

# Flexing the Frame: The Role of Cognitive and Emotional Framing in Innovation Adoption by Incumbent Firms

Ryan Raffaelli  
Michael Tushman

Mary Ann Glynn

Working Paper 17-091



# Flexing the Frame: The Role of Cognitive and Emotional Framing in Innovation Adoption by Incumbent Firms

Ryan Raffaelli  
Harvard Business School

Mary Ann Glynn  
Boston College

Michael Tushman  
Harvard Business School

**Working Paper 17-091**

Copyright © 2017, 2018 by Ryan Raffaelli, Mary Ann Glynn, and Michael Tushman

Working papers are in draft form. This working paper is distributed for purposes of comment and discussion only. It may not be reproduced without permission of the copyright holder. Copies of working papers are available from the author.

**FLEXING THE FRAME:  
THE ROLE OF COGNITIVE AND EMOTIONAL FRAMING IN  
INNOVATION ADOPTION BY INCUMBENT FIRMS**

**Ryan Raffaelli**

Assistant Professor  
Harvard Business School  
Soldiers Field  
Boston, MA 02163  
[r Raffaelli@hbs.edu](mailto:r Raffaelli@hbs.edu)  
617-495-6792

**Mary Ann Glynn**

Joseph F Cotter Professor of Management & Organization  
President, Academy of Management  
Boston College  
Chestnut Hill, MA 02467  
[maryann.glynn@bc.edu](mailto:maryann.glynn@bc.edu)  
617-552-0203

**Michael Tushman**

Paul R. Lawrence, MBA Class of 1942 Professor of Business Administration  
Harvard Business School  
Soldiers Field  
Boston, MA 02163  
[mtushman@hbs.edu](mailto:mtushman@hbs.edu)  
Tel: 617-495-5442

WORKING PAPER

January 2018

**FLEXING THE FRAME:  
THE ROLE OF COGNITIVE AND EMOTIONAL FRAMING IN  
INNOVATION ADOPTION BY INCUMBENT FIRMS**

**ABSTRACT**

Why do incumbent firms frequently reject non-incremental innovations? Beyond technical, structural, or economic factors, we propose the degree of frame flexibility (i.e., the capability of the top management team (TMT) to expand an innovation's categorical boundaries, and to cast the innovation as emotionally-resonate with the organization's identity, capabilities, and competitive boundaries) plays a role. We argue that forces of inertia constrict how TMTs perceive innovations, but that frame flexibility can overcome these perceptions, increasing the likelihood of adoption and the breadth of the organization's innovation practices. We advance a theoretical model that relaxes the assumption that cognitive frames are static, showing how they become flexible via categorical positioning, and introducing a role for emotional frames that appeal to organizational sentiments and aspirations in innovation adoption.

**Keywords:** innovation adoption, framing, cognition, emotional resonance, incumbent inertia

Innovations are the lifeblood of organizations and yet their adoption poses considerable challenges to incumbent firms (Christensen and Bower, 1996; Gans, 2016; Henderson, 1993). By definition, non-incremental innovations are inconsistent with an organization's current product portfolio and business model (Henderson and Clark, 1990; Smith and Tushman, 2005); thus, they can trigger perceived threats that hold the incumbent organization hostage to its prior success (e.g., Vuori and Huy, 2016). Moreover, top management teams (TMTs) often become mired in framing innovations in terms of the organization's past, rather than its possible future (Gilbert, 2006; Rumelt, 1979; Tripsas and Gavetti, 2000). Because of these inertial forces, incumbents frequently fail to adapt even as product classes evolve (Benner and Tushman, 2003).

Scholars have documented numerous challenges to innovation adoption, including resource allocation, technological demands, and business model incompatibilities (e.g., Anderson and Tushman, 1990; Sull, 1999). However, an additional factor – the process by which TMTs frame innovations – has received less attention, in spite of the recognized need for such work (see recent calls from Eggers and Kaplan, 2013; Helfat and Peteraf, 2015). We propose that the TMT's framing, i.e., the interpretation, packaging, and “organizing of information” (Giorgi, 2017: 712) related to a focal innovation, plays a pivotal role in their decision to adopt an innovation (e.g., Eggers, 2016). The divergent fates of two firms, Blockbuster and Netflix, provide a useful illustration.

Prior to going bankrupt in 2010, Blockbuster's TMT framed the then-novel innovation of online streaming in ways that conflicted with the company's legacy strategy as a brick-and-mortar video rental service. In 2000, Netflix's CEO had approached Blockbuster about forming a partnership to pursue an online streaming platform. However, he “got laughed out of the room” (Satell, 2014:1 ) and the innovation was rejected by Blockbuster's TMT in part because they

perceived it to be strategically incongruent with their existing business model (Newman, 2010). By contrast, the TMT at Netflix had been able to frame online streaming more flexibly as an extension of “entrainment subscription services,” and thus came to see it as compatible with their current capabilities in DVD rentals. They did this by broadening their framing, cognitively aligning the innovation and the organization’s business model, and emotionally aligning the innovation with the organization’s ambitious aspirations to provide consumers with even greater “value, convenience, and selection” (O’Reilly and Tushman, 2016: 6). Such flexibility in framing abetted Netflix’s adoption of online streaming services and content production; by comparison, Blockbuster’s more inflexible framing of the innovation hampered adoption.

Blockbuster’s TMT framing focused on affirming its legacy strategy, even as this strategy was becoming less competitively advantageous (c.f., Rothaermel, 2001). In hindsight years later, Blockbuster’s former CEO expressed regret at the inflexible framing: “I firmly believe that if our online strategy had not been abandoned, Blockbuster Online would have 10 million subscribers today, and we’d be rivaling Netflix for the leadership position in the internet downloading business” (Antioco, 2011: 1). As Eggers and Kaplan (2013: 317) have observed, incumbent TMT’s cognitive frames “are frequently stuck in an old understanding of the environment.” The contrast between Blockbuster and Netflix highlights how some (but not all) TMTs are able to reframe target innovations more flexibly so as to enhance their suitability with the organization’s strategy and, in turn, the likelihood of their adoption. We seek to explain such variations in TMT framing in this paper.

We theorize and develop a process model that depicts the ways in which TMTs create, maintain, and modify their framing of potential innovations, in both cognitive and emotional terms, and in turn, how such framing affects an organization’s adoption decision. We focus on

non-incremental innovations, as opposed to more incremental ones, because they present a greater disruption and challenge to existing TMT framing and organizational functioning. Our model theorizes that organizational adoption of a non-incremental innovation pivots on the TMTs' framing of that innovation relative to the incumbent organization's legacy strategy. Our conceptualization goes beyond existing work which has focused primarily on cognitive biases (Kaplan and Tripsas, 2008; Tripsas and Gavetti, 2000), to consider a second aspect of framing: emotional. While cognitive framing is a process of *thinking*, providing the "mental templates that individuals impose on the information environment to give it meaning" (Walsh, 1995: 281), emotional framing is a process of *feeling*, providing "a felt alignment of a frame with the audience's passions, desires, or aspirations" (Giorgi, 2017: 717).

Cognitive frame flexibility, we argue, functions to categorize a seemingly incompatible non-incremental innovation as complementary with the organization's existing capabilities, identity, and competitive boundaries, by re-classifying the TMT's perceptions of the innovation itself, the firm's legacy strategy, or both, to make them more aligned. Emotional frame flexibility functions to enable a non-incremental innovation to resonate and to have a felt positive, emotionally engaging connection with the firm's strategy. Together, we propose that flexibility in both cognitive and emotional framing leads to greater strategic alignment with the focal innovation and, consequently, increases the likelihood of its adoption. As well, we posit the reverse to be true: Fixed cognitive and emotional framing of an innovation will be associated with threat resistance and decrease the likelihood of adoption. Finally, we propose that a TMT's capacity to flexibly frame innovation adoption decisions accumulate over time and affects their ability to attend to future non-incremental innovations.

We seek to make several contributions related to innovation adoption and strategic framing. First, we reconceptualize cognitive framing, which has been theorized as relatively static and immutable (Benner and Tripsas, 2012; Danneels, 2011) or trapped by a TMT's extant cognition (Tripsas and Gavetti, 2000; Vergne and Wry, 2014). This theorization is largely refuted by social movement studies (Benford and Snow, 2000) which allow for flexibility and adaptation in framing. Our theoretical model focuses on frame flexibility as a contraction or expansion of the TMT's strategic frame, and influenced by the senior team's understanding of the innovation's impact on the firm's capabilities, identity, and competitive boundaries.

Second, we expand current notions of strategic framing beyond cognition to include emotions (Giorgi, 2017; Voronov and Vince, 2012; Voronov and Weber, 2016). Incorporating the role of emotions offers a way of addressing gaps at the intersection of strategy and cognition, which has been faulted for its compartmentalization and lack of a unified theory (Eggers and Kaplan, 2013; Helfat and Peteraf, 2015; Huff and Huff, 2000; Walsh, 1995). Accounting for emotional framing allows the possibility of contrasting sets of innovation capabilities to remain coupled (or uncoupled) to an emotionally engaged narrative among members of the leadership team and the organization (Battilana and Dorado, 2010; Gardner, Anand, and Morris, 2008; Raisch and Tushman, 2016; Vuori and Huy, 2016). We suggest the likelihood of innovation adoption is accentuated if expanded cognitive frames emotionally resonate with the TMT and members of their extended team. Although not all innovations may flourish, we argue that TMTs who build flexible cognitive frames, and couple these frames with emotional engagement among members of their team, increase the likelihood of innovation adoption.

Third, we bring to the literature on innovation adoption a deeper understanding of strategic framing. Innovations trigger framing contestation and resistance (Lavie, 2006; Weick,



1990). Building on existing research on cognitive framing in the context of innovation (e.g., Benner and Tripsas, 2012; Gilbert, 2006), we theorize how frames can bend, flex and be more supple, so as to consider how even competence-destroying technical innovations (Tushman and Anderson, 1986) can be hosted within existing organizational capabilities and the formal and informal systems that form the organization's architecture (Gulati, Puranam, and Tushman, 2012; Nadler and Tushman, 1989). Essentially, this issue pivots on the question of whether the TMT is capable of thinking about innovations that are seemingly contradictory or paradoxical (e.g., Smith, 2014). We address how flexible TMT cognitive and emotional framing helps resolve complex, internally inconsistent aspects of non-incremental innovation adoption in incumbent firms (e.g., Raisch and Birkinshaw, 2008).

The paper is organized as follows. We begin by developing a conceptual process model that explains how TMT framing – both cognitive and emotional – affects the likelihood of non-incremental innovation adoption in incumbent firms. The model advances a series of propositions that illuminate dimensions of TMT framing and their influence on adoption. We extend these effects over time, mapping the cyclical nature of this process, and conclude by discussing the implications of our conceptual model for theory, research, and practice.

### **TMT FRAMING AND INNOVATION ADOPTION IN INCUMBENT FIRMS: A CONCEPTUAL MODEL**

We advance a theoretical model of the role of framing in the TMT's adoption decisions of non-incremental innovations. These decisions are important but problematic in that they challenge the TMT's existing mental models and necessitate fundamentally different framing and conceptualizations of the organization's capabilities, competitive boundaries, and identity (e.g., Barr, Stimpert, and Huff, 1992; Gans, 2016; O'Reilly and Tushman, 2016; Tripsas, 2009; Weick,

1990). It is in this context which framing becomes especially salient and where its effectiveness has the potential to reshape the firm's strategic focus (Huff, 1982; Rumelt, 1979).

Innovations fall into three distinct types: incremental (Christensen, 1997; Dosi, 1982), discontinuous (Gatignon *et al.*, 2002), and architectural (Henderson and Clark, 1990).

Incremental innovations necessitate minimal strategic or organizational change, and thus, the need for TMT re-framing is of little relevance. Discontinuous innovations, by contrast, are challenging to adopt because they require new frames, processes, and knowledge that radically redefine and extend existing competencies (Corso and Pellegrini, 2007) and with them, initiate deep-seated strategic and organizational change (Adner, 2012; Schilling, 2005; Tushman and Anderson, 1986). Architectural innovations are also difficult to adopt because they reconfigure existing organizational components and frames while leaving core design concepts and the basic knowledge underlying the components untouched (Henderson and Clark 1991). Because their adoption presents the most significant tensions for adopting firms, our model focuses on discontinuous and architectural innovations, which we group together under the umbrella of non-incremental innovations.

Our primary unit of analysis is the TMT because they are charged with reviewing and evaluating innovations, as well as addressing the challenges of, and making strategic choices about, innovation adoption (e.g., Danneels, 2011; Gilbert, 2005; Sull, 1999). We theorize that framing achieves this via two main pathways: cognitive, through claimed categorization of innovations, and emotional, through claimed appeals to feelings, desires or aspirations. The first pathway – cognitive – has been recognized as important in the strategic management literature (Eggers and Kaplan, 2013); however, the latter – emotive – has been relatively neglected but is gaining attention (Giorgi, 2017; Voronov and Weber, 2016).

We offer a model to articulate our core arguments, presented in the Figure. To summarize, the model theorizes that an incumbent firm’s legacy strategy generates a set of strong inertial forces – associated with the organization’s capability development, identity, and competitive boundaries – that impel TMTs to maintain a contracted cognitive frame that is associated with the legacy strategy. To overcome these inertial forces in order to adopt a non-incremental innovation, we elaborate the processes by which TMTs acquire the capability to develop more flexible and expansive cognitive and emotional frames that, in turn, affects how the TMT (and its extended leadership team) perceives the strategic alignment of the focal innovation and affects their propensity to adopt a non-incremental innovation. Below, we detail the processes underlying our model and advance Propositions for testing its core tenets.

-----  
Insert Figure (Theoretical Model) About Here  
-----

### **The incumbent firm’s legacy strategy**

Our starting point is when the TMT is presented with a decision about whether to adopt a non-incremental innovation. Their initial deliberation takes place in the context of the organization’s legacy strategy and business model. Here, history matters; a TMT evaluates whether the adoption of the target innovation facilitates competitive advantage over existing market opportunities (Gavetti and Levinthal, 2000; Gopalakrishnan and Damanpour, 1997; Levinthal and March, 1993). Regardless of whether the innovation emerges from within (e.g., Eggers, 2016) or outside the firm (e.g., Sull, 1999), non-incremental innovations are challenging to adopt because they require processes and knowledge that redefine and extend existing know-how and technologies (Corso and Pellegrini, 2007), and with them, strategic and organizational change (Adner, 2012; Schilling, 2005).

Firms that dominate a prior technological or institutional order are less likely to successfully adopt non-incremental innovations because of incumbent inertia that constrains action (Henderson, 1993; Hill and Rothaermel, 2003; Tushman and O'Reilly, 2002). For example, incumbents like Firestone (Sull, 1999), Smith Corona (Danneels, 2011), and Polaroid (Tripsas and Gavetti, 2000) struggled to manage non-incremental innovations because they provided the TMT “with options either to reinforce or destabilize a technological regime” (Benner and Tushman, 2003: 242). But exploitation trumps exploration, especially when it comes to strategic adaptation (March, 1991).

### **Cognitive framing: lenses and filters**

Innovations do not simply present themselves to organizations; rather, the TMT must recognize and interpret the value of a potential innovation to the firm as the first step in making adoption decisions (Ocasio and Joseph, 2005). In other words, the TMT needs to cognitively frame the focal innovation in terms of its relevance to the firm.

A cognitive frame refers to the managerial mental maps (Barr et al, 1992) and thought structures (Reger, 1990) that shape interpretation (Gavetti and Rivkin, 2007). Cognitive frames have been shown to be influential in several aspects of strategic decision-making, including search (Gavetti and Levinthal, 2000), information processing (Cornelissen and Werner, 2014), and organizational change (Tushman and Anderson, 1986). Because TMTs process information collectively (Weick, 1993), cognitive frames help them aggregate interrelated information (O'Keefe & Nadel, 1978) when faced with ambiguity (Barr et al., 1992); moreover, these frames are tied to the TMT's perception of the organization's legacy strategy (Adner, 2012; Dosi, 1982) and its past performance (Greve and Taylor, 2000).

Cognitive frames serve as “interpretive lenses” shaping TMTs perceptions of their environment and how they respond (Eggers and Kaplan, 2013). Akin to *lenses* on a camera, the TMTs of incumbent firms develop and maintain interpretive *filters* that offer more or less variety in the composition and perspective through which the TMT cognitively frames innovations. Our model of cognitive framing depicts a two-step process. First, because incumbent inertia plays a critical role in technology change (Hill and Rothaermel, 2003), we identify how three filters – capability development, organizational identity, and competitive boundaries – typically drive incumbent TMTs to maintain a contracted cognitive lens when they evaluate non-incremental innovations. Second, we theorize how and why frame flexibility enables TMTs to expand their cognitive lens to overcome these forces of inertia.

***Capability development filter: consistency vs. co-existence orientations***

Innovations vary in the extent to which they build on, fit with, and are commensurable with the firm’s existing capabilities (e.g., Andriopoulos and Lewis, 2009; Cho and Hambrick, 2006; Raisch and Birkinshaw, 2008). By definition, non-incremental innovations involve inconsistencies with the firm’s existing capabilities (e.g., Kaplan and Tripsas, 2008; O’Reilly and Tushman, 2008) and can be perceived as contradictory to the exploitation of existing capabilities and technologies, whereas other innovations can be associated with the exploration of new capabilities (Raisch and Birkinshaw, 2008). Scholars highlight how the process of matching old and new capabilities with competing framings creates cognitive complexity and dissonance (Festinger, 1957; Tripsas, 2009).

Over time, TMTs develop orientations that shape how they perceive capability development in the face of non-incremental innovation decisions. TMTs that adopt a *co-existence orientation* are more likely to embrace contradictory capabilities and innovation

agendas within the firm: a co-existence orientation is facilitated by “frames and processes that recognize and embrace contradiction” (Smith and Tushman, 2005: 523). For instance, the senior team at Ciba’s Crop Protection Division adopted an expanded cognitive frame that allowed the co-existence of its traditional chemical capabilities along with new molecular biology capabilities (O’Reilly and Tushman, 2008).

However, Smith and Tushman (2005: 525) argue that inertial forces on incumbent firms will push TMTs toward a *consistency-orientation* that privileges uniformity with the firm’s existing capabilities and “stem[s] from a fundamental epistemological belief of a unitary truth (Ford and Backoff, 1988; Voorhees, 1986) [such that]...inconsistencies fundamentally cannot co-exist.” Under this frame, the adoption of non-incremental innovations triggers capability tensions. As a result, TMTs who embrace a consistency orientation are more likely to see contradictory innovations (e.g., Smith, 2014) through a contracted cognitive lens. Several empirical examples illustrate this. Danneels’ (2011) account of Smith-Corona showed how the company transitioned from mechanical to electric typewriters to personal word processors by maintaining a consistent focus on word processing, but was unable to adopt additional capabilities related to the production of other office supplies that would have allowed the company to transition into much needed new product categories. A consistency-orientation that favored typewriters sustained the contracted frame through which the TMT viewed the company’s potential for growth. Similarly, in the 1960s, incumbent Swiss watchmaking executives adopted a consistency orientation that pitted the integrated circuitry found in quartz watches against nearly 300 years of mechanical watchmaking prowess. As a result, many Swiss executives were unable to reconcile inconsistencies among the capabilities needed to produce both quartz and mechanical watches, and thus struggled to perceive a useful role for quartz

technology within their existing operations (Landes, 1983). In response to the emergence of online news, many newspapers were unable to develop a co-existence orientation that could have expanded their cognitive frame to allow journalism capabilities to sit alongside those capabilities needed to produce digital media (Gilbert, 2006; Tushman and O'Reilly, 2002).

An especially important context where consistency and co-existence orientations toward capability development are visible is in the distinct products or outputs produced by innovations (Sujan, 1985). Across the portfolio, the organization's products or services may share few or many capabilities in common. Because the adoption of a non-incremental innovation, by definition, permits radically new capabilities to penetrate the firm, adoption decisions force debates about whether or not the innovation is reconcilable with existing capabilities.

Alternatively, a co-existence orientation serves to bundle or “match” (Eggers and Kaplan, 2013) inconsistent organizational capabilities, permitting the TMT to reconcile and execute incremental as well non-incremental innovation via simultaneous exploitation and exploration (March, 1991; O'Reilly and Tushman, 2008). We theorize that organizational inertia will push incumbent firms toward a consistency orientation, making it more difficult for the TMT to reconcile inconsistent capabilities within the firm (Nadler and Tushman, 1989; Benner and Tushman, 2002). More formally, we posit:

*Proposition 1a: TMTs who maintain a consistency orientation toward capability development are more likely to cognitively frame a non-incremental innovation through a contracted framing lens.*

***Organizational identity filter: less vs. more elastic***

Organizational identity is the collectively agreed upon set of central, distinctive, and enduring characteristics that define an organization (Albert & Whetten, 1985). Organizational identity, because it is socially constructed and can affect the meaning systems TMTs use to maintain the organization's core purpose, has the potential to shape the TMTs cognitive frame toward

innovations that may come to define the organization. We theorize that the manner by which identity shapes a cognitive frame can be attributed to the degree of its elasticity, i.e., “the tensions that simultaneously stretch, while holding together, social constructions of identity” (Kreiner *et al.*, 2015: 981). In the context of innovation adoption, we posit that the elasticity (or inelasticity) of an organization’s identity is rooted in two basic elements: “who we are” and “what we do” (Ashcraft, 2013; King and Whetten, 2008; Navis and Glynn, 2010, 2011; Nelson and Irwin, 2014). Previous work has tended to treat this coupling as unproblematic, generally assuming a fairly tight pairing between these two elements (e.g., Navis & Glynn, 2010). However, relaxing this assumption allows a consideration of how elasticity holds these two elements together and affects the nature of a TMT’s cognitive frame toward innovation.

At one extreme, an inelastic identity offers little interpretive variation between the conceptualization of “who we are” and the meanings of the organization’s core activities and products, or “what we do.” For instance, Polaroid maintained a tightly coupled, inelastic identity up until its demise. Even after substantial investment in digital innovation, Polaroid’s TMT was unable to decouple its sense of “who we are” from the type of film it produced (Gavetti, 2005). Similarly, although Kodak developed some of the first digital cameras (Lucas Jr and Goh, 2009), the Kodak engineer who invented one of the first digital cameras recalled, “It was filmless photography, so management’s reaction was, ‘that’s cute—but don’t tell anyone about it.’” (Deutsch, 2008). Thus, when a firm’s core products are too tightly coupled to “who we are,” the identity remains inelastic and the TMT’s cognitive frame is contracted.

Alternatively, when an organization’s identity is more elastic, “who we are” and “what we do” are more loosely coupled. Weick (1976: 3) described loose coupling as “a situation in which elements are responsive, but retain evidence of separateness and identity.” The contrast



between an inelastic and an elastic identity filter is evident in the contrasting decisions made by Blockbuster and Netflix when both were confronted with online streaming technology. As illustrated in our earlier example, Blockbuster persistently defined itself (“who we are”) as a brick-and-mortar video rental service (“what we do”), proudly citing the number of stores located across the United States as a core performance metric. In contrast, Netflix caught criticism for having “a bit of an identity crisis” (Reisinger, 2012) when it expanded its identity to be an “entertainment subscription service” while many US users still saw it as a DVD rental company. By treating its identity elements of “who we are” and “what we do” as related but not interchangeable, Netflix capably expanded how it framed new non-incremental innovations, while Blockbuster’s tight coupling of these two elements contracted its framing lens.

Thus, when a TMT’s sense of “who we are” is less elastic, a narrower set of alternatives will be perceived as legitimate and the incumbent firm’s TMT will view the innovation through a more contracted cognitive frame. The Figure’s concentric circles illustrate the varying degrees of elasticity between these elements and illustrate how identity filters the incumbent TMT’s cognitive framing lens. We propose:

*Proposition 1b: TMTs who view their organization’s identity as less elastic are more likely to cognitively frame a non-incremental innovation through a contracted framing lens.*

***Competitive boundary filter: narrower vs. wider scanning***

Finally, a TMT’s cognitive framing of a non-incremental innovation is filtered by its conceptualization of the firm’s competitive boundaries. Competitive boundary scanning affects the TMT’s search for strategic growth opportunities (Gavetti and Levinthal, 2000; Hambrick, 1982; Miles and Snow, 1978). TMTs who scan a wider landscape of their competitive environment will develop a more expansive cognitive frame; alternatively, those who scan a

narrower competitive landscape will have a more contracted frame. According to Peteraf and Bergen (2003: 1028), incumbent TMTs face cognitive limitations that constrict their ability to expand the notions of their competitive terrain:

When it comes to recognizing rivals, managers are notoriously myopic (Levitt, 1960). Left to their own devices, they notice only competitors that are relatively close in terms of product type, geography, and other salient characteristics (Porac and Thomas, 1990). They pay attention to a few close rivals, but ignore others only barely more distant (Lant and Baum, 1995). As a consequence, they are likely to be blindsided by rivalry coming from unexpected quarters (Zajac and Bazerman, 1991).

The implications of competitive boundary scanning on TMT cognitive framing are most noticeable when TMTs scan their competitive environment for common innovation adoption decisions within their field of reference (Raffaelli and Glynn, 2014; Westphal, Gulati, and Shortell, 1997). Competitors perceived to be consistent or aligned with the firm's competitive boundaries are favored, while those that lie outside the perceived boundaries tend to be de-legitimated, de-valued or rejected. A TMT's perception of membership in larger categories of meaning is dependent on their ability to scan and then associate competition within an industry or field as being "of a particular type" (e.g., Hsu and Hannan, 2005; Navis and Glynn, 2010; Porac, Thomas, and Baden Fuller, 1989; Zuckerman, 1999). For example, Benner and Tripsas's (2012) work in the nascent digital camera industry showed how prior industry affiliation constrained incumbents' ability to strategically move into a related strategic space. Thus, TMTs who view the field through more "focused scanning techniques" (Peteraf and Bergen, 2003: 1029) are more likely to approach non-incremental innovations through a contracted cognitive framing lens. We propose:

*Proposition 1c: TMTs who narrow their competitive boundary scanning are more likely to cognitively frame a non-incremental innovation through a contracted framing lens.*

In sum, TMT cognitive framing of non-incremental innovation attends to three distinct, but nonetheless related elements (i.e., capability development, organizational identity, and competitive boundary scanning). Because inertial forces on incumbent firms will consistency push TMTs toward more contracted framing lenses, TMTs are more likely to perceive and conceptualize non-incremental innovations as being misaligned with their current business model. The TMT's decision to adopt non-innovations is dependent on their ability to shift and realign an initial contracted cognitive frame to expand it to accommodate new innovations. To accommodate shifts toward a more expanded frame, we theorize the need for *frame flexibility* in order to host non-incremental innovations.

### **TMT frame flexibility**

Whereas the filters discussed above often contract, our model points to the possibility that some incumbent firm TMTs can develop the capability to expand and flex their cognitive frame.

Frame flexibility, we argue, is an ability to reframe how the TMT perceives an innovation's categorical classification relative to the preexisting filters used to evaluate extant innovation.

Prior models of strategic choice have limited the classification of non-incremental innovations to a simple binary determination of whether (or not) a target innovation is consistent (or inconsistent) with an established cognitive frame (e.g., Sull, 1999; Tripsas and Gavetti, 2000):

Innovation choices perceived to be consistent or aligned with the current organizational model are favored, while those that lie outside tend to be rejected. We suggest that cognitive framing shifts are made possible by the TMT's ability to categorize and/or label the non-incremental innovation within a classification system that accommodates the new innovation within the organization; a process facilitated by the TMTs ability "to locate, perceive, identify, and label" events or choices (Goffman, 1974: 21) and guide decision-making (Huff, 1982).

In the section that follows, we suggest that the TMT's categorical classification of a non-incremental innovation is a critical element linking a more expanded cognitive frame to innovation adoption. Such TMT frame flexibility informs and realigns their interpretation of the innovation with the firm's existing organizational architecture (Greenwood and Hinings, 1996; Gulati *et al.*, 2012; Nadler and Tushman, 1989; Schreyögg and Sydow, 2010).

### ***Categorical classification of the non-incremental innovation***

Categorical classification schemes shape how novel objects of interest (e.g., non-incremental innovations) fit within an existing cognitive frame (Mervis and Rosch, 1981) and provide a bandwidth of "acceptable" variation. Classification boundaries, defined by prototypical representativeness, set up the rules for categorical inclusion and exclusion at different categorization levels in a classification hierarchy. These classifications make the implications of adopting a non-incremental innovation clearer for the strategic positioning of the firm. Such bandwidth affords more or less latitude in claiming organizational membership categories (e.g., Glynn and Abzug, 2002) and furnishes the parameters for the ways in which a cognitive frame can be stretched legitimately.

Mervis and Rosch (1981) define three key levels of vertical inclusion that describe classification hierarchies: (1) a *specific*, subordinate level, having more domain specificity and concreteness (e.g., a dining room table; a bedside table; a coffee table); (2) an *intermediate* level, consisting of the most typical and most used categories (e.g., a table); and (3) an *abstract* superordinate level, located above the intermediate level and having lower domain specificity and greater abstractness (e.g., a piece of furniture). In construing a cognitive frame related to innovation adoption, the TMT makes two assessments: one, determining where the salient category is in the hierarchy, i.e., specific, intermediate, or abstract; and two, assessing the fitness

of the firm as a prototype for that category. At higher taxonomic levels, cognitive frames tend to be less domain-specific than at lower ones; this was illustrated, for instance, in Fuji's shift from the subordinate category of film to the superordinate category of "imaging and information" (Tripsas, 2009: 455), as well as IBM's ability to embrace LCD flat panel technology after shifting to a superordinate "flexible, business-case oriented framing" (Eggers, 2016: 1590). As an organization moves its understanding of the firm up the classification hierarchy, from a more specific (subordinate) to a more abstract (superordinate) categorization, prototype representativeness widens to encompass the subordinate categories that sit below it, thereby allowing more diversity in prototypicality at higher levels (e.g., Netflix's aim to produce online entertainment suggests a more abstract classification than DVD-by-mail subscription services).

TMTs who engage in more specific framing strategically position the firm at a more subordinate level and to take a more limited or narrow view of what constitutes appropriate membership. Under this condition, cognitive frames become fixed when the TMT construes the frame in terms of a subordinate level of classification and is unable to expand its initially contracted lens through which it perceives the firm's capabilities, identity, and competitive boundaries. This was evident, for instance, in the Kodak TMT (Munir and Phillips, 2005), who struggled to move beyond a specific classification as "a film company" (rather than imaging) because they generally perceived digital film production as unassociated with chemical film processing (Swasy, 1997). Likewise, Blockbuster's TMTs deferred to a specific classification as a brick-and-mortar video retailer and was unable to embrace the capabilities and organizational architectures required to deliver the same content to their existing customers across multiple distribution channels (O'Reilly and Tushman, 2016). At these lower taxonomic hierarchies, a TMT's cognitive frame for innovation tends to be more domain specific, more concrete, and less

flexible. And so, the prototype grows narrower as we move down the hierarchy to the specific subordinate level (e.g., sailboat maker Linjett's decision to shift from 'boat manufacturer' to focusing more specifically on 'custom sailing yacht' production) (Adner and Snow, 2010). Thus, specific subordinate classifications embody fixed, domain-specific cognitive frames.

Alternatively, prior research has shown that intermediate levels of categorization classification are most effective in helping organizations adapt to environmental change because they are "both rich enough to provide useful information and distinct enough to be nonredundant" (Porac and Thomas, 1990: 232). By adopting an intermediate classification, the TMT can re-position the firm, moving it up or down in the taxonomic classification hierarchy (Mervis and Rosch, 1981). This makes frame flexibility possible. TMTs who engage in flexible framing tend to categorically position the firm at an intermediate, but relatively more abstract level, allowing them to view a wider set of organizational offerings (or potential innovations) as fitting within the category. Rather than being too specific (i.e., fixed) or too abstract (i.e., ambiguous), such intermediate claims to the classification taxonomy allow for flexibility in the hands of the TMT.

The TMT accomplishes frame flexibility by matching the innovation to a cognitive referent that they, as well as customers, partners, analysts, and employees come to "automatically recognize" as being the epitome of a category in which the firm operates (Santos and Eisenhardt, 2009: 649); this involves claiming the firm as a prototype or exemplar that best represents the category identified. Prototypes are more than lists of particular framing attributes "but, rather, fuzzy sets" that encapsulate the key features of group membership (Hogg and Terry, 2000: 123). Well-known examples of prototypical representatives are Amazon in online commerce and, at one time, IBM in computing, software, and services. Both firms expanded

upon an initial product offering (e.g., books, mainframes) to later serve as a representative of much larger category.

Thus, we propose that the expansion of a cognitive framing lens must, in turn, be coupled with a classification of the non-incremental innovation in a way that is neither too specific nor too abstract. Such intermediate classifications permit the non-incremental innovation to be connected to, but different from, extant innovation. For instance, Amazon was founded in 1994 as an online bookstore, but in the years that followed, the TMT adopted a flexible frame that helped its CEO justify an expansion into a variety of retail goods, internet streaming services, eBooks, tablet hardware production, and cloud computing. During each shift, Amazon's flexible frame never anchored the TMT's view of the organization on one specific good or service (i.e., bookselling), but rather on the goal of building an online commerce platform. Similarly, post 9/11, the Federal Bureau of Investigation (FBI) reclassified its hierarchical frame away from protection and criminal activities and, instead, as a "threat-based intelligence-led" agency. To complement this intermediate categorical framing, Gulati, Raffaelli, Rivkin and Zuzul (2016) illustrated how the FBI Director embedded new capabilities and an identity into local field offices that allowed for law enforcement and cyber-terrorism capabilities to coexist. And Martha Stewart claimed a more flexible frame in naming her business Martha Stewart Living Omnimedia to reflect a focus on "lifestyle" that could transcend specific domains of life and be disseminated across multiple media channels that each required novel capabilities to grow (e.g., magazines, books, television and radio programming, and online activities) (Glynn, 2011; Glynn and Dowd, 2008). In these and other cases (e.g., Eggers, 2016), the TMTs expanded their cognitive frame flexibly to embed new innovations in an intermediate classification that blanketed an array of products and offerings that those inside and outside the firm could interpret

as consistent with the TMT's stated strategy and mission. However, each example shows how the TMTs also set cognitive boundaries that avoided too much abstraction, so as to prevent ambiguity and confusion about how to categorically classify the organization.

Thus, frame flexibility occurs when the TMT holds a cognitive frame that includes an intermediate level of classification that reconciles preexisting cognitive inconsistencies about the firm's existing capabilities, organizational identity, and competitive boundaries. While each dimension ascribes meaning to a cognitive frame, a flexible frame allows for an interpretation of innovations that can be held together under a cohesive intermediate classification that is neither too specific (i.e., fixed) nor too abstract (i.e., ambiguous). We propose:

*Proposition 2a: TMTs who classify a non-incremental innovation as a representative prototype of an intermediate hierarchical category are more likely to develop a flexible cognitive frame.*

*Proposition 2b: TMTs who classify a non-incremental innovation as a representative prototype of a specific hierarchical category are more likely to develop a fixed cognitive frame.*

*Proposition 2c: TMTs who classify a non-incremental innovation as a representative prototype of an abstract hierarchical category are more likely to develop an ambiguous cognitive frame.*

## **Emotional framing**

In addition to cognitive framing, a TMT's decision to adopt a new innovation also involves emotional framing (e.g., Vuori and Huy, 2016). In studying social movements, Robnett (2004: 195) identified a key role for emotions and, especially emotional resonance, i.e., "the degree of 'emotional harmony between ideology, practices...or frames.'" In particular, this research has shown that emotional arousal, displays, and identification are critical to organizational change (Davis *et al.*, 2008). Giorgi (2017: 724) explains that framing needs to achieve "emotional embeddedness in its institutional or organizational setting...[and] evoke emotions that are in line with a predominant institutional ethos...or an organization's culture." As such, emotional



framing involves alignment between symbols and more enduring themes (Gamson, 1988) that make a non-incremental innovation feel emotionally engaging and sensible. For example, research on social movements has shown how cognitive frames elicit positive emotions when they resonate with participants' values, beliefs, and ideas and reinforce existing cultural narratives and understandings (e.g., Robnett, 2004; Thoits, 1989). Thus, organizations that infuse the organization with value shape emotional aspirations that affect organizational adaptation (Selznick, 1957; Voronov and Vince, 2012; Voronov and Weber, 2016).

Emotional framing helps resolve inconsistent sets of organizational capabilities, identities, and competitive membership associated with flexible framing (e.g., Gilbert, 2006; Gupta, Smith, and Shalley, 2006; Tripsas, 2009) by linking a non-incremental innovation with an emotionally engaging competitive vision (e.g., Rotemberg and Saloner, 2000; Van den Steen, 2005). Building on Selznick's (1957) notion of "infusing the organization with value," emotional framing enables a positioning of the non-incremental innovation in the context of the firm's history and normative values. For example, Fuji's TMT was able to articulate a vision rooted in a set of values associated with being a world-class "imaging and information" company (Tripsas, 2013). Ravasi and Schultz (2006) and Rindova, Dalpiaz and Ravasi (2011) demonstrated how framing anchored in opportunity narratives facilitated positive emotional responses to organizational change.

When individuals are exposed to novelty, they assign "affective tags" to their evaluative appraisals (Fiske and Pavelchak, 1986). Dutton and Jackson (1987: 82) demonstrated the relevance of such evaluative appraisals to strategic issue responses observing that "evaluative appraisals are the affective components of cognitions...[and] may attract people to become associated with an opportunity and repel people from becoming involved with an issue labeled a

threat.” For example, Gilbert (2005) observed how incumbent print media firms failed to change organizational strategies in response to web media because of emotionally resonant threat perceptions that emerged from individual self-narratives. Such threat narratives have been shown to trigger affective responses related to avoidance, as well as ambivalence (Ashforth *et al.*, 2014). Striking a responsive chord, or being emotionally resonant (Giorgi, 2017; Snow *et al.*, 1987), we argue, is key for effective framing by the TMT and, in turn, their strategic decision to adopt a non-incremental innovation.

A decision to adopt a non-incremental innovation, with its associated capability, identity, competitive boundary challenges, depends on whether the cognitive frame resonates emotionally as an opportunity with the TMT, as well as with members of the expanded leadership team (Benner and Tripsas, 2012; Gilbert, 2005; Staw, Sandelands, and Dutton, 1981; Tripsas, 2009). If a non-incremental innovation is coded as a threat by the extended team, threat-rigidity dynamics sabotage adoption. Especially during periods of technological ferment, cognitive frames are mired in legacy strategies and framings (Eggers and Kaplan, 2013) and, in turn, revert to overlearned behaviors (Staw *et al.*, 1981). Danneels (2011) offered an example of such a threat frame in his account of Smith-Corona’s failure to adapt to the rise of desktop computing, illustrating how the TMT was unable shift resources toward new capabilities because of an entrenched cognitive frame anchored to typewriters and an emotional resistance to selling other office supplies. Similarly, Tripsas and Gavetti (2000) demonstrated that prior managerial cognitive representations posed the primary challenge to innovation adoption at Polaroid. And Gilbert (2006) illustrated how competing cognitive frames of threat and opportunity led to the collapse of several newspapers in the wake of online news. We argue that the emotional framing

associated with a non-incremental innovation will, in turn, affect how the leadership team resonates with the non-incremental innovation.

### ***Emotional frames and innovation adoption***

When TMTs are able to attach an emotionally engaging aspiration to a non-incremental innovation, doing so permits, justifies, and contextualizes a more flexible cognitive frame. Thus, we theorize that cognitive and emotional frames are inextricably related to innovation adoption decisions. Relatedly, Rindova and Petkova (2007: 220) found that both emotional and cognitive factors influence how consumers perceive the potential value of novel products and innovations, noting that that cognition and emotion were “intertwined in the process of forming perceptions of the value of a product innovation.” We posit a similar cognitive and emotional interaction, but our model takes the perspective of key organization members inside the firm. For example, the Ball Corporation, which started as a bucket company in 1880, innovated into glass, aluminum, and plastics containers over time. Across these different businesses, the TMT adopted a more flexible intermediate cognitive frame as a “world-class container company,” also touting an emotionally resonant slogan “We Can!” As such, Ball’s cognitive and emotional frames were interpreted internally as an opportunity rather than a threat (Tushman and O’Reilly, 2002). Thus, innovation adoption is influenced by both cognitive and emotional framing. Absent TMT framing that fosters emotional engagement, the extended leadership team is less likely to engage in the work necessary to execute a more flexible cognitive frame. We propose:

*Proposition 3a: Non-incremental innovations that emotionally resonate as an opportunity among members of the extended management team are more likely to be adopted.*

*Proposition 3b: Non-incremental innovations that emotionally resonate as a threat among members of the extended management team are less likely to be adopted.*

*Proposition 3c: Non-incremental innovations that emotionally resonate as ambivalent among members of the extended management team and adoption will be unpredictable.*

## **How framing flexibility affects innovation adoption decisions over time**

TMTs can learn from prior successes and failures in making adoption decisions (Levitt and March, 1988; Starbuck and Milliken, 1988). Over time, senior teams develop their capabilities for cognitive and emotional framing (and re-framing). Like other forms of capability development, we suggest that TMTs develop, manage, and hone their ability to develop more flexible frames over time as one cycle affects the next. Helfat and Peteraf (2015) explicate how cognition serves as an important microfoundation of dynamic capabilities (e.g., Teece, 2007). They suggest that processes of sensing, seizing and reconfiguring dynamic capabilities are associated with a managerial cognitive capability – defined as “the capacity of an individual manager to perform one or more of the mental activities that comprise cognition” (Helfat and Peteraf, 2015: 835). Thus, we posit that TMTs utilize “feedback from previous experience” to consider current options for innovation adoption (March and Olsen, 1976: 148).

Developing the TMT capability to manage the work of framing – and ultimately, the potential to effectively expand frames cognitively and emotionally – provides strategic flexibility. Such processes occur when TMTs leverage past experience to develop strategic capabilities and learn (e.g., Adler and Clark, 1991; Argote, McEvily, and Reagans, 2003; Argyris, 1976). Weigelt and Sarkar (2009: 52) argued that firms “face knowledge hurdles when adopting certain types of innovation, partly because adoption-enabling knowledge is experiential and based on learning.” They found that the adoption of electronic banking solutions among credit unions was facilitated by learning to exploit external knowledge through marketing efforts.

We argue that a TMT’s ability to engage in more flexible framing is contingent on adaptive learning processes that foster TMT experimentation with more abstract cognitive frames that are anchored on an emotionally engaging aspiration. These processes are contingent

on the TMTs ability to develop capabilities and an identity that are perceived to be consistent with the organization's competitive boundaries. Several mechanisms are likely to facilitate TMT learning related to innovation adoption and flexible framing, including the willingness to experiment (Thomke, 1998; Weigelt and Sarkar, 2009), knowledge diversity (Fichman and Kemerer, 1997) and a participative decision-making culture (Hurley and Hult, 1998).

For example, Tushman and O'Reilly (2002) illustrated how USA Today's TMT, after several attempts to implement digitized content in the context of print content, was able to articulate an intermediate frame for their organization (e.g., "the world's leading news organization") and create a set of processes that permitted the organization to leverage its content across platforms in a way to enhance its brand. Likewise, Time Warner's TMT held a contracted cognitive frame that was unable to reconcile inconsistent capabilities and identities required to develop TIME magazine's print and digital news content. As a result, the TMT was unable to develop a flexible categorization frame that engendered a more intermediate superordinate level classification for TIME magazine alongside Time Warner's other media offerings in television and online media. TIME magazine was eventually spun-off, turning the magazine back into an independent property (Smith, 2016). The effect of this inconsistency was to embrace new capabilities, but without an intermediate cognitive frame, the TMT was unable to embrace an overarching identity and clear definition of their competitive boundaries. Thus, without learning, frames are likely to be reinforced and unchanged over time.

In addition, a TMT's ability to engage in frame expansion is likely related to its ability to reach consensus on the appropriateness of adopting an innovation. Because frame flexibility furnishes a reference for adoption decisions, TMT consensus is more achievable. Attewell's (1992: 6) work on accumulated learning highlights how TMTs develop knowledge contingent on

“individual insights and skills becom[ing] embodied in organizational routines, practices, and beliefs that outlast the presence of the originating individual.” In addition, past non-incremental innovation adoption decisions that emotionally resonate throughout the organization as an opportunity are likely to engender support for future innovations. Fiske and Pavelchak (1986: 196) illustrate how such recursive patterns reinforce consensus building over time:

When certain decisions are made regularly, groups may develop consensual ways to categorize the entity.... Consensus on categorization may or may not emerge as a result of group interaction, but lack of consensus would be most problematic if alternative views were evaluatively (rather than descriptively) inconsistent.

Alternatively, if the TMT holds a fixed or ambiguous frame over time, individual members are likely to maintain their individual interpretive schemes, akin to separate and distinct “thought worlds” that have been previously shown to prevent consensus on innovation adoption decisions (Dougherty, 1992). Thus, we posit that TMTs who develop the capability to manage a flexible cognitive frame more effectively over time are likely to learn from prior innovation adoption experiences and develop consensual mental models that promote learning and positively emotionally resonate with the organization. We propose:

*Proposition 4: Over time, TMTs who develop flexible frames with positive emotional resonance are more likely to successfully learn from their prior non-incremental innovation adoption experiences.*

## **DISCUSSION AND IMPLICATIONS**

Organizations continuously face decisions about whether or not to adopt innovations (e.g., Gupta *et al.*, 2006). As technologies evolve, failing to innovate has a significant impact on a firm’s ability to compete (Anderson and Tushman, 1991). Often, however, organizations do not adopt an innovation, even when they have the organizational capacity to do so (e.g., Landes, 1983), or they develop innovations they cannot execute (e.g., Benner and Tushman, 2015; Christensen, 1997). These challenges are accentuated when the innovation violates a long-standing view of

the organization's strategy (Sull, 1999), a prior history of success (O'Reilly and Tushman, 2008) or embedded institutional norms (Fox-Wolfgramm, Boal, and Hunt, 1998).

Although these factors are important, we have argued that a distinct source of incumbent inertia (Hill and Rothaermel, 2003) is rooted in framing. Frames "shape the organization's dedication of scarce resources to one capability or another (Laamanen and Wallin, 2009), ...[which is a] central task of strategic management (Bower, 1970)" (Eggers and Kaplan, 2013: 313). But the interplay of cognitive and emotional framing has largely been omitted in accounts related to non-incremental innovation adoption (Vuori and Huy, 2016). To address this theoretical gap, we advanced a model revealing the role of framing in innovation adoption and explore how TMT frames affect the perceived goodness-of-fit and emotional resonance with non-incremental innovations, which ultimately affects innovation adoption decisions. Moreover, we proposed that the effects of these processes accumulate over time, as the TMT's attention to, and reflection on, the individual adoption decisions builds capabilities for effective cognitive and emotional framing and broaden the diversity of innovations adopted by an organization. Our model has implications for both theory and practice.

### **Theoretical implications**

The primary goal of this article is to strengthen the bridge between the domains of organizational strategy, innovation, and managerial cognition. We believe our work advances theory and practice in a number of ways. First, we contribute to a rich stream of research on innovation adoption by theorizing how cognitive frames inform managerial choices about whether or not to adopt innovations. At key junctures in product class evolution, the movement toward a more flexible cognitive frame, and in turn, innovation adoption, may have survival value for the firm. For instance, at the closing of industry standards and/or at the initiation of non-incremental

technical change, the ability to develop a flexible frame relative to a new innovation permits TMTs to more accurately understand strategic options and permits members of the firm and external constituents to better understand and execute strategic shifts. When such strategic junctures occur, the ability of the TMT to flexibly reframe the firm's existing capabilities, organizational identity, and boundaries is particularly important because it helps those in the organization conceptualize and emotionally resonate with technological shifts as connected with opportunities (as opposed to threats).

Second, we believe our treatment of cognitive framing affords new insights for cognition scholarship. We theorize that cognitive frames not may be fixed, but instead, may be flexible and mutable over time. Prior conceptualizations of cognitive frames have focused on frames “as ‘things,’ rather than on the dynamic processes associated with their social construction, negotiation, contestation, and transformation” (Benford, 1997: 415 in Croteau & Hicks, 2003). Our theorization and application of cognitive flexibility attends to calls within the strategy literature to more fully account for how and why cognitive frames influence the competitive dynamics of strategic decision making within the firm (Helfat and Peteraf, 2015; Livengood and Reger, 2010). To this end, our work exposes how cognitive flexibility is influenced by three specific forms of TMT cognition related to capability development, organizational identity elasticity, and competitive boundary construction. Together, these aspects influence and shape how the TMT cognitively classifies the innovation. We theorize that cognitive framing, like other dynamic managerial capabilities, requires “managing, or ‘orchestrating,’ the firm’s resources to address and shape rapidly changing business environments” (Teece, 2014: 328). More specifically, we explicate how a TMT’s cognitive frame influences innovation decisions and how the active management of this process has substantial strategic value for the firm.



Third, we extend current notions of strategic framing to include a role for emotions. While cognitive framing of innovations and organizational capabilities is necessary, we argue it is not sufficient for TMT innovation adoption. We theorize that more flexible cognitive framing must also be coupled with the emotional engagement within the extended team. Thus, our model addresses how “thinking” (cognitive framing) and “feeling” (emotional framing) facilitate non-incremental adoption decisions. Because multiple cognitive frames co-exist when incumbent firms execute non-incremental innovation, this emotional engagement helps organizational members make sense of the innovation in the context of the firm’s history. Such emotional engagement helps employees be proud of the past even as they help create a new future. For example, at NASA Life Sciences, the shift from “doing great research” to “keeping astronauts safe in space” helped scientists engage in open innovation as another tool to complement their traditional scientific methods (Lifshitz-Assaf, 2017).

In addition, we answer calls in the innovation literature to theorize the underlying micro-mechanisms underpinning how individuals and teams balance decision-making processes related to exploration and exploitation (Gupta *et al.*, 2006). When TMTs are able to develop a flexible frame, it can guide proactive change in either shaping dominant technological designs or initiating competence destroying technical change. Under a range of conditions, the infusion of organizations with appropriate meaning and emotional resonance (Pfeffer, 1981; Selznick, 1957; Weick, 1979) may be as strategically important as the content of the strategy itself (e.g., Glynn, 2000). Similarly, recent work has exposed the salience of cognition and capability development (Eggers and Kaplan, 2013), highlighting the importance of aligning managerial beliefs with market opportunities. If so, those more traditional analytic strategic capabilities found within the

TMT must be complemented with the ability to function as skilled cultural operators in managing cognitive framing, along with affect and emotion (e.g., Huy, 2002).

While our theorization focuses primarily on the relationship between innovation and framing, we do not mean to suggest that cognitive and emotional frames are the entire explanation for adoption. In this regard, we appreciate that other factors will also influence a TMT's adoption decision. Technical factors, such as whether the innovation is competency-enhancing or competency-destroying (Tushman & Anderson, 1986), will certainly impact the TMT's willingness to engage in explorative innovation activity and consider new adoptions. Likewise, structural factors, such functional differentiation and team size have been shown to influence adoption decisions (Kimberly and Evanisko, 1981). And institutional factors related to the "increased density of interaction, information flows, and membership identification" among members of the focal organization with other organizations in the field (DiMaggio and Powell, 1983: 148) are likely to be influenced by additional normative, regulative, and socio-cognitive factors (Scott, 2008) that promote innovation diffusion.

We also acknowledge the boundary conditions of this work. Our conceptual model assumes that the adoption of an innovation is in the best interest of the adopting firm (e.g., Gopalakrishnan and Damanpour, 1997; Kimberly, 1981; Rogers, 1995). But this may not always be the case. Future empirical research could explore the conditions, if any, where a fixed, flexible or ambiguous cognitive frame might be a viable and appropriate response. For example, some successful incumbent firms chose *not* to adopt a non-incremental innovation (e.g., Henderson, 1995). Also, our model is agnostic about whether cognitive and emotional framing is managed differently depending on whether the non-incremental innovation originates from an exogenous or endogenous source. Parsing out the role that framing flexibility plays in these

different types of circumstances could lead to additional theoretical insights. Finally, research that further explores the sequencing and interaction of cognitive and emotional framing in the context of innovation adoption could entice scholars from multiple domains to collaborate.

We sought to provoke new research that links cognition and emotion to innovation, especially for strategy scholars. Future researchers will be tasked with operationalizing and testing the various aspects of our model. Here we offer some initial ideas to advance empirical work. To begin, we envision many opportunities to model TMT frame flexibility. We could imagine, for example, that archival textual analysis of mission statements, company logos and annual reports will serve as viable sources of data (Eggers and Kaplan, 2013). Using methods such as linguistic category modeling (Semin and Fiedler, 1991) could be especially useful in tracking how the language in these data sources vary in level of abstraction (e.g., Reyt and Wiesenfeld, 2015). Alternatively, data related to the products and technologies that categorize legacy as well as the future may be most easily accessible through external company announcements of new products, services, patent filings, or alliance partnerships. Internal, archival sources of company data that report early stage research and development allocations may also prove suitable, especially for evaluating how framing flexibility influences the adoption of innovations that are incubated within the organization, but are never fully adopted.

We believe opportunities for empirical work are especially plentiful should scholars follow the historical evolution of firms that have adopted multiple innovations over time. 3M, for instance, was founded as a mining company but then made shifts into waterproof sandpaper, masking tape, Post-It notes, pharmaceuticals, and flexible circuits. Intel successfully moved from making memory to computer processors. Using archival data to track how a TMT frames evolve across multiple technological transitions could provide helpful insights. Drawing from Selznick's

(1957) work on value infusion, emotional framing flexibility might be found in normative value claims associated with the organization's character (e.g., Dutton and Dukerich, 1991), claims for consistency or continuity over time (e.g., Schultz and Hernes, 2013), and collectivity or integrity of the organization as a whole (e.g., Raffaelli and Glynn, 2015).

We believe that the study of innovation and frame flexibility is well suited for both qualitative and quantitative methods of inquiry. To date, the bulk of the innovation literature that accounts for cognition has been qualitative in nature (e.g., Danneels, 2011; Gilbert, 2006). Building on this tradition, we see the value of studies that use non-participant observation to follow how TMTs develop, maintain or shift cognitive frames when making innovation adoption decisions. Alternatively, more research employing mixed methods would also be beneficial. For example, scholars might pair qualitative work with generalizable quantitative models to evaluate patterns of frame flexibility over time (e.g., Eggers and Kaplan, 2009). Of particular interest would be to test for shifts in frames by industry or moments in history.

A helpful instrument to measure perceptions of the relationship between frame flexibility and strategy might be the series of overlapping circles employed by marketing and organizational identification scholars (e.g., Bergami and Bagozzi, 2000). These measures might capture the degree of intersection between the TMT's perception of a new non-incremental innovation with the firm's existing innovations. Likewise, scholars might also examine how TMTs sequence their attention to the central aspects of a specific cognitive frame compared to the innovation adoption decisions they make over time. Attention to frame flexibility at certain stages of a change effort may vary, for instance, depending on the stage of the organization's lifecycle or the type of technological shock the firm faces (e.g., exogenous or endogenous; discontinuous, architectural, or incremental).

An organization's performance context is likely to affect the nature of frame flexibility. For example, organizations can proactively adopt innovations to initiate technological discontinuities for potential strategic gain (e.g., Adner, 2012; O'Reilly and Tushman, 2013) before they are forced to; alternatively, firms must sometimes move reactively, under performance shortfall conditions, to their competitor's strategic moves (e.g., Rosenbloom and Christensen, 1994; Siggelkow, 2001). The ordering of cognitive and emotional framing and innovation adoption may be contingent on whether the shifts are initiated opportunistically or reactively. It may be that those most effective proactive technological transitions will be initiated by shifts in framing followed by shifts in non-incremental adoption patterns. In contrast, reactive technological transitions will be initiated by shifts in frames followed by shifts in innovation adoption (e.g., Gulati *et al.*, 2016). Future research looking into whether proactive or reactive innovation adoption decisions influence cognitive flexibility would be worthwhile.

### **Managerial implications**

Ever more frequently, dominant designs shift and technological discontinuities require firms to adopt innovations (Benner and Tripsas, 2012). Product or service modularization and decreasing information processing costs accentuate these dynamics (Altman, Nagle, and Tushman, 2015; Lakhani *et al.*, 2013), creating pressures for TMTs to redefine or reframe their mental models while continuing to develop capabilities and product category variants. Maintaining clearly defined boundaries for product category membership is often associated with efficiency, productivity, and short-term performance (e.g., March, 1991; O'Reilly and Tushman, 2013) when conditions are relatively unchanging. Yet, at key junctures of change in a product class, at the closure of industry standards, and at competence destroying technical transitions, a concrete definition of the firm's innovation boundaries holds firms hostage to their past (Sull, 1999). We

have shown that at firms like Blockbuster and Kodak, the TMT's cognitive frame led them to code these transitions and external changes as threats. Such interpretations stunt a firm's ability to adapt to technical transitions. In sharp contrast, if the TMT is able to embrace and articulate a more flexible frame, they are likely to be more creative in attending to, and dealing with, these transitions. Confronting a technological discontinuity is a difficult challenge for any TMT, but incumbent firms have been shown to successfully host non-incremental innovations and technological change (e.g., Boumgarden, Nickerson, and Zenger, 2012; Eggers, 2016; Eisenhardt and Martin, 2000); the articulation of a flexible frame can help organization members understand and get emotionally engaged in the transformation. This ability to initiate, shape, and execute such cognitive and emotional transitions has important strategic ramifications.

## REFERENCES

- Adler PS, Clark KB. 1991. Behind the learning curve: A sketch of the learning process. *Management Science* **37**(3): 267-281.
- Adner R. 2012. *The wide lens: A new strategy for innovation*. Portfolio Penguin: New York.
- Adner R, Snow D. 2010. Old technology responses to new technology threats: demand heterogeneity and technology retreats. *Industrial & Corporate Change* **19**(5): 1655-1675.
- Altman EJ, Nagle F, Tushman M. 2015. Innovating Without Information Constraints: Organizations, Communities, and Innovation When Information Costs Approach Zero. In *The Oxford Handbook of Creativity, Innovation, and Entrepreneurship*. Shalley CE, Hitt MA, Zhou J (eds.), Oxford University Press: New York.
- Anderson P, Tushman M. 1990. Technological Discontinuities and Dominant Designs: A Cyclical Model of Technological Change. *Administrative Science Quarterly* **35**(4): 604-633.
- Anderson P, Tushman M. 1991. Managing through cycles of technological change. *Research Technology Management* **34**(3): 26-31.
- Andriopoulos C, Lewis MW. 2009. Exploitation-Exploration Tensions and Organizational Ambidexterity: Managing Paradoxes of Innovation. *Organization Science* **20**(4): 696-717.
- Antiocho J. 2011. How I Did It: Blockbuster's Former CEO on Sparring with an Activist Shareholder. Harvard Business Review online ed: <https://hbr.org/2011/04/how-i-did-it-blockbusters-former-ceo-on-sparring-with-an-activist-shareholder>.
- Argote L, McEvily B, Reagans R. 2003. Managing knowledge in organizations: An integrative framework and review of emerging themes. *Management Science* **49**(4): 571-582.
- Argyris C. 1976. Single-Loop and Double-Loop Models in Research on Decision Making. *Administrative Science Quarterly* **21**(3): 363-375.
- Ashcraft KL. 2013. The glass slipper: Incorporating occupational identity in management studies. *Academy of Management Review* **38**(1): 6-31.
- Ashforth BE, Rogers KM, Pratt MG, Pradies C. 2014. Ambivalence in Organizations: A Multilevel Approach. *Organization Science* **25**(5): 1453-1478.
- Attewell P. 1992. Technology diffusion and organizational learning: The case of business computing. *Organization Science* **3**(1): 1-19.
- Barr PS, Stimpert JL, Huff AS. 1992. Cognitive Change, Strategic Action, and Organizational Renewal. *Strategic Management Journal* **13**: 15-36.
- Battilana J, Dorado S. 2010. Building sustainable hybrid organizations: The case of commercial microfinance organizations. *Academy of Management Journal* **53**(6): 1419-1440.
- Benford RD. 1997. An insider's critique of the social movement framing perspective. *Sociological inquiry* **67**(4): 409-430.

- Benford RD, Snow DA. 2000. Framing Processes and Social Movements: An Overview and Assessment. *Annual Review of Sociology* **26**(ArticleType: research-article / Full publication date: 2000 / Copyright © 2000 Annual Reviews): 611-639.
- Benner M, Tripsas M. 2012. The Influence of Prior Industry Affiliation on Framing in Nascent Industries: The Evolution of Digital Cameras. *Strategic Management Journal* **33**: 277-302.
- Benner M, Tushman M. 2015. Reflections on the 2013 decade award: "Exploitation, Exploration, and Process Management: The Productivity Dilemma Revisited" ten years later. *Academy of Management Review*: AMR.2015.0042.
- Benner MJ, Tushman ML. 2003. Exploitation, Exploration, and Process Management: The Productivity Dilemma Revisited. *Academy of Management Review* **28**(2): 238-256.
- Bergami M, Bagozzi RP. 2000. Self Categorization, Affective Commitment and Group Self Esteem as Distinct Aspects of Social Identity in the Organization. *British Journal of Social Psychology* **39**(4): 555-577.
- Boumgarden P, Nickerson J, Zenger TR. 2012. Sailing into the wind: Exploring the relationships among ambidexterity, vacillation, and organizational performance. *Strategic Management Journal* **33**(6): 587-610.
- Bower JL. 1970. Managing the resource allocation process: A study of corporate planning and investment.
- Cho TS, Hambrick DC. 2006. Attention as the mediator between top management team characteristics and strategic change: The case of airline deregulation. *Organization Science* **17**(4): 453-469.
- Christensen C, Bower J. 1996. Customer power, strategic investment, and the failure of leading firms. *Strategic Management Journal* **17**(3): 197-218.
- Christensen CM. 1997. *The innovator's dilemma: when new technologies cause great firms to fail*. Harvard Business Press: Boston.
- Cornelissen JP, Werner MD. 2014. Putting Framing in Perspective: A Review of Framing and Frame Analysis across the Management and Organizational Literature. *The Academy of Management Annals* **8**(1): 181-235.
- Corso M, Pellegrini L. 2007. Continuous and discontinuous innovation: Overcoming the innovator dilemma. *Creativity and Innovation Management* **16**(4): 333-347.
- Croteau D, Hicks L. 2003. Coalition Framing and the Challenge of a Consonant Frame Pyramid: The Case of a Collaborative Response to Homelessness. *Social Problems* **50**(2): 251-272.
- Danneels E. 2011. Trying to become a different type of company: dynamic capability at Smith Corona. *Strategic Management Journal* **32**(1): 1-31.
- Davis G, Morrill C, Rao H, Soule S. 2008. Introduction: social movements in organizations and markets. *Administrative Science Quarterly* **53**(3): 389-394.
- Deutsch C. 2008. At Kodak, Some Old Things Are New Again. In *The New York Times*.



- DiMaggio P, Powell W. 1983. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American sociological review* **48**(2): 147-160.
- Dosi G. 1982. Technological paradigms and technological trajectories: A suggested interpretation of the determinants and directions of technical change. *Research Policy* **11**(3): 147-162.
- Dougherty D. 1992. Interpretive barriers to successful product innovation in large firms. *Organization Science* **3**(2): 179-202.
- Dutton JE, Dukerich JM. 1991. Keeping an Eye on the Mirror: Image and Identity in Organizational Adaptation. *Academy of Management Journal* **34**(3): 517-554.
- Dutton JE, Jackson SE. 1987. Categorizing strategic issues: Links to organizational action. *Academy of management review* **12**(1): 76-90.
- Eggers JP. 2016. Reversing course: Competing technologies, mistakes, and renewal in flat panel displays. *Strategic Management Journal* **37**(8): 1578-1596.
- Eggers JP, Kaplan S. 2009. Cognition and Renewal: Comparing CEO and Organizational Effects on Incumbent Adaptation to Technical Change. *Organization Science* **20**(2): 461-477.
- Eggers JP, Kaplan S. 2013. Cognition and Capabilities: A Multi-Level Perspective. *Academy of Management Annals* **7**(1): 295-340.
- Eisenhardt KM, Martin JA. 2000. Dynamic capabilities: what are they? *Strategic Management Journal* **21**(10-11): 1105-1121.
- Festinger L. 1957. *A theory of cognitive dissonance*. Row Peterson: Evanston, IL.
- Fichman RG, Kemerer CF. 1997. The Assimilation of Software Process Innovations: An Organizational Learning Perspective. *Management Science* **43**(10): 1345-1363.
- Fiske ST, Pavelchak MA. 1986. Category-based versus piecemeal-based affective responses: Developments in schema-triggered affect.
- Fox-Wolfgramm SJ, Boal KB, Hunt JG. 1998. Organizational Adaptation to Institutional Change: A Comparative Study of First-Order Change in Prospector and Defender Banks. *Administrative Science Quarterly* **43**(1): 87-126.
- Gamson WA. 1988. Political discourse and collective action. *International social movement research* **1**(2): 219-244.
- Gans J. 2016. *The Disruption Dilemma*. MIT Press: Cambridge.
- Gardner HK, Anand N, Morris T. 2008. Chartering new territory: Diversification, legitimacy, and practice area creation in professional service firms. *Journal of Organizational Behavior* **29**(8): 1101-1121.
- Gatignon H, Tushman ML, Smith W, Anderson P. 2002. A Structural Approach to Assessing Innovation: Construct Development of Innovation Locus, Type, and Characteristics. *Management Science* **48**(9): 1103-1122.

- Gavetti G. 2005. Cognition and Hierarchy: Rethinking the Microfoundations of Capabilities' Development. *Organization Science* **16**(6): 599-617.
- Gavetti G, Levinthal D. 2000. Looking forward and looking backward: Cognitive and experiential search. *Administrative Science Quarterly* **45**(1): 113-137.
- Gavetti G, Rivkin JW. 2007. On the Origin of Strategy: Action and Cognition over Time. *Organization Science* **18**(3): 420-439.
- Gilbert CG. 2005. Unbundling the Structure of Inertia: Resource versus Routine Rigidity. *Academy of Management Journal* **48**(5): 741-763.
- Gilbert CG. 2006. Change in the presence of residual fit: Can competing frames coexist? *Organization Science* **17**(1): 150-167.
- Giorgi S. 2017. The Mind and Heart of Resonance: The Role of Cognition and Emotions in Frame Effectiveness. *Journal of Management Studies* **54**(4): 711-738.
- Glynn MA. 2000. When Cymbals Become Symbols: Conflict Over Organizational Identity Within a Symphony Orchestra. *Organization Science* **11**(3): 285-298.
- Glynn MA. 2011. The "Martha" Moment: Wading into Others' Worlds. In *Research Alive: Generative Moments for Doing Qualitative Research*. Carlsen A, Dutton J (eds.), Copenhagen Business School Press: Copenhagen.
- Glynn MA, Abzug R. 2002. Institutionalizing Identity: Symbolic Isomorphism And Organizational Names. *Academy of Management Journal* **45**(1): 267-280.
- Glynn MA, Dowd TJ. 2008. Charisma (Un)Bound: Emotive Leadership in Martha Stewart Living Magazine, 1990-2004. *Journal of Applied Behavioral Science* **44**(1): 71-93.
- Goffman E. 1974. *Frame Analysis*. Harvard University Press: Cambridge.
- Gopalakrishnan S, Damanpour F. 1997. A review of innovation research in economics, sociology and technology management. *Omega* **25**(1): 15-28.
- Greenwood R, Hinings CR. 1996. Understanding Radical Organizational Change: Bringing together the Old and the New Institutionalism. *The Academy of Management Review* **21**(4): 1022-1054.
- Greve HR, Taylor A. 2000. Innovations as Catalysts for Organizational Change: Shifts in Organizational Cognition and Search. *Administrative Science Quarterly* **45**(1): 54-80.
- Gulati R, Puranam P, Tushman M. 2012. Meta-organization design: Rethinking design in interorganizational and community contexts. *Strategic Management Journal* **33**(6): 571-586.
- Gulati R, Raffaelli R, Rivkin JW, Zuzul T. 2016. Does 'What We Do' Make Us 'Who We Are'? Organizational Design and Identity Change at the Federal Bureau of Investigation. *Harvard Business School Working Paper No. 16-084*.
- Gupta AK, Smith KG, Shalley CE. 2006. The Interplay between Exploration and Exploitation. *Academy of Management Journal* **49**(4): 693-706.

- Hambrick DC. 1982. Environmental scanning and organizational strategy. *Strategic Management Journal* **3**(2): 159-174.
- Helfat CE, Peteraf MA. 2015. Managerial cognitive capabilities and the microfoundations of dynamic capabilities. *Strategic Management Journal* **36**(6): 831-850.
- Henderson R. 1993. Underinvestment and Incompetence as Responses to Radical Innovation: Evidence from the Photolithographic Alignment Equipment Industry. *The RAND Journal of Economics* **24**(2): 248-270.
- Henderson R. 1995. Of life cycles real and imaginary: The unexpectedly long old age of optical lithography. *Research Policy* **24**(4): 631-643.
- Henderson RM, Clark KB. 1990. Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms. *Administrative Science Quarterly* **35**(1).
- Hill CWL, Rothaermel FT. 2003. The Performance of Incumbent Firms in the Face of Radical Technological Innovation. *The Academy of Management Review* **28**(2): 257-274.
- Hogg M, Terry D. 2000. Social identity and self-categorization processes in organizational contexts. *Academy of Management Review* **25**(1): 121-140.
- Hsu G, Hannan MT. 2005. Identities, Genres, and Organizational Forms. *Organization Science* **16**(5): 474-490.
- Huff AS. 1982. Industry Influences on Strategy Reformulation. *Strategic Management Journal* **3**(2): 119-131.
- Huff AS, Huff JO. 2000. When firms change direction Barr PS (ed.), Oxford University Press: New York.
- Hurley RF, Hult GTM. 1998. Innovation, market orientation, and organizational learning: an integration and empirical examination. *The Journal of Marketing*: 42-54.
- Huy QN. 2002. Emotional balancing of organizational continuity and radical change: The contribution of middle managers. *Administrative Science Quarterly* **47**(1): 31-69.
- Kaplan S, Tripsas M. 2008. Thinking about technology: Applying a cognitive lens to technical change. *Research Policy* **37**(5): 790-805.
- Kimberly JR. 1981. Managerial innovation. In *Handbook of Organizational Design*. Nystrom P, Starbuck W (eds.), Oxford University Press: New York.
- Kimberly JR, Evanisko MJ. 1981. Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations. *The Academy of Management Journal* **24**(4): 689-713.
- King BG, Whetten DA. 2008. Rethinking the Relationship Between Reputation and Legitimacy: A Social Actor Conceptualization. *Corporate Reputation Review* **11**(3): 192-207.
- Kreiner G, Hollensbe E, Sheep M, Smith B, Kataria N. 2015. Elasticity and The Dialectic Tensions of Organizational Identity: How Can We Hold Together While We're Pulling Apart? *Academy of Management Journal* **58**(4): 981-1011.

- Laamanen T, Wallin J. 2009. Cognitive Dynamics of Capability Development Paths. *Journal of Management Studies* **46**(6): 950-981.
- Lakhani KR, Boudreau KJ, Loh P-R, Backstrom L, Baldwin C, Lonstein E, Lydon M, MacCormack A, Arnaout RA, Guinan EC. 2013. Prize-based contests can provide solutions to computational biology problems. *Nature biotechnology* **31**(2): 108-111.
- Landes DS. 1983. *Revolution in time: Clocks and the making of the modern world*. Harvard University Press: Cambridge.
- Lavie D. 2006. Capability Reconfiguration: An Analysis of Incumbent Responses to Technological Change. *The Academy of Management Review* **31**(1): 153-174.
- Levinthal DA, March JG. 1993. The myopia of learning. *Strategic Management Journal* **14**(S2): 95-112.
- Levitt B, March JG. 1988. Organizational learning. *Annual review of sociology*: 319-340.
- Lifshitz-Assaf H. 2017. Dismantling Knowledge Boundaries at NASA: The Critical Role of Professional Identity in Open Innovation. *Administrative Science Quarterly* **0**(0): 0001839217747876.
- Livengood RS, Reger RK. 2010. That's our turf! Identity domains and competitive dynamics. *Academy of Management Review* **35**(1): 48-66.
- Lucas Jr HC, Goh JM. 2009. Disruptive technology: How Kodak missed the digital photography revolution. *The Journal of Strategic Information Systems* **18**(1): 46-55.
- March JG. 1991. Exploration And Exploitation in Organizational Learning. *Organization Science* **2**(1): 71-87.
- March JG, Olsen JP. 1976. *Ambiguity and choice in organizations*. Universitetsforlaget: Bergen.
- Mervis CB, Rosch E. 1981. Categorization of Natural Objects. *Annual Review of Psychology* **32**(1): 89-115.
- Miles RE, Snow C, C. 1978. *Organizational strategy, structure, and process*. McGraw-Hill: New York.
- Munir KA, Phillips N. 2005. The Birth of the 'Kodak Moment': Institutional Entrepreneurship and the Adoption of New Technologies. *Organization Studies* **26**(11): 1665-1687.
- Nadler DA, Tushman ML. 1989. Organizational frame bending: Principles for managing reorientation. *The Academy of Management Executive* **3**(3): 194-204.
- Navis C, Glynn MA. 2010. How New Market Categories Emerge: Temporal Dynamics of Legitimacy, Identity, and Entrepreneurship in Satellite Radio, 1990-2005. *Administrative Science Quarterly* **55**(3): 439-471.
- Navis C, Glynn MA. 2011. Legitimate Distinctiveness and the Entrepreneurial Identity: Influence on Investor Judgments of New Venture Plausibility. *Academy of Management Review* **36**(3).
- Nelson A, Irwin J. 2014. Defining What We Do-All Over Again: Occupational Identity, Technological Change, and the Librarian/Internet-Search Relationship. *Academy of Management Journal* **57**: 892-892.

- Newman R. 2010. How Netflix (and Blockbuster) Killed Blockbuster. *US News and World Report*.
- O'Reilly C, Tushman M. 2016. *Lead and Disrupt: How to Solve the Innovator's Dilemma*. Stanford University Press: Stanford.
- O'Reilly CA, Tushman ML. 2013. Organizational ambidexterity: Past, present, and future. *Academy of Management Perspectives* **27**(4): 324-338.
- O'Reilly CA, Tushman ML. 2008. Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. *Research in Organizational Behavior* **28**(0): 185-206.
- Ocasio W, Joseph J. 2005. An attention-based theory of strategy formulation: Linking micro-and macroperspectives in strategy processes. *Advances in Strategic Management* **22**(18): 39-61.
- Peteraf MA, Bergen ME. 2003. Scanning dynamic competitive landscapes: a market-based and resource-based framework. *Strategic Management Journal* **24**(10): 1027-1041.
- Pfeffer J. 1981. Management as symbolic action: The creation and maintenance of organizational paradigms. *Research in Organizational Behavior* **3**(1): 1-52.
- Porac J, Thomas H, Baden Fuller C. 1989. Competitive groups as cognitive communities: The case of Scottish knitwear manufacturers. *Journal of Management Studies* **26**(4): 397-416.
- Porac JF, Thomas H. 1990. Taxonomic Mental Models in Competitor Definition. *Academy of Management Review* **15**(2): 224-240.
- Raffaelli R, Glynn MA. 2014. Turnkey or Tailored? Relational Pluralism, Institutional Complexity, and the Organizational Adoption of More or Less Customized Practices. *Academy of Management Journal*.
- Raffaelli R, Glynn MA. 2015. What's so Institutional about Leadership? Leadership Mechanisms of Value Infusion. In *Research in the Sociology of Organizations*. Kraatz M (ed.), Emerald.
- Raisch S, Birkinshaw J. 2008. Organizational Ambidexterity: Antecedents, Outcomes, and Moderators. *Journal of Management* **34**(3): 375-409.
- Raisch S, Tushman ML. 2016. Growing new corporate businesses: From initiation to graduation. *Organization Science* **27**(5): 1237-1257.
- Ravasi D, Schultz M. 2006. Responding to Organizational Identity Threats: Exploring the Role of Organizational Culture. *Academy of Management Journal* **49**(3): 433-458.
- Reger RK. 1990. Managerial thought structures and competitive positioning. *Mapping strategic thought*: 71-88.
- Reisinger D. 2012. Netflix has an identity problem. In *Fortune*.
- Reyt J-N, Wiesenfeld BM. 2015. Seeing the forest for the trees: Exploratory learning, mobile technology, and knowledge workers' role integration behaviors. *Academy of Management Journal* **58**(3): 739-762.
- Rindova V, Dalpiaz E, Ravasi D. 2011. A cultural quest: A study of organizational use of new cultural resources in strategy formation. *Organization Science* **22**(2): 413-431.

- Rindova VP, Petkova AP. 2007. When Is a New Thing a Good Thing? Technological Change, Product Form Design, and Perceptions of Value for Product Innovations. *Organization Science* **18**(2): 217-232.
- Robnett B. 2004. Emotional Resonance, Social Location, and Strategic Framing. *Sociological Focus* **37**(3): 195-212.
- Rogers EM. 1995. *Diffusion of Innovations*. Free Press: New York.
- Rosenbloom RS, Christensen CM. 1994. Technological discontinuities, organizational capabilities, and strategic commitments. *Industrial and corporate change* **3**(3): 655-685.
- Rotemberg JJ, Saloner G. 2000. Visionaries, managers, and strategic direction. *RAND Journal of Economics*: 693-716.
- Rothaermel FT. 2001. Incumbent's advantage through exploiting complementary assets via interfirm cooperation. *Strategic Management Journal* **22**(6-7): 687-699.
- Rumelt RP. 1979. Evaluation of strategy: Theory and models. *Strategic management: A new view of business policy and planning*: 196-212.
- Santos FM, Eisenhardt KM. 2009. Constructing markets and shaping boundaries: Entrepreneurial power in nascent fields. *Academy of Management Journal* **52**(4): 643-671.
- Satell G. 2014. A Look Back At Why Blockbuster Really Failed And Why It Didn't Have To. Forbes (online ed.): <http://www.forbes.com/sites/gregsatell/2014/09/05/a-look-back-at-why-blockbuster-really-failed-and-why-it-didnt-have-to/#580bc131261a>. <http://www.forbes.com/sites/gregsatell/2014/09/05/a-look-back-at-why-blockbuster-really-failed-and-why-it-didnt-have-to/#580bc131261a>.
- Schilling MA. 2005. *Strategic management of technological innovation*. Tata McGraw-Hill Education.
- Schreyögg G, Sydow J. 2010. Organizing for Fluidity? Dilemmas of New Organizational Forms. *Organization Science* **21**(6): 1251-1262.
- Schultz M, Hernes T. 2013. A Temporal Perspective on Organizational Identity. *Organization Science* **24**(1): 1-21.
- Scott W. 2008. *Institutions and organizations: Ideas and interests*. Sage Publications, Inc.
- Selznick P. 1957. *Leadership in administration: A sociological interpretation*. University of California Press: Berkeley.
- Semin GR, Fiedler K. 1991. The linguistic category model, its bases, applications and range. *European Review of Social Psychology* **2**(1): 1-30.
- Siggelkow N. 2001. Change in the presence of fit: The rise, the fall, and the renaissance of Liz Claiborne. *Academy of Management Journal* **44**(4): 838-857.
- Smith C. 2016. Magazine to Digital Transition Challenges Time Inc. . American Graphics Institute: <https://www.agitraining.com/adobe/indesign/classes/magazine-to-digital-transition-challenges-time->.
- Smith WK. 2014. Dynamic Decision Making: A Model of Senior Leaders Managing Strategic Paradoxes. *Academy of Management Journal* **57**(6): 1592-1623.

- Smith WK, Tushman ML. 2005. Managing Strategic Contradictions: A Top Management Model for Managing Innovation Streams. *Organization Science* **16**(5): 522-536.
- Snow DA, Rochford EB, Jr., Worden SK, Benford RD. 1986. Frame Alignment Processes, Micromobilization, and Movement Participation. *American sociological review* **51**(4): 464-481.
- Starbuck WH, Milliken FJ. 1988. Challenger: fine-tuning the odds until something breaks. *Journal of management studies* **25**(4): 319-340.
- Staw BM, Sandelands LE, Dutton JE. 1981. Threat-Rigidity Effects in Organizational Behavior: A Multilevel Analysis. *Administrative Science Quarterly* **26**(4): 501-524.
- Sujan M. 1985. Consumer knowledge: Effects on evaluation strategies mediating consumer judgments. *journal of Consumer Research*: 31-46.
- Sull DN. 1999. The dynamics of standing still: Firestone tire & rubber and the radial revolution. *Business History Review* **73**(03): 430-464.
- Swasy A. 1997. *Changing focus : Kodak and the battle to save a great American company* (1st ed.). Times Business: New York.
- Teece DJ. 2007. Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal* **28**(13): 1319-1350.
- Teece DJ. 2014. The Foundations of Enterprise Performance: Dynamic and Ordinary Capabilities in an (Economic) Theory of Firms. *Academy of Management Perspectives* **28**(4): 328-352.
- Thoits PA. 1989. The Sociology of Emotions. *Annual Review of Sociology* **15**: 317-342.
- Thomke SH. 1998. Managing experimentation in the design of new products. *Management Science* **44**(6): 743-762.
- Tripsas M. 2009. Technology, Identity, and Inertia Through the Lens of The Digital Photography Company. *Organization Science* **20**(2): 441-460.
- Tripsas M. 2013. Exploring the interaction between organizational identity and organizational design in technological transitions. *Working paper*.
- Tripsas M, Gavetti G. 2000. Capabilities, cognition, and inertia: Evidence from digital imaging. *Strategic Management Journal* **21**(10-11): 1147-1161.
- Tushman M, Anderson P. 1986. Technological discontinuities and organizational environments. *Administrative Science Quarterly* **31**(3): 439-465.
- Tushman ML, O'Reilly CA. 2002. *Winning through innovation: A practical guide to leading organizational change and renewal*. Harvard Business School Press: Boston.
- Van den Steen E. 2005. Organizational beliefs and managerial vision. *Journal of Law, Economics, and organization* **21**(1): 256-283.
- Vergne J, Wry T. 2014. Categorizing categorization research: Review, integration, and future directions. *Journal of Management Studies* **51**(1): 56-94.

- Voronov M, Vince R. 2012. Integrating emotions into the analysis of institutional work. *Academy of Management Review* **37**(1): 58-81.
- Voronov M, Weber K. 2016. The Heart of Institutions: Emotional Competence and Institutional Actorhood. *Academy of Management Review* **41**(3): 456-478.
- Vuori TO, Huy QN. 2016. Distributed Attention and Shared Emotions in the Innovation Process: How Nokia Lost the Smartphone Battle. *Administrative Science Quarterly* **61**(1): 9-51.
- Walsh JP. 1995. Managerial and Organizational Cognition: Notes from a Trip Down Memory Lane. *Organization Science* **6**(3): 280-321.
- Weick K. 1979. *The social psychology of organizing*. Addison-Wesley: New York.
- Weick KE. 1976. Educational organizations as loosely coupled systems. *Administrative Science Quarterly*: 1-19.
- Weick KE. 1990. Technology as equivoque: Sensemaking in new technologies. In *Technology and Organizations*. Goodman P, Sproull L (eds.), Jossey-Bass: San Francisco.
- Weigelt C, Sarkar MB. 2009. Learning from Supply-Side Agents: The Impact of Technology Solution Providers' Experiential Diversity on Clients' Innovation Adoption. *Academy of Management Journal* **52**(1): 37-60.
- Westphal J, Gulati R, Shortell S. 1997. Customization or conformity? An institutional and network perspective on the content and consequences of TQM adoption. *Administrative Science Quarterly* **42**(2).
- Zuckerman E. 1999. The Categorical Imperative: Securities Analysts and the Illegitimacy Discount. *American Journal of Sociology* **104**(5): 1398-1397.



**Figure: TMT Frame Flexibility and Innovation Adoption**

