Organizational Ambidexterity Through the Lens of Paradox Theory: Building a Novel Research Agenda

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Abstract

The organizational ambidexterity literature conceptualizes exploration and exploitation as conflicting activities, and proposes separation-oriented approaches to accomplish ambidexterity; namely, structural and temporal separation. We argue that viewing ambidexterity from the lens of paradox theory enables us to move beyond separation-oriented prescriptions toward synthesis or transcendence of paradoxical poles; as well as toward longitudinal explorations of how paradoxical poles dynamically interrelate over time. In this way, the conceptual repertoire of ambidexterity theory is enriched and empirical research can more closely and pragmatically track practice.

Keywords

ambidexterity, paradox, exploration, exploitation

Introduction

Given the pressures on organizations to gain competitive advantage in increasingly turbulent and competitive markets, the concept of ambidexterity has been gaining ground. It has been investigated through a variety of literatures, including organizational design (Duncan, 1976; Jansen et al., 2005; Tushman & O'Reilly, 1996), innovation (Tushman & O'Reilly, 1996; O'Reilly & Tushman, 2008), and strategic management (Hamel & Prahalad, 1993; Markides & Charitou, 2004). Organizational

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ambidexterity is emerging as a new research paradigm within organization studies with a considerable increase of published work during the past few years (Raisch et al., 2009, O'Reilly & Tushman, 2013).

Based on the notion that exploration and exploitation are opposing activities, research on the concept of ambidexterity initially advocated a structural approach of spatial separation between explorative and exploitative business units, to be coordinated by the top management team (Tushman & O'Reilly, 1996). A subsequent conceptualization by Gibson and Birkinshaw (2004) suggested that ambidexterity can be fostered by a supportive organizational context that enables individuals to choose whether to emphasize exploitation or exploration activities at different times (thereby proposing a type of temporal separation of activities at the individual level). These conceptualizations have been supplemented by the concept of temporal ambidexterity, suggesting that organizations alternate between long periods emphasizing exploitation and shorter periods emphasizing exploration, through punctuated equilibrium (Gupta, Smith, & Shalley, 2006; Siggelkow & Levinthal, 2003; Tushman & O'Reilly, 1996). Additional research has focused on the role of linking mechanisms between exploration and exploitation business units as well as the leadership characteristics that facilitate effective dealing with the attendant tensions (Beckman, 2006; Lubatkin, Simsek, Yan, & Veiga, 2006; Smith & Tushman, 2005).

Conceptualizations of ambidexterity assume conflicting characteristics between the activities of exploration and exploitation and prescribe solutions characterized by structural separation or temporal separation. We propose that the conceptual lens of paradox can take us beyond structural and temporal separation as a way to accomplish ambidexterity, toward potential synthesis of poles forming a duality, or transcendence of tensions, as well as emphasizing a longitudinal, dynamic, and productive interrelationship between poles.

We first provide a review of ambidexterity literature, addressing structural ambidexterity, contextual ambidexterity, and proceeding to individual-level ambidexterity. We then engage with the literature on paradox management, discussing the nature of organizational paradoxes as a constitutive organizational feature, and suggested ways of dealing with paradoxes. We finally address how a paradox lens can help us advance research on organizational ambidexterity. We argue that viewing exploration and exploitation not as necessarily opposing (as in the ambidexterity literature) but as dynamically interrelated or even complementary activities, enables us to conceive prescriptions that move beyond structural or temporal separation toward synthesis or transcendence. A paradox view also encourages longitudinal approaches that can track the dynamic interrelationship between the two poles of the paradox, extending the mostly cross-sectional way in which organizational ambidexterity has so far been researched, and enabling us to more closely and pragmatically track practice.

Approaches to Organizational Ambidexterity

Organizational ambidexterity as a term was firstly used by Duncan (1976), who proposed that dual structures should be formed within an organization so as to support the initiation and the execution phases of an innovation. These phases are sequential in accordance with the innovation cycle, a concept adopted in ambidexterity research as

"temporal sequencing" (O'Reilly & Tushman, 2008). Wider interest in the concept of ambidexterity, however, is primarily due to March's (1991) seminal article on exploration and exploitation processes of organizational learning. The concept of organizational ambidexterity has been taken up in a variety of fields, as Table 1 shows.

March (1991) described exploration and exploitation as two fundamentally different activities, whereby exploitation refers to "refinement, efficiency, selection and implementation" and exploration refers to "search, variation, experimentation and innovation" (p. 71). The two processes are regarded as incompatible, leading to organizational tensions as both compete for scarce resources and entail different capabilities within the organization. Experimenting and exploring is more time consuming, entails uncertain results, and has a longer time horizon than refining current knowledge and extending current competencies; yet March (1991) underlines the need for a balance between the two, for superior organizational performance. Research on ambidextrous organizations has shown that the pursuit of both exploration and exploitation (through structural or temporal separation) is indeed both feasible and beneficial to organizational performance (He & Wong, 2004; O'Reilly & Tushman, 2004).

Firms overemphasizing exploration or exploitation however risk getting caught into failure traps or success traps respectively (Levinthal & March, 1993). Cameron and Quinn (1988) refer to this process of negatively reinforcing cycles as unproductive schismogenesis; a process of self-reinforcement where "one action or attribute perpetuates itself until it becomes extreme and therefore dysfunctional" (1988, p. 6).

Ambidexterity research has challenged established notions, for example the idea supported by traditional research in strategy, that attempting to pursue both differentiation and cost-leadership strategies results in firms being "stuck in the middle" (Porter, 1980), becoming mediocre in both exploration and exploitation (Ghemawat & Costa, 1993; O'Reilly & Tushman, 2008). Recent strategy research has advocated dual business models (Markides & Oyon, 2010) as a way for firms to simultaneously pursue different strategies, balance exploration and exploitation, and accomplish strategic ambidexterity (Judge & Blocker, 2008; Voss & Voss, 2013).

Table 2 shows in chronological order how ambidexterity has been conceptualized in different studies, and the respective proposals that were made to accomplish ambidexterity.

Table 1. Exploitation, Exploration and Tensions in Different Fields.

Literature	Exploitation	Exploration	Tensions	Key authors
Organizational learning	Single-loop learning Knowledge through existing routines Refinement Implementation	Double-loop learning Knowledge through experimentation Search Variation	Old/new	Argyris and Schön (1978); March (1991); Gupta et al. (2006); Levinthal and March (1993); Mom, Van Den Bosch, and Volberda (2007)

(continued)

Table 1. (continued)

Literature	Exploitation	Exploration	Tensions	Key authors
Technological innovation	Incremental innovation Minor adaptations of existing products and business concepts to meet existing consumer needs	Radical innovation Fundamental changes leading to new products or business concepts to meet emergent consumer needs	Capability/ rigidity	Benner and Tushman (2003); Tushman and O'Reilly (1996); Tushman and Smith (2002)
Organizational adaptation	Convergence Alignment	Revolutionary/ discontinuous change Radical transformation	Continuity/ change Chaos/ inertia	Huy, 2002; O'Reilly, Harrel, and Tushman (2009); Volberda (1996)
Strategic management	Induced strategy processes Initiatives within current scope Build on existing competencies Static efficiency	Autonomous strategic processes Initiatives outside current scope Build on new competencies Dynamic efficiency	Leverage/ stretch	Ghemawat and Costa (1993); Hamel and Prahalad (1993); Markides and Charitou (2004); Markides and Oyon (2010);
Organizational design	Mechanistic Structures Centralization Hierarchy	Organic structures Decentralization Autonomy	Efficiency/ flexibility	Duncan (1976); Jansen, Van den Bosch, and Volberda (2005); Tushman and O'Reilly (1996)

Structural Ambidexterity

According to Tushman and O'Reilly (1996) ambidextrous organizations simultaneously manage short-term efficiency and long-term growth through the structural separation of exploration and exploitation in different business units. Based on the premise that the culture of incremental innovation often creates an institutional hostility toward discontinuous innovation and that both are competing for scarce resources, the authors argue for separate structures within the same organization to accommodate what are argued to be opposing competencies, systems, and practices of exploration and exploitation. Exploratory units are conceived as small, decentralized with loose processes, in

contrast to exploitative units that are described as larger, more centralized and with tighter processes (Benner & Tushman, 2003, Tushman & O'Reilly, 1996).

Structural separation has brought to the forefront the need for various integration mechanisms across these "monodextrous" explorative and exploitative business units. O'Reilly and Tushman (2004) emphasize the role of the top management team as the "corporate glue" that holds the organization together by managing the tensions that arise between exploitation (incremental innovation) and exploration (discontinuous innovation). In this context, organizations can benefit from "cross-fertilization among units while preventing cross-contamination" (O'Reilly & Tushman, 2004, p. 77). In a similar vein, Jansen et al. (2009) also argue for the social integration of the senior team as a means of facilitating, coordinating, and managing conflicting demands of structurally separated business units. Lubatkin et al. (2006) suggest that behavioral integration of the top management team in terms of collaborative behavior, information exchange, and joint decision making is significant for enhancing ambidexterity and firm performance. Carmeli and Halevi (2009) extend this line of thinking by arguing that top management team processes (such as behavioral integration) and capacities (such as behavioral complexity) can lead to organizational ambidexterity provided that the appropriate supportive organizational context is in place.

Shifting the level of integration from the senior team to middle management, Jansen, Vera, and Crossan (2009) propose the use of cross-functional interfaces (such as liaison personnel, task forces, and teams) as a means of enabling knowledge exchange within organizational units that manage exploration and exploitation. The role of the middle management as an integrative mechanism is also highlighted as crucial in promoting ambidexterity by Taylor and Helfat (2009), who examine the radical transformation of two high-tech organizations undergoing a transition from an existing technology to a new one.

Contextual Ambidexterity

Further research on ambidextrous organizations challenged the structural approach of Tushman and O'Reilly (1996) with a contextual view that conceives of ambidexterity as emerging through a business unit's organizational context, defined as the combination of performance management and social support. Contextual ambidexterity thus argues that ambidexterity is best achieved not through structural separation but "by building a set of processes or systems that enable and encourage individuals to make their own judgments about how to divide their time between conflicting demands for alignment and adaptability" (Gibson & Birkinshaw, 2004, p. 210).

The authors argue that the organizational context and in particular the interaction of discipline, stretch, support, and trust can shape an individual's ability to choose between alignment and adaptation on a day-to-day basis (Birkinshaw & Gibson, 2004). Alignment (identified with exploitation) refers to coherence among all the patterns of activities in the business unit so that they work toward the same goals; and

adaptability (identified with exploration) refers to the capacity to reconfigure activities in the business unit quickly to meet changing demands in the task environment (Gibson & Birkinshaw, 2004, p. 209).

This view suggests that ambidexterity can be achieved within the same unit, rather than through structural separation of exploitative and exploration activities in different units coordinated by a top management team. This has been supported by empirical evidence examining how particular organizations have accomplished ambidexterity, such as Singapore Airlines (Heracleous & Wirtz, 2010) or Apple Inc. (Heracleous, 2013) as well as by survey research (Jansen et al., 2005).

Despite this empirical evidence that goes beyond the individual level and beyond the concept of contextual ambidexterity as originally proposed, the concept of conceptual ambidexterity itself relies on a form of temporal separation at the individual level. It is accomplished, in terms of its original formulation, when individuals are enabled to select either exploitation or exploration activities at different times depending on the situation. According to Birkinshaw and Gibson (2004), ambidextrous behavior is characterized by the ability to take initiative and recognize opportunities outside one's field of expertise, the search for cooperation, the ability to hold multiple roles, and the ability to identify potential synergies.

Individual-Level Ambidexterity

Individual-level studies are based on the assumption that ambidextrous organizations need ambidextrous individuals who are able to understand and be sensitive to the demands of both exploration and exploitation practices (O'Reilly & Tushman, 2004). Lassen, Waehrens, and Boer (2009), for example, underline the key role of middle managers in pursuing both market exploitation and technological innovation through what they call "dual management" (p. 22); the ability to balance planned and emergent activities and reconcile market and technological understandings. As these activities demand constant social negotiation within the organization, the importance of incentives and opportunities for managers to engage in dual management is underlined, highlighting the need for both structural and sociocultural solutions.

Mom et al. (2007) also focus on the individual manager level of analysis to examine bottom-up, top-down, and horizontal knowledge inflows in relation to managers' exploration and exploitation activities. They find that exploration and exploitation activities are complementary as well as simultaneous; top-down knowledge inflows enhance exploitation activities whereas bottom-up and horizontal inflows enhance exploration activities. In a similar vein, Mom et al. (2009) define ambidextrous managers as multitaskers, able to host contradictions, and refine and renew their knowledge, skills, and expertise. Eisenhardt, Furr, and Bingham **(**2010) finally explore how leaders balance efficiency and flexibility through high order thinking and expertise. They suggest that by the means of abstraction, cognitive variety, and work interruptions that are nevertheless inherently flexible and efficient, managers use simple, cognitive solutions to address the complex tensions of exploration and exploitation.

Table 2. Organizational Ambidexterity in the Literature.

Authors	Ambidexterity definition	Proposition
Tushman and O'Reilly (1996)	Ambidextrous organizations are those able to implement both evolutionary and revolutionary change	Small, autonomous units with different structure, processes and culture from main organization undertake exploration activities
Adler, Goldoftas, and Levine (1999)	Ambidextrous organizations are those that can overcome the trade-offs between efficiency and flexibility	Efficiency and flexibility in the Toyota Production System was possible due to effective use of 4 organizational mechanisms that help shift the trade-offs (meta-routines, job enrichment, switching, partitioning). Training and trust as critical contextual factors
O'Reilly and Tushman (2004)	Ambidextrous organizations are those that manage both exploration and exploitation activities, accomplishing both incremental and radical innovation	Structural ambidexterity: Structural separation of explorative and exploitative business units and tightly integrated top management team to coordinate across units
Gibson and Birkinshaw (2004)	Contextual ambidexterity is the behavioral capacity of individuals to simultaneously demonstrate alignment and adaptability across an entire business unit	Contextual ambidexterity: Creating a high performance organizational context that enables individuals to choose how to divide their time between adaptability and alignment activities
He and Wong (2004)	Ambidexterity is the simultaneous pursuit of exploration and exploitation strategies (technological innovation activities aimed at entering new product-market domains) and innovation strategies (technological innovation aimed at improving existing product-market positions)	Empirical evidence of the positive effect of ambidexterity in the context of technological innovation. Need for managers to manage the tension between exploration and exploitation on a continuous basis
Smith and Tushman (2005)	Ambidextrous organizations build internally inconsistent architectures and cultures into different, separate business units so that the firm can both explore and exploit	Structural differentiation, with top management team as the point of integration. Senior team develops cognitive capacity to balance contradictions that stem from the tension between short-term efficiency (exploiting) and long-term innovation (exploring)
Van Looy, Martens, and Debackere (2005)	Ambidexterity is simultaneous presence of activities of both incremental and radical innovation, coinciding with differences in technology and market maturation	Extended time frames, interface management practices for cross-fertilization, synergies of technologies (existing or potential)
Lubatkin et al. (2006)	Ambidexterity is the ability to jointly exploit existing competencies as well as explore new ones. These two facets of organizational learning are considered inseparable	Higher level of behavioral integration of top management team positively influences how managers deal with the contradictory knowledge processes of an exploitative and exploratory orientation. Ambidexterity thus can be pursued within the same business unit
Mom et al. (2007)	Ambidexterity is the ability to both explore new possibilities in order to cope with future changes in the business environment and to exploit old certainties to meet today's business demands	Top-down knowledge inflows positively relate to exploitation activities, bottom-up and horizontal knowledge inflows positively relate to exploration activities

Table 2. (continued)

Authors	Ambidexterity definition	Proposition
O'Reilly and Tushman (2008)	Ambidexterity is a capability embedded in leaders' learning and expressed through an ability to reconfigure existing organizational assets and competencies in a repeatable way to adapt to changing conditions	Structural ambidexterity and senior leadership team with cognitive and behavioral flexibility are needed. Ambidexterity is warranted when there are opportunities offering high organizational leverage and are of high strategic importance
Judge and Blocker (2008)	Strategic ambidexterity is the ability to simultaneously explore new market opportunities while efficiently exploiting existing markets	Key means by which an organization becomes strategically ambidextrous is by cultivating organizational capacity for change, which is moderated by environmental uncertainty and organizational slack
Cao et al. (2009)	Ambidexterity is the firm's innovation orientation, with respect to the introduction of new products/markets (exploration) and the improvement of existing products/markets (exploitation)	Firms that are relatively resource constrained due to their small size or scarce-operating environments benefit the most from achieving a close balance of exploration and exploitation
Rothaermel and Alexandre (2009)	Ambidexterity is a firm's ability to simultaneously balance different activities in a trade-off situation	Enhanced firm performance requires a balance between internal and external technology sourcing of known as well as new technology
O'Reilly et al. (2009)	Organizational ambidexterity is the dynamic capability of an organization to simultaneously explore and exploit, accounting for its ability to adapt	Organizational adaptation is a function of the variation selection-retention process occurring across business units; and of the ability of senior management to regulate this process in a way that maintains the ecological fitness of the organization with its environment
Carmeli and Halevi (2009)	Ambidextrous organizations are ones that are capable of exploiting existing competencies as well as exploring new opportunities with equal dexterity, simultaneously	Contextual ambidexterity is a critical moderating condition for organizational ambidexterity. Top management teams enable and create organizational ambidexterity through behavioral integration and behavioral complexity
Jansen et al. (2009)	Organizational ambidexterity refers to the routines and processes by which organizations mobilize, coordinate, and integrate dispersed contradictory efforts, and (re)allocate and (re) combine resources and assets across differentiated exploratory and exploitative units	Structural differentiation and integration mechanisms (senior team social integration and cross-functional interfaces) play a crucial role in a firm's ability to pursue exploratory and exploitative innovation concurrently
Andriopoulos and Lewis (2009)	Ambidextrous firms are capable of simultaneous, yet contradictory knowledge management processes associated with incremental and radical innovation	Integration and differentiation tactics address paradoxical tensions and enable ambidexterity. Paradoxes need to be managed across organizational levels
Nemanich, Keller, and Vera (2007)	Ambidexterity is the simultaneous pursuit of both radical and incremental learning (the ability to explore new capabilities while exploiting existing ones)	Transformational leadership behaviors and the values of a learning culture promote ambidexterity in a context of change

Table 2. (continued)

Authors	Ambidexterity definition	Proposition
Mom, Van Den Bosch, and Volberda (2009)	Ambidexterity is a behavioral orientation that enables combining exploration and exploitation-related activities simultaneously	Ambidextrous managers host contradictions, are multitaskers, and both refine and renew their knowledge, skills, and expertise. Managers differ in the extent to which they are ambidextrous
Markides and Oyon (2010)	An ambidextrous organization is capable of competing with dual business models in the same industry	Search for company-specific answers and develop the right organizational environment (culture, structures, incentives and people) to gain potential synergies and promote ambidexterity
Turner, Swart, and Maylor (2013)	Ambidexterity is the ability to both use and refine existing knowledge (exploitation) while also creating new knowledge to overcome knowledge deficiencies or absences (exploration)	Intellectual capital resources (organizational, social, and human capital) enable ambidexterity at various levels (organizational, group, and individual)
Patel, Messersmith, and Lepak (2013)	Organizational ambidexterity refers to the ability of an organization to efficiently take advantage of existing market opportunities while creating and innovating to meet the challenges of future markets	Firms implementing particular human resource practices create a high-performance work system that assists in developing the resource flexibility necessary to produce ambidexterity, which supports firm growth

Dealing With Paradoxical Demands: The View From Paradox Theory

Based on March's (1991) definition of exploration and exploitation as distinct and opposing learning processes, research on ambidexterity has viewed exploration and exploitation as two ends of the same continuum, competing for scarce resources and realized through opposing organizational capabilities. In this context, ambidexterity is conceptualized as managing the tensions and conflicts that arise from these activities to find the appropriate balance between the two. Yet if exploration and exploitation are viewed as competing activities that are independent from each other, organizations are advised to try to maintain a high level of both activities through structural ambidexterity, and no pursuit of balance between the two within the same organizational unit is needed or indeed possible (Gupta et al., 2006; Lubatkin et al., 2006). Contextual ambidexterity (Gibson & Birkinshaw, 2004) accepts that balancing can take place within a single organizational unit, but not because the fundamental conflicts between exploration and exploitation have been removed; rather, it is because individuals develop the behavioral capacity to allocate their time between the two types of activities. Temporal ambidexterity (Siggelkow & Levinthal, 2003; Tushman & O'Reilly, 1996) similarly accepts this fundamental assumption of conflict and addresses it via temporal separation of exploration and exploitation activities.

Perhaps it is because of the persistence of the assumption of conflict, that Gupta et al. (2006) note that "although near consensus exists on the need for balance [of exploitation and exploration], there is considerably less clarity on how this balance can

be achieved" (p. 697). They note that exploration and exploitation can be treated as two ends of a continuum (supporting the assumption of necessary conflict between them) or as orthogonal to each other (implying that accomplishing one is not necessarily at the expense of the other; Gupta et al., 2006). In this context, Cao, Gedajlovic, and Zhang (2009) explored whether organizations should be aiming to achieve a balance between the two activities what they term as "balance dimension of exploration and exploitation," implying a trade-off, or maximize both concurrently, implying an integration, which they label as "combined dimension of exploration and exploitation" (Cao et al., 2009, p. 782). Their findings suggest that the choice depends on the organization's size and resource availability, with smaller firms operating in a resource-constrained environment benefiting more from a balance of exploration and exploitation.

As we have seen, the main approaches to ambidexterity maintain the assumption of conflict between exploration and exploitation activities. This, in turn, is reflected in the solutions that are proposed, which involve structural separation at the organizational level or temporal separation at the organizational and individual levels. Some ambidexterity scholars however challenge this assumption of conflict (e.g., Cao et al., 2009; Gupta et al., 2006). We argue that a paradox perspective can enable us to further move beyond the assumption of conflict between exploration and exploitation and to explore new ways by which they could be simultaneously accomplished.

Situating Paradox

A paradox is literally a contention that is beyond belief, in the sense of being counter to ordinary expectations (Rescher, 2001, p. 3). Paradoxes are defined as "contradictory yet interrelated elements that seem logical in isolation but absurd and irrational when appearing simultaneously" (Lewis, 2000, p. 760). Paradox was introduced as a framework to deal with the inherent complexity of organizational life by Cameron and Quinn (1988) and has received increased attention in the organizational theory literature as organizations become more complex, dynamic, and pluralistic (Clegg, Cunha, & Cunha, 2002; Poole & Van De Ven, 1989; Smith & Lewis, 2011).

It is now recognized that organizations are constituted at the core by embedded paradoxes such as autonomy and control, collective action and individual interests, continuity and change, closed and open systems, and deliberate and emergent management (Bouchikhi, 1998; Lewis & Smith, 2014). In a more encompassing paradox perspective, Smith and Lewis (2011) identify four categories of paradoxes within organizations: paradoxes of learning (based on the tensions created between the old and the new), paradoxes of organizing (based on the diverging forces for control and flexibility), paradoxes of belonging (stemming from the tension between the self and the other within an organizational context), and last, paradoxes of performing (stemming from the plurality of goals from internal and external stakeholders). The tensions arising represent core organizational activities (knowledge, interpersonal relationships, processes, and goals) and occur not only within each category, but also at their intersections and across organizational levels.

Further research on organizational paradoxes has addressed a variety of themes including the tensions of continuity and change in the face of radical change (Huy, 2002), contradictions of collaboration and control in corporate governance (Sundaramurthy & Lewis, 2003), and tensions of committing to multiple strategic goals (Jarzabkowski & Sillince, 2007).

Dealing With Paradox

Apart from a framework for understanding the complexity of organizational life, paradox literature offers interesting approaches on how paradoxes can be resolved, that not only encompass but also move beyond the structural and temporal separation theses of the ambidexterity literature. Poole and Van De Ven (1989) argue for a distinction between a logical and a social paradox. Whereas logical paradoxes are timeless and by definition unsolvable, social paradoxes refer to a specific time and place, which offers the possibility of managing them. Thus, the authors propose four generic ways of dealing with organizational paradoxes. In addition to spatial and temporal separation, they propose opposition, where the paradox is accepted and used constructively as a source of creative tension and synthesis, where new concepts can be introduced, and the frame of reference changed to reframe how the poles of the paradox are viewed.

The Relationship Between Paradoxical Poles. Focusing on the relationship between the poles of dualities, Ford and Backoff (1988) propose three alternative ways of dealing with organizational paradoxes: formal logic, dialectics, and trialectics. Formal logic is based on viewing paradoxes as static dualities characterized by oppositional tendencies. Following the formal logic perspective, the paradox is resolved either by choosing between the constitutive poles (either/or choice) or by achieving a "compromise" between the two, which however as the authors argue "is only superficially so because it does not allow for an outcome that encompasses both poles in their entirety" (p. 95). This formal logic approach is consistent with how most of the ambidexterity literature views the relationship between exploration and exploitation, given the assumption of conflict between the two, and the separation solutions proposed.

On the contrary, dialectics views paradoxes as dualities, whose oppositional poles are in a dynamic and interrelated relationship, within a both/and approach where the paradox is ultimately resolved through the transformation of the tensions into a new synthesis. Last, trialectics argues that there are no real oppositions between the constituent poles of a duality; only apparent ones, that is, the opposition is a socially constructed reality. Instead of viewing the poles as opposing forces pulling in different directions, trialectics argues for the complementary relationship of dualities, much like the polar opposites of an electrical circuit. In this case, paradox is resolved through the "jump" to a higher or lower level of equilibrium caused by a reframing or reconstruction of the distinctions that create the apparent opposites. Dialectics and trialectics encourage organizations to embrace paradox as a source of productive energy that is central to organizational change and development.

Clegg et al. (2002) argue for a relational approach to the management of organizational paradoxes, such the need for simultaneous presence of autonomy and control. The authors take issue with Poole and Van De Ven's (1989) spatial and temporal approaches to managing paradoxes (and by implication with the ways of dealing with exploration and exploitation tensions proposed by the ambidexterity literature), arguing that these approaches would lead to simplistic solutions within a hierarchical setup and eliminate the creative potential of tensions. Thus, instead of trying to eliminate or solve paradoxes, the authors propose keeping the paradoxes open and examining the relationship between their constituent poles. This relationship emerges through everyday practice, is context specific, and can lead to a synthesis in cases where the opposite poles are mutually reinforcing. The example of jazz improvisation is used as a synthesis of planning and emergent action that maintains an ongoing creative tension between the poles, bringing them closer together, but not subjecting one to the other or replacing them with something else.

Working Through Paradox. An alternative framework for managing organizational paradoxes is proposed by Lewis (2000) as a means for managers to not only understand but also benefit from tensions created within the organization. In this context, working through paradox is based on immersion and exploration of paradox rather than suppressing its underlying tensions and requires actors to actively learn to cope with tensions and ambiguity.

The paradox framework proposed by Lewis (2000) identifies the root causes of paradox, its underlying tensions, and how these are reinforced by actors' defensive reactions, when they try to deal with paradox. Lewis proposes three ways to identify paradoxes: the narrative way through the analysis of discourse (e.g., see Luscher, Lewis, & Ingram, 2006), the psychodynamic way that involves working with actors to help both actors and researchers to recognize conflicts, and the multiparadigm approach where different conceptual lenses are employed as sensitizing devices.

Andriopoulos and Lewis (2009) explore the exploration–exploitation innovation tensions in five product design companies. Through their study, the authors identify three innovation paradoxes: strategic intent (related to the tensions of profitability and creativity), customer orientation (related to the tensions of tight and loose relationship with the clients), and personal drivers (related to the tensions of discipline and passion). Consistent with the pursuit of synthesis as a way to deal with paradox, these tensions are addressed within these organizations through concepts and practices that combine these polarities; such as paradoxical vision, diversity in product portfolio, and a view of the employees as practical artists.

Recent research on how CEOs view and handle paradoxes (Fredberg, 2014) is consistent with the synthesis approach; CEOs recognize paradoxical goals and tensions as simultaneous, ongoing features of organizations, and find applied, ongoing solutions to them. Smith, Binns, and Tushman (2010) also found that managing successfully a complex business model such as an ambidextrous organization depends

on leaders' ability to make dynamic decisions, build commitment to both overarching visions and agenda-specific goals, learn actively at multiple levels, and engage in conflict management.

In a similar vein, Beech, Burns, De Caestecker, Macintosh, and Maclean (2004) explore the approach of holding the paradox open in a study of an organization undergoing radical change. They use the theory of serious play as means to action that can enable actors to deal with paradoxes through expressing emotions, exploiting ambiguity, challenging rules, and experimenting with boundaries. In this study, the actors transcended the paradox created by the demands of organizational change that called for both centralized and decentralized services in the NHS, only to discover that new paradoxes emerged; pointing to paradox as an inherent feature of organizational life that is both the outcome and driver of change.

Organizational Ambidexterity Through the Lens of Paradox Theory

As we have argued, building on the work of Duncan (1976) and March (1991), conceptualizations of ambidexterity have focused on the inherent contradiction between exploration and exploitation because of resource constraints and competing organizational capabilities. Drawing from this assumption, the ambidexterity literature has proposed either spatial or temporal separation strategies as a way for resolving tensions. At the same time though, the tension between exploration and exploitation has been referred to as paradoxical, in order to describe the need for accommodating contradictory demands (Gibson & Birkinshaw, 2004; O'Reilly & Tushman, 2008; Raisch & Birkinshaw, 2008). Some studies have illustrated the value of a paradoxical perspective, focusing for example on the mutually reinforcing nature of exploration and exploitation (Andriopoulos & Lewis, 2009) or on the need for individuals' paradoxical cognition (Smith & Tushman, 2005) that enables senior managers to deal with the contradictions of explorative and exploitative innovation. O'Reilly and Tushman (2008) viewed ambidexterity in terms of the paradoxical capabilities of senior management, a set of senior team decisions including structure, linking mechanisms, culture, and senior team processes. Paradox theory can therefore offer a valuable lens in the study of ambidexterity, not only in offering a more holistic approach to organizational tensions across a range of phenomena and levels of analysis but also in terms of offering avenues for how tensions can be managed, that is, by going beyond the separation thesis, and move toward integrating rigid dualities into flexible polarities.

In the following section, we argue for a paradoxical management of ambidexterity tensions that focuses on their dynamic relationship. A paradox approach to ambidexterity explores the relationship between the poles of a duality and proposes synthesis and transcendence as further ways of managing tensions that move beyond separation (Chen, 2002).

Beyond Separation: A Paradoxical View of Managing Tensions

Research on ambidexterity to date has predominantly focused on the performance implications of structural and contextual ambidexterity, than on how ambidexterity can be accomplished and under which circumstances. The contextual approach to ambidexterity offers a significant alternative to the structural approach of separate exploration and exploitation units that is often criticized in terms of not exploiting possible synergies between units or relying on a series of integrating mechanisms across units. Yet the idea that a single business unit can become ambidextrous poses some significant issues that remain underresearched, one of which involves ambidexterity at the individual level (Raisch, Birkinshaw, Probst, & Tushman, 2009). In particular, there is a notable lack of empirical evidence on how individuals actually perceive and manage the tensions of exploration and exploitation within everyday business practice. What are the everyday challenges that individuals face when confronted with the simultaneous need for alignment and adaptation, and through which practices and behaviors are these challenges faced? Studies in contextual ambidexterity by Gibson and Birkinshaw (2004) assume that ambidexterity is an inherent capability of selected organizational actors but mainly focus on describing ambidextrous behaviors in terms of certain managerial jobs.

At the core of paradox theory lies the acceptance of dualities of coexisting tensions, where no compromise or singular choice between them has to be made (Eisenhardt, 2000; Westenholz, 1993). The effective management of these tensions is based therefore on finding creative ways to engage both poles; capitalizing on the inherent pluralism within the duality (Eisenhardt, 2000, p. 703). This process of managing paradox by shifting rigid dualities into more workable entities has often been referred to in the literature as synthesis or transcendence (Chahrazad et al., 2011; Chen, 2002; Lewis, 2000; Poole & Van De Ven, 1989).

Transcedence and Synthesis as Ways of Managing Paradox. So far, research on ambidexterity has followed Poole and Van De Ven's (1989) view of taking paradoxes as a given and trying to deal with them through temporal or spatial separation. However, "synthesis" could be a valuable approach for research on how tensions of ambidexterity are perceived and managed simultaneously at the individual level. For example, Chae and Bloodgood (2006) argue that exploring competition without simultaneously considering cooperation offers an incomplete view of competition, as competitors do not always act on the same level of competitiveness and at times they can work together toward a common goal. In a similar vein, the concept of duality assumes both contradictory and complementary relationships between the poles of a paradox (rather than the concept of dualism, which assumes division and precludes unity). In an exploration of the paradox of stability and change, Farjoun (2010) notes that "the apparent paradox of stability and change arises because the concepts are usually defined as opposites and by implication separate" (p. 202). Adopting a more dynamic conceptualization of stability, Farjoun identifies stability

with continuity and low variance, but instead of taking this to imply fixity or rigidity, it is seen as adaptation. In this sense, we have the paradoxical situation that variable practices can contribute to stability in outcomes, and stable practices can enable variable outcomes.

The universal dilemmas inherent in corporate as well as national cultures (Hampden-Turner, 1994) become pronounced in cross-cultural interaction. Univeralism versus particularism or individualism versus Communitarianism, for example, present dilemmas in practice that paradoxical, both/and thinking can help to reconcile. Trompenaars and Hampden-Turner (1997) have developed an approach that reconciles these dilemmas through recognizing complementarities, use of language to reframe them in a way that allows reconciliation or synthesis, toward creation of virtuous circles rather than oppositional spirals. Seet (1997) has employed such a methodology to map entrepreneurial dilemmas, suggesting that this approach can shed light on entrepreneurial processes, such as new product launch success or failure.

Integrated Approaches to Ambidexterity. As noted by Simsek (2009), research on ambidexterity to date has typically involved only one lens to explain the phenomenon, such as dual structures in the case of structural ambidexterity or organizational context in the case of contextual ambidexterity. In this context, it would be fruitful to further research the interrelationship between contextual and structural approaches to ambidexterity. Paradox theory, through its assumptions of duality (rather than dualism) between poles, encourages more holistic studies of ambidexterity that can combine structural, contextual, and individual elements.

Fang, Lee, and Schilling (2010) argue that exploration and exploitation can be successfully managed through parallel semiautonomous subunits with a small fraction of cross-group links, such as inter-team liaison roles, personnel rotation, or interdivisional task forces. This mixture of differentiation and integration allows for both the preservation of variety of knowledge within an organization and the identification of valuable synergies. Güttel and Konlechner, (2009) explore the interrelationship between structure and context and underline the need for a set of structural configurations and organizational values that should be in place for the effective balance of exploration and exploitation. Adopting a multilevel perspective, Kauppila (2010) suggests that structural and contextual approaches to ambidexterity can be synthesized through a combination of interorganizational partnerships that accommodate exploration and exploitation activities under a strong ambidextrous organizational context.

Managing Tensions Over Time. A paradox perspective emphasizes the embedded and constitutive nature of paradoxes in organizations, thus encourages a longitudinal perspective which can explore the dynamic relationship between the poles of a paradox, and on how paradoxes evolve over time and interact with each other (Bloodgood & Chae, 2010). Current research on ambidexterity has offered a more static view of managing tensions; however, paradox-inspired research over longer time frames might

explore to what extent and how organizations manage tensions over time and potentially assume a more dynamic balance (Burgelman & Grove, 2007; Simsek, Heavey, Veiga, & Souder, 2009).

Temporal balancing in the ambidexterity literature has been conceptualized as punctuated equilibrium involving long terms of stability punctuated by short revolutionary changes (Devins & Kähr, 2010). This has been proposed as a way to deal with major disruptions in a firm's competitive environment (Volberda, 1996) or more recently as an alternative to the simultaneous approach to balancing exploration and exploitation (Geerts, Blindenbach-Driessen, & Gemmel, 2010; Siggelkow & Levinthal, 2003). Theory on punctuated equilibrium supports organizational cycling between periods of exploration and periods of exploitation (Gupta et al., 2006; Simsek, 2009), adopting a discontinuous approach to how organizations respond to change (Güttel & Konlechner, 2009).

Burgelman (1991) similarly argued for a sequential approach to exploring and exploiting, while Boumgarden, Nickerson, and Zenger (2012) refer to "organizational vacillation" to describe firm's dynamic capability of temporally and sequentially alternating between periods of exploration and exploitation. These findings highlight the crucial role of time in relation to how organizational ambidexterity is conceptualized and the importance of longitudinal data for exploring how exploration and exploitation tensions evolve over time (Uotila, Maula, Keil, & Zahra, 2009).

However, a paradoxical perspective can extend the concept of temporal balancing beyond punctuated equilibrium. Temporal balancing can involve a dynamic interplay between the poles, rather than long periods of emphasis on one pole, followed by short periods of emphasis on the other pole. This could involve for example reframing the situation (Westenholz, 1993), developing paradoxical cognition in managers as a behavioral capability (Eisenhardt et al., 2010), or a mind-set and attendant organizational processes that can address both poles of a paradox dynamically over time (Heracleous & Wirtz, 2014).

A paradoxical view of ambidexterity therefore enables us to use paradox as a guiding framework that can enrich our research and understanding of complex organizational phenomena, such as the need for innovation and efficiency, stability, and change by replacing the notion of conflicting, independent opposites with that of interdependent, dynamically interrelated poles of a duality (Chen, 2002; Farjoun, 2010).

Table 3 outlines the main approaches in the ambidexterity literature, their main assumptions with respect to the two types of activities involved, and their propositions for accomplishing ambidexterity. Paradox theory extends our conceptual arsenal by offering the assumption that the poles can be complementary and dynamically interrelated over time, and assuming that they are in a state of duality rather than a dualism, preserving the option of integration. Paradox theory also proposes that synthesis of the poles, or transcendence via reframing can take place and fosters the pursuit of organizational processes that can contribute to both poles of the paradox.

Table 3. Dominant Approaches to Ambidexterity and the View From Paradox Theory.

Dominant approach	Fundamental assumption	How to manage tensions	Key proposition	Key authors
Structural ambidexterity	Contradictory poles, dualisms	Spatial separation	Institute separate business units with different designs, cultures, and processes focused on exploration or exploitation	Jansen, Tempelaar, Van Den Bosch, and Volberda (2009); Kauppila (2010); Tushman and O'Reilly (1996)
Contextual ambidexterity	Independent poles, dualisms	Temporal separation	A supportive organizational context can enable individuals to choose between alignment and adaptability activities at different times	Birkinshaw and Gibson (2004); Carmeli and Halevi (2009); Gibson and Birkinshaw (2004)
Temporal ambidexterity	Contradictory poles, dualisms	Temporal separation	Alternate temporally and sequentially between longer periods of exploitation with shorter periods of exploration	Boumgarden et al. (2012); Siggelkow and Levinthal (2003);
Paradox theory	Complementary or interrelated poles, dualities rather than dualisms	Moving beyond temporal or spatial separation to synthesis or transcendence	Paradoxical thinking can enable managers to simultaneously and longitudinally work through tensions of exploration and exploitation; encourages reframing situations to enable transcendence of paradoxes; and fosters the institution of organizational processes that can simultaneously support pursuit of both paradoxical poles	Andriopoulos and Lewis (2009); Fredberg (2014); Heracleous and Wirtz (2014); Martini, Laugen, Gastaldi, and Corso (2013); Smith et al. (2010); Westenholz (1993)

Conclusion

Discussions of how organizations can achieve ambidexterity are very much dependent on how ambidexterity is conceptualized, the level of analysis and most importantly whether exploration and exploitation are considered competing or complementary aspects of the organizational phenomena in question. Following a paradoxical view of organizational ambidexterity as a firm's ability to be equally dexterous in different and often conflicting areas, aiming to synthesize or transcend polarities, enables us to move beyond the dominant separation-oriented prescriptions of the structural, contextual, and temporal, ambidexterity literature. Paradox offers a more pragmatic perspective on the ongoing need to accept paradox as an embedded feature of organizations and as a potentially productive source of creative tensions that can support organizational effectiveness (Cameron, 1986; Lewis, 2000; Smith & Lewis 2011).

Viewing exploration and exploitation activities not as mutually exclusive but as interwoven polarities shifts management thinking from an either/or to both/and mind-set. By viewing the ambidexterity literature from a paradox perspective, we move one step further from using paradox as a generic description of seemingly contradictory demands to a lens that explores the fine nuances of tensions and their dynamic potential for ongoing

integration across organizational phenomena and levels of analysis. Following a paradox perspective research on ambidexterity can untangle and inform a broader spectrum of the complexity of organizational life.

This is particularly true with respect to firstly a practice-based perspective and secondly, a longitudinal, process-oriented perspective. A practice-based perspective would focus on understanding the pressures and tensions that practitioners face, which come in sharp relief at times, such as when organizational change is planned or implemented—for example, when dealing with the tension between top-down versus bottom-up change, internal organizational versus external strategic alignment, or between empowerment versus control. In such conditions, effective change agents know that the answer is not either/or, but both/and, with the goal of building up organizational and individual capacity for actualizing both poles of the paradox. Organizations that exhibit these competencies, such as Apple Inc. (Heracleous, 2013) and Singapore Airlines (Heracleous & Wirtz, 2014), are able to develop capabilities, organizational designs and processes, and leadership thinking that enable the transcendence and synthesis of tensions.

A longitudinal, process-oriented perspective can allow us to see how organizations change over time to move toward ambidextrous capabilities. For example, Apple Inc. moved from its early days of intense exploration (but low exploitation) in the late 1970s and 1980s to the early to mid-1990s, when both exploration and exploitation were low, until Steve Jobs returned in 1997 and focused on returning Apple to its former creative glory (exploration), as well as hiring the current CEO, Timothy Cook in 1998 with an explicit mandate to enhance efficiency (exploitation). Perhaps, influenced by his practice of Zen Buddhism and interest in transcendental experiences, Jobs saw that exploration and exploitation were not necessarily conflicting and incompatible. Several of Apple's organizational choices (Heracleous, 2013) can be understood from a paradoxical perspective (e.g., flat, empowering but also centralized organization design; high levels of concurrent engineering involving cross-functional inputs, accompanied by high levels of secrecy). So can Jobs' leadership style (Isaacson, 2012); not only empowering but also authoritative, seeing the big picture but also micro-managing, seeing the structural constraints of industry life cycles as well as what could be done to reshape industries.

In terms of practice-oriented considerations, technology has enabled the transcendence of classic tensions, such as the richness versus reach distinction in communications (via, e.g., distributed video streaming) or the volume versus cost tension in manufacturing (via e,g., mass customization). Working patterns such as virtual teams, portfolio working, or telecommuting enable degrees of organizational flexibility not traditionally or previously possible. A paradox perspective can enable organizations and change agents to conceptualize configurations that make the most of both paradoxical thinking as well as the paradoxical ontology of organizations, that is, the unavoidable presence of tensions that at once constrain, but can also be a source of rejuvenation and newness, if their creative potential is harnessed.

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