

Strategic Orientation and Ambidextrous Public Organizations

By John M. Bryson, Kimberly B. Boal, and Hal G. Rainey

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Abstract

In this paper we explore some implications of the Miles and Snow (1978, 2003) typology of strategy types for public organizational adaptation and effectiveness, particularly as they are linked to organizational ambidexterity and dynamic capabilities. We see *ambidexterity* as referring to “the synchronous pursuit of both exploration and exploitation via loosely coupled and differentiated subunits or individuals, each of which specializes in either exploration or exploitation” (Gupta, et al., 2006: 691). Exploration and exploitation both involve learning, but of different types. Exploitation involves learning along an existing technological and stakeholder trajectory, while exploration involves learning along a trajectory distinct from existing ones. Ambidexterity is consistent with Miles and Snow’s Analyzer strategy type. We argue that to be effective over the longer term, all public organizations need to exhibit a certain amount of ambidexterity. The paper includes a lengthy discussion of organizational learning and strategic leadership, a crucial feature of successful pursuit of organizational ambidexterity. We pull our argument together in the form of a set of propositions relating ambidexterity and organizational effectiveness. Finally, we offer a set of conclusions.

Introduction

How can public organizations enhance and sustain their effectiveness in the face of change? Answering that question hinges on the answer to a prior question – namely, whether public organizations *can* adapt and change. The evidence seems pretty overwhelming that adaptations and changes do happen because of incrementalism, strategic planning, crises, leadership changes, new legislation, reform movements, or other proximate causes. What is less clear is whether the changes lead to better performance. For one thing, not all changes are good and too much change clearly can be bad for performance. Beyond that, there appear to be limits to the changes a public organization can make linked to the strategy it is already pursuing and how it is organized to pursue it.

We do know that there *are* very successful public organizations (e.g., Light, 2002; Rainey, 2003; Meier and O’Toole, 2006) and that public organizations frequently produce successful changes and innovations (e.g., Borins, 1998, 2008). Effective strategizing and strategies seem to play a role in these processes (e.g., Bryson, 2004; Andrews, Boyne, and Walker, 2006; Meier, et al., 2007). To contribute to analysis of these processes, in this paper we explore some implications of the Miles and Snow (1978, 2003) typology of strategy types for public organizational adaptation and effectiveness, particularly as they are linked to organizational ambidexterity and dynamic capabilities. In the process we will be dealing with a distinction famously drawn by March (1991) between knowledge exploitation and knowledge exploration. As March puts it: “The

essence of exploitation is the refinement and extension of existing competencies, technologies, and paradigms... The essence of exploration is experimentation with new alternatives” (85). Gupta, et al. (2006: 694) assert that “there is near consensus in the [business management] literature that organizations must learn to excel at both tasks,” though they themselves believe the consensus “may be somewhat premature and not necessarily logical in all contexts.” Light (2005) also finds, based on extensive Rand Corporation data, that high-performing businesses, government agencies, and nonprofits have a talent for accomplishing both tasks.

We rely on Gupta, et al’s definition of *ambidexterity* as referring to “the synchronous pursuit of both exploration and exploitation via loosely coupled and differentiated subunits or individuals, each of which specializes in either exploration or exploitation” (691). Exploration and exploitation both involve learning, but of different types. Exploitation involves learning along an existing technological and stakeholder trajectory, while exploration involves learning along a trajectory distinct from existing ones.

We will argue that to be effective over the longer term, all public organizations need to exhibit a certain amount of ambidexterity, by which we mean they need to have some reasonable capacity for:

- Responding to both stable *and* turbulent technological and stakeholder environments
- Exploring knowledge *and* exploiting knowledge
- Being both tightly coupled *and* loosely coupled
- Avoiding decision failures *and* learning from their mistakes
- Making radical, “architectural” changes *and* making routine changes within the existing architecture
- Maintaining their corporate identity *and* subtly changing their identity
- Being very serious *and* not taking themselves too seriously

The paper proceeds in six sections. First, we present a selective review of the Miles and Snow typology and especially the public-sector oriented research based on it. Second, we explore in more detail some of the intellectual underpinnings of the Miles and Snow typology and focus particularly on the Analyzer strategy and the concomitant need for organizational ambidexterity. Third, we discuss organizational learning and strategic leadership, a crucial feature of successful pursuit of organizational ambidexterity. Fourth, we pull our argument together in the form of a set of propositions relating ambidexterity and organizational effectiveness. Finally, we offer a set of conclusions.

The Miles and Snow Typology

The Miles and Snow strategy typology is one of the widely-cited and utilized classifications of business-level strategies. It is based on the idea that managers seek to formulate strategies that are congruent with the external environment their organization confronts (Miles and Snow, 1978, 2003; Zahra and Pearce, 1990; Daft, 2007). Miles and Snow (1978: 21 – 27) also argue for the importance of what they call *the adaptive cycle* as a “means of conceptualizing the major elements of adaptation and of visualizing the

relationships among them.” The cycle consists addressing three adaptive problems: the *entrepreneurial problem* of the choice of product market domain; the *engineering problem* of the choice of technologies of production and distribution; and the *administrative problem*, which consists of a *leading aspect* of selecting areas for future innovation, and a *lagging aspect* of rationalizing structure and process. They note that, “while adaptations can be triggered at any point in the adaptive cycle, the most rapid and effective adjustments appear to be those that are preceded by appropriate administrative changes” (28).

Miles and Snow position their work as fitting within the *strategic choice* approach to organization-environment relations (Child, 1972), an approach which highlights the role of what we later call *strategic leadership*. In particular, they emphasize: (1) the role of the organization’s dominant coalition of decision makers, (2) the importance of their perceptions, (3) their responsibility for assigning (segmenting) portions of environment to different organizational subunits, (4) their need to scan the environment and choose whether to be proactive or reactive to changes, and (5) their need to address, and often work to change, the constraints facing the organization (Miles and Snow, 1978: 20 – 21).

Nearly two decades ago, Zahra and Pearce (1990) reviewed research evidence on the Miles and Snow typology and identified three premises on which it is founded. First, over a period of time, successful organizations develop systematic, identifiable approaches to environmental adaptations. Secondly, there are four strategic orientations (or types of strategy) that organizations adopt: *Prospectors*, *Defenders*, *Analyzers*, and *Reactors*. The third premise is that strategies of the Defender, Analyzer, and Prospector types, if properly implemented, can lead to effective performance (Miles and Snow, 1978, 2003; Zahra and Pearce, 1990; Boyne and Walker, 2004; Daft, 2007). Additionally, Boyne and Walker (2004) also cite contemporary studies and their own research findings that point to Prospectors, Defenders, and Analyzers as tending to display performance superior to that of Reactors. The typology has been widely used, and its validity has been tested in a number of different organizational settings (*i.e.*, hospitals, colleges, businesses). Researchers have found strong support for effectiveness of the Miles and Snow typology in many real-world, applied situations (Daft, 2007), but it is also true that there appear to be few pure types in practice. For example, Doty, Glick and Huber’s (1990) study of 109 organizations found a mean pureness of approximately 45%, meaning that most organizations contain some aspects of the other types from Miles and Snow’s typology. That is, a Prospector will evidence some Reactor, Defender, Analyzer characteristics and so on. This clearly has implications for ambidexterity, a topic we pursue further below.

Described in more detail, the four orientations of the Miles and Snow typology include:

Prospectors are organizations that “continually search for market opportunities, and...regularly experiment with potential responses to emerging environmental trends” (Miles and Snow, 1978: 29). Prospectors often stress product development, have a keen learning orientation and are strong in research, and tend to adopt flexible organizational structures (Zahra and Pearce, 1990; Boyne and Walker,

2004; Daft, 2007). The strategy resembles what Wechsler and Backoff (1988: 110) call “developmental.”

Defenders are organizations that emphasize controlling secure and premium niches in their respective industries and “seldom need to make major adjustments in their technology, structure or methods of operation...[and] devote primary attention to improving the efficiency” of their operations (Miles and Snow, 1978: 29). They engage in little or no product development, work under centralized authority, and have little employee empowerment (Zahra and Pearce, 1990; Boyne and Walker, 2004; Daft, 2007). The strategy is what Wechsler and Backoff (1988: 110) call “protective.”

Analyzers are organizations that typically exhibit characteristics of both Prospectors and Defenders. They “operate in two types of product market domains, one relatively stable, the other changing” (Miles and Snow, 1978: 29). Analyzers balance efficiency and learning, use tight cost control with flexibility and adaptability, and often have efficient production for stable product lines while yet maintaining an emphasis on research, creativity and innovative risk-taking (Zahra and Pearce, 1990; Daft, 2007). They are the most ambidextrous of all the organization types. The Analyzer strategy is somewhat consistent with one type of “political” strategy Wechsler and Backoff (1988: 110) identified, in which an organization is seen “as an instrument of partisan politics and as a means of rewarding supporters and key constituents; this type of strategy often is associated with changes in regime and frequently results in changes in staffing, structure, and policy and program emphases.” In practice, however, this type of political strategy is more likely to represent an instance of punctuated equilibrium than of ambidexterity (Gupta, et al., 2006).

Reactors are organizations “in which top managers frequently perceive change and uncertainty occurring in their organizational environments, but are unable to respond effectively” (Miles and Snow, 1978: 29). Reactors have a general lack of consistent strategy and have no clearly defined organizational approach. They are generally viewed as dysfunctional (Zahra and Pearce, 1990; Daft, 2007). The strategy is consistent with the second type of “political” strategy Wechsler and Backoff (1988: 110) identified, in which an organization “aims simply to accommodate the balance of power among external forces... An organization’s planners and strategists have some control over this type of strategy, but they remain generally reactive rather than active.”

Zahra and Pearce (1990) assessed the then-current research on the Miles and Snow typology, focusing on four themes: “(a) strategic type identification, (b) accuracy of predictions concerning entrepreneurial, engineering, and administration elements of the adaptive cycle, (c) the association between environmental characteristics and the existence of the four strategic orientations, and (d) efficacy of the typology’s propositions on differences among groups in competitive posture and performance.” The research that they surveyed varied considerably in emphasis on the four strategic types. Of 17 studies

reviewed, only eight (47.1%) investigated all four groups, despite varying comparisons among them. Four studies (23.5%) reviewed only Defenders and Prospectors, and Reactors were completely omitted from eight of the studies (47.1%) Zahra and Pearce (1990) noted several aspects of the prior research and offered some criticism of it, most notably issues surrounding the inadequacy of the operationalization of strategic types. They argue that researchers have tended to use only one or very few questionnaire items or indicators to identify the strategic type of the firm. The items usually pertained to the entrepreneurial element of the typology, without due attention to the administrative or engineering components, thus rendering incomplete most assessments of the adaptive cycle as set forth by Miles and Snow (1978). Additional criticisms cited inattention to validity and reliability, overemphasis on between-group differences, omission of process variables and the omission of the strategist's role. Zahra and Pearce (1990) conclude by offering directions for future research, suggesting the need for longitudinal designs to better understand the nature of the adaptive cycle as well as the evolution and shift among strategic types. Additionally, they suggest that future research must tie the typology to research on strategic change.

More than a decade after Zahra and Pearce's review of research on the Miles and Snow typology, new research began to emerge on application of the typology to public sector organizations (Boyne and Walker, 2004; Andrews, Boyne, et al., 2005; Meier, O'Toole, et al., 2007). Boyne and Walker (2004) emphasize the importance of a clearer understanding of the strategies of public service organizations and point out that expectations for more strategic focus are evident in examples such as the National Performance Review in the United States (Thompson, 2000) and the "Modernisation Agenda" in the United Kingdom (Boyne, Kitchener and Kirkpatrick, 2001). The purpose of their research was to develop a framework to classify strategies pursued by public organizations. They define *strategy content* as patterns of service provision that are selected and implemented by organizations. They posit that strategy does not need to be viewed as a "weapon" that is used to defeat rivals in competitive struggles (Greer and Hoggett, 1999; Boyne and Walker, 2004).

Boyne and Walker (2004) asserted that a framework that has applicability to public organizations will make it possible to identify and measure their strategy content. As a dependent variable, their classification scheme could be used to understand why particular strategies are adopted, and as an independent variable it can be used in models of organizational performance. They then asserted that the Miles and Snow (1978) typology corresponded closely with their concept of *strategic stance*, although Boyne and Walker's typology of strategic stance includes only Prospectors, Defenders, and Reactors (Boyne and Walker, 2004). Boyne and Walker did not attempt to place public organizations exclusively into one of those categories, but rather their expectation was that public organizations would pursue a mixture of those strategies and that the mix would change over time as agencies confront new opportunities and challenges. (Note that in Miles and Snow's typology, Analyzers pursue a mixture of the Prospector and Defender types.) Boyne and Walker believe that their criteria are not mutually exclusive, but that they are exhaustive (Boyne and Walker, 2004).

Boyne and Walker joined with other colleagues in additional research wherein they applied the Miles and Snow typology to public organizations (Andrews, Boyne, et al., 2005; Andrews, Boyne and Walker, 2006; Walker and Boyne, 2006; Meier, O'Toole, et al., 2007, Andrews, Boyne, et al., 2008a, 2008b; Enticott and Walker, 2008). The first of these studies focused on the issue of representative bureaucracy and workforce diversity. Representative bureaucracy is likely to benefit the Prospector types and further enhance their performance (Andrews, Boyne, et al., 2005). Because strategies of employee involvement are central to the Prospector's achievement of higher levels or organizational performance, Prospectors are then expected to be able to take advantage of an ethnically diverse workforce that brings alternative perspectives on agency goals and strategies. The results did show that Prospector strategic stances related more positively to service performance measures than did Defender or Reactor strategies (Andrews, Boyne, et al., 2005).

Andrews, Boyne and Walker (2006) reported the first empirical test of the proposition that strategy content is a key determinant of organizational performance in the public sector. The authors posited that strategy content is comprised of strategic stance, or the extent to which organizations act consistently with different orientations specified by the Miles and Snow typology (*i.e.*, Prospector, Defender, Reactor) and *strategic action*, which is related to changes in markets, services, revenues, external relations, and internal characteristics. The authors establish thirteen hypotheses in relation to the two components of strategy content and using a survey of English local authorities determine, overall, that strategy content matters and that organizational performance is positively associated with a Prospector stance and negatively associated with a Reactor stance. They point out that the study has limitations, in part because it is the first of its kind. They also imply, however, that public managers can make significant differences based on the strategies they follow. Additionally, Walker and Boyne (2006) used the data from this same survey to assess empirically the Labour government's public management reform program in the United Kingdom. As in the previous study, the authors show that the strategies and actions of managers in public sector organizations can influence performance (Walker and Boyne, 2006). Furthermore, Enticott and Walker (2008) similarly applied a first-time empirical analysis of sustainable management and performance in public organizations. They found that sustainable management is related to sustainability performance but not to other measures of organizational performance (Enticott and Walker, 2008).

Meier, O'Toole and colleagues (2007) turned to the typology again as an important influence on organizational performance. This study had the primary objective of integrating work on strategic content and management into the O'Toole-Meier formal theory of public management. The article tested the strategic management concepts in a large, multiyear sample of public organizations that show results of strategy being separated from other elements of management (Meier, O'Toole, et al., 2007). In this instance, however, they found that the Defender strategy is the most effective for the primary mission of the organization and that the Prospector and Reactor strategies work best in regard to goals of more politically powerful elements of the organization's environment. They examined several hundred organizations over a six-year period and

found little evidence of “a one-size-fits-all pattern—whether it be the Prospectors-outperform-Defenders-who-outperform-Reactors idea in the earlier literature or another clear ordering of strategies in terms of overall effectiveness” (Meier, O’Toole, et al., 2007: 373). Meier, O’Toole and colleagues conclude

Strategy content matters; as a venerable idea, this one succeeds. But how it matters must be grounded in theory-building efforts and empirical investigations that are context general rather than context specific... In addition, it will be important for future research to expand our work by incorporating other elements of the Miles and Snow model. To what extent is the impact of different strategies contingent on the internal structures and processes of organizations? An answer to this question is likely to require comprehensive information on how organizations develop and implement their strategies, and measures of structural characteristics such as centralization and formalization.

...Much more work, including systematic empirical study, is needed before we can, with confidence, suggest matches between the standards and circumstances of public organizations and the ideal type or mix of strategy content. Recent theories provide a start, but much more work remains (Meier, O’Toole, et al., 2007: 375).

Andrews, Boyne and colleagues (2008a, 2008b) continued this stream of research on strategy and public service performance. The first of these two studies examined centralization as a measure of the hierarchy and authority and the degree of participation in decision making. Again, the Miles and Snow typology is utilized – specifically Prospectors, Defenders, and Reactors – as the authors contend that “[s]ervice improvement is at the heart of contemporary debates in public management” (Andrews, Boyne, et al., 2008a: 1). Their findings show that centralization has no independent effect on service performance, even when controlling for prior performance, service expenditure, and external constraints, though they claim that the strategic orientation of organizations may affect the impact of centralization (Andrews, Boyne, et al., 2008a). The second study builds on previous research and examines the separate and combined effects of specific external and internal variables that have strong effects on success in public sector organizations (Andrews, Boyne, et al., 2008b). The authors found that the strategy that is most strongly associated with service success is prospecting and they additionally claim that organizations that emphasize innovation and change in service provision are more likely to achieve better results. This is consistent with prior findings in both the public and private sectors. The positive effect of prospecting can be weakened by a destabilization of the relationship between strategy and performance; and regulation viewed in a positive light by service managers likely reinforces the effectiveness of successful strategies (Andrews, Boyne, et al., 2008b). The authors add that further research might be able to reveal similarities and differences in the relationship between strategy and performance in other organizations and that their research highlights the importance of how organizational and environmental variables interact to influence

performance and “add weight to the need for contingency models of public service improvement.” (Andrews, Boyne, et al., 2008b: 198).

In sum, these newer studies provide general support for the applicability of the Miles and Snow typology to public organization. Beyond that, the studies indicate that public managers typically do have some leeway regarding strategy content choices. In the next section we explore in more depth the nature of some of the knowledge management challenges faced by public organizations and how they may respond to the challenges of being ambidextrous.

Exploitation versus Exploration, Temporal and Spatial Separation of the Two, and the Demands on Senior Managers

The recent research indicates the applicability of the Miles and Snow typology to public organizations, that public organizations vary in strategic orientation, and that strategy matters. We will argue more strongly later that public organizations can and do, and often should, adopt Analyzer strategies, and hence ambidextrous modes. Yet organizations face obstacles to ambidexterity, and overcoming them represents a major challenge. In this regard, we pose the question: Do public organizations and their managers sow the seeds of their own destruction? Sometimes the answer is yes, according to a host of perspectives. Dominant logics that drive out competing, but perhaps very valuable different logics; core rigidities; inappropriate emphasis on either knowledge exploitation or exploration; and the innovator’s dilemma can all cause mischief.

Prahalad and Bettis (1986) introduced the notion of dominant logic as the way in which managers conceptualize the work of the organization and make critical resource allocations. Stored in shared schemas, cognitive maps or mind sets, dominant logics are determined by previous experience and are largely unrecognized. More recently, Prahalad and Bettis (1995) have come to see dominant logics as information filters that blind managers to competing, perhaps better logics. As information filters they help focus the organization in a sea of noise, thus helping the organization speed and simplify decision making. As long as the environment does not change, underlying changes to the dominant logic are not necessary. But when the environment does change, the dominant logic inhibits organizational adaptation. To adapt to the new environment the organization must first unlearn the old dominant logic, and countenance alternative competing logics. But the longer the organization has used the dominant logic, the more difficult it is to unlearn. This has been referred to as core-rigidities by Leonard-Barton (1992) and the Icarus Paradox (that is, succeeding at what you’re doing until you fail) by Miller (1990). It is only when the organization begins to unlearn and experiment, and consider competing logics that it is able to start to perceive mismatches between the environment and its way of functioning. Prahalad and Bettis (1986) suggest that this requires a crisis. But a crisis may not help, as Fox-Wolfgramm, Boal, and Hunt’s (1998) work shows how an organization’s identity can inhibit its ability to learn and adapt, even in the face of crisis. As a consequence, it may be that the two systems cannot live side by

side. They must be separated spatially, and perhaps temporally, if the changes necessary to survive are to take place and evolve.

The challenge of considering new logics that compete with dominant logics is richly illustrated in the public sector by Charles Rossotti's efforts, as Commissioner of the U.S. Internal Revenue Service, to introduce a new approach on tax administration and tax collection. Critics had lambasted the IRS for alleged abuse of taxpayers, coupled with inadequate tax collection. Rossotti sought to introduce a new strategy of taxpayer support and education in the "pre-filing" stages. He drew on Sparrow's (1994) ideas about an approach to governmental regulatory and enforcement activities that moved away from the traditional surveillance and punishment mode toward methods that induce voluntary compliance. He contended that providing taxpayers with information, service, and support would induce more voluntary compliance with the tax code. Yet many IRS employees were steeped in a tradition of believing that tax compliance required suspicion toward taxpayers, intensive audit and inspection of tax returns, and strict enforcement to protect honest taxpayers from noncompliant ones. Sharp rejection of Rossotti's alternative logic was widespread and evident. Rossotti describes how, in one of his many meetings with employees, some sarcastically challenged his emphasis on service; one referred to taxpayers as "adversaries," and another complained that "All we're doing is making it easy for the deadbeats to get away with not paying" (Rossotti, 2005: 105). Rossotti never fully succeeded in supplanting the dominant logic with his alternative competing logic.

How then, does an alternative competing logic manage to supplant a previously dominant one? As noted, learning and change are based on either the exploitation of core competencies and sustaining technologies, or the exploration for new opportunities brought on, in particular, by disruptive technologies (March, 1991). It is in the exploitation of core competencies that firms maintain their trajectory and identity, thus achieving stability in the midst of change (Fox-Wolfgramm et al., 1998). It is in the exploration for new opportunities that firms overcome the related problems of core rigidities, dominant (but outdated) logics, and the Icarus paradox. Exploitation without exploration can lead to specialization and excess, confidence and contentment, to dogma and ritual, and to severe organizational disruption or death (Boal, 2007).

The "innovators dilemma" (Christensen, 1997) captures the tension between knowledge exploitation and exploration. The dilemma posits that in every market there is a trajectory of improvement in the product or service that users or customers can actually utilize over time. *One trajectory* involves focusing on what highly demanding users want. These users take advantage of all the performance that is available to them. At the other end, there are the mainstream users who are well-satisfied. That is, they can neither use all of the available performance, nor are they willing to pay for it. For example, Bryson, Ackermann and Eden (2007) present a case study of a public-sector training and management development organization in Northern Ireland that made the strategic choice to focus its own research and development efforts on meeting the needs of the clients – in its case, other public organizations – who demanded both the latest in service innovations and a high volume of service. The organization believed that if it could satisfy these

most-demanding users, it would also meet the needs of the mainstream users now and in the future; but if the organization focused only on the mainstream users, it believed it would lose the most demanding users and also the stimulus to stay on the cutting edge. Ultimately, it would lose the mainstream users as well. The case goes on to indicate the competencies the organization concluded it needed in order to pursue this strategy.

A *second trajectory* of improvement involves introducing new products that start out using inferior technologies that do not meet the needs of the most-demanding customers, but do meet the needs of niche customers. While these products start out with an inferior technology, they also improve generation by generation. The trajectory of improvement for these products slopes upward faster than the user's ability to absorb it. An example might be e-government services for most users; more is possible or available than most people use. Thus, products or services not good enough to be utilized by the mainstream can improve at such a rapid rate that they address user needs at a future time, but not now.

These two trajectories are differentiated by the technologies they employ. *Sustaining technologies* are those which make products for the best user much better and are sold at a price premium. (The Northern Ireland public-sector training and development organization chose to focus primarily on enhancing sustaining technologies.) On the other hand, *disruptive technologies* are usually inferior technologies, with lower level performance, and therefore are not valued by the mainstream. The successful use of disruptive technologies typically begins in the low-end, low-profit market segments and then moves up as quickly as possible into the mainstream by coming in at the bottom of the market. In a sense, disruptive technologies are trivial technologies that disrupt the business models of heretofore well-managed organizations. Business examples of disruptive technologies are the personal computer, steel mini-mills, discount retailing, digital photography, and internet telephony (Christensen, 1997). Web 2.0 technologies promise to be disruptive for many public organizations. (In its research and development efforts, the Northern Ireland training and development organization also experiments with some disruptive technologies, particularly involving the Web.)

When new, disruptive technologies are first on the horizon, there are two strategic tracks that can be taken in making use of these technologies. The first track is to push or stretch the technology until it can be used in the existing market segment with applications for existing users. The second track is to find or create a new market segment in which the attributes of the disruptive technology as it exists are valued. For companies, the second track of finding a new market segment is usually the preferred strategy. The new market is at the low end of the market in terms of niche, but ultimately the technology moves into the mainstream and supplants the leaders.

The ability of an organization to succeed depends on whether or not the available resources, processes, and values give the organization the capabilities to properly frame the question of whether the disruptive technology is a marketing problem or a technological problem. Said differently: Is the problem one of finding a niche market for the technology as it exists, or is it one of finding a way the technology can serve the existing mainstream market? Christensen (1997) argues that usually this requires

separating that part of the organization focusing on the sustaining technology for the best users from that part of the organization focusing on the disruptive technology, and allowing the disruptive technology to be attached to the parent at a significant distance organizationally and physically. Without doing so, the likelihood of trying to change the parent company so it can be competitive with the trajectory of the disruptive technology is close to zero. He cites IBM, which developed its PC and became the dominant player in the market by first separating its PC operation physically in Florida, away from the organizationally dominant logic of mainframe computers located in New York. Years later when corporate headquarters decided there were economies to be had by relocating the PC operations back to New York, it heralded the beginning of the end of IBM's PCs. However, others (e.g., Miles and Snow, 1978; Tushman & O'Reilly, 1997) have suggested that *ambidextrous architectures* provide another solution. An ambidextrous organizational architecture allows subunits handling exploration and exploitation to be physically and culturally separated, but integrated through coordination at the strategic level with a strong and widely shared corporate culture. IBM did not have such an architecture.

The choice to pursue an ambidextrous architecture is more complex and difficult to implement than is the choice of switching temporally as an organization from one set of coherent technological, stakeholder, and organizational alignments to another very different one (O'Reilly and Tushman, 2007: 23). That sort of switch may be viewed as an example of "punctuated equilibrium" (Baumgartner and Jones, 1993; Gupta, et al., 2006).

O'Reilly and Tushman (2007: 9) use the term ambidextrous to refer not just to a particular type of structure, but to "a set of senior team decisions, including structure, linking mechanisms, culture, and senior team processes." They go on to argue that successful pursuit of organizational ambidexterity places particular demands on senior management (31 – 40). Specifically, they argue that set of five conditions are necessary for organizational ambidexterity to work; or in their terms, for ambidexterity to succeed as "a dynamic capability" (39). *First*, senior management must clearly articulate a clear strategic intent that justifies the ambidextrous form as necessary for survival and long-term effectiveness. The statement should explain why the units pursuing exploration and exploitation should collaborate and how both will be rewarded if they do. The statement provides a rationale for behavioral integration of the top management team, e.g., one that includes senior R & D staff alongside senior marketing and operations managers. *Second*, there must be an overarching vision and values that "provides for emotional engagement and a common identity [and] provides the foundation for multiple cultures in explore and exploit subunits" (61). *Third*, there should be "a clear consensus within the senior team about the strategy and the importance of ambidexterity" (23). The aligned team must have "the cognitive flexibility to manage the ambidextrous form and to relentlessly communicate a consistent message about the need for ambidexterity; this requires a common reward system [for the senior team] based on metrics for the entire business" (61). The consensus on the importance of the strategy and ambidexterity is necessary to handle the inevitable conflicts and challenges to coordination that occur. The common metrics are meant to reward collaboration on the part of explore and exploit units for the benefit of the organization as a whole. *Fourth*, the organizational architecture must

include “different alignments and physical separation for explore and exploit units (different business models, competencies, incentives, metrics and cultures) with targeted integration to leverage firm-wide assets and capabilities; this requires senior level integration and lower-level tactical integration” (61)... “necessary to leverage both exploitation and exploration and to capture the benefit of both” (23). *Finally*, there is a need for leadership, especially at the senior level, that “tolerates the contradictions of multiple alignments and is able to effectively and quickly resolve the inevitable trade-offs and conflicts that occur” (61). Meeting the five conditions clearly is a tall order, but as Boal and Hooijberg (2001) suggest, effective strategic leaders are responsible for developing both the capacity for learning and the capacity for change; they note that organizational flexibility derives from the leaders at the top. Taken as a set, the five conditions may be seen as a *dynamic capability* enabling the organization to identify opportunities and threats and reconfigure assets (people, physical assets, programs, procedures) to adapt to these changes and to perform effectively over time (O’Reilly and Tushman, 2007: 31)

Strategic Leadership and Organizational Learning

In ambidextrous organizations, managing the context of exploratory and exploitive organizational learning become crucial responsibilities for strategic leaders. As Senge (1990) argues, strategic leaders must value learning and become experts at learning in the context of their organization. Managing the learning challenges in ambidextrous organizations is particularly demanding because the contexts for exploratory and exploitive learning are so different.

Strategic leadership focuses on the creation of meaning and purpose for the organization (House & Aditya, 1997). Strategic leadership is “marked by a concern for the evolution of the organization as a whole, including its changing aims and capabilities” (Selznick, 1984, cited in Boal & Hooijberg, 2000: 5). Based upon a review of the literature, Boal (2004: 1504) recently offered the following description of *strategic leadership*:

Strategic leadership is a series of decisions and activities, both process-oriented and substantive in nature, through which, over time, the past, the present, and the future of the organization coalesce. Strategic leadership forges a bridge between the past, the present, and the future, by reaffirming core values and identity to ensure continuity and integrity as the organization struggles with known and unknown realities and possibilities. Strategic leadership develops, focuses, and enables an organization's structural, human, and social capital and capabilities to meet real-time opportunities and threats. Finally, strategic leadership makes sense of and gives meaning to environmental turbulence and ambiguity, and provides a vision and road map that allows an organization to evolve and innovate.

Ghosal and Barlett (1994) suggest that a key role of strategic leadership is to create an organizational context within which learning can take place. Since knowledge and learning are distributed throughout the organization in a nexus of networks, strategic leaders, with their unique ability to change or reinforce existing action patterns, serve as

network brokers. By interacting with a wide range of networks, strategic leaders are responsible to bringing competence carriers together so that new solutions to old problems or new problems for which known or knowable solutions can be discovered (Boal, 2007). This increases the store of knowledge and procedural memory as well as transactive memory. Procedural memory refers to an understanding and mastery of the organization's rules and routines. Transactive memory refers to an awareness of the range of knowledge available and who possesses it. It has been found that the leader's personal networking behavior or the encouragement of subordinates' networking is related to organizational creativity and complex problem solving (Amabile, Schatzel, Moneta, and Krammer St., 2004; Shalley and Gilson, 2004). Thus, one important role strategic leaders can play in the development of the organization's procedural and transactive memories is that of providing access to and encouraging the sharing of knowledge and information. It is the procession and development of procedural and transactive memory that is a key aspect of the organization's *absorptive capacity* (Wegner, 1987; Liang, Moreland, and Argote, 1995), defined as the organization's ability to identify, assimilate, and exploit knowledge from external sources (Cohen and Levinthal, 1990). Since knowledge is embedded in an interconnected network of other pieces of knowledge, changes in parts of the knowledge structure trigger changes in other related or similar parts. Learning thus depends upon establishing connections between prior knowledge and new knowledge (March, Schulz, and Zhou, 2000).

Organizations learn from both their intra- and inter-organizational networks. Learning occurs by connecting people, problems, and/or solutions. Communications, interdependence, knowledge-sharing routines, and complementary resources or capabilities all affect knowledge transfer (Lane, Koka, and Patak, 2002). Moving or modifying people, technology, or structure are alternative mechanisms by which organizations learn and knowledge is transferred (Argote, 1999). But prior learning, especially those lessons encoded in rules and routines often prevent new learning making improvement problematic (Schulz, 2002; Wooten and James, 2004). Often, organizations must first unlearn the lessons of history lest they apply them when they are no longer appropriate (Nystrom and Starbuck, 1984). In stable environments, the development of procedural memories enhances the ability of the organization to exploit its core competencies. However, in unstable environments, the dominance of rules and routines can inhibit double-loop learning and exploration (March et al., 2000).

As previously noted, strategic leaders play a pivotal role in the creation and use of intra- and inter-organizational networks. Four types of network ties have been identified: strong, weak, cohesive, and bridging (Gulati, Dialdin, and Wang, 2002). Strong ties promote trust and reciprocity and facilitate the transfer of private information and critical resources. Weak ties provide new information from sources with whom interaction is infrequent. Cohesive ties reduce transaction and coordination costs through social norms and sanctions that facilitate trust and cooperative exchange. Bridging ties connect the firm and the bridging partner thus two disparate networks and two unrelated sets of information. While strong ties tend to be cohesive and weak ties tend to be bridging, that is not always the case (Burt, 1992; McEvily and Zaheer, 1999). Exploitative learning is reinforced by strong and cohesive ties, while explorative learning is reinforced by weak

and bridging ties.

These observations relate directly to the strategic types outlined by Miles and Snow and to the promotion of ambidexterity. We would argue that strategic leaders can promote exploratory learning and organizational ambidexterity by creating weak and bridging ties in Defender organizations. Strategic leaders can promote exploitative learning and organizational ambidexterity by creating strong and cohesive ties in Prospector organizations. And finally, in Analyzer organizations, strategic leaders can promote exploratory learning and organizational ambidexterity by creating weak and bridging ties in the stable, centralized (Defender) parts of the organization, and promote exploitative learning and organizational ambidexterity by creating strong and cohesive ties in the flexible, decentralized (Prospector) parts of the organization.

Ambidextrous Public Organizational Architecture

In theory, developing organizational ambidexterity can allow public organizations to deal effectively with the problems of competing logics, core rigidities, inappropriate emphases on knowledge exploitation or exploration, and the innovator's dilemma. But is it realistic to think that government agencies can function ambidextrously? Scholars and other observers frequently stereotype public organizations as inherently hierarchical and highly bureaucratic in the Weberian sense—indeed, political scientists typically refer to government agencies as “public bureaucracies.” Innovation requires discretion, and bureaucratic discretion is a sensitive and complex issue for public organizations and political authorities (Kelman, 2008, p. 29; Altshuler, 1997, p. 39). These conditions prompt the question of whether government organizations can ever have the capacity and opportunity to adopt ambidextrous structures and cultures. Various examples indicate that clearly they can. For example, Donahue (2008, p. 107) describes a period of innovation at the U.S. Department of Labor. He concludes that “The systems that developed at Labor...constrained by the long-established culture of the department...were an amalgam that exemplified what Thomas J. Peters and Robert H. Waterman famously termed a “loose-tight” management style (Peters and Waterman, 1982).” The Social Security Administration several decades ago adopted a modular design for processing client claims for social security payments. This design reassigned specialists from large units that specialized in handling one aspect of a claim, and placed all the different types of specialists together in work modules (or teams) that processed a client's claim from the beginning to the end of the process. The new design was developed separately from the large service centers where it would be implemented. The modular design was implemented experimentally in one major service center, imperfections were identified and corrected, and then the agency leadership bargained with all the service centers to encourage them to implement. After encountering resistance during early implementation, the modules have remained strongly institutionalized in the service centers for decades (Rainey, 1990). The U.S. Internal Revenue Service, during a period of major organizational reforms and changes during the late 1990s employed 26 “design teams” representing various levels, locations, and specializations in the huge organization. The design teams made participative decisions about major features of the “new IRS,” such as the details of a new structure of operating divisions, that were implemented later and

separately from the teams' activities (Thompson and Rainey, 2003). While these instances may not all exemplify clearly ambidextrous conditions, they certainly come close to doing so.

How do we explain such instances of innovation through differentiated structures and processes in stereotypically hierarchy-bound public organizations? What follows are a set of propositions about how public organizations may effectively pursue ambidexterity, which we are linking directly to an Analyzer strategy. (As mentioned earlier, the Analyzer strategy is the most ambidextrous of the categories). Note that for Miles and Snow, the strategic orientations captured by their typology act as an interpretive scheme through which environmental changes get processed and acted upon resulting in different patterns of change. Note as well that we are specifically focused on *organizational* ambidexterity, and to a lesser extent ambidexterity in the strategic leadership team. The list of propositions builds in part on Rainey and Steinbauer (1999) and Rainey and Ryu (2004). For the sake of brevity, we only include propositions and adaptations from Rainey and his colleagues specifically related to ambidexterity, as well as new propositions flowing from our arguments above.

Public agencies are more likely to succeed as Analyzers when there exhibit higher levels of the following conditions:

1. *Effective relations with oversight authorities (legislative, executive, judicial).* Authorities are attentive, demanding, supporting, and delegative, by which we mean that authorities avoid "micromanaging" and excessive intrusion (Rainey and Steinbauer, 1999; Rainey and Ryu, 2004). Senior management teams must be given both the support and leeway to pursue ambidexterity.
2. *Responsive autonomy in relation to political oversight and influence.* The autonomy allows for both simultaneous exploration and exploitation and for the dynamic capability to reconfigure assets in response to opportunities and threats (Rainey and Steinbauer, 1999; Rainey and Ryu, 2004; O'Reilly and Tushman, 2007).
3. *A statement of strategic intent that justifies ambidexterity.* Senior management articulates a strategic intent that justifies the ambidextrous form as necessary for survival and long-term effectiveness, explains why units pursuing exploration and exploitation should collaborate and how both will be rewarded if they do, and provides a rationale for behavioral integration of the top management team (O'Reilly and Tushman, 2007)
4. *Strong organizational culture, linked to mission.* The culture includes an overarching vision and values that provide for emotional engagement and a common identity among cultures in explore and exploit units (O'Reilly and Tushman, 2007).
5. *Effective strategic leadership.* Key elements include (Rainey and Steinbauer, 1999; Rainey and Ryu, (2004):
 - (a) stability of leadership
 - (b) distributed leadership throughout the organization

- (c) leadership commitment to the mission and overarching vision
- (d) clear consensus within the senior management team about the strategy and importance of ambidexterity (O'Reilly and Tushman, 2007)
- (e) effective goal-setting in relation to task and mission accomplishment
- (f) effective coping with political and administrative constraints
- (g) tolerance of the contradictions of multiple alignments (O'Reilly and Tushman, 2007)
- (h) effective engagement in conflict management resulting from inevitable contradictions (O'Reilly and Tushman, 2007)
- (i) a common reward system based on metrics for the entire agency (O'Reilly and Tushman, 2007)
- (j) in Analyzer organizations, a promotion of exploratory learning and organizational ambidexterity in the stable, centralized (Defender) parts of the organization by creating weak and bridging ties; and a promotion of exploitative learning and organizational ambidexterity in the flexible, decentralized (Prospector) parts of the organization by strong and cohesive ties (Boal, 2007).

6. *Strong planning and decision-making system.* The system would include the following features:

- (a) Multiple modes of strategy making processes, including making use of both deliberate and emergent strategizing to accommodate exploitive and exploratory learning (Hart and Banbury, 1994; Bryson, 2004)
- (b) Clear separation of developmental issues requiring more exploration and loose coupling from non-developmental issues requiring more exploitation and tight coupling (Nutt, 2002)
- (c) Clear conceptual differentiation between strategy formulation and strategic programming (Mintzberg, 1994)
- (d) Strong linkages between adopted strategies and implementation processes

7. *Ambidextrous organizational architecture.* The architecture will include:

- (a) Different alignments for explore and exploit units (i.e., different business models, competencies, incentive, metrics, and cultures) (O'Reilly and Tushman, 2007)
- (b) Senior level integration and lower-level tactical integration to make sure benefits of pursuing exploration and exploitation are actually achieved
- (c) A capacity for making radical, "architectural" changes when necessary *and* making routine changes within the existing architecture. Depending on the circumstances, this may involve selective use of existing or new networks, strategic alliances, or outsourcing as possible solutions for radical architectural change.

8. *Effective relations with partners and suppliers.* This includes effective management of contracting and contractors. Among other things, contractors will be used to address complementary needs for exploitation and exploration. It also includes making use of partners and suppliers to make effective use of sustaining and disruptive technologies and

other resources (Christensen, 1997). External partners and suppliers are used effectively to promote both exploitive and exploratory learning (Boal, 2007).

9. *Effective utilization of technology.* Sustaining and disruptive technologies will be managed effectively. Typically this will mean keeping them organizationally separated, while managing issues related to coordinating use of the two types of technology at the strategic level. An ambidextrous organizational architecture allows subunits handling exploration of the disruptive technologies and exploitation of the sustaining technology to be physically and culturally separated, but integrated through coordination at the strategic level (O'Reilly and Tushman, 2007).

In the paper's final section, we present a number of conclusions flowing from our analysis.

Conclusions

In this paper we have explored some implications of the Miles and Snow (1978, 2003) typology of strategy types for public organizational adaptation and effectiveness, particularly as they are linked to organizational ambidexterity and dynamic capabilities. We have relied Gupta, et al's (2006: 691) definition of *ambidexterity* as referring to "the synchronous pursuit of both exploration and exploitation via loosely coupled and differentiated subunits or individuals, each of which specializes in either exploration or exploitation" (691). Exploration and exploitation both involve learning, but of different types. Exploitation involves learning along an existing technological and stakeholder trajectory, while exploration involves learning along a trajectory distinct from existing ones.

We have argued that to be effective over the longer term, all public organizations need to exhibit a certain amount of ambidexterity, by which we mean they need to have some reasonable capacity for:

- Responding to both stable *and* turbulent technological and stakeholder environments
- Exploring knowledge *and* exploiting knowledge
- Being both tightly coupled *and* loosely coupled
- Avoiding decision failures *and* learning from their mistakes
- Making radical, "architectural" changes *and* making routine changes within the existing architecture
- Maintaining their corporate identity *and* subtly changing their identity
- Being very serious *and* not taking themselves too seriously

The challenge, of course, is that ambidextrous organizational forms, which go with the Analyzer strategy type, are very difficult to manage, requiring as they do a highly effective strategic leadership group, an ambidextrous organizational architecture, and relations with oversight bodies and stakeholders that allow and support ambidexterity. Thus, while ambidexterity may lead to long-term success, it is also possible that,

ironically, ambidexterity may lead to short-term failure, or at least lesser performance in relation to both Prospector and Defender types of organizations.

Effective strategic leadership emerges as one of the strongest requisites for effective management of organizational ambidexterity. The list of key elements we suggest is long and hard to fulfill. Considerable additional research is needed to explore these elements in more detail and to understand how they might best be developed in public managers.

Indeed, more research in general is needed into the topic of public organizational ambidexterity. The research should be clear about what level of analysis it is focused on. In this paper we have focused principally on the organization as a whole and on the strategic leadership team. Additional research should be especially attentive to strategic alliances and collaboration as sources of ambidexterity

Zahra and Pearce (1990) concluded their assessment of Miles and Snow-inspired research by offering directions for future research. They particularly emphasized the need for longitudinal designs to better understand the nature of the adaptive cycle as well as the evolution and shift among strategic types. Additionally, they suggest that future research must tie the typology to research on strategic change. Meier, O'Toole, et al., (2007: 375) reach a similar conclusion:

In addition, it will be important for future research to expand our work by incorporating other elements of the Miles and Snow model. To what extent is the impact of different strategies contingent on the internal structures and processes of organizations? An answer to this question is likely to require comprehensive information on how organizations develop and implement their strategies, and measures of structural characteristics such as centralization and formalization.

Given the complicated nature of ambidexterity, we think that a longitudinal designs relying on multiple methods might be a particularly fruitful way to pursue future explorations into public organizational ambidexterity and its antecedents, processes, structures, and consequences (Raisch and Birkenshaw, 2008).

References

- Amabile, T. M., Schatzel, E. A., Moneta, G. B., & Krammer, K., St. (2004). Leader behaviors and the work environment for creativity: Perceived leader support. *Leadership Quarterly*, 15, 5-32.
- Andrews, R., G. A. Boyne, et al. (2005). "Representative Bureaucracy, Organizational Strategy, and Public Service Performance: An Empirical Analysis of English Local Government." *Journal of Public Administration Research and Theory*, 15(4): 489-504.

- Andrews, R., G. A. Boyne, and R. M. Walker. (2006). "Strategy Content and Organizational Performance: An Empirical Analysis." *Public Administration Review*, 66(1): 52-63.
- Andrews, R., G. A. Boyne, J. Law, and R. M. Walker. (2008a). "Centralization, Organizational Strategy, and Public Service Performance." *Journal of Public Administration Research and Theory*: Advance Access published on February 29, 2008; doi:10.1093/jopart/mum039.
- Andrews, R., G. A. Boyne, J. Law, and R. M. Walker. (2008b). "Organizational Strategy, External Regulation and Public Service Performance." *Public Administration*, 86(1): 185-203.
- Baumgartner, F. R., and Jones, B. D. (1993). *Agendas and Instability in American Politics*. Chicago: University of Chicago Press.
- Bettis, R. A., Prahalad, C. K. 1995. The dominant logic: Retrospective and extension. *Strategic Management Journal*, 16, 5-14.
- Boal, K. B. 2004. "Strategic leadership." In G. R. Goethals, G. J. Sorenson, and James McG. Burns, *Encyclopedia of Leadership, Vol. 4*. Thousand Oaks, CA: SAGE: 1497 – 1504.
- Boal, K. B. 2007. Strategic Leadership of Knowledge-based Competencies and Organizational Learning. In R. Hooijberg, J. G. Hunt, J. Antonakis, & K. Boal, with N. Lane (eds.), *Being there even when you are not: Leading through strategy, structures, and systems, Monographs in Leadership and Management, Volume 4*, pp. 73-90. Amsterdam, the Netherlands: Elsevier.
- Boal, K. B., & Hooijberg, R. 2001. Strategic leadership research: Moving on. *The Leadership Quarterly*, 11(4), 515-549.
- Borins, S. (2008). *Innovations in Government*. Washington, D.C: Brookings Institution Press.
- Boyne, G. A., M. Kitchener, and I. Kirkpatrick. (2001). "Introduction to the Symposium on New Labour and the Modernisation of Public Management." *Public Administration*, 79(1): 1-4.
- Boyne, G. A. and R. M. Walker (2004). "Strategy Content and Public Service Organizations." *Journal of Public Administration Research and Theory*, 14(2): 231-252.
- Bryson, J. M. (2004). *Strategic Planning for Public and Nonprofit Organizations, 3rd Edition*. San Francisco: Jossey-Bass.

- Burt, R. 1992. *Structural holes: The social structure of competition*. Cambridge, ma: Harvard University Press.
- Child, J. 1972. "Organizational Structure, Environment, and Performance – The Role of Strategic Choice," *Sociology*, 6: 369 – 393.
- Christensen, C. M. 1997. *The innovator's dilemma: When new technologies cause great firms to fail*. Boston, MA: Harvard Business School Press.
- Cohen, W. M., & Levinthal, D. A. 1990. *Absorptive capacity: A new perspective on learning and innovation*. *Administrative Science Quarterly*, 35, 128-152.
- Daft, R. L. (2007). *Organizational Theory and Design (9e)*. Mason, OH: Thomson South-Western.
- Donahue, J.D. (2008). "The Unaccustomed Inventiveness of the Labor Department." In Borins, S. (Ed.). *Innovations in Government*. Washington, D.C: Brookings Institution Press, pp. 93-112.
- Doty, D. Harold, William H. Glick, and George P. Huber 1993 "Fit, equifinality, and organizational effectiveness: A test of two configurational theories." *Academy of Management Journal*, 36:1196-1250.
- Enticott, G., and R. M. Walker. (2008). "Sustainability, performance and organizational strategy: an empirical analysis of public organizations." *Business Strategy and the Environment*, 17(2): 79-92.
- Fox-Wolfgramm, Susan J., Boal, Kimberly B., and Hunt, James G. (Jerry). 1998. Organizational adaptation to institutional change: A comparative study of first-order change in Prospector and Defender banks. *Administrative Science Quarterly*, 43, 87-126.
- Greer, A., and P. Hoggett. (1999). "Public policies, private strategies and local public spending bodies." *Public Administration*, 77(2): 235-256.
- Ghoshal, S., & Barlett, C. A. 1994. Linking organizational context and managerial action: The dimension of quality of management. *Strategic Management Journal*, 15, 91-112.
- Gulati, R., & Singh, H. 1998. The architecture of cooperation: Managing coordination costs and appropriation concerns in strategic alliances. *Administrative Science Quarterly*, 43, 781-814.
- Hart, S. and C. Banbury. 1994. How Strategy-Making Processes Can Make a Difference. *Strategic Management Journal*, 15(4): 251 – 269.

- Hunt, J. G. (Jerry), Osborn, Richard N., and Boal, Kimberly B. (Forthcoming). The architecture of managerial leadership: Stimulation and channeling of organizational emergence. *The Leadership Quarterly*.
- Kelman, S. (2008). "The 'Kennedy School' School of Research on Innovation in Government. In Borins, S. (Ed.). *Innovations in Government*. Washington, D.C: Brookings Institution Press, pp. 28-51.
- Lane, P. J., Koka, B., & Pathak, S. (2002). A thematic analysis and critical assessment of absorptive capacity research. Proceedings BPS M1-M5, Academy of Management, Denver.
- Leonard-Barton, D. 1992. Core capabilities and core rigidities: A paradox in managing new product development. *Strategic Management Journal*, 13, 111-126.
- Liang, D. W., Moreland, r., & Argote, L. (1995). Group versus individual training and group performance: The mediating role transactive memory. *Personality and Social Psychology Bulletin*, 21, 384-393.
- Light, P. C. (2005). *The four pillars of high performance: how robust organizations achieve extraordinary results*. New York : McGraw-Hill
- Light, P. C. (1998). *Sustaining innovation : creating nonprofit and government organizations that innovate naturally*. San Francisco: Jossey-Bass.
- March, J. G. 1991. Exploration and exploitation in organizational learning. *Organization Science*, 2, 71-87.
- March, J. G., Schulz, M., & Zhou, X. 2000. *The dynamics of rules: Change in written organizational codes*. Stanford, CA: Stanford University Press.
- McEvily, B., & Zaheer, A. 1999. Bridging ties: A source of firm heterogeneity in competitive capabilities. *Strategic Management Journal*, 20, 1113-1156.
- Meier, K. J., L. J. O'Toole, Jr., et al. (2007). "Strategic Management and the Performance of Public Organizations: Testing Venerable Ideas against Recent Theories." *Journal of Public Administration Research and Theory*, 17(3): 357-377.
- Miles, R. E., and C. C. Snow. (1978). *Organizational strategy, structure and process*. New York: McGraw-Hill Book Company.
- Miles. R. E., and C. C. Snow. (2003). *Organizational strategy, structure and process*. Palo Alto, CA: Stanford Business Classics, Stanford University Press.
- Miller, D. 1990. *The Icarus Paradox*. New York: Harper Business.

- Mintzberg, H. 1994. *The Rise and Fall of Strategic Planning*. New York: Simon and Schuster.
- Nutt, P. C. 2002. *Why Decisions Fail*. San Francisco, CA: Berrett-Koehler.
- Nystrom, P. C., & Starbuck, W. H. 1984. To avoid crises, unlearn. *Organizational Dynamics*, 12(4), 53-65.
- O'Reilly, C. A., and M. L. Tushman (2007) "Ambidexterity as a Dynamic Capability: Resolving the Innovator's Dilemma." Palo Alto, CA: Stanford University Graduate School of Business, Working Papers, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=978493# ; accessed November 21, 2008. Also published as O'Reilly, C. A., & Tushman, M. L. 2007. Ambidexterity as a dynamic capability: Resolving the innovator's dilemma (Working Paper # 07-088). Cambridge, MA: Harvard Business School.
- Rainey, G. W. (1990). "Implementation and Managerial Creativity: A Study of the Development of Client-Centered Units in Human Services Programs." In D.J. Palumbo and D. J. Calista (Eds.) *Implementation and the Policy Process*. Westport, Connecticut: Greenwood Press.
- Rainey, H. G., and P. Steinbauer. (1999). "Galloping Elephants: Developing Elements of a Theory of Effective Government Organizations." *Journal of Public Administration Research and Theory*, 9, 1-32.
- Rainey, H. G., and J. E. Ryu (2004). "Framing High Performance and Innovativeness in Government: A Review and Assessment of Research." In Ingraham, P. W. and Lynn, L. E., *The art of governance: analyzing management and administration /* Washington, D.C. : Georgetown University Press.
- Raisch, S., and J. Birkenshaw (2008). "Organizational Ambidexterity: Antecedents, Outcomes, and Moderators." *Journal of Management*, 34 (3): 375 – 409.
- Rossotti, C. O. (2005) . *Many Unhappy Returns: One Man's Quest to Turn around the Most Unpopular Organization in America* . Boston : Harvard Business School Press .
- Senge, P. M.. (1990). *The fifth discipline*. New York: Double Day.
- Schulz, M. 2002. Organizational learning. In J. A. C. Baum (Ed.), *The Blackwell companion to organizations* (pp. 415-441). Oxford: Blackwell Publishers Ltd.
- Shalley, C. E., and Gilson, L. L. (2004). What leaders need to know: A review of social and contextual factors that can foster or hinder creativity . *Leadership Quarterly*, 15 : 33-53.

- Sparrow, M. (1994). *Imposing Duties: Government's Changing Approach to Compliance*. Westport, CT : Praeger .
- Thompson, J. R. (2000). "Reinvention as reform: Assessing the National Performance Review." *Public Administration Review*, 60(6): 508-550.
- Thompson, J. R., and H.G. Rainey. (2003). *Modernizing Human Resource Management in the Federal Government: The IRS Model*. Washington, D.C.: IBM Center for the Business of Government.
- Tushman, M. L., & O'Reilly, M. A. 1996. Ambidexterous organizations: Managing evolutionary change. *California Management Review*, 38, 8-30.
- Walker, R. M., and G. A. Boyne. (2006). "Public Management Reform and Organizational Performance: An Empirical Assessment of the U.K. Labour Government's Public Service Improvement Strategy." *Journal of Policy Analysis and Management*, 25(2): 371-393.
- Wechsler, B. and R. W. Backoff (1988). "The Dynamics of Strategy in Public Organizations." In Bryson, J. M., and Einsweiler, R. E. *Strategic Planning: Threats and Opportunities for Planners*. Chicago, IL: American Planning Association.
- Wenger, D. M. (1987). Transactive memory: A contemporary analysis of the group mind. In B. Mullen & G. R. Goethals (Eds.), *Theories of group behavior* (pp. 185-208). New York: Springer-Verlag.
- Wooten, L. P., & James, E. H. When firms fail to learn. The perpetuation of discrimination in the workplace. *Journal of Management Inquiry*, 13, 23-34.
- Zahra, S. A., and J. A. Pearce. (1990). "Research Evidence On The Miles-Snow Typology." *Journal of Management*, 16(4): 751-768.