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SAILING INTO THE WIND: EXPLORING THE RELATIONSHIPS AMONG AMBIDEXTERITY, VACILLATION, AND ORGANIZATIONAL PERFORMANCE

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While sustainable high performance requires the capacity to simultaneously explore and exploit, the management literature is divided on the most feasible and efficient route toward this end. We review two proposed approaches for achieving simultaneously high levels of exploration and exploitation: organizational ambidexterity and organizational vacillation. To facilitate comparison, we map these approaches onto a common performance landscape, making precise the empirical question of which delivers superior long run performance. We then analyze canonical cases from both literatures, examining patterns of decision making and corresponding performance over time. These cases suggest that vacillation may offer higher long run performance than ambidexterity, while ambidexterity enhances performance on the margin when utilized within larger epochs of vacillation. We conclude that ambidexterity and vacillation are complements with respect to performance, albeit through different mechanisms. Copyright © 2012 John Wiley & Sons, Ltd.

INTRODUCTION

Organizational scholars for decades have argued that an organization's long run performance demands that it simultaneously explore and exploit (Abernathy, 1978; Burns and Stalker, 1961; Cyert and March, 1963; Ghemawat and Ricart, 1993; Lawrence and Lorsch, 1967; O'Reilly and Tushman, 1997; Thompson, 1967; March, 1991). As Levinthal and March (1993: 105) succinctly argue, 'the basic problem confronting an organization is to engage in sufficient exploitation to ensure its current viability and, at the same time, devote enough energy to exploration to ensure future viability.' Implicit in this literature is the assumption that exploration and exploitation function as complements in delivering high levels of organizational performance. While performance is increased by exploitation activities, the positive effect of exploitation on performance is greater as exploration increases and vice-versa.[1] Consistent with this assumption, high levels of both exploration and exploitation with some degree of temporal simultaneity, or what some may call balance, optimize the complementary relationship in generating performance.

The broad challenge in simultaneously achieving exploration and exploitation is that the organizational design elements that promote exploration are distinct from design elements that promote

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[1] More formally, complementarily with respect to performance implies that $\partial P(x)/\partial x_1 \partial x_2 > 0$ where P(x) equals performance, x_1 equates to the amount of exploration, and x_2 equates to the amount of exploitation. The formal representation assumes P is concave and satisfies certain technical conditions of concave functions (Kannai, 1980).

exploitation. Scholars have shown that the organizational designs that promote exploration are decentralized and organic, while those that promote exploitation are centralized and mechanistic (Burns and Stalker, 1961; Thompson, 1967; Duncan, 1976; O'Reilly and Tushman, 2008). Indeed, each organizational design demands its own distinct and complementary set of elements regarding structure, incentives, and culture. Research suggests that attempts to design an organization that both explores and exploits create inconsistencies in design elements that diminish the firm's capacity to deliver the desired performance outcome. Indeed, designing an organization that achieves this simultaneity in exploration and exploitation is considered either highly difficult or simply impossible (Abernathy, 1978; Christensen, 1997; Cyert and March, 1963; Duncan, 1976; O'Reilly and Tushman, 1997, 2004, 2008; Gibson and Birkinshaw, 2004). Described more precisely, the organizational elements that deliver exploitation generate negative externalities for those that deliver exploration and vice versa. The presence of one set of organizational elements detracts from the effectiveness of the other. The manager seeking to generate both exploration and exploitation, therefore, faces a fundamental paradox. While exploration and exploitation function as complements in generating high performance, the organizational structures and choices that produce them demonstrate negative externalities that undermine the simultaneous delivery of both. Finding a way to resolve this fundamental design paradox is essential to achieving high organizational performance.

The organization design literature offers two distinct resolutions to the paradox. One approach, referred to as 'organizational ambidexterity,' proposes a balance in exploration and exploitation activities by crafting complex hybrid or dual-structured organizations (O'Reilly and Tushman, 2008). The approach calls for one part of the organization to engage in exploration while another part engages in exploitation, with any resulting organizational inconsistencies overcome through integration efforts by top-level managers. Ambidextrous top-level managers, through their leadership skills, are advised to balance exploration and exploitation attempting to achieve a static equilibrium, selectively integrating and addressing any negative externalities or inconsistencies in organizational design (O'Reilly and Tushman, 2004, 2008; Benner and Tushman, 2003; Raisch *et al*., 2009).

The alternative approach, referred to as 'organizational vacillation,' emphasizes dynamically achieving high levels of both exploration and exploitation by temporally and sequentially alternating between organizational structures that promote either exploration or exploitation, respectively (Gulati and Puranam, 2009; Nickerson and Zenger, 2002; Siggelkow and Levinthal, 2003). The approach asserts that a structure promoting balance *per se* is not necessarily the managerial prescription that follows from the complementarity between exploration and exploitation. Instead, this perspective notes that the manager's task is to optimize long run performance, where performance is influenced by the levels of exploration and exploitation and not merely their degree of balance or simultaneity. By vacillating between (or among) discrete formal organizational modes such as centralization and decentralization, the organization may increase dynamically the levels of exploration and exploitation beyond those achievable through an approach based strictly on a static design choice. The key assumption is that as structural shifts occur, the levels of exploration and exploitation increase and dissipate with inertia (Gulati and Puranam, 2009; Nickerson and Zenger, 2002). Hence, the fundamental distinction between these approaches is that with organizational ambidexterity, managers achieve high performance by deliberately emphasizing a structure that promotes balance in exploration and exploitation, whereas with vacillation, managers achieve high performance by dynamically vacillating between structures to achieve high levels of exploration and exploitation on average, albeit with inconsistent balance.

In this article, we explore the relationships among ambidexterity, vacillation, and organizational performance. We note at the outset that organizational ambidexterity and organizational vacillation rely on distinctly different assumptions, which make them theoretically difficult to compare. Comparison is further complicated because neither theory is entirely clear in its posited relationship to long run economic performance. To advance a comparative analysis of the two theories, we first define organizational ambidexterity and organizational vacillation, along with their base assumptions and predictions. Through this

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exercise, we seek to generate a common theoretical language. We then make explicit the theoretical relationships among exploration, exploitation, and economic performance by developing a landscape that maps performance as a function of these dual capabilities. Next, we overlay both frameworks onto this shared performance landscape to directly compare their hypothesized performance trajectories over time. By mapping onto a common performance landscape, we make clear the empirical question regarding the relationship between each theory and long run performance. The key empirical question is whether organizational ambidexterity maps onto a performance trajectory that is superior to or inferior to the performance trajectory delivered by organizational vacillation. The question, therefore, is not which approach delivers balanced exploitation and exploration, but which approach delivers an abundance of both. Our empirical question is then initially investigated by turning to two longitudinal canonical case studies.

The first case study examines in detail 25 years of Hewlett-Packard's organizational history, a brief synopsis of which Nickerson and Zenger (2002) used as the archetype to illustrate vacillation. The second case study examines with new details approximately 20 years of *USA Today*'s efforts to explore and exploit the Internet space through what ultimately became USAToday.com, a canonical illustration that O'Reilly and Tushman (2004) use to describe organizational ambidexterity. The details of these case studies offer new insights into the currency of the ambidexterity and vacillation theories. For instance, the Hewlett-Packard case illustrates that management vacillated about every four to six years between organizational structures focused on generating either exploration or exploitation, but within these epochs Hewlett-Packard experienced periods of both balance in exploration and exploitation. The 20-year assessment of *USA Today*'s efforts to generate an online business also suggests period of organizational ambidexterity and a similar pattern of vacillation between decentralization and integration. In both settings, senior management's target was high economic performance. Moreover, with every organizational change, managers expressed that a balance of exploration and exploitation was sought. Yet, in every instance as managers pursued high performance, they consistently compromised on balance through a structural change that in the short run (or medium term) aggressively promoted either exploration or exploitation, respectively.

In this article, we seek to theoretically explain and illustrate the comparative functionality of organizational ambidexterity and vacillation. In addition, we attempt to compare their respective relationships as strategic paths to economic performance. While our case studies cannot statistically respond to our empirical question, they nonetheless provide suggestive evidence of the important role organizational vacillation and organizational ambidexterity play in achieving high performance by delivering an abundance of exploration and exploitation, while also offering new evidence for theory building. Importantly, we find evidence in our case studies that brief episodes of organizational ambidexterity are delivered by and embedded within organizational vacillation. Ambidextrous leadership, therefore, plays an important role for generating economic performance within broad patterns of organizational vacillation. Our insight provides the foundation for a theoretical reconciliation between organizational ambidexterity and organizational vacillation.

THEORY

The capacity to both explore or 'search for new, useful adaptations,' and exploit through 'the use and propagation of known adaptations' (Fang, Lee, and Schilling, 2010: 626) is vital to the survival and performance of organizations (Levinthal and March, 1993). Exploration and exploitation function as complements in generating organizational performance. Thus, a capacity to exploit innovations is more valuable in the presence of a larger capacity to generate innovations, just as a capacity to generate innovations is more valuable in the presence of a larger capacity to exploit them. Moreover, there may be particular benefit to simultaneously generating high levels of exploration and exploitation, rather than generating exploration and exploitation asynchronously.

While achieving high levels of both of these activities concurrently is the aim of many organizations, the literature suggests that this outcome is not easily achieved (Abernathy 1978; Christensen 1997; Cyert and March, 1963; Duncan, 1976; O'Reilly and Tushman, 1997, 2004, 2008; Gibson and Birkinshaw, 2004). The difficulty arises because the organizational structures

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that promote exploration are generally regarded as distinct from those that generate exploitation (e.g., Nickerson and Zenger, 2002). Specifically, organizational structures that promote exploration involve a distinctly different set of complementary design elements than organizational structures that promote exploitation. Efforts to mix these competing bundles of design choices may yield ineffective organizational design. Figure 1 provides a simple representation of this tension. While exploration and exploitation operate as positive complements in generating organizational performance, negative externalities generally define the relationship between the complementary set of design elements that generate exploration and the complementary set of design elements that generate exploitation. A choice to design solely for exploration (or exploitation) ignores the positive complementary that accompanies simultaneous success in generating both, but designing to generate both confronts the negative externalities associated with mixing the design elements in a way that targets both.

Consistent with Raisch *et al*. (2009), we highlight two distinct approaches to resolving this contradiction and developing such dual capability: a static approach in which firms adopt ambidextrous organizational structures that balance the pursuit of exploration and exploitations (O'Reilly and Tushman, 2008; Raisch & Birkinshaw, 2008) and a dynamic approach in which firms sequence the adoption of structures that target either exploration or exploitation (Nickerson and Zenger, 2002; Siggelkow and Levinthal, 2003; Gulati and Puranam, 2009). We will develop theoretical arguments for each, noting in particular the tensions between designing to exploit the performance complementarities between exploration and exploitation and designing to maximize complementarities among organizational design elements.

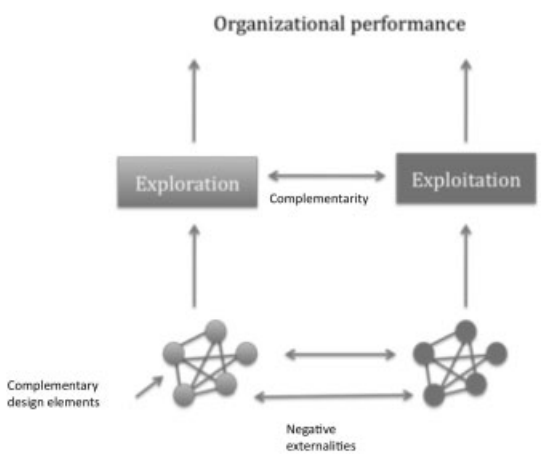

Figure 1. The ambidexterity design dilemma

Organizational ambidexterity

The static approach to organizational ambidexterity involves the structural separation of exploration and exploitation activities into distinct units, a dual structure coupled with a set of leadership directives focused on integrating across this discrete structuring (O'Reilly and Tushman, 2008). For example, managers of an ambidextrous organization orient some units toward exploration with significant autonomy (i.e., a new venture division) and other units toward exploitation (i.e., divisions focused on current product refinement and marketing) with a focus on coordination, resource sharing, and centralized control. Integration across these groups takes place when a senior leadership group develops and reinforces 'a common strategic intent, an overarching set of values, and targeted structural linking mechanisms to leverage shared assets' (O'Reilly and Tushman, 2008: 195). Recent work suggests that middle management may also play an important role in facilitating this integration (Taylor and Helfat, 2009).

The argument for organizational ambidexterity begins by assuming a structural tension between designing for exploration and designing for exploitation, but then highlighting a top management capability for resolving incompatible organizational structuring through leadership. Echoing the arguments for loosely coupled systems (Weick, 1976), researchers argue that overly disruptive technologies generated through exploration must be segmented from the rest of the organization or they run the risk of undermining the more exploitative processes of the organization (Christensen, 1997). The complementary integration behaviors are necessary because high performance requires capabilities in exploration and exploitation to be intertwined across the entire organization, rather than focused solely with a specific subunit. As Benner and Tushman (2003: 247) argue, ambidextrous organizations must 'build in both tight and loose coupling simultaneously,' as 'integration and differentiation are complementary, not alternative, mechanisms for achieving

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organizational effectiveness' (Raisch *et al*., 2009: 687). Integration across these segmented systems takes place as management uses a balanced set of incentives to effectively manage the inconsistent alignments (Smith and Tushman, 2005). The integration serves to 'synchronize the team's social and task processes, including the quality of information exchange, collaborative behavior, and joint decision making,' thus helping 'its members deal with the contradictory knowledge processes that underpin the attainment of an exploitative and exploratory orientation, such that greater integration enhances the likelihood of jointly pursuing both' (Lubatkin *et al*., 2006: 647). Researchers argue that organizational ambidexterity results in an organization capable of navigating 'a balance between the need to be small and large, centralized and decentralized, and focused both on the short term and long term simultaneously' (Benner and Tushman, 2003: 248).

While much of the literature on ambidexterity examines large organizations with the capacity to structurally separate exploring units from exploiting units, the deeper organizational challenge is to simultaneously pursue exploration and exploitation at all levels of the organization, including levels where structural separation seems quite infeasible. Indeed, as March (1991: 72) correctly notes, the task of 'finding an appropriate balance is made particularly difficult by the fact that the same issues occur at levels of a nested system.' Thus, entire multibusiness organizations, single divisions, departments, work teams, and even individuals all face this need for both exploration and exploitation. At the corporate and business unit level, however, researchers advocating the static model of organizational ambidexterity highlight the importance of top management team leadership and a separation of distinct units that explore while others exploit. The approach arguably provides a stable balance of exploration and exploitation activities over time. While inconsistencies may arise among design elements, scholars claim that a top management team capable of integrating these competing goals will minimize the negative consequences of the tension. Organizational ambidexterity emphasizes the pursuit of balance between exploration and exploitation, consistent with the presence of complementarity between them and implies that any negative externalities that accompany inconsistency in design elements are minimal and can be overcome, or at least mitigated, through effective leadership and nuanced design. Successfully pursing balance between exploration and exploitation in essence implies the ability to maintain a more or less static equilibrium.

Organizational vacillation

Organizational vacillation is a dynamic approach to achieving high performance through simultaneously high levels of exploration and exploitation. The approach advocates modulating between a structural orientation focused on exploration and a structural orientation focused on exploitation. The theoretical case for this dynamic approach hinges on the presence of inertia in the informal outcomes from formal shifts in organizational design and on the capacity of an internally consistent and more focused design structure to generate elevated levels of either exploration or exploitation (Nickerson and Zenger, 2002). Complementarity in design elements creates a form of discreteness in organizational design (Mintzberg, 1979; Milgrom, Qian, and Roberts, 1991; Williamson, 1991). While complementarity in design elements can certainly be violated, doing so undermines the design's capacity to achieve high levels of either exploration or exploitation respectively.

Nickerson and Zenger (2002), however, argue that while complementarities in design encourage discreteness in the choice of formal organizational structure rather than an ambidextrous mixing of elements, the informal organization, governed by significant inertia, responds with much greater continuity. Thus, while the formal structure or 'the normative system designed by management' (Scott, 1981: 82) can be quite abruptly shifted, the degree of actual exploration or exploitation produced reflects the underlying informal organization—the routines, decision-making processes, and knowledge flows within the organization, as well as the general behaviors, decisions, and actions of individuals within the organization. The informal behaviors, processes, communication patterns, and routines adjust more continuously in response to structural shifts. Thus, formal structural choices influence the shape of the informal organization (Stevenson, 1990; Shrader, Lincoln, and Hoffman, 1989; Kadushin and Brimm, 1990), albeit more gradually with the pace contingent on the magnitude of organizational inertia present.

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By choosing a structure characterized by decentralization and autonomy, the organization generates knowledge flows, communication patterns, and decision-making routines that promote high levels of exploration; then, in response to structural change toward greater centralization and integration, these informal organization elements shift (Nickerson and Zenger, 2002). Repeated modulation provides the 'functionality to temporarily achieve intermediate levels' (Nickerson and Zenger, 2002: 560) of exploration and exploitation and, thus, produces brief periods of dual capability and a definable high performance trajectory.

In sum, in advocating for organizational vacillation, Nickerson and Zenger (2002) suggest that this structuring provides relatively high amounts of both exploration and exploitation, albeit in a gradually shifting mix. While organizational vacillation may not produce the stable balance of exploration and exploitation that is the target of organizational ambidexterity, the key question is whether an effectively timed modulation results in an informal organization that produces higher and more abundant levels of exploration and exploitation on average, although in a varying mix.[2] Thus, the basic logic of vacillation is that an emphasis on static balance in exploration and exploitation compromises the levels of each that are attained and that higher performance accompanies the higher levels of exploration and exploitation achieved through a dynamic approach of organizational vacillation.

MAPPING A COMMON THEORETICAL FRAME FOR COMPARISON

While both organizational ambidexterity and organizational vacillation posit a relationship between structural choices and corresponding levels of exploration and exploitation, comparison is complicated in that neither theory is clear in explicitly defining the relationships among exploration, exploitation, and economic performance. Thus, to facilitate theory comparison, we delineate these relationships more clearly on a common performance landscape. We first identify how each theory maps onto the common framework. Then we make more theoretically precise the comparative empirical question that discriminates between these two perspectives.

Exploration, exploitation, and performance

To map the relationships among exploration, exploitation, and performance, we articulate three foundational assumptions. First, we assume that, ignoring for the moment the costs of organization, short run organizational performance (conceptualized as an instantaneous rate of expected economic profitability[3]) increases with corresponding increases in the level of exploration or exploitation activity within the organization. Long run performance, therefore, is defined by integrating instantaneous economic performance over time. For simplicity, we conceptualize two orthogonal variables—one for the level of exploration and one for the level of exploitation, where the level represents flow of investments into each type of activity. Second, we assume that exploration and exploitation are complementary in generating performance, where complementarity is defined as the property that doing more of one activity raises the marginal performance return of the other (see Milgrom and Roberts, 1990).[4] Third, we assume that, consistent with standard neoclassical economic assumptions of convexity, the marginal increase in performance benefits from increased exploration as well as from exploitation are positive but with diminishing returns to scale.[5] Our assumptions are generally consistent with empirical and theoretical work in the ambidexterity and learning literatures that finds, for example, a positive relationship between the interaction of exploration and exploitation and sales growth (He and Wong, 2004). The assumptions also are consistent with the underlying logic

[2] While we don't address the ideal cadence of change, our argument shares much in common with Probst and Raisch (2005: 101) who suggest that to remain 'balanced,' firms must identify 'early warning signs' that signal the need for a 'course correction' or 'counter measures.' As they note, one of the key challenges for senior leadership is determining when 'the time for a course correction has come' and then determining the correct 'counter measures' (Probst and Raisch, 2005: 100).

[3] The temporal realization of profit differs for exploration and exploitation. We assume that expected economic profitability offers a theoretical construct that accounts for the future paths of profits generated from past and current levels of investments in exploration and exploitation, but does not incoporate returns from potential future investments.

[4] Milgrom and Roberts (1990) define complementarity in mathematical terms for smooth functions as $\partial\pi^2/\partial x_1 \partial x_2 \geq 0$ where x_i for all i represent the levels of activities conducted to produce resulting profits.

[5] Mathematically, these assumptions are $\partial\pi/\partial x_1 \geq 0$; $\partial\pi^2/\partial {x_1}^2 \leq 0$; $\partial\pi/\partial x_2 \geq 0$; $\partial\pi^2/\partial {x_{12}}^2 \leq 0$.

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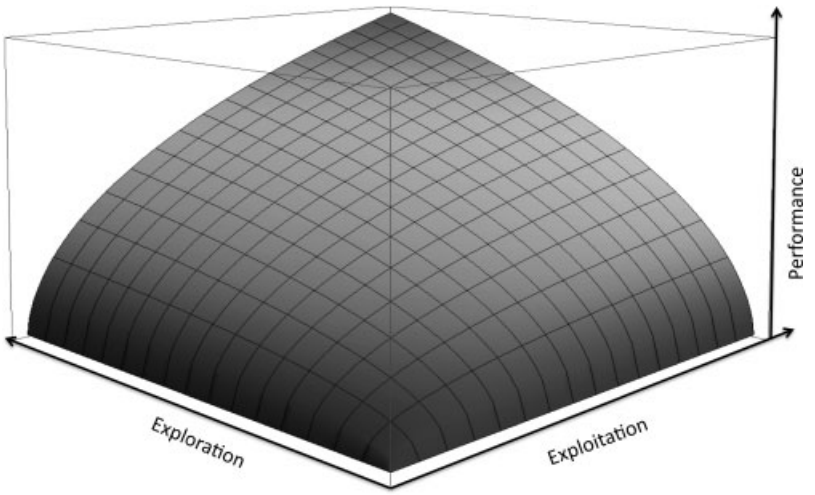

Figure 2. Performance landscape

of vacillation (Nickerson and Zenger, 2002). Mathematically from these assumptions, we infer that the cross-partial derivative of performance with respect to exploration and exploitation within the relevant range is positive; though, we anticipate that the overarching performance landscape is concave, implying diminishing returns to scale.[6]

Given our assumptions, Figure 2 provides a three-dimensional representation of the relationships among the three variables that satisfies our assumptions. Specifically, exploration and exploitation are located along the x- and y-axes, respectively, and performance, as expected economic profitability (a function of such exploration and exploitation combinations), is positioned vertically on the z-axis.[7]

Performance trajectories of ambidexterity and vacillation

Having defined a performance landscape absent the costs of organization, we now explore how each theory maps onto the performance landscape once we account for the costs of organization (see Figure 1). Two classes of organizational costs are relevant for our analysis. The first class of costs is associated with the cost of organizing each complementary set of design elements used to support either exploration or exploitation. For instance, it is commonly argued that a centralized organizational structure is needed to facilitate exploitation. In contrast, decentralized organizations generate exploration. Each one of these organizational structures requires some setup costs to configure the set of design elements, as well as administrative costs to maintain and operate them. For purposes of simplifying exposition, we momentarily set aside setup costs as well as any administrative costs to maintain and operate purely complementary configurations of design elements, such as either centralization or decentralization. Instead, we focus on only those costs associated with the negative externality from mixing competing design elements with the scope of these costs measuring the magnitude of negative externalities. As we will describe, the magnitude of such costs contribute significantly in differentiating the empirical predictions of ambidexterity from those of vacillation. We now turn to describing the magnitude of this potential negative externality and how it influences the performance predicted from each theory.

The argument for organizational ambidexterity achieving high performance hinges on the assumption that the negative externalities that accompany organizational design choices needed to deliver exploration and exploitation are moderate or can, through skillful management, be minimized. Yet,

[6] Although our model is not formally analytic in nature, we anticipate in our formulation that a more formal approach will include assumptions about smoothness and other desirable mathematical properties. For instance, a concave quadratic function within a specified relevant range would satisfy our assumed constraints.

[7] In this framework, performance is conceptualized as instantaneous in that it reflects the short-run performance of an organization at any given point in time. To understand performance in the long run, it is necessary to observe movement along this performance landscape over time.

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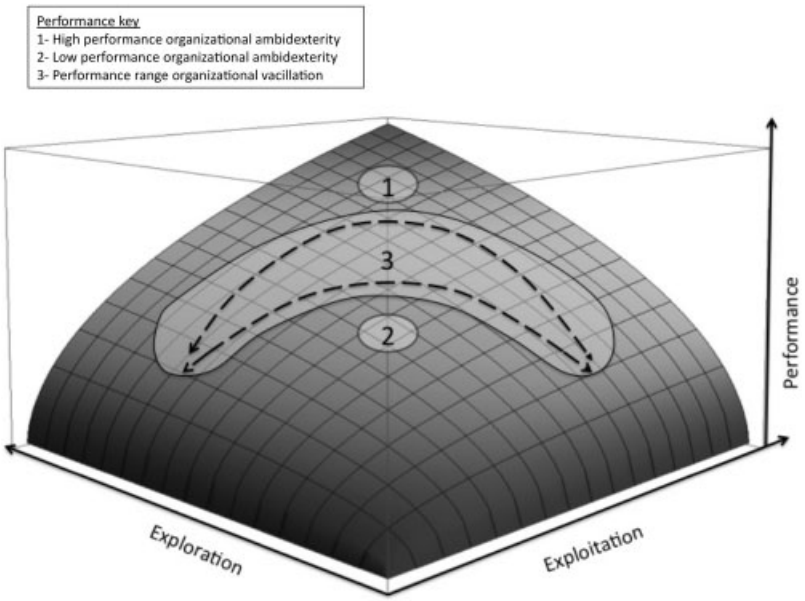

Figure 3. Performance comparison of ambidexterity and vacillation strategies

research suggests the negative externalities may be substantial. For instance, as Martens, Debackere, and Van Looy (2005: 210) argue, 'the idea of... ambidextrous organizations is diametrically opposed to the notion of internal consistency that has dominated the literature on organizational design over the last decades.' Theorists in the structural configuration literature argue that 'effective organizations achieve an internal consistency among their design parameters, in effect, a structural configuration' (Mintzberg, 1979: 300), and they empirically demonstrate that organizational traits are not randomly distributed within populations of organizations, but rather appear in clusters (Miller and Friesen, 1980; Doty *et al*., 1993). Therefore, adopting an organizational form that deviates from these clusters results in lower performance and a diminished probability of survival (Doty, Glick, and Huber, 1993; Mintzberg, 1979).

Economists have also emphasized the fundamental complementarity among design elements in discretely different organizational forms. For example, Williamson (1991) describes alternative governance forms as characterized by a syndrome of mutually supporting attributes and views attempts to craft organizational forms that violate these complementarities as problematic and unlikely to survive. Organizational theorists, using punctuated equilibrium models, have emphasized concepts of complementarity to describe patterns of organizational change that result in rather discrete organizational choices (Gersick, 1991; Tushman and Romanelli, 1985). The discontinuous nature of both change and organizational choices reflects the 'deep structure' that governs these stable forms (Gersick, 1991) and the resulting problems of structuring without such consistency.

Given the objective of high performance through organizational ambidexterity, we expect an ambidextrous organization is structured and led to produce an approximate balance of exploration and exploitation. Such a balance will fall somewhere on the performance landscape where exploration and exploitation are relatively equivalent—two examples being Points One and Two in Figure 3. However, all points along a vector from the origin through Points One and Two are positions of balance. The critical question concerns the performance level that organizational ambidexterity produces. In other words, does the performance that can be delivered by ambidexterity lie closer to Point One or Point Two? The greater the negative externality (organizational cost) delivered by inconsistent design elements, the lower the actual exploration and exploitation delivered by the organizational structure. Put differently, the greater the negative externality from organizational ambidexterity, the lower and more distant the level of performance achieved will be from Point One. If the negative externality is relatively small, which

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ambidexterity scholars implicitly assume, then an ambidextrous organization generates abundant levels of exploration and exploitation corresponding to high performance indicated by Point One. In contrast, if the negative externality delivered from inconsistent design elements is great, then the actual levels of exploration and exploitation are much less than the ideal and project onto the performance landscape at a much lower level of performance—symbolized by the location of Point Two or even lower.

While the debate over the merits of structural ambidexterity involves a discussion about where performance lies between Points One and Two in Figure 2, organizational vacillation maps onto the performance landscape in a very different way. For instance, instead of balancing exploration and exploitation on the performance landscape, vacillation in formal structure leads to a dynamic path on the landscape that traverses from one side of the landscape to the other as initiated by discrete changes in the formal organizational structure. To understand the path delivered by vacillation, assume an initial location on the performance landscape in which an organization is centralized delivering high levels of exploitation and comparatively lower exploration. Following the vacillation logic, managers desiring more exploration restructure the formal elements of the organization's design to decentralize. The structural shift quickly increases the level of exploration and, due to the embedded nature of culture, routines, and communication patterns, may allow for temporary retention of the cross-unit coordination developed in the previous structuring. In periods between formal structural changes, the informal organization simultaneously reflects both the current structure promoting exploitation (exploration) and the prior structure promoting exploration (exploitation). The simultaneous increase in the level of exploration and a slowly diminishing level of exploitation allows organizational vacillation to generate a higher level of performance in the short run than a static choice to adopt one or the other.

Eventually, as the autonomy of the decentralized units gradually unwinds the cross-unit coordination, the organization repositions to a high level of exploration with a low level of exploitation. As the temporally achieved dual capability of exploration and exploitation depletes over time as "mechanistic' firms... become still more mechanistic over time... and firms moving in an 'organic' direction become still more organic later' (Miller and Friesen, 1980: 592; c.f. Nickerson and Zenger, 2002), management again restructures and reverses the dynamic performance trajectory. Vacillation particularly improves performance over a static choice if there is an asymmetry in the pace at which exploration and exploitation respond to shifts in the formal structure; in particular if a structural shift rapidly accelerates the formation of one performance dimension, while inertia slows the decay of the other. Thus, if a centralized firm, which is effectively exploiting, suddenly decentralizes and, in response, exploitation slowly decays while exploration quickly accelerates, complementarity in exploration and exploitation will elevate performance through switching. Similarly, if the same firm that is now decentralized (and effectively exploring) suddenly centralizes and, in response, exploration slowly decays while exploration quickly accelerates, then switching again will elevate performance. The vacillating back and forth scribes the performance trajectory that moves across the landscape. The difference between high and low performance vacillation is shown by the different performance locations of the two dual-arrowed lines in Figure 2 (Path Three); specifically, low performance vacillation is shown by the line closer to the origin and higher performance movements by the higher-arced line further from this point. The trajectories of these arcs are determined by the inertia present, i.e., how fast organizational attributes both accelerate and decay in response to shifts in structure.

With both frameworks theoretically mapped onto a common performance landscape, we can now formulate the fundamental question of whether ambidexterity is located at a higher level on the landscape compared to the performance region that vacillation generates or vice versa. With reference to Figure 3, the question is whether ambidexterity achieves performance at Point One, which yields performance comparatively greater than that delivered by vacillation along Path Three, or whether ambidexterity achieves performance at Point Two, which yields performance comparatively lower than that delivered by vacillation along Path Three. Returning to the logic summarized in Figure 1, the question is whether static design decisions targeting balance yield a greater abundance of exploration and exploitation than do design decisions that emphasize dynamic vacillation between

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complementary design choices that target exploration and exploitation.

CASE EVIDENCE

To examine our fundamental question, we focus on an in-depth case analysis of two familiar illustrations in this literature. We hope a focus on familiar examples that develop a commonly understood set of facts will permit more robust discussion and debate about the source of high performance through exploration *and* exploitation, in much the same way that the GM-Fisher Body case has provided the backdrop for extended theoretical discussions and debates in the literature on the topic of vertical integration (see Klein, Crawford and Alchian, 1978; Casadesus-Masanell and Spulber, 2000; Coase, 2000; Freeland, 2000; Klein, 2000). We first focus our attention on the Hewlett-Packard illustration, which was briefly detailed by Nickerson and Zenger (2002) in developing the efficiency of organizational vacillation as an explanation for organizational performance. In adding to this prior analysis, we draw on a much wider array of data sources to develop a more complete history of HP's evolution over a longer time period of 25 years. Moreover, lest we be accused of merely selecting illustrations that highlight the virtue of vacillation over structural ambidexterity, our second case study focuses on USAToday.com, a case frequently used to illustrate the benefits of organizational ambidexterity (see O'Reilly and Tushman, 2004, 2008; Tushman *et al*., 2010). Further, to address March's (1991) argument that the exploration and exploitation tension operates at multiple levels of analysis, our case illustrations are at two different levels: the firm or multibusiness level and the business unit level.

We approach our task by examining patterns of managerial decision making over time. Our methodological approach is similar to previous use of case studies for theory testing (e.g. Anderson, 1983; Pinnfield, 1986), though our time horizon is long. We assume managers are boundedly rational in their choice of organizational design (Simon, 1955) and are selecting structures over time that respond to inefficiencies generated by the current choices (or changes in environment). If organizational vacillation yields high average performance while organizational ambidexterity yields lower performance, managers should pursue a pattern of modulation over time. If, however, organizational vacillation yields low performance and organizational ambidexterity high performance, management should pursue organizational ambidexterity over extended periods of time. The case studies provide data relevant to understanding when and how firms develop capability in both exploration and exploitation, thereby serving the purpose of theory elaboration (Lee, Mitchell, and Sablynski, 1999).

Hewlett-Packard

We examine Hewlett-Packard over a 25-year period—a time during which HP became the largest information technology company in the world. Our analysis of HP is based on a variety of data sources, including news articles identified through Lexis-Nexis, case studies developed at Washington University (Zillmer and Zenger, 2002a, 2002b, 2002 c, 2002d), Stanford University (Burgelman and Meza, 2000, 2004a, 2004b), and Harvard University (King, 1984), annual reports, and 25 years of securities analyst reports (1,026 reports) on Hewlett-Packard from Bears Stearns, Credit Suisse, Deutche Bank, PaineWebber, Prudential, and Smith Barney. We also analyzed transcripts from personal interviews with former CEO John Young conducted by two of the authors in 1998, as well as a memoir Carly Fiorina (2006) wrote about her experiences at HP. Using these data sources, we constructed a focused history of HP which we have organized into sections demarcated by significant shifts in organizational structure.

A decentralized HP (pre-1982)

By the early 1980s, Hewlett-Packard had firmly established itself as one of the world's most innovative corporations—a company remarkable in its capacity to explore new technology and exploit what it discovers. A 1983 *Fortune* survey of the top 6,000 organizations ranked HP third in innovativeness. Over several decades, HP had developed a leading position in test and measurement equipment, designing and producing largely stand-alone products. Much of HP's success in innovation was credited to a structure of decentralization, with 45 small, autonomous divisions crafted around specific products. Each division maintained control over marketing, production, and product design.

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The decentralized structure was accompanied by a culture of cooperation and autonomy identified as the 'HP Way.' However, in recent years, HP had become an important player in the computing industry which, for the first time in its history, demanded a significantly higher level of integration across divisional products and services.

A move toward centralization (1982 to 1988)

Despite HP's remarkable historic success in innovation, by the early-1980s, both external observers and company management noted significant problems. CEO Young stated the biggest challenge at HP was finding a way to balance the organization by 'orchestrat(ing) the divisions and provid(ing) a strategic glue and direction for the computer effort, while keeping the work units small' (*BusinessWeek,* 1982: 73). Yet, as HP's product portfolio increasingly drifted away from instruments and into computing and software, customers began to complain about compatibility across HP products and increasingly demanded integrated solutions rather than stand-alone components. Analysts critiqued HP for having poor 'integration of instruments and computer sales efforts' (Muratore, 1984: 29). For the first time in its history, HP faced strong pressure to coordinate designs, products, and marketing efforts across divisions—all key steps in efficiently exploiting existing technological strength.

Starting in 1983, HP made a series of moves to remedy these problems and thereby achieve greater balance. These structural shifts consolidated product divisions around shared customer lines. In late 1983, HP began organizing disparate computer groups under a common umbrella to improve the coordination and efficiency of marketing, manufacturing, and engineering. By July 1984, HP reorganized the, 'previous product-group-based organization into four major sectors, including one devoted entirely to marketing and selling' (Hewlett-Packard, 1984: 5) to provide integration in both sales and product development efforts. In addition, HP stripped away up to 40 percent of each division's marketing dollars and placed these in a centralized marketing group that oversaw strategic marketing for the entire Computer Group. Consolidation continued in January 1985, with the grouping of three separate units into a single Manufacturing, Medical and Analytical Group. At the conclusion of this centralization phase, the historic, decentralized HP had been dramatically transformed. Autonomy within the product divisions had been significantly curtailed. Product divisions had been collapsed and most other divisions were clustered under larger structural umbrellas. Sales and marketing had been significantly centralized and organized by customer categories rather than product divisions.

The reorganization yielded positive performance benefits over the next several years. HP became more skilled in delivering integrative customer solutions as evidenced by products that bridged historic computer and instrument divides. Managers agreed on common standards and platforms, such as RISC technology and UNIX, around which product and software were built, producing a more unified and integrated product line. Analyst comments reflected the exploitation benefits of centralization, noting an increased ability to see customers' problems across products and market HP's overall capabilities. Surprisingly, given HP's long tradition of autonomy and decentralization, there was very little concern expressed by securities analysts, the business press, or management itself that the shift toward centralization might undermine HP's innovativeness. Instead, the sentiment was that HP had gained greater balance, as reflected in a 1984 Prudential analyst report that said:

> *'The independence and limited perspective of the individual divisions (before reorganization), however, has tended to produce products not integrated from either a product or a market perspective. The reorganization regroups these divisions, but it does not change the basic concept of independent units'* (Muratore, 1984: 30).

Finally, the structural shift seemed to initially have a positive impact on HP's operating performance, infusing, in particular, a greater balance of emphasis on exploration and exploitation. During the next several years, HP's stock price outperformed the S&P 500.

A return to decentralization (1988 to 1994)

Despite what were likely intentions of sustained balance, by the late-1980s, HP had become markedly more bureaucratic, with innovation significantly curtailed. HP's share price had also slumped. Analysts critiqued HP for its lack of innovation and lateness to market, particularly in

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contrast to smaller rivals such as Sun Microsystems. Analysts credited delays in the release of both the Model 950 microcomputer and the Spectrum Series to the growing bureaucracy. *The Wall Street Journal* characterized the organizational environment as one in which 'even the simplest decision was sent up the management chain, sometimes all the way to Mr. Young' (Yoder, 1991: 1). By the late-1980s, the founders, David Packard and William Hewlett, along with CEO Young were convinced the centralized structure was constraining innovation.

Beginning in 1988 and then abruptly in 1990, HP took aggressive steps to increase innovation by granting divisions greater autonomy. In April 1988, HP separated the Computer Peripherals Group into three distinctly separate product groups for Publishing Products, Hardcopy Technology, and Mass Storage. HP split the Printer and Disk Drive groups away from Computer Products Group in 1990, to give the computer group more freedom to concentrate on microcomputers and workstations, a movement back toward a decentralized product structure. In an attempt to further enhance innovation through autonomy, divisional heads, such as Lew Platt, were moved away from corporate headquarters and given significant autonomy to work on major projects without having to consult CEO Young. In 1991, HP did merge several divisions under a Personal Computation Business (PCB), but the new division gained significant autonomy from corporate headquarters. In 1992, newly promoted CEO Lew Platt further split out the Computer Systems Organization, eliminating a layer of management and breaking up the operations of its networked systems group into four independent units oriented around products, all with autonomy to make their own strategic and marketing decisions. Thus, by 1992, HP moved its formal structure significantly back toward its decentralized roots in an effort to enhance exploration.

Analysts noted improved performance in HP divisions, expressing new confidence in HP's capacity to generate innovative products and revenue growth. By June 1991, Smith Barney analysts were lauding HP for 'the removal of layers of decision makers and the exodus of 'management by committee," and its return to, 'its more entrepreneurial roots" (Wang, 1991a: 5). Analysts and HP executives also expressed a clear sentiment that HP was balanced again by being both integrated and innovative, able to both diversify into new business and maintain cost control (Wang, 1991b). Prudential analysts commented on HP's newfound balance in exploration and exploitation and its capacity to deliver earnings growth through both revenue growth led by products and significant cost controls (Conigliaro, 1991). The 1992 Annual Report also spoke of an improved ability to 'balance responsiveness with the steadfast pursuit of excellence' (1992: 15). Favorable comments by analysts continued into 1993 and 1994; although, the focus was less on balance and more on renewed innovation through decentralization. Analysts at Smith Barney felt the previous move to decentralize had transformed HP into:

> *'A significantly more nimble organization and the improvement or increase in new products as a percent of total received. These attributes are consistent with the company's history but have perhaps been raised to a new level of proficiency'* (Wang, 1995: 5).

1995 to 1998: movement back toward centralization

The greater balance between exploration and exploitation was not long lived. By 1995, the emphasis again shifted toward exploitation through greater coordination across businesses. Analysts highlighted the need for integrated customer solutions due to the convergence of multiple computing systems into a single information technology environment (Neff, Wu, and Bean, 1999). Customers, popular press, and analysts alike criticized HP for 'functioning almost like separate computer companies under the same brand name' (Vijayan, 1998).

In a series of moves starting in 1995, HP formally adopted a more centralized structure. HP's leadership felt this centralization effort came at the right time to pull together the benefits of autonomous divisions and their resulting technological expertise. In August 1995, HP brought together the Computer Products Organization, the Computer Systems Organization, and the Worldwide Customer Support Operations into a collaborative Computer Organization Group. The 1995 Annual Report articulated clearly that the aim of this centralization was to find balance between innovation and integration:

> *'By unifying our computer activities, we can leverage strengths and deliver the integrated*

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solutions customers are looking for while maintaining the benefits of focused businesses' (Hewlett-Packard, 1995: 3).

By 1997, despite increased centralization, analysts still highlighted HP's capacity for effective exploration through rapid entry into new markets (Jones, Jones, and McBride, 1997).

In 1997, HP further centralized by reorganizing the sales force around customer groups, rather than products, with the aim of creating a sales force with broad product knowledge and the capacity to create solutions. In early 1998, HP merged the Test and Measurement Group and Measurement Systems Organization into a combined Measurement Organization, a move that pulled together all product groups associated with HP Electronics, Test and Measurement, Medical Products, Chemical Analysis, and Components Groups. To facilitate additional coordination, Lew Platt created a formal executive committee to address company-wide strategic issues including business evaluation, portfolio management, structure and governance, and management and employee practices. Late in 1998, HP combined the Enterprise Systems and the Software and Services Group to redevelop the UNIX solutions business and allow for the presentation of 'one face to the customer' (Vijayan, 1998). In the 1998 Annual Report, HP executives claimed a degree of balance, suggesting that they now operated a 'faster, more competitive company, with an improved product and services offering, greater ability to deliver solutions, and a more focused organizational structure' (Hewlett-Packard, 1998: 2)

HP divides and decentralizes again (1998 to 1999)

Despite positive exploitation benefits from centralization, signs of significant imbalance and performance decline appeared by 1999. Analysts again labeled HP as 'big, bloated, and bureaucratic' (Lambeth, 1999). The integrated divisions and bureaucratic decision-making process shelved good ideas across the organization. HP began to experience poor performance in test and measurement and began losing market share in other divisions to competitors pushing more innovative products. HP began to be viewed as lagging in innovation, and its stock price dropped in late 1998 as it struggled to regain market share and adjust to the falling prices in the semiconductor, PC, and printer industries. News media and analysts also suggested that the individual business units, especially Test and Measurement, were unable to get the attention that they needed in the integrated structure.

From late-1998 through 1999, Platt made a series of decisions to increase innovation through greater autonomy of the divisions. Moreover, in March 1999, to further increase autonomy, HP spun off its testing, medical, and chemical products into the new company, Agilent. By April 1999, HP was segmented into four distinct business units (Enterprise Computing Solutions, Computer Products, Inkjet Imaging Solutions, and LaserJet Imaging Systems) oriented primarily around products, each with a CEO and the latitude to formulate business and partner strategies independent of one another and corporate approval. The 1999 Annual Report suggested HP's desire was for the new structure to encourage flexibility and innovation. Moreover, language in the annual report had shifted away from integration and customer solutions—key elements of a focus on exploitation—to a renewed emphasis on flexibility and innovation.

The move to spin-out the Test and Measurement division was met with acclaim by analysts who cited the minimal attention HP devoted to the division. Analysts at Bears Stearns lauded the announced spin-off as a way to give the division increased attention (Neff *et al*., 1999). Analysts at Deutche Bank felt the move to spin out Agilent would 'provide increased visibility into Hewlett-Packard's core business' (Rueppel *et al*., 1999: 1). The move toward product divisions was also viewed positively by analysts as a device that allowed HP to capture intellectual property more effectively than the previous organizational structure. By late 1999, the stock was again outperforming the S&P 500.

Fiorina's march toward centralization (1999 to 2005)

When new CEO Carly Fiorina arrived in 1999, analysts were already demanding significant reorganization, emphasizing coordination and exploitation across divisions. Fiorina's assessment of HP was an organization overrun with internal competition and duplicated effort—and an organization with which it was difficult for customers to do

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business. Analysts at Prudential pointed to HP's growth in size causing 'inefficiencies across the organization' (Alexy and Park, 2000: 6). They note that HP's 'lack of focus had created opportunities for its competitors' (Alexy and Park, 2000: 6). Internally, managers feared that HP had missed significant opportunities in the Internet.

Starting in 1999, Fiorina made a series of significant moves toward centralization. She saw these moves as an effort to rather explicitly undo or 'offset the patterns of the previous organization' (Fiorina, 2006: 191). Regarding the benefits and drawbacks of the previous structure, Fiorina suggested to shareholders in 2000 in rather explicit terms that she was trying to balance the organization—to address exploitation objectives that the decentralized structure poorly achieved:

> *'Our highly decentralized structure has enabled us to move quickly. In an Internet age, it's clear that we must maintain this speed. At the same time, our value to customers lies not only in individual products, but in delivering total solutions. To achieve this, we are focusing on strategic opportunities that fall between our traditional businesses, or cross the lines of one of more of our business'* (Hewlett-Packard, 2000: 11).

HP adopted a 'front-back' organizational structure with two customer-facing sales organizations and two focused on production and product development. In the 2000 Annual Report, Fiorina emphasized the need to 'quickly… turn inventive ideas into world-class technology solutions' (Hewlett-Packard, 2000: 11), which she felt was achievable only through greater centralization. In 2001, HP completed a dramatic acquisition of Compaq followed by its direct integration into this centralized structure. In May 2004, HP created a complete Customer Sales Organization to further integrate the sales and marketing efforts across the entire organization rather than by specific product groups.

Analysts praised Fiorina for initiating much needed changes and for attempting to integrate the highly decentralized organization. They noted HP's new and balanced capacity to sustain 'earnings growth while re-engineering and streamlining operations' (Young, 1999: 2). New products and customer solutions and strategies demonstrated the benefits of HP's new integration. For instance, HP unveiled a digital entertainment strategy that pulled together divergent strengths across the firm. HP additionally realized significant savings in infrastructure costs from the shift toward centralization.

Hurd decentralizes (2005 to 2008)

Despite benefits from centralization, within a few years analysts were commenting on HP's problems with innovation, noting that HP was failing to 'grow at the same rate as its more narrowly focused competitors' (Altherr and Haneman, 2000: 3). In 2004, interim CEO Robert Wayman also recognized the need to shift from a focus on 'consolidation, integration, and cost cutting' to a focus on 'accelerating profitable growth, driving leverage across HP's product portfolio and extending leadership into new categories' (Hewlett-Packard 2004: 1). Moreover, the media began to call for either greater decentralization or the actual breakup of HP as a solution, including either the sale of the PC or the printers business. HP had become slow and bureaucratic and insiders to the HP situation felt Fiorina's centralization considerably slowed organizational processes that were central to exploration. HP's board began pushing for decentralization efforts. However, despite HP's prior history of structural change by each of the prior two CEOs, Fiorina actively resisted board pressure to change; she insisted on maintaining the current centralized state (Tam, 2005).

At a board meeting in mid-January 2005, HP board members decided on a management reorganization plan despite Fiorina's objections. Not surprisingly, she was replaced in early February with new CEO, Mark Hurd. The 2005 Annual Report addressed the bureaucracy that Hurd discovered upon taking the helm:

> *'In a few cases there were nine layers of management between the CEO and a customer… Some business divisions had less than 30 percent of their budgets directly under their control because of the way costs were allocated. When this kind of organizational design is applied to a company of HP's scale, it represents the underpinnings of slow decision-making and confusion in terms of accountability'* (Hewlett-Packard, 2005: 2).

Almost immediately, CEO Mark Hurd streamlined staff and significantly decentralized to rekindle innovation. In July 2005, Hurd dismantled the

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Customer Solutions Group and divided responsibility to each of the specific product groups, putting product groups in charge of their own marketing, product development, and sales.

As a result, HP's profit and innovation rebounded. Analysts applauded the shift back to decentralization, suggesting the new structure 'reinforces its long-standing philosophy on the strength of the HP portfolio' (McCullough, 2005: 1). Moreover, they again spoke of regained balance, in which HP had strengthened 'its ability to balance growth and profitability' (Semple and Kelleher, 2006: 1). Disbanding the centralized sales and marketing organization, the Customer Solutions Organization, has been viewed as instrumental in HP's resurgence in the PC market, including regaining the No. 1 market share from Dell.

Assessment

Over 25 years, HP pursued a rather remarkable pattern of reorganizations, each structural change seemingly focused on correcting the outcomes of the past structure. When HP's autonomous divisions produced excessive redundancy and inconsistency, management formally reorganized, centralizing key cross-divisional activities and collecting divisions under larger organizational umbrellas that could fuel integration and consistency as well as lower costs. Such efforts were directly focused on more effectively exploiting existing businesses and products—reducing inefficiencies, eliminating redundancies, and combining and integrating products to satisfy customers. These formal organizational structures rapidly delivered consistency, integration, and solution selling. However, they also generated bureaucracy that increasingly attenuated and delayed innovativeness and exploration. As these bureaucratic costs increased with time, management sought increased exploration by formally restructuring. Divisions were separated and centralized activities were redistributed back into autonomous product divisions. The divisions quickly responded with increased exploration ushering in a period of greater balance between exploration and exploitation, but eventually undermining the level of exploitation again.

While HP leadership frequently spoke of seeking to balance or rebalance the organization, essentially expressing a desire for ambidexterity, it nonetheless frequently engaged in structural change—change that shifted the organization toward either greater exploration or greater exploitation. HP's inability to achieve static balance with high levels of both exploration and exploitation led it to vacillate. Management centralized when too little exploitation (in terms of coordination and integration) was identified. As a result, the firm enjoyed episodes where the formal structure delivered exploitation and the inertial informal structure delivered exploration. Managers decentralized when too little exploration (in terms of flexibility and autonomy) was realized. That said, we also found evidence that senior leadership attempted to balance within each epoch, which may have elevated performance. Nonetheless, such balancing efforts eventually were insufficient and, repeatedly, an organizational change led to a new epoch. While HP's stock price performance drifted up and down in these 25 years, the stock significantly outperformed all market indices over this time period and HP emerged as the world's largest global IT company. Note also that this case illustration highlights an important boundary condition for both perspectives. Prior to the early 1980s, decentralization and the primary pursuit of exploration was a stable equilibrium for HP. It was the rapid expansion into computing that elevated the need for integration across divisions that triggered efforts to achieve exploration and exploitation at the corporate level.

USA Today Online

USA Today's Internet business emerged during a 15-year time period—a time when growth of the Internet caused a fundamental shift in the format through which news is delivered. Our discussion of this case is based on several sources. For the early periods, we draw heavily from existing case studies and academic articles featuring this episode (O'Reilly and Tushman, 2004, 2008; Tushman, Roberts, and Kiron, 2001a, 2001b). We augment the study with data collected from a variety of secondary news reports, from annual reports of *USA Today*'s parent company, Gannett Company, Inc., and from an interview with a *USA Today* executive. Using these data sources, we construct a focused history of *USA Today*, highlighting its successful efforts to explore the online business, while in the process exploit the existing print business. Thus, while our discussion of HP focused on its aggregate, corporate-level organization, this

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case highlights the efforts to both explore and exploit within a focused business segment: online news.

Pre-1995 integration

USA Today (USAT) launched in 1982 with the goal of creating a national daily newspaper. With a key strategy of providing the newspaper free of charge at hotels around the country, the newspaper experienced 10 years of financial losses before the paper began earning profits. Tom Curley, the young manager who coordinated the original market research that led to the launching of the newspaper, became president in 1986, with responsibility for circulation. In 1991, he added the title of publisher and assumed responsibility for the newsroom in 1994. In 1995, he expanded his responsibilities to include USAT's international edition and Internet business.

Efforts to explore Internet expansion opportunities began within four years of the launch of *USA Today*. Beginning in 1986, USAT launched several projects that experimented with a bulletin board service that allowed users to play chess and peruse an online sports center. These projects evolved into a small organization embedded within USAT called the USA TODAY Information Network. While these online projects exploited some of USAT's existing sports content and provided some valuable Internet experience, by the mid-1990s nothing in the Internet realm had emerged into a substantial source of revenue growth for USAT.

A stand-alone division (1995 to 2000)

By 1995, global activity on the Internet was exploding. USAT recognized that its own efforts to explore in this space were failing or insufficient. Therefore, they closed down the Information Network in March 1995 and launched a new independent division, USAToday.com (Online), in April 1995. In forming this new division, Curley made a substantial investment and granted extensive autonomy to its general manager, Lorraine Cichowski, to run the business autonomously as a 'stand-alone' operation entirely separate from the USAT newsroom operation and culture (Tushman *et al*., 2001a).

The stand-alone structure of the Online division led to dramatic experimentation, rapid innovation, and a business model that increasingly diverged from the print business. The original Online model was positioned as a dial-up online newspaper providing up-to-the-minute sports statistics. Customers were charged a subscription of $12.95 per month for unlimited access to the online newspaper and three hours of access to the broader Internet. However, this model was quickly scrapped in favor of an advertising-based revenue model. A month later, Online introduced another major change by shifting from a daily published edition, consistent with the print business format, to a format of continuous updating and breaking news. This strategy shift meant Cichowski had to rely mostly on wire services for breaking news. The format also meant vastly different work habits and culture as compared to the USAT print newsroom. Cichowski also chose to hire staff with a distinctly different and younger demographic profile than those already within the print business. Moreover, incentives and the culture were strikingly different from the USAT print newsroom, and they were shaped to support the continuous update format. Furthermore, decision processes and structures discouraged coordination between USAT and Online. The two newsrooms were physically separated on different floors. The autonomous division began to see success with revenue increasing at a double-digit pace in 1996 and 1997. The organization turned a profit in the fall of 1998, becoming the first newspaper-owned online news service to achieve this distinction.

Online's autonomy and success came with a predictable cost, however. By 1998, a growing conflict emerged between Online and the print newsroom. Online found news from the USAT newsroom to be increasingly useless, as the writers worked to the one daily deadline for the print newspaper. As a result, by 1998 only 20 percent of Online's news came from the print newsroom. Conflict also arose since the accuracy of Online stories occasionally slipped below USAT standards, thus undermining what USAT saw as their key brand attributes: fairness, accuracy, and trust. Conflict also arose over access to news sources and ownership of stories. Print reporters were concerned that news sources might stop returning calls if they had already returned calls to Online's reporters. Even more pressing was the concern that the Online business essentially leaked key stories to their print competitors, who could follow the Online Web site and with minor source checking, and then include similar stories in their print

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news publications. All in all, USAT print personnel were concerned that online media would soon put them out of business. The sense of competition between the two autonomous units was summed up by an Online staffer who said 'there was almost a sense of 'watch what we can do without you (the paper).' We felt like the paper people thought we were a joke, so this didn't help matters much' (Tushman *et al*., 2001a: 10). In concert with deterioration of relationships between the two newsrooms, Cichowski's relationship with Curley had also deteriorated by 1998 because of the tensions between the two divergent arms of USAT. In part to resolve the growing issues, in 2000 Cichowski pushed for further autonomy by spinning off the online business.

2000 to 2005: selective integration

Curley, however, perceived a larger opportunity in moving the opposite direction—a direction that would exploit significant synergies across the business units by promoting the integration of the print and Online groups in which he termed a 'network' strategy. With this strategy, he planned to leverage news gathering/editorial capabilities across online and print newsrooms, as well as Gannett's network of television stations. His initial efforts to promote this strategy involved management changes, but these efforts proved insufficient and in spring of 2000, Online continued to operate as an independent business unit.

With the view that 'separateness equals death' (Tushman *et al*., 2001a: 13), Curley replaced Cichowski and 40 percent of the senior management team. While the Online newsroom remained physically separated from the print newsroom, Curley insisted on weekly editorial meetings that forced both staffs to interact and integrate. He also shifted senior team incentives so that bonus incentives were based on the combined performance of Online *and* print growth. Curley additionally launched USA LIVE, which offered news through Gannett-owned television stations.

Very quickly, the online and print newsrooms, along with television, began to share stories and better coordinate. Jeff Weber, Cichowski's replacement, also took steps to shift the brand identity of Online closer to the newspaper's brand image. He met twice a month with the combined organization's publisher and editor to 'figure out the guidelines for how the newspaper and Online should play in the same sandbox' (Tushman *et al*., 2001b: 2). Online editors started attending daily newsroom's meetings. The immediate results were impressive. The average unique monthly visitors increased from 300,000 a month under to Cichowski to 400,000 under Weber, with visitors spending more than 18 minutes per visit versus 11 minutes previously. However, while the number of visitors grew, USAToday.com nonetheless lost market share.

Post-2005: complete integration

The shift toward closer integration of Online and print continued over the years from 2000 to 2005, culminating with Jeff Weber announcing in December 2005 that the print and online newsrooms would structurally merge. In the process, any remaining autonomy between the two groups was eliminated. In announcing the shift, Craig Moon, president and publisher of *USA Today* stated that 'what I'm basically here to tell you today is that there no longer is going to be a dotcom newsroom. There no longer is going to be a print newsroom' (*USA Today*, 2005). By 2005, the opportunities to exploit cost savings through integration simply overwhelmed any gains from separation. USAT print and online had become a single integrated unit with no separate accounting systems or structures of any form.

Assessment

Unlike the focus on an entire organization in the case of HP, our focus on *USA Today* highlights how a specific business unit was structurally governed over time. Over a 19-year period, we see a pattern of a new business beginning fully integrated, then radically becoming decentralized and autonomous to facilitate exploration, then selectively reintegrated, only to fully reintegrate as efforts shifted to exploitation. Prior to 1995, USAT's attempts to develop an Internet business were simply embedded within USAT. These efforts were rather limited in their success until a highly autonomous USAToday.com was formed under Cichowski and made independent from an equally autonomous USAT. With this decentralized, autonomous structure, exploration flourished. Yet predictably, a lack of cross-unit coordination was problematic, prompting pressure to restructure. We see evidence of this pressure in the tenor

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of interactions between Online and USAT from 1995 to 2000. After separating USA Today Online in 1995, there was an extended period of time in which the business seemed to both simultaneously explore new innovations and exploit existing resources in the print business. For example, Online experimented with a sports portal offering up-to-the-minute sports statistics and other content from the newsroom for an individual subscription fee. However, when this approach proved insufficient, Online quickly moved to exploring other options irrespective of the effect this new strategy had on USAT—options that were much less exploitative of the print business resources. Such exploration led to increasing frictions between the two autonomous units in addition to redundant news generation efforts.

As the cost of this failure to coordinate across businesses increased, consistent with organizational vacillation, management began selectively restructuring the formal organization to gain the greater coordination and integration, while still maintaining USAT Online as a separate business. In theory, a formal reorganization would shift goals, reporting relationships, decision rights, and incentives in a consistent way. We see just this in 2000 as Curley's structural changes involved replacing recalcitrant staff, directing the new staff to hold weekly meetings, and introducing an incentive structure based on group performance instead of individual performance. These selective efforts at integration are consistent with the organizational ambidexterity argument and appear to have enhanced their capacity to exploit across these two distinct business units. However, eventually in 2005, management determined that this selective integration was insufficient and the Online and print newsrooms became fully integrated (*USA Today* Staff, 2005). We view this pattern of integration, separation, and reintegration as suggestive of organizational vacillation.

It is clear from Curley's own assessment that the pattern of first exploration through autonomy and structural separation, followed by a focus on exploitation and economizing through active integration, was critical to his success in achieving ambidexterity. In reflecting on the business, Curley commented:

> *'Originally, when Online launched, they did need some space, some separateness to figure out who they were. I'm not sure that they would have embraced breaking news as early and as fully as they did if they'd been fully integrated with the paper. And, you can't just blame them for this separateness—the first four years when they were up and running, people in the newsroom didn't even have a PC on their desk to access the Web. But, by 1999, it was pretty clear that greater integration was required'* (Tushman *et al.,* 2001b: 3).

Note the clear sentiment in Curley's comments that decentralization and autonomy were essential to their initial success in innovation and exploration. When Curley formally reorganized in 2000, Online and USAT shifted their focus to exploiting synergistic opportunities. The important observation is that achieving exploration demanded a structural change, as did achieving exploitation. Thus, while USAT certainly pushed to organize for balance with what appears to be some extended success, the performance of the online business in exploring and exploiting was also significantly driven by the dynamics of structural change toward both integration and separation.

In fact, USAT's use of autonomous units to create space for an exploration outside of traditional competencies was nothing new for the organization. In the past, USAT had used a similar strategy with several ventures, including their telemarketing group, USA Today TV, and Sports Weekly. With all these projects, management granted a certain level of autonomy to facilitate its development. Then, depending on the success of this project and whether or not it had developed synergies with the larger organization, these projects were reintegrated with USAT, spun out, or simply shut down.

DISCUSSION

In these two cases, we find support for patterns of structural vacillation playing a vital role in corporate efforts to develop exploration and exploitation, together resulting in high long run performance. Specifically, we find that in both HP and *USA Today*, efforts to structurally segment the organization and build in cross-unit integration through leadership initiatives were not sustainable over time, leading us to infer that organizational ambidexterity was insufficient in the long run at delivering high performance. We also find

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that repeated structural modulation corresponded to periods of capability in both exploration and exploitation and overall organizational success. While two case studies are insufficient to provide strong empirical support, each illustrates the role of organizational vacillation in delivering high performance over the long run through the provision of both exploration and exploitation, even though much of the time the levels of each were unbalanced. At HP, the observed exploration, exploitation, and superior organizational performance over a 25-year period was achieved through a pattern of organizational vacillation. Note that these structural shifts targeted increased balance, but achieved it only temporarily with epochs of structural change. In the case of *USA Today*, while we find evidence that managers attempted to successfully implement an organizationally ambidextrous approach in 2000, an extension of the time horizon both before and after 2000 reveals that the attempt was nonetheless embedded in a pattern of organizational vacillation in which online efforts were first centralized within USAT, then decentralized, and subsequently recentralized.

While our case studies highlight vacillation's role in generating high long run performance, we also find evidence that ambidexterity as a leadership initiative yields performance benefits within the epochs of organizational vacillation. Initiatives to build coordination across a segmented organization with cross-unit teams, linking mechanisms, and a unifying culture and team processes—facets O'Reilly and Tushman (2008) describe in their definition of ambidexterity—appear to be beneficial to performance at least in the short run in the midst of transitions from one organizational structure to another. Our finding is consistent with the cross-sectional empirical results that are suggestive of a positive impact of organizational ambidexterity on various performance metrics (He and Wong, 2004; O'Reilly and Tushman, 2008), while additionally suggesting that research with longer time horizons is essential to evaluate vacillation's role in shaping these outcome over time.

Our discoveries from the two case studies are suggestive of a theoretical reconciliation between the organizational ambidexterity and organizational vacillation perspectives. In essence, our case studies indicate that vacillation, within the boundary conditions described below, can yield higher long run performance. Yet, those managers who engage in organizational ambidexterity within each epoch of vacillation can deliver even higher long run performance as their efforts attempt to extend the period of balance as well as increase the amount of exploration and exploitation in the short run. Therefore, we conclude that the two perspectives present some capacity for integration. For instance, we believe the theory of organizational vacillation can be extended to acknowledge that effort by leaders to achieve ambidexterity can shift upward the organizational vacillation performance path described in Figure 3. That said, more theory and empirical work is needed to understand the precise path of the curve and how these efforts impact such factors like the frequency of vacillation. Advancing this combined theory not only provides a way to reconcile the two perspectives, but also provides value by building a more comprehensive and cumulative theory of organization that can benefit leaders.

As noted earlier, our case studies reflect differing units of analysis. The HP illustration employs the corporation as the unit of analysis, whereas the *USA Today* illustration occurred at the business unit level. While the two units of analysis differ, both units illustrate vacillation between discrete structural alternatives due to the facilitating role of organizational inertia and illustrate managers attempting to manage ambidextrously. That said, different units of analysis might yield differences in the ideal rate of vacillation and the nature of structural choices. We also envision that the challenges of ambidexterity may differ because of the differing authority structures found in corporate versus business unit levels of analysis.

The intensity of these differences may reflect differences in the intensity of the selection environment (i.e., the pressure to perform). Williamson (1985) draws this distinction and suggests that differences in selection environments serve to influence the time span by which certain organizational processes take place. The selection environments between Hewlett-Packard, a publicly traded company, and *USA Today*, a business unit within the larger Gannett Corporation, are likely to differ. The leaders at Hewlett-Packard arguably operated within a relatively strong selection environment as a result of its public ownership. Failure to perform in the short run quickly aggregates pressure for change from external shareholders and increases the likelihood of strategic or structural adjustment. By contrast, *USA Today* is a subunit of the larger

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Gannett Corporation. We suggest that embeddedness within a larger organization may, at times, insulate the business unit from selection pressures. The notion that selection pressures may vary by the unit of analysis represents an opportunity to expand and refine vacillation theory.

The primary alternative explanation for finite episodes of organizational ambidexterity and organizational vacillation is that the environment is changing. If the environment is changing, then contingency theory would predict that so too should an organization's structure. Over the long time horizons studied, the environment was undoubtedly changing in both cases. However, for a contingency explanation to explain the observed phenomena, the environment would need to change so as to *exogenously* vacillate in its need for exploration and exploitation in a pattern consistent with the observed patterns in structural change. This seems quite unlikely in either illustration. Over the 25 years of the study, the computer industry tended to move in the direction of proprietary systems to open standards, from mainframes to networks of microcomputers, from large corporate customers to a diversity of business and consumer customers. These trends did not reverse. Similarly, trends in the news industry have been unidirectionally driven by the Internet and related technologies, which likewise have not reversed. Both environments seem to have consistently demanded exploration *and* exploitation.

Both theories of organizational ambidexterity and organizational vacillation are valid within a set of boundary conditions. Key conditions are highlighted here and build on those identified by Nickerson and Zenger (2002) and Gulati and Puranam (2009). For instance, both theories rely on managers desiring multiple performance dimensions, each of which is best achieved by a rather discrete organizational form. However, in those environments where only exploitation is required, managers can simply centralize or otherwise structure to exploit with little concern for generating balance through either vacillation or ambidexterity. A second and related boundary condition is that both theories assume that complementarities exist among organizational design elements. If this were not the case, exploration and exploitation could be organized quite separately in a dual structure without any conflict or design tension. Both theories also rely on the condition of a selection environment that is not so hypercompetitive that firms pursuing exploration to any degree are selected out. In this type of extreme selection environment, the benefits of vacillation would not have time to accrue. Moreover, for ambidexterity, any reduction in exploitation caused by pursuing exploration would result in the firm being selected out. The theories do differ in one important set of boundary conditions. Ambidexterity suggests that the benefits of crafting somewhat conflicting organizational structures exceed the costs of doing so. In contrast, organizational vacillation assumes that the inertia in the informal organization causes exploration and exploitation to differentially wax and wane in response to structural shifts and, as a result, generates benefits from vacillation that over time exceed the cost of structural change. We assume all of these boundary conditions hold in our case studies.

Sailing into the wind

To help convey the findings of our research to managers, we believe a metaphor may be particularly helpful. The challenge of achieving high levels of both exploration and exploitation parallels the challenge sailors face in attempting to sail into the wind. The sailor knows that laying a course directly into the wind not only slows progress, but ensures regress. In contrast, skillfully configuring the boat's mainsail, foresail, and rudder to set a course 40 degrees off wind can generate tremendous speed. While traveling on this 'close-hauled' course can maintain a fast speed, the boat is not sailing directly toward the desired destination. Indeed, sailing for too long on this course takes the boat far from its desired destination. Hence, the sailor comes about, reconfigures the sails and rudder, and sets a course 40 degrees off wind. While each course correction or 'tack' imposes a loss in forward momentum, the skillful sailors masters these reconfigurations so as to minimize momentum loss and enable the boat to sail, on average, into the wind and achieve the objective faster than staying on one course for an extending period of time.

In much the same way, by adopting a coherent bundle of organizational attributes, management generates momentum toward increased exploration. By adopting a distinctly different set of attributes, the organization generates momentum toward increased exploitation. An effort to craft an organization that generates both in perfect balance may simply stifle both. Inconsistent

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choices compromise the capacity of the organization for movement of any type, while consistent choices can accelerate the pace toward either increased exploration or exploitation. By vacillating between consistent sets of choices and allowing the informal organization to respond accordingly, exploitation and exploration are generated at high levels with a varying degree of balance, depending on time from the previous change. Nonetheless, each tack or shift in structure imposes costs on the organization, including lost momentum that curtails performance, much like the overzealous captain that loses momentum from tacking inefficiently or too often. Ambidextrous managers may be capable of tacking with greater efficiency or metaphorically maintaining a course fewer degrees off wind, thereby improving organizational performance, at least on the margin. Once efficiency is achieved, a key task of the manager is to identify when changes in formal organization are required and what these changes entail. Over time, these choices essentially define the cadence of change or the pace of vacillation.

Limitations and future research directions

This article is not without weaknesses. While our qualitative analysis of historically wide and deep canonical cases provides the benefits of richness critical to understanding the mechanisms that deliver ambidexterity, the method does not provide for conclusive statistical assessment of the competing mechanisms. The limitation of archival research is also visible in this project. Our data is limited by its sources, as well as self-presentation and retrospective biases. Particular care must be exercised in the interpretation of annual reports that are biased in presentation. Our use of analyst reports, interviews, and secondary news sources provides us a way around some of these problems inherent in using annual reports, though these sources are subject to limited information. Finally, even though our archival work is extensive and from a multitude of perspectives, we still are not able to completely and precisely describe the informal organization as it follows shifts in the formal organization. The analysis of *USA Today* was additionally limited by the fact that it is not a public company in and of itself, so intensive analysis of management's action was largely limited to material from or about the parent company and/or secondary news sources and academic literature. Though the observed patterns in these two cases appear to suggest that organizational vacillation played a role in the development of organizational ambidexterity, other factors not accessible to us may have influenced the organizational dynamics. Thus, our findings are tentative and we call for more comprehensive and large-scale empirical research.

We recommend that future research on organizational ambidexterity take a temporally rich perspective on the role of strategic and organizational decisions. We believe organizational research is better informed by moving away from snapshots of organizational strategies and, instead, exploring dynamics and histories. Much like the literature on emergent strategies (Mintzberg, 1978), we argue that strategy (whether deliberate or emergent) is most clearly visible through a temporally rich frame. Large-scale empirical examination of the phenomenon is the next research step. Our case studies illustrate the challenges involved in developing such a data set. Information on structural shifts in organizations is not presently collected in widely available databases. Vacillation is episodic, and identifying episodes requires detailed case studies. That said, these cases studies should provide guidance with respect to constructing case studies for other firms, as well as to coding episodes of change. Our hope is that details for each firm provided herein will speed coding efforts for other firms, thereby enabling large-scale empirical research on vacillation and ambidexterity.

Our findings provide important implications for management. We argue that managers who are willing to pursue dual capability dynamically by skillfully vacillating among bundles of complementary elements are best able to achieve sustained high performance over time. The leaders of ambidextrous organizations must be able to understand which formal structural decisions facilitate the achievement of an ambidextrous informal organization and when to employ them. In this way, the ambidextrous leader is much like the captain sailing into the wind—one who progresses toward the destination by skillful tacking between positions.

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