one another.

By probing into each product, the Titan top management team legitimizes the differences between these products. The team focuses on each product independently and recognizes their goals and needs to implement these goals. However, the Titan executives also explicitly discussed differences between these products. The General Manager's own discourse acknowledged these differences. She framed the organization as a portfolio in which she had to diversify its investments across three different 'buckets' - optimizing products in the market place, growing new products recently launched into the market, and exploring future products not yet in the market. She also recognized the different strategies and structures associated with these different products. For example, she was quite clear of the differences of leadership needed for each product.

For the innovation, "you need someone who can think out of the box. You need to have someone who can take a marshmallow fluff ball, bring structure to it, build excitement in the team, and make a team out of it." For the existing product, "you need the kind of person in those jobs who can go in and figure out how to do just enough with little, and give the customers enough for wellbeing and security."

The General Manager further defines the different expectations that she had for each of these products.

In the existing product, I track revenue growth and customer satisfaction. In the innovation, I track the performance of the innovation leadership on his ability to get this going in the marketplace and on the partnerships that he is building around our strategic

elements. Mindshare and building a space are more important than is the revenue. If I look at the innovations in the marketplace, I'm looking at revenue growth, customer satisfaction, how we partner with others.

The executives also discussed the differences between the existing product and innovation's strategy and associated architectures. For example, several months after investing in the internet based hardware, the manager responsible for this innovation recognized several obstacles to the innovation's success. When the organization decided to invest in the innovation, they tried to leverage the existing structures and competencies and gave the responsibility for developing the innovation to the R&D manager. The R&D manager then moved some of the engineers from existing projects to work on this new product. Several months later, the R&D manager recognized that this was not going to work. The engineers were too committed to their existing technologies and resisted exploring new technologies for the new product. In addition, current customers demanded updates to their existing products, putting pressure on the R&D manager to prioritize the existing product over the innovation. The R&D manager felt frustrated that these demands prevented him from making the necessary time to focus on the innovation. After a couple of months, he shared this frustration with the General Manager and eventually they brought this conversation to the rest of the executives. "We recognized that the innovations were important to us, and that we weren't getting much traction on them," the R&D manager noted. The Titan executive team listened to the situation and responded by creating a distinct team for the innovations with its own leader (the former R&D Vice President), and hired new engineers with new skills to work on the innovation.

Several months later, as the team was trying to sell the innovation, they encountered another challenge with the existing sales team. Selling the current product was easier and more efficient than trying to sell the innovation. These sales executives already had relationships with existing clients, had extensive knowledge about the current product and knew how to structure a sale around this product. This team was compensated based on their sales volume. Efficiency mattered. The innovation manager brought this issue to the top management team. Selling the innovation, he argued, required relationships with different clients, knowledge of the new products, and a different sales tactic. Again, the top management team acted on this issue, this time creating what they considered a 'SWAT' sales team, dedicating sales resources to the innovation for a limited time to help develop the innovation market.

In both of these examples, Titan executives learned over time the differences between the innovations and existing product and acted upon this knowledge. This recognition of differences also benefited the existing product. Creating a designated sales team for the innovation allowed the rest of the sales community to continue to maintain focus on the existing product.

Legitimizing differences helped Titan executives make tradeoffs to support both existing products and innovation. First, this information helped Titan target their resources and organizational structures more specifically to meet the needs of each product. Rather than assume that both products demand additional engineering resources, these executives clarified when and what types of engineering resources are appropriate for each product and deployed them as necessary. For example, the existing product may require additional engineering support toward the end of the quarter to meet the demands of that quarter, whereas specific timing is less critical to the innovation or the innovation may require a more expedient decision making process and more meetings with the General Manager than the existing product. Exploring these differences enables executive to be more targeted in their decision making. Clarifying differences further enables executives to make decisions that achieve synergies between both products. Clear articulation of the different demands of each product can achieve great synergies in top management team decision making.

Other top management teams in this research also legitimized differences. The Apollo General Manager held one-on-one meetings with line of business executives each responsible for the existing product and innovation. Team meeting agendas provided time for each line of business executive to give an update about their progress. Apollo executives engaged in a number of discussions evaluating the existing product and innovation strategy and structures associated with each. When first investing, Apollo had two different units develop the innovation, each already hosting aspects of the existing product. Thus, each of these units developed the innovation in ways that mirrored the existing products technology, creating limitations for the innovation. As well, these two different units found that that they were conflicting with one another about the development of the product. The challenges associated with this arrangement launched a conversation between the line of business owners and the general manager in which these executives realized the challenge associated with managing both products simultaneously, the limitations that existing engineers imposed on the development of the innovation, and the confusion created by developing the innovation in multiple units. As a result, Apollo executives developed a new R&D lab for the innovation, appointed a new executive to lead this lab, and hired engineers not associated with the existing product. In another situation, the engineers began to explore a technology for the innovation with no input from executives on how this technology would impact the existing structures. While many of the engineers were enthusiastic about this technology, several executives were skeptical that the technology would limit the integration of the existing product and innovation and would need more engineers to support the new product. In order to learn more about this technology, the General Manager asked three executive to get involved explore the new technology, its possibilities and its limitations on the structure. This additional information helped executives make a decision about whether to adopt this new technology.

Changing teams engaged in similar behaviors as the balancing teams to learn about the innovation and to differentiate this product from the existing product. For example, Hera conducted several offsite meetings to learn about and develop their wireless telecom strategy. They consistently compared the innovation with the existing product, striving to build a different, unique business. The top management team recognized this innovation as a unique business with a distinct strategy and structure from the existing business and was structured to support the new business, make quick decisions, create metrics around new business development, and support an entrepreneurial culture.

In contrast to the balancing team and changing teams, the sustaining top management team, Sisyphus, engaged in minimal learning behaviors about either product. The team was so focused on short-term performance that they minimized the discourse, discussions, and reflection upon either the existing product or the innovation. Rather, they cared about the short-term responses to problems. In meetings, the executives spent extensive time reflecting on how to close deals with different customers to hit their targets for the quarter so they could make their revenue targets. As the Vice President of R&D noted, there was almost no discourse discussing the development of the innovation. There was also no discussion about how the innovation differed from the existing product. As a result, the innovations were treated as another initiative within R&D. Just as with the existing product, these innovations followed the same lengthy decision making process when they wanted to move forward with an idea, the same metrics for success which included revenues and return on assets, and the same reporting procedures to the top management team.

Differentiating creates the knowledge and learning among the senior executives to allow them to make distinct and unique decisions on the top management teams between the two different products. Differentiating is thus a learning process by which executives can better understand and provide more focused support to each product.

Reinforcing Integration. A second set of information processing behaviors in top management teams included discussions about the integration of the existing product and the innovation. These discussions raised issues about how the two products could share resources, learn from one another, and divide resources in a way that benefited both products. Top management teams engaged in these conversations in several ways. First, top management teams often referred to an overarching, superordinate goal that reminded them to support both products and think about the cooperation rather than conflict between products. Top management teams also discussed ways of leveraging synergies between the existing product and innovation, such as bundling the existing product and innovation to sell together or identifying how resources could be shared across products.

Titan's executives had a clear superordinate goal and the executives reminded themselves of this goal as they considered resource tradeoffs between today and tomorrow. The Titan team's goal was to

“Defeat [the #1 player] in the marketplace.” Titan’s General Manager continuously reinforced this goal. For example, the General Manager began their business meetings by reflecting on this goal. She then talked about her own personal business commitments – essentially a set of objectives to achieve this overarching goal. These objectives included specific targets associated with each product, sending the message to all of the executives about the importance of both agendas to the overall success of the company. Titan executives suggested that this overarching focus created a commitment to the overall business and not just the particular products. As one executive noted,

The [executive] team has to be willing to forgo their own business for the benefit of the total business. I know that I’m in Titan. If something in my innovation doesn’t get invested in, I’m going to have to go back into my own business and disinvest. We are all in this together.

Titan executives also clearly discussed possible synergies between the two products. Budget cuts made this conversation particular critical, as each of the executives fought for scarce resources. In one instance, the director of R&D had control over engineering resources and was allocating those resources to time critical exploitative products at the expense of the innovations. One of the innovation executives recalls the situation as an attempt to find a more integrative solution,

We all agreed that the innovation was a critical business when we went through a portfolio review. Yet each of us [all three lines of business executives] required more resources from development than development than they had. The VP of R&D developed a plan - and my development director came back and said that we are going to have to cut some of our resources. So I called the VP of R&D and said, tell me what your problem is that you are trying to solve and let me help you solve it. I ended up getting a portion of what we needed, and the other business owners got a portion of what they needed. None of us get all of what we need, but we all benefit in the end from working it out this way.

Other balancing teams also focused on an overarching vision and on identifying synergies between both products. In the Hercules team, the VP of Strategy and Operations reported to the team about their performance. They were losing money. They were too focused on their hardware outsourcing business. And they would benefit from bundling their different products together. As the General Manager of Hercules noted,

[The VP of Strategy and Operations] did a great piece of market research. Everyone understood what it meant. The team had a “big aha” moment; we were far too preoccupied with [hardware outsourcing]. That was the game changer. At the same time, the team recognized that the team itself was the main obstacle to solving our business problems. The need for better cross-LOB selling was clear, but it was also clear that the team had not been working well together.

As a result, discourse on the team changed from focusing independently on how each of the distinct products could develop to focusing on what they need to do to cross sell their products. This required thinking about how the different lines of business could work together and change in the compensation systems. As the General Manager noted,

The executives would go out and find an opportunity and then they would come back and say, guess what, this opportunity looks like it's a little bit of business integration consulting, it's a little bit of hardware outsourcing, and it's a little bit of application outsourcing services, so we're going to need to get these groups together to go after it together versus if you were in business before say this is an opportunity only for our business.

The result of asking these executives work together was that they began learning more about each other's businesses and developing increased bundled selling, even making sacrifices for the good of the team.

These guys end up making sacrifices for the team. For example, my hardware outsourcing guys are participating in joint deals, where they could be getting much higher margins if they just sold their product independently. Outsourcing is a high margin business, but they lose part of their margins in a joint sell in order to sell more products to the customer. Yet they still do it.... I think that they realize that this is what will benefit them in the end.

In contrast to the balancing teams, the changing teams were not interested in the synergies or point of integration between today and tomorrow. Changing teams were so focused exclusively on tomorrow that anything that represented today was an obstacle. Thus, they were not considering how these products could effectively share resources or creating a joint strategic sell. As discussed previously, the executives and employees working on the existing products often felt neglected and undermined rather than feeling included. This did not create an environment where executives were able to engage both strategies.

The sustaining team, Sisyphus, however focused on different aspects of their existing products and innovation in their strategic discussions. Similar to the other balancing teams, the sustaining team engaged in extensive discourse around the integration of the existing products with the innovations. Early in the process of investing in the innovation, the Sisyphus General Manager created a committee of executives to clarify their strategy. This committee spent much of their time clarifying the organization's vision and creating an overarching vision statement that including both products. They marketed this statement across the organization by creating full color glossy handouts and banners to share this vision. Moreover, they talked extensively about taking advantage of their extensive and loyal customer base to sell their new products, as well as using their existing organizational skills and infrastructure. Because of this process, the innovation was at the mercy of the existing structure and was never able to survive independently.

Legitimizing Difference and Reinforcing Integration – Stages of Emergence

Discourse on differentiating and integrating emerged in stages for these top management teams. In some stages, conversations focused primarily on reinforcing differences between the existing product and innovation. In other stages, the discussions identified points of integration between the different time horizons. Still other stages engaged in both of these types of conversations at the same time.

Table 5 indicates the emergence of these processes over time for the 12 teams in this study. As this table suggests, nine of the 12 top management teams in this study demonstrated a similar pattern movement through the stages, first focusing on integration to leverage existing competencies with the innovation then, switching to legitimizing differences between the existing product and innovation, and finally, engaging in both of these dual processes. Moving from one stage to another occurred when the team acknowledged challenges or shortcomings and actively decided to shift their focus. As such, these teams learned how to manage existing products and innovation simultaneously over time. The nine top management teams that engaged in both integration and legitimizing difference are at different stages in the process of moving from one to another. These stages are associated with the mode of managing existing products and innovation. Balancing teams are both differentiating and integrating at the same time – stage 3; changing teams are mostly differentiating – stage 2; and the sustaining team is still trying to leverage existing architectures and strategies for the innovation – stage 1. Figure 1 depicts this process. Table 5 demonstrates these stages across team type, and Appendix 1 elaborates on the data associated with each team.

As Table 5 indicates, nine of the teams in this research initially focused almost exclusively on creating synergies by leveraging existing competencies, structures, skills and processes to benefit the innovation. Rather than enabling the innovation to develop more quickly, these existing structures and processes burdened the innovation with inertia, and often resulted in less time and focus on the innovation. Upon realizing that these decisions burdened rather than benefited the innovation, the top management teams discussed how the innovation differed from the existing product, and created new structures and strategies to support the existing product.

Titan exemplifies this process. Initially, executives gave responsibilities for the innovation to the existing R&D Vice President. This R&D VP used their existing engineers to build the innovation. Similarly, the existing sales team was responsible for promoting the product to their clients. Titan executives soon realized that the R&D VP spent more time on the existing product because short term client expectations created pressing deadlines. As well, the engineers developed the innovation using the existing product technology as a base, which created problems for the innovation. Finally, in order to maximize revenues, the sales team focused on the products they were more confident they could sell, the

existing product. The R&D VP raised these issues with both the fellow executives and the General Manager. Based on this new information, executives created a new unit for the innovation, led by a distinct leader, and developed a temporary sales team to target the innovation. They also hired new engineers that were more familiar with the innovation's technology, and created a new prototype for the innovation with this technology.

These efforts to distinguish the innovation from the existing product however triggered a second realization that differentiation created an excessive focus on the innovation, neglecting the existing product. Often teams recognized that the assets of the existing product – their customer base, current knowledge, or extensive infrastructure – were being underutilized or ignored. In an effort to still utilize these assets, teams began to reexamine the tradeoffs, synergies, and points of leverage. For example, after creating a distinct structure for their innovation, the Apollo team began to recognize the value in their current customer base. The Apollo executives began to identify new ways to bundle the sale of their existing enterprise hardware with the new internet based hardware. They updated the technology of the existing product to align with the innovation, created new marketing campaigns, and retrained their sales forces to bundle these products. Semiconductor, Inc. also began to think through the synergies between their existing analog chips and their developing digital chips and again developed ways to rethink the technology and their targets markets so that they can bundle the products together.

These balancing teams continued to iterate between differentiating and integrating. In the ongoing development of the innovation, their discourse would shift between focusing uniquely on each product and recognizing how they differed from each other to recognizing their synergies, points of integration, and the need for both to succeed. Titan's line of business executives, for example, each focused on the needs of their distinct products. They would raise these needs at team meetings and in their one-on-one negotiations with one another, particularly in regards to resource allocations. Yet, the executives also consistently recognized that they had to make tradeoffs or seek synergies for the overall success of the organization. The general manager would reinforce this point in team meetings and in how she coached the executives. Thus, balancing executives moved through each of these stages of development until they were able to engage in the dual processes of managing both existing products and innovations simultaneously.

Three of the five changing teams initially move through stages 1 and 2 like the balancing teams, however they never make it to stage 3. They try to leverage existing competencies and eventually reinforced differences between the existing product and innovation. However, they never get past focusing on the difference to get to both integrating and differentiating together. For example, Artic Timber initially expected the existing sales, marketing, and R&D to develop their new specialty wood products. Over time the General Manager recognized that the innovations were not progressing. The

existing sales and manufacturing executives raised much resistance to the innovation and the limited R&D competencies could not develop the innovation. The General Manager began to make changes, creating new teams to focus on the innovation, building new R&D facilities, hiring a new R&D vice president and hiring new engineers. Artic Timber's General Manager however never returned to reexamine the assets of the existing product. The executives recognized that this focus on the innovation limited the existing product; however, by this time the organization was no longer interested in supporting the existing product. They continued to change, building the organization so that almost 98% of their revenues came from the innovation within the next five years. Three of the changing teams followed a different pattern, which I discuss below.

The sustaining team, Sisyphus, began the process the same way the changing or balancing teams did but never shifted beyond their efforts to leverage existing competencies. In fact, in response to the recognition that decisions limited the innovations, they continued to discuss how to leverage competencies, never moving to discuss differences between the innovation and the existing product. The top management team allocated innovation responsibilities to the existing functional executives. R&D was responsible for the innovation's development. Sales and marketing executives were responsible for these functional roles in the innovation. The innovations used the same processes of decision making and information reporting as the existing products. Several executives recognized the limitations on the innovations and raised this in front of the General Manager and the rest of the executives. In fact, Sisyphus held a full day meeting for their top management team and focused on exploring why the innovations were struggling. While the executives raised issues about the obstacles caused by the organizational structures and processes, many executives rejected this point of view and instead attributed it to weak leadership on behalf of the innovation. For example, in the face of limitations, the general manager demanded that innovation executives take more leadership. "There are a lot of challenges. There are a lot of limitations," the General Manager told his executives in regard to the innovations. "What I expect you to do is to be creative with these challenges." These executives never moved beyond this integrative and leveraging mentality to recognize and act upon the differences in the innovations.

Three of the changing top management teams in this research follow a different process in which they focused on differentiating the innovation from the existing product, but never sought out points of synergies. Two cases, Hera and Artemis, launched as entrepreneurial business units in FORTUNE500 companies to explore emerging business opportunities. Artemis spent almost a year focused on the innovation, developing network and transport semiconductor chips. While the top management team had responsibility for selling their existing ASIC chips during this time, they ignored this responsibility. Instead, they were creating new products, identifying new processes, and cultivating new customers, all of which differed from the existing business. Hera focused on developing the product, market and

partnerships to build a wireless telecom business for almost two years. During this time, Hera had no responsibility for the innovation. After two years, Hera was given responsibility for also managing the traditional telecom business and began managing an innovation stream. They continued to only focus on the wireless business, even more clearly articulating how and why this business differed from the traditional telecom business. Discussions on the top management team continued to focus on how the innovation differed from the existing product. Hera's top management team members balked when feeling pressure to pay attention to the existing product, and integrate the existing product with the innovation. As one of the executives noted,

The pressure now for the existing business is external to the General Manager. It manifests itself in requests made by industry manager for the traditional product. When the industry manager says he needs help, the rest of the team responds by saying 'We are not far enough along on the [innovation] for your request for each of these businesses. It takes the focus off the target of the [innovation] itself.'

In contrast, CIBA Vision was committed to seeing the innovation as a substitute for their existing product early in the development process. This senior team immediately began focusing on how the innovation was different from the existing product and as a result, separated their innovation from their existing product, hired new staff, and quickly created new structures to support their innovation.

DISCUSSION

Exploring and exploiting simultaneously is complex, placing increased demands on senior leadership. This study investigates the top management team's microprocesses as they navigate this complexity. Comparisons of 12 top management teams' managerial frames and strategic discourse reveal differential patterns associated with more or less effectively supporting an existing product and innovation. These patterns provide insights into senior management's contributions and capabilities associated with managing ambidexterity.

Revised View of Managing Strategic Paradoxes

One goal of this study was to empirically explore senior leaders' frames and discourse associated with managing ambidexterity as guided by Smith and Tushman's (2005) conceptual model. In support of their model, we find that frames, as well as discourse around differentiating and integrating, are all associated with whether top management teams can simultaneously explore and exploit. Yet these data expand and clarify this model in three significant ways.

First, the data in this study clarify the nature of frames that allow teams to balance strategic contradictions. Smith and Tushman (2005) suggest that balancing is associated with paradoxical frames, frames that juxtapose and highlight the inconsistencies of exploring and exploiting. In contrast, the

balancing teams in these data all articulated superordinate organizational frames, which created a unified and integrated goal. This goal demanded both the success of the existing product and innovation to succeed. Whereas a paradoxical frame highlights the contradictions and complexity between the innovation and existing product, a superordinate frame highlights the integration and synergies. A paradoxical frame serves to host and support competition, whereas a superordinate frame hosts cooperation. This insight reinforces evidence that suggests that the purpose of a vision is to create direction that can drive cooperative performance in an organization. This vision strives to coordinate activities across a broad group of individuals, even if their own goals seem to compete for organizational resources. Hackman (2002) argues that a vision can “energize, orient, and engage” (p. 62) the more clear and focused it is. Even as a superordinate frame embeds complexity, it simplifies that complexity and in doing so, can more effectively direct and energize an organization’s leaders and members.

Second, these data describe a more complex relationship between differentiating and integrating than Smith and Tushman (2005) initially suggested. Their conceptual model describes team processes of differentiating and integrating balancing one another. The data in this study demonstrate a temporal pattern of balancing that emerges in three different stages. Top management teams that are trying to balance both existing products and innovation initially approach these distinct agendas by integrating - seeking synergies and points of leverage. Most teams have been exploiting an existing product when they introduce an innovation, and want to ensure that they can leverage their existing competencies to support this innovation. Yet focusing on integration often results in senior leaders succumbing to forces of inertia and trying to fit the existing processes, skills, capacities and capabilities to the innovation. Over time balancing teams hit a transition point in which they recognize that this integration over-emphasizes exploitative capabilities and restricts freedom for exploration. To rectify the forces of inertia, these teams shift their discourse to instead focus on the differences between the exploratory and exploitative product. At this stage, teams begin to identify ways that the innovation differs from the existing product and implement new strategies and structures to reflect these differences. The emphasis on differentiating, however, leads to new questions about whether there are benefits to be exploited between the two products, and these executives begin to explore possibilities for integration again. In a final stage, executives engage in discourse that both differentiates and integrates. This staged model of senior team discourse provides a more sophisticated understanding of how discourse about the relationship between existing products and innovations emerges over time.

Third, these data provide a more specific understanding of the behaviors associated with differentiating and integrating. Smith and Tushman (2005) suggest that differentiating is about ‘recognizing and articulating differences’ and that integration involves ‘shifting levels of analysis’. This research expands these definitions. Our investigation finds that differentiating includes both the distinct

learning focused separately on the existing product and the innovation, and the specific points of comparison between these two agendas. Thus, differentiating is not just a point of comparison, but also a separate focus on each agenda. Integrating not only involves shifting levels of analysis to find points of comparison, but also seeking specific points of synergy. These definitions help to expand our understanding of cognitive differentiation and integration, but also provide specific behavioral manifestations that demonstrate how these groups enact their cognitions.

Implications and Contributions to Existing Research

This research contributes to a growing body of literature arguing that organizations can successfully host ambidextrous agendas. Specifically, researchers studying the challenge of exploring and exploiting have debated whether or not an organization can successfully support both of these agendas at the same time (see e.g. Gupta et al. 2006). One point of view argues for managing exploring and exploiting in separate organizations (i.e. Rosenbloom and Christensen 1994) or in sequential time horizons (Tushman and Romanelli 1985). In contrast, the research on ambidexterity argues that organizations benefit from investing in both agendas simultaneously. Yet an ambidextrous strategy is complex, and therefore more demanding of senior leaders who have to navigate the inconsistencies (Lubatkin et al. 2006; Tushman and Smith 2002). This research underscores that managing an ambidextrous agendas is challenging. Indeed, half of the cases in this study were unable to implement an ambidextrous strategy, despite their espoused commitment to do so. Yet, the other half of the cases are able to manage this complexity. More importantly, this research demonstrates how top management teams can manage the complexities they face so that they are able to simultaneously balance exploration and exploitation.

This temporal pattern further supports and extends Gilbert's (2006) case study that suggests that the adoption of an ambidextrous strategy is associated with an emergence of frames from opportunity to threat to a balance of both. The shifts of discourse from integrating, differentiating to both that are reflected in this study could easily be aligned with the simultaneously shift of opportunity and threat frames. Extending Gilbert's (2006) research, this study provides additional insight into those teams that try to balance existing products and innovations, but instead become stuck sustaining only the status quo, or only focusing on changing to the innovation. The sustaining team seems to have focused on integration, but never shift beyond this first stage, and the inertial burden prevents this team from moving further. The changing teams also begin integrating, but shift to focus only on the differences between the two agendas. They do not seem to shift beyond this second stage. In doing so, their clear distinctions provide the opportunity to focus only on the innovation, and avoid or reject demands from the existing product.

This research further contributes to a broad literature on the cognition associated with balancing inconsistencies. As we noted previously, two different perspectives highlight either a differentiating process or an integrating process as the primary approach to reflect upon contradictions, assuming that the other process will follow. The research on individual and organizational mindfulness (i.e. Langer 1989; Weick and Sutcliffe 2001) focuses on the importance of actively differentiating – finding novel distinctions that distinguish contradictory events from one another. This point of view assumes that the cognitive tendency is to assume similarities and fail to see distinctions. A second point of view more clearly suggests that individuals default to focus on distinctions, but fail to acknowledge synergies (Suedfeld et al. 1992). Instead, as this pattern reveals, balancing depends on the interaction of both differentiating and integrating. Neither one is sufficient to result in decisions that balance existing products and innovation. Both are necessary for balanced decision patterns. Moreover, these processes also highlight the importance of differentiating in order to result in more specific, targeted integration. By trying to integrate first, executives create more of a burden to the organization, rather than identifying specific and targeting points of integration. Titan executives first assumed that the innovation could leverage existing engineering talent and sales teams and benefit from the existing technology. After trying to build an innovative product within the existing R&D unit, the R&D Vice President recognized that they were building an inferior product. They ultimately move the engineering of the innovation into its own unit, hiring new engineers, and abandoning the first generation of the innovation to build a new product. In contrast to these processes, three top management teams suggest a different process, one which begins with differentiating and focus only on the innovation. It may be that focusing on the innovation encourages differentiating, without first integrating.

Limitation and Next Steps

This kind of study has several limitations and opportunities for future exploration. The nature of collecting qualitative data at the senior management team presents several limitations. First this sample was an opportunistic sample, collected from organizations with espoused commitments to an ambidextrous strategy to introduce a non-incremental innovation while continuing to support an existing product. Moreover, this sample included both retrospective and ongoing cases. While the qualitative patterns that emerge from this sample remain insightful, additional research could explore these issues using a more systematic sample and controlled study.

Second, these data makes several assumptions. We focus on how managerial cognitive patterns impact decision patterns that balance exploration and exploitation. We assume that organizations that shift their resources and organizational design to support both the existing product and the innovation will be more effective in the performance of these different agendas. It may be, however that exploitative success

may continue without any additional support. An organization may be able to focus all of its resources on innovation, as the changing teams do, but still be successful in both the existing products and innovation. Future research therefore could test this assumption with more comprehensive performance data.

Third, 12 case studies provides strong data for generating and exploring emerging ideas, but does not provide a large enough sample for more rigorously testing hypotheses. In the nature of full-cycle research (Chatman and Flynn 2005), the next phase of this research stream should consider more rigorously testing these ideas with different methodologies and a large sample size.

The insights in this research also generate a number of interesting additional questions. We identify two possible areas of future exploration here. First, this staged pattern of managing contradictions implies that the top management team must be able to learn over time. The initial focus on integration suggests that the top management team assumes that the innovation can adopt the competencies, routines, strategies, leadership styles, etc. used for the existing product. In this way, the innovation can leverage resources and routines from the existing product. However, applying existing resource and routines indiscriminately problematically burdens the innovation with the inertia from the past, rather than enabling it to succeed. The realization of this burden sparks a shift of the top management team's discourse to instead recognize the more nuanced distinctions between the existing products and innovation. The third shift to a more balanced stage of differentiating and integrating reflects another insight of the top leadership to again seek integration, only this time with more specificity. Thus, these shifts reflect increased insight on behalf of the senior leadership. What enables and supports some senior managers to reflect and act effectively but not others?

Second, can these models of managing exploration and exploitation apply to other strategic contradictions? Organizations are rife with strategic contradictions – long term and short term, global and local, employee-centric and customer-centric. Are the ideas generated here specific to exploring and exploiting or can they be generalized to other tensions as well? What is similar and what is different in these types of organizational contradictions?

CONCLUSION

From a narrow perspective, these data demonstrate how top management teams can manage strategic ambidexterity. More broadly, this research offers microprocesses associated with strategic contradictions, and provides insight into the frames and cognitive processes of top management teams. In this way, this research is at the boundary of strategic management and organizational behavior.

More importantly, this research provides insight into the paradoxes of management. While much of the organizational research has focused on the innovation and change process, this research instead focuses on the notion of balancing exploration and exploitation simultaneously. At one level, existing

products and innovations compete for managerial time, organizational resources, and ultimate market attention. Therefore, the success of one seems to be at the detriment of the other. Yet overall organizational performance is associated with the co-existence of both agendas, resulting in a strategic paradox. Increasingly both managerial (i.e. Handy 1994) and academic research (i.e. Cameron and Quinn 1988; Lewis 2000) argue that organizational success depends on senior teams leveraging rather than avoiding these paradoxes. These data therefore make a significant contribution to understanding how teams do leverage these paradoxes.

Table 1: Summary of Cases

Case	Org. Unit	Existing Product	Innovations	Industry	Size	Age (years)	Time Observed (years)	Existing Product Performance
Phase I								
Titan	Business Unit	Enterprise hardware	Internet hardware Internet hardware tools 2	Hardware	\$3.7 B	15	1	Improving #1 in market category and gaining market share
Apollo	Business Unit	Enterprise hardware	Internet hardware 1	Hardware	\$2 B	0 ²	2	Improving #1 in product category and maintaining market share
Sisyphus	Business Unit	Integrated collaboration	Advanced collaboration Knowledge management E-Learning 3	Hardware	\$1.3 B	20 yrs	1	Declining Losing market share and revenues
Hercules	Business Unit	Business integration consulting Hardware outsourcing	Application outsourcing services 1	Services	\$1.7 B	5 yrs	2.33	Declining Losing market share and revenues
Artemis	Business Unit	ASIC chips	Transport chips Network chips 2	Semiconductor	\$720 M	0 ²	2.5	Stable Strong and stable products in markets
Hera	Business Unit	Telecom	Wireless telecom 1	Telecom	\$2 B	0 ²	1.75	Stable Strong and stable products in market
Phase II								
Engineered Materials	Business Unit	Commodity wood products	Specialty wood products 1	Natural materials	\$100 M	20	3	Declining Overall market decline due to environmental shifts
Power Services	Organization	Uninterrupted power supply	Data center power system 1	Hardware	\$1.4 B	23	3.33	Improving #1 in market category and gaining market share
Ciba Vision	Business Unit	Conventional lenses	Daily disposables Extended wear lenses Visudyne 3	Eye care	\$425 M	12	4	Improving #2 in market category and gaining market share
Semiconductor	Organization	Analog semiconductor chips	Digital chips 1	Semiconductor	\$322 M	20	2	Improving Gaining market share
Hospital	Organization	Hospitals	Physician managed care 1	Health Care	\$1.6 B	9	1	Stable Recognized as one of the top 100 hospitals
Power Systems	Organization	Diesel wholesale	Quick time engine services 1	Auto Repair	\$20 M	10	3	Declining Overall Market decline due to environmental shifts
TOTAL	8 SBU 4 Org.			8 industries				

¹ Innovation type includes both the technological innovation (incremental, architectural and discontinuous), and the market innovation(current customers, defined markets and emerging markets) (Gatignon et al. 2002).

² Age 0 means that the unit was created at the beginning of the research time frame to include both exploratory and exploitative products in the same unit.

Table 2: Data Collection

Case	Direct Interviews	Additional Interviews	TOTAL	Informants	Meetings Observed
Phase I					
Titan	7		7	Division Manager General Manager Senior Executives	2
Apollo	6	17	23	Division Manager General Manager Senior Executives	0
Sisyphus	24 ^b		24	Division Manager General Manager Senior Executives Mid-level Managers	7
Hercules	2	8	10	Division Managers General Manager Senior Executives	1
Artemis	2	14	16	Division Managers General Manager Senior Executives	0
Hera	10		10	Division Managers General Manager Senior Executives	3
Phase II					
Engineered Materials	5	5	10	CEO General Manager Senior Executives	0
Power Services	6		6	Senior Executives	0
Ciba Vision	6		6	General Manager Senior Executives	0
Semiconductor, Inc.	5		5	CEO Senior Executives	0
Hospital	4		4	CEO Senior Executives	1
Power Systems	4		4	General Manager Senior Executives	1
TOTAL	81 Interviews¹	44	115		15 Meetings

^a Additional interviews include interviews conducted by colleagues for additional research and case studies which helped inform this study.

^b Interviews with Sisyphus included 12 TMT members and 12 lower level managers.

Figure 1: A Process Model of Top Management Teams Managing Contradictions

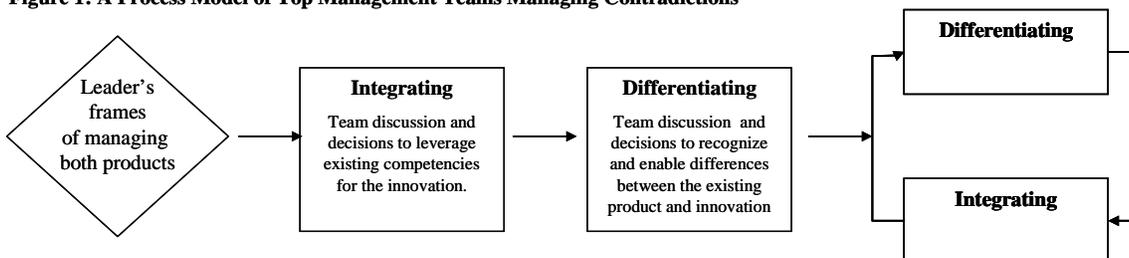


Table 3 – Framing: Senior Leader’s Articulation of Strategic Goals

Case	Senior Leader’s Articulation of Strategic Goals	Focus of Goals
Balancing		
Titan	<p>“We are managing a portfolio, which includes optimizing the existing business, the growth business, and the future growth business.” [GM]</p> <p>The GM is “really serious about the innovation process and also concerned to optimize the existing product.” [Innovation Manager]</p>	Both products
Apollo	<p>“We were focused on the innovation... but we had to start thinking about the existing product as well.” [GM]</p> <p>Initially “we were all eager for growth” that we were “acting like entrepreneurs.” [Innovation manager]</p> <p>Over time “the GM wanted to avoid cannibalizing our own existing revenue stream” and instead decide how to “extend it, or evolve it.” [Existing Product Manager]</p>	Both products
Hercules	<p>“The long-term strategy” involved “holding onto the market share in the current product but at the same time build a foundation for the future.”[GM]</p> <p>“We decided that the new services are an important growth area, while also looking for others.” [GM]</p>	Both products
Semiconductor	<p>“We didn’t know where in the ‘S’ curve we were with the existing product. The introduction into the innovation was a pure opportunity play.” [GM]</p> <p>“Eventually the strategy became “real world signal processing” which included existing product and innovation. “We had had analog and converts, but we didn’t have digital.” [GM]</p>	Both products
Power Services	<p>“The GM sees the core business as a way of paying the bills, but we have to develop a new vision of the future.” [Existing Product Manager]</p>	Both products
Hospital	<p>“We are building the different aspects of health care so that we can improve the health status of people, across all of their needs.” [GM]</p>	Both products
Changing		
Hera	<p>“I have gotten pressure from others to expend the money on helping us shore up solutions that are more traditional conventional areas. It’s not very difficult to say no... it’s not strategic, not where the puck is moving.”[GM]</p>	Focus on innovation
Artemis	<p>We wanted to “be hungry for growth” and “really rally and go for the innovation like crazy.”[GM]</p>	Focus on innovation
Artic Timber	<p>“Be the recognized leader worldwide in creating value with engineered wood composite panels through specialty products, process innovation, and learning.”[GM]</p> <p>“Everyone knew that I really only cared about the innovation. [GM]</p>	Focus on innovation
Power Systems	<p>Planned to switch to quick time diesel services. Compared with the expectation that they would eventually lose business in their existing ‘stable, but declining business.</p>	Focus on innovation
CIBA	<p>CIBA’s General Manager and team focused on a strategy “of radical innovation, where we starved the conventional lens business and fertilized the growth products.” [GM]</p>	Focus on innovation
Sustaining		
Sisyphus	<p>Created vision statement to ‘enable the minds of e-business’ which included both “continuing to drive short-term revenues” and “develop three new initiatives.” [GM]</p>	Both products

Table 4 – Cognitive Information Processes: Differentiating and Integrating

Information Processes	Examples
<p>Legitimizing Differences</p> <p>Probing about each product</p> <p><i>Independently learning more about the strategy and structures needed for each product.</i></p>	<ul style="list-style-type: none"> • “The GM asked a group of three of us to go and explore what software language we should use as we built the new technology.” (Apollo) • “The GM and I sit down and set the goals that we are after. She says run the business. My job is to come back when we need help, when I’ve screwed up. Then the GM will do deep dives every once in a while. At the end of the month, the GM and I have a half day booked, a one on one meeting, to make sure that we are heading in the right direction.... She [the GM] is really serious about the innovations.” (Titan)
<p>Clarifying distinctions</p> <p><i>Discussing how the innovation and existing product differ from one another.</i></p>	<ul style="list-style-type: none"> • “We often remind ourselves in team meetings that the innovation is just a different business. So for example, when the innovation was having problems succeeding, we talked about what we could do to support it differently from the existing product.” (Titan)
<p>Reinforcing Integration</p> <p>Focusing on an overarching vision.</p> <p><i>Reflecting on how the organization’s goals depend on both the existing product and innovation, and are willing to make sacrifices.</i></p>	<ul style="list-style-type: none"> • “We realize that the team has to be willing to forgo their own business for the benefit of the total business. I know that I’m in the Titan. If something in my innovation doesn’t get invested in, I’m going to have to go back into my own business and disinvest. We are in this together.” (Titan) • “These guys end up making sacrifices for the team. For example, my maintenance guys are participating in joint deals, where they could be getting much higher margins if they just sold their product independently. Maintenance is a high margin business, but they lose part of their margins in a joint sell in order to sell more products to the customer. Yet they still do it.... I think that they realize that this is what will benefit them in the end.” (Hercules)
<p>Discovering shared resources and synergies.</p> <p><i>Identifying points of integration where both products can succeed.</i></p>	<ul style="list-style-type: none"> • “We were eventually able to bundle the analog and digital semiconductors to sell real world signal processing.” (Semiconductor) • “We created a SWAT team for a sales team for the innovation...” to use sales resources temporarily for the innovation and then move them back to the existing product. (Titan)

Table 5 – Emergence of Top Management Team Cognitive Information Processing

Case	1. Integrating Leveraging Existing Assets	2. Differentiating Creating New Opportunities	3. Balancing Integration and Differentiating
	<i>Seeking to leverage existing resources to support the innovation.</i>	<i>Identifying and implementing innovation's strategies and structures unique from the existing product.</i>	<i>Dual processing of differences between two products and seeking points of integration</i>
Balancing			
Titan	Yes Titan executives discuss ways to leverage existing competencies to develop the innovations. Innovations are developed within the R&D, organization using the existing engineers, sales teams, and marketing.	Yes Titan executives discuss the distinct needs of the innovations and discuss how to enable to the innovation to succeed. Innovations are moved into their own unit, with their own manager, and with engineers hired from outside the organization.	Yes Titan executives discuss both the integration -points of synergy and overarching vision, as well as the differentiations –needs of each products and distinctions between both products. Decisions are balanced between support for the existing products and support for the innovation.
Apollo	Yes	Yes	Yes
Hercules	Yes	Yes	Yes
Semiconductor	Yes	Yes	Yes
Power Services	Yes	No	No
Hospital	Yes	Yes	Yes
Changing			
Engineered Materials	Yes Engineered Materials executives discuss ways to leverage existing competencies to develop the innovations. Innovation is developed using existing sales, marketing, and manufacturing.	Yes Engineered Materials GM talks with a small group of executives about how to better develop the innovation. The Engineered Materials GM decides to create a new team to develop the innovation, hire a new R&D VP and new engineers, and replace the manufacturing and sales VP's.	No
Hera	No	Yes	No
Artemis	No	Yes	No
Power Systems	Yes	Yes	No
CIBA	No	Yes	No
Sustaining			
Sisyphus	Yes Sisyphus executives discuss ways to leverage existing competencies to develop the innovations. Sisyphus executives give responsibility for the innovations to the existing sales, marketing, and R&D. The Sisyphus GM organizes a committee of individuals to develop a new overarching vision statement.	No	No

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