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**INTERFACES OF STRATEGIC LEADERS: A CONCEPTUAL FRAMEWORK,
REVIEW, AND RESEARCH AGENDA**

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ABSTRACT

Interfaces are of growing importance for theorizing and testing the influence of strategic leaders on firm behavior and actions. But despite their relevance and ubiquity, the lack of a commonly accepted definition and unifying framework has hindered researchers' ability to take stock, synthesize, and systematize extant knowledge. We first develop an encompassing definition and organizing framework to review 122 prior studies across three decades. We then chart promising directions for future research around three concepts central to the framework and review: (a) why do interfaces occur? (b) what happens at these interfaces? and (c) what are the impacts of interfaces? Together, the encompassing definition, framework, review, and specific directions for future research provide the much needed platform to agglutinate research and advance strategic leader interfaces as the next frontier of strategic leadership research.

Keywords: strategic leader interfaces; top management teams; managers; executives; interdependence; SLIs; strategy process

Interfaces are the purposive contact points where the separate worlds of actors intersect, and are central to facilitating the transfer of influence, information, and resources. As organizations and entities within them become more porous, interfaces represent an increasingly important phenomenon for management researchers. They are of special interest to scholars of top executives because strategic leadership *of* organizations is a collective endeavor entailing a complex web of relationships between executives and other parties. For example, these interfaces include the CEO and the top management team (Georgakakis, Heyden & Ruigrok, 2015; Klimoski & Koles, 2001; Ling, Simsek, Lubatkin & Veiga, 2008), CEO and board of directors (Boyd, Haynes, & Zona, 2011), and the board of directors and top management team (Kim, Burns & Prescott, 2009). They also include internal/external stakeholders such as middle-managers, customers, investor analysts, and alliance partners.

Even as the major thrust of recent theorizing and testing on strategic leaders has been on “who they are” and “what they do” (Hambrick, 1989), the importance of interfaces, or “how they do it” has long been recognized in management research and practice. In the *Functions of the Executive*, Barnard (1938: 215-216) discussed how one of the key functions of the executive is to serve as channels of communication or “centers or points of interconnection.” At least four of the ten managerial roles identified by Mintzberg (1973) – liaison, disseminator, disturbance handler, and negotiator – center upon interfaces with internal or external stakeholders. We also know, from everyday experience and our own conversations with strategic leaders, that interfaces are the primary means by which the daily work of strategic leaders is carried out. Consider the case of a new procurement executive launching a new cost cutting initiative who requests that all contracts above a certain threshold be sent to him for review. His decision to make this request by email, rather than build rapport and trust with divisional management, resulted in him receiving no contracts despite promises and commitments to the contrary.¹ Or consider the case of Paul Austin, who

was the CEO of Coca Cola from 1966 to 1980. His dis-agreeableness, emotional instability, and confrontational style of engagement created a series of dysfunctional interfaces between him and his top management team, and further down the chain of command (Peterson, Smith, Martorana & Owens, 2003). The resulting culture of intimidation and conformity to procedures inhibited the ability of Coca Cola to adapt to environmental changes, eventually leading to disastrous financial performance (Peterson et al., 2003). In a recent issue of the *Harvard Business Review*, Botelho, Powell, Kincaid and Wang (2017) describe how “engaging with impact,” or achieving buy-in with employees and stakeholders can be one of the hallmarks of successful CEOs. Using the example of the CEOs of the Children’s Hospital of Philadelphia and Takeda Pharmaceuticals, they illustrate how successful CEOs develop an astute understanding of stakeholders’ motivations and get people on board by aligning them around value creation goals.

Despite their ubiquity and importance to the work of executives, research on interfaces of strategic leaders, however, remains scattered and piecemeal, with no common definition, framework, or nomenclature for integrating the core elements and dimensions, as well as for synthesizing current understanding. Indeed, while a critical mass of relevant studies has been marshalled (122 studies, with 70 published in the last ten years), no unifying framework exists and there been no rallying call to study interfaces in a more coordinated and accumulative fashion. Researchers in strategy, organizational theory, entrepreneurship, and organizational behavior have typically focused on a single interface at a time and from different perspectives, without considering the possibility of a core set of variables that characterize strategic leader interfaces (SLIs)—such as the environmental, task, and social context in which they are embedded, function, and evolve. Said simply, even though several “pixels” exist related to the specific elements, types, and levels of SLIs, we cannot yet discern the “big picture” themes, identify uncharted territory, and highlight issues worthy of further

examination. Thus, an integrative review is timely, necessary, and valuable, for not only deducing stylized facts and identifying what is known and unknown, but also for guiding future research toward an improved understanding and impactful contributions.

To that end, we first review existing definitions from multiple disciplines to advance an encompassing definition of SLIs that synthesizes core elements. Drawing from the definition and population of reviewed articles, we next iteratively develop a unifying framework that interrelates the *context*, *contact*, and *consequences* of SLIs. Because the framework holistically accommodates these three elements across all salient SLIs, we then use it to provide a review, summary, and synthesis of more than three decades of relevant research. The review brings into sharper focus the knowns and unknowns in the literature, as well as the key ambiguities that have plagued research on SLIs. With the review as our launching pad, we finally outline eight directions to extend existing conversations, stimulate new conversations, and provide ways for new participants to join the conversation.

AN ENCOMPASSING DEFINITION OF STRATEGIC LEADER INTERFACES

Even though interfaces are a central fixture of executive life, and contributions germane to specific interfaces exist, organizational researchers have yet to adopt a shared, formal definition that captures the domain and boundaries of SLIs. Focusing on the CEO-top management team interface, Klimoski and Koles (2001: 219) stressed that it is “critical to examine the means by which the CEO leads the TMT and uses it to establish the CEO’s true potential impact on overall organizational effectiveness.” Similarly, Zaccaro and Klimoski (2002: 6) defined the interface as the various ways that “leadership and team processes become intertwined so as to influence collective performance.” To Raes, Heijltjes, Glunk & Roe (2011: 103), interfaces are “a place where the separate worlds of TMTs and [middle managers] intersect, characterized by an alternation of episodes of contact during which interaction or ‘interface processes’ take place, and periods of no contact.” Most recently,

Bromiley and Rau (2016) reviewed a decade of studies on how social, behavioral, and cognitive factors associated with the CEO-TMT interface influences strategic decision making. However, they stop short of offering a definition or framework. Beyond these contributions, others have considered selected aspects of the interface, such as the processes that take place at the interface (e.g., Ling et al., 2008), or the nature of communication that defines them (e.g., Cao, Simsek, & Zhang, 2010). In management studies broadly, Wren (1967) defined an interface as the “contact point” between organizations which are “interdependent and interacting” to work towards common goals. Interfaces have also been used to examine inter-organizational relationships (Albers, Wohlgezogen, & Zajac, 2016), inter-functional relationships (De Ruyter & Wetzels, 2000; Rau, Moslein, & Neyer, 2016), cross-functional exchanges (Ashenbaum and Terpend, 2010), and modular systems (de Blok, Meijboom, Luijkx, Schols & Schroeder, 2014).

We undertook three steps towards an encompassing definition: 1) a Web of Science search of management journals to identify prior definitions in management research; 2) examination of subject dictionaries/textbooks where the concept of interfaces is often used; and 3) a cross-disciplinary article search of the Web of Science across ten disciplines.² Based on these searches, we compiled a representative list of definitions in Table 1.

--- *Insert Table 1 about here* ---

Synthesizing the insights across these disciplinary definitions, we propose a definition of *SLIs as the interdependent social situations in which the attributes, aspirations and/or activities of strategic leaders and/or salient stakeholders come into contact with and influence each other*. We refer to strategic leaders as those with overall responsibility for organizational functioning and performance (Hambrick, 1989). Stakeholders are actors, groups of actors, or institutions that “can affect or [are] affected by the achievement of the

organization's objectives" (Freeman, 1984: 46)—via their power, legitimacy, or urgency in relation to the firm's strategy and performance (Mitchell, Agle, & Wood, 1997).

In defining SLIs in this encompassing manner, it is necessary to make some qualifying statements regarding scope conditions and semantic relationships (Suddaby, 2010). First, SLIs consider more than one party at a time, and thus the combination of different actor characteristics is crucial. This distinguishes interface studies from the larger body of strategic leadership that focuses on intra-team processes and dynamics. Essentially, SLIs capture direct *contact* among actors in which their attributes, aspirations, and activities influence one another. Therefore, while strategic controls or administrative mechanisms (such as compensation) can be a conduit through which influence propagates, interface studies must explicitly capture "both sides of the ledger" in terms of the actors involved.

Second, because interfaces occur within the context of the strategic roles, responsibilities, and activities of strategic leaders and stakeholders, they are consequential for firm behavior, processes, actions, and/or outcomes. As such, they differ from other non-task based, mundane, and routinized forms of contact and interaction that occur among leaders on an almost daily basis – for example, routine encounters on the corridor or at the water cooler, interactions in a social setting, and so forth. Although instances of contact, unless they are in the *context* of strategic demands, roles, and responsibilities, and have *consequences* for strategic processes, behaviors, or outcomes, they fall outside of the proposed definition.

Finally, a key aspect of the definition is the requirement of interdependence: "[a] state by which entities have mutual reliance, determination, influence, and shared vested interests in processes they use to accomplish work [strategic] activities" (Mathieu, Marks & Zaccaro, 2001: 293). Whether the purpose is to share information, transfer resources, or make decisions, interfaces are the conduits by which dispersed actors, groups, and organizations

become intertwined and shape collective outcomes. As such, the simple correlation or coevolution of one leadership variable on another through processes such as cohort effects does not constitute an interface, unless they are a consequence of the focal interaction. Similarly, the interfaces of strategic leaders with technologies or processes are not included unless they are a means to facilitate interdependent interactions.

METHOD AND SCOPE OF REVIEW

With the above definition as the conceptual anchor, we turned to assessing the current state of SLI research. To ensure a comprehensive review, we performed a multi-faceted search encompassing four steps with additional verification checks (see Figure 1). First, using the Web of Science we performed a forward-looking citation search of all the articles citing Hambrick and Mason (1984) - the core framework for strategic leadership research over the last three decades. We reviewed the title, abstract, and when necessary the main body of these articles to identify relevant works – our intent at this stage was simply to exclude papers that tangentially cite Hambrick and Mason (1984) but are not related to strategic leadership research in any capacity. We located 2,476 articles using this approach. Second, we performed a search using a combination of over 500 keywords in the Web of Science (details of the specific keyword combinations are available upon request).³ This step uncovered 1,691 additional candidate articles for review for a total of 4,167 unique articles.

--- Insert Figure 1 about here ---

We then performed the third step of our procedure and analyzed the titles and abstracts of all 4,167 articles found in the first two steps to determine whether: a) two or more strategic leaders and / or stakeholders were present and engaged in contact, and b) whether that contact had the potential to be consequential for firm behavior and/or outcomes.⁴ We classified these papers into those that met both criteria and were retained for further review (201 papers) and those that did not (3,966 articles). To achieve this classification, each of the

4,167 articles was independently categorized by three authors using a coding guide. After initial discussions, enhancements to the coding guide were made, and the remaining articles coded. A subset of articles was used to assess inter-rater consistency—overall agreement was 91%, with a Fleiss' Kappa of 84.5%, indicating strong absolute agreement ($ICC(2, 1) = .85$) and consistency among the reviewers ($ICC(2, 3) = .94$).

Limiting our focus to the 201 articles selected for detailed review, we manually coded all articles by extracting key quotes and findings and categorizing the articles using a scheme consisting of 25 dimensions (available upon request), many of which are present in our conceptual framework. In this final step, our third criterion (the presence of interdependence between the parties) was applied. In total, 80 of the 202 coded articles were subsequently excluded because they focused on non-interdependent parties (50 articles); considered samples that did not include strategic leaders (8 articles); or for other reasons such as being a book review or conference proceeding (22 articles). We also performed a verification check that our population was comprehensive by reviewing the reference lists of the articles coded for detailed review, locating one additional article for a final population of 122 articles.

CONCEPTUAL FRAMEWORK AND REVIEW RESULTS

Drawing from the definition and population of reviewed articles, we iteratively developed the framework (Figure 2) that holistically interrelates the *context*, *contact*, and *consequences* of SLIs. The framework is intended as an organizing heuristic, rather than a causal model. In this respect, it can be applied to different loci or units of analysis, whether among leaders (*inter-SLI*), between leaders and internal stakeholders (*internal-SLI*), or between leaders and external stakeholders (*external-SLI*). As with other strategic leadership research, the framework is also primarily concerned with the consequences of *SLIs* for the firm's strategic choices and performance, rather than as an end in themselves.

--- Insert Figure 2 about here ---

Briefly, the *context* represents the strategic imperatives and broader social dynamics that give rise to SLIs by creating interdependencies, either among strategic leaders or between strategic leaders and salient stakeholders. *Contact* refers to the key feature of our definition that SLIs represent interdependent social situations in which the attributes, activities, and aspirations of two or more actors intersect. Contact addresses key questions such as what is intersected at the interface; what are the manifestations of interfaces; and what is the nature of influence at the interface? Finally, *consequences* refer to both the proximal and distal outcomes of SLIs. In the first instance, the frequency, duration, mode, and scope of interfaces, together with associated influence mechanisms, exert a proximal impact on strategic choices. And ultimately, interfaces will have direct and indirect impacts on the distal outcomes such as survival, growth, and overall performance. We next provide a discussion and synthesizing summary of all prior studies using each of these three elements.

Context of SLIs

What is the nature of interdependence? Although interdependence seems to be central to interface definitions, most of what we know about SLI interdependencies is inferred from theoretical arguments and interpretations of research findings rather than tests of specific hypotheses. It is also the case that researchers have (explicitly or implicitly) considered situations where parties at the interface predominately exhibit pooled, sequential or reciprocal interdependence (Thompson, 1967).

In terms of the CEO-TMT interface, research most commonly focuses on situations of sequential interdependence, such as when the TMT depends upon the CEO as a source of information (Cao et al., 2010), goal direction (Foo, Sin, & Yiong, 2006), and/or values (Hayibor, Agle, Sears, Sonnenfeld & Ward, 2011). This sequential interdependence between the CEO and TMT arises in part due to the disproportionate influence of the CEO given their formal position, power, and status (Carmeli, Schaubroeck, & Tishler, 2011). As the titular

head, the CEO plays a unique role in motivating, coaching, and rewarding members of the TMT (Simsek, Veiga, Lubatkin, & Dino, 2005), and in delegating responsibilities to TMT members (Buyl, Boone, & Hendriks, 2014). The CEO also serves a role as a “disturbance handler”, intervening to avoid situations of strategic polarisation. For example, in a case study of two Canadian hospitals, Kisfalvi, Sergi, and Langley (2016) observed a “triangular” interface pattern, where opposition between two factions was managed by the CEO.

Some other studies have shown that CEOs may sequentially depend on TMT members as a source of information and advice (Arendt, Priem & Ndofor, 2005), particularly in making decisions that are novel or expose the firm to high levels of uncertainty (Buyl et al., 2014; Carmeli, Tishler, & Edmondson, 2012; Hmieleski & Ensley, 2007). CEOs might also depend on their TMT members as a source of psychological counsel and support. For example, Mannor, Wowak, Bartkus and Gomez-Mejia (2016: 1975) found that CEOs appoint decision-making teams whom they “perceive as providing a supportive inner circle,” but only when facing a loss-making context.

Our review also revealed that the interface between the CEO and TMT is sometimes characterized by reciprocal interdependencies, particularly in situations where CEOs and TMT members must operate in unison, such as in dynamic, novel, or uncertain environments. Lin and Rababah (2014), for example, developed the concept of CEO-TMT exchange quality to represent the average quality of reciprocity and emotional and social exchange between the CEO and each of his or her executive peers. Such deep, frequent and reciprocal exchanges between the CEO and TMT serve as a conduit by which the natural diversity within teams is leveraged and parlayed to improve decision quality (Lin & Rababah, 2014) and ultimately firm performance (Buyl, Boone, Hendriks, & Matthyssens, 2011). More broadly, reciprocal interdependencies are observed in situations where the influence of the CEO on the TMT, or vice versa, depends upon the receptivity or reaction of the other. As an example of this,

Stoker, Grutterink, and Kolk (2012) found that efficacy of the CEO's transformational leadership style was contingent on the extent to which their TMT members seek feedback.

With respect to the CEO-board interface, while there are clearly situations in which the CEO and board operate in "parallel universes" (see Boyd et al., 2011 for a review), the more common pattern of interdependence is sequential. The CEO depends upon the board not only as a source of decisional authority but also for access to external resources (Sauerwald, Lin & Peng, 2016). For example, Chen, Ho, and Hsu (2013) found that CEOs in firms competing on innovation rely on the board in acquiring, comprehending, and mastering external information and resources. CEOs may also depend, early in their tenure, on the leadership development activities of board chairs (Shen, 2003), or as a guide for how much emphasis the CEO should place on socio-emotional wealth in the context of family firms (Goel, Voordeckes, van Gils, & van den Heuvel, 2013). In terms of how CEOs may seek to influence board perceptions, Westphal (1998) found that when boards became more structurally independent, CEOs were more likely to use persuasion and ingratiation tactics to retain more control over compensation policy, while Tuggle and colleagues (2010) find that CEO duality results in the board reducing its attention to monitoring.

There is also growing evidence of reciprocal interdependence of the CEO and board of directors. Molinari, Hendryx, and Goodstein (1997), for example, found that effective governance depends on the ability of the CEO and board of directors to work effectively together. Westphal (1999) showed that friendship ties between the board and the CEO make the CEO more likely to rely upon the board for advice and counsel, but at the same time the performance effect of this advice was stronger when the board simultaneously had put in place long term incentives or ensured the CEO had higher levels of firm ownership. Wu (2008) showed that ties between the board and the CEO influence product innovation performance. Most recently, Cornforth and MacMillan's (2016) case study indicates the

boundary between board chair and CEO responsibilities is subject to renegotiation as the relationship develops, forging a reciprocal relationship between the roles.

Beyond the immediate interfaces among strategic leaders, strategic leaders and stakeholders can also exhibit interdependencies. Internally, studies have shown how top managers depend on middle managers as a source of ideas and input to strategy (Ren & Guo, 2011) and as a source of learning and strategic renewal (Sun & Anderson, 2012). To Raes and colleagues (2007; 2011), managing the interface with middle managers is a key aspect of strategic leadership because of the “catalytic role” that middle managers play in converting strategic intent into operational plans. Some studies have shown that middle manager performance is influenced by the combination of CEO and TMT leadership styles, with each having both complementary and substitutive effects depending on the configuration (Song, Zhang, & Wu, 2014). Externally, the dependence of CEOs and TMTs on stakeholders for resources (Dai, Montabon, & Cantor, 2014) or for knowledge is considered a key basis for interfaces (Alexiev, Jansen, Van den Bosch & Volberda, 2010; Heyden *et al.*, 2013).

What demands and imperatives give rise to interfaces? Interdependencies, and the interfaces they give rise to, are ultimately dictated by task and positional demands (Hambrick, Finkelstein & Mooney, 2005), strategic and performance challenges that arise from the organization’s current context (Hambrick, 1994), and contingencies captured by environmental uncertainty and dynamism (Pfeffer & Salancik, 1978).

Early work in contingency theory and organizational design (e.g., Galbraith, 1973) recognized that a foundational source of interdependence is the type of work performed and the inherent demands for specialization, coordination, and delegation. Sapienza and Gupta (1994) found that managers and venture capitalist investors interact more frequently when there is low goal congruence (due to increased coordination requirements), and less

frequently when the CEO has more prior start-up experience (and thus the CEO does not need to rely on the venture capitalist to the same extent for job knowledge). Roberts and Stiles (1999) provide case evidence to suggest that CEOs and board chairs are jointly responsible for the development of strategy, “swim in parallel” and seamlessly swap “swimming lanes” as circumstances dictate. Hambrick and Cannella (2004) explore in detail the evolution of the chief operating officer (COO) role, and how changes in the amount and complexity of work of the CEO results in a higher propensity to hire a COO, particularly for large firms or where the CEO has extraordinary task demands. Similarly, Ren and Guo (2011) argued in a conceptual paper that middle managers have two essential tasks: to “pre-screen” opportunities brought to their attention, and to exploit “policy windows” where these issues can be sold to upper management, resulting in the activation of the interface.

Other scholars have focused on strategic challenges as setting the context for the development of SLIs. For example, Huse’s (1998) ethnography provides an indication that strategic challenges determine the level of communication frequency between leaders with internal and external stakeholders, and that the source of authority for the board largely depends upon the relative importance of these stakeholders, and how much they trust each other. Tulimeri and Banai (2010) argue that new regulatory complexities are driving the CEO and CFO to work more closely together and to be more equal in power and stature, while Krotov (2015) comes to a similar conclusion for CIOs in arenas where informational technology confers competitive advantage. Closely related to strategic challenges, the deviation (or deterioration) of firm performance from expected standards or aspirations has also been shown to shape the interfaces, by either inducing the CEO to look for advice (McDonald & Westphal, 2003), or to perform impression management activities (Westphal, Park, McDonald & Hayward, 2012). For example, Heyden and colleagues (2013) showed that when a firm underperforms, the CEO is more likely to seek advice internally.

Finally, several studies have shown that turbulence and change in the external environment give rise to more intense interactions and communication flows among strategic leaders (Nath & Mahajan, 2011; Niehoff, Enz, & Grover, 1990), as well as between strategic leaders and internal stakeholders. For example, in a study of Chinese CEOs and their employees, Peng and colleagues (2016) found initial evidence to suggest that the extent to which CEO intellectual stimulation influenced employee perceptions of work meaningfulness was more pronounced when the company was performing poorly or was operating in a dynamic environment. Looking at the role of environmental dynamism specifically, many studies have considered the theoretical implications of dynamism (e.g., Arendt, Priem, & Ndofor, 2005; Kim et al., 2009; Waldman & Yammarino, 1999), but few tests have been performed. The empirical studies available indicate that in dynamic environments directive leadership styles are more useful for harnessing top management team heterogeneity (Hmieleski & Ensley, 2007), and CEOs are more likely to seek external advice (Heyden et al., 2013). Further, industry uncertainty influences the extent to which tenure shapes the relationship between the CEO and stakeholders (Luo, Kanuri, & Andrews, 2014).

How does the wider social context shape interfaces? Strategic leaders are embedded within a broader social system and socialized order that sets the context for their interfaces. From our review, we deduced four key dimensions of the social context that shape the content of SLIs: *hierarchical* (the system of formal hierarchical relations in which leaders are embedded), *relational* (the broader set of informal interpersonal network ties), *organizational* (the setting such as the type of firm or environment in which strategic leaders are located), and *cultural* (the cultural norms that govern leader interactions).

First, SLIs are shaped by the hierarchical system of relationships that determines the distribution of power and allocation of decision-making authority. This is most often observed in the interface between the CEO and the board, where the balance of power shapes

the fate of the CEO's strategic proposals and actions (Deng & Hendrikse, 2015; Yoo & Reed, 2015), and creates the potential for rivalries and conflicts (Wu, 2008). Roberts and Stiles (1999) noted that the challenge of establishing an effective working relationship between the CEO and board chair depends on their prior history of interactions. Beyond the board, the CEO's position as titular head bestows them with authority to shape the composition of the TMT and how tasks are allocated (Kisfalvi & Pitcher, 2003; Klimoski & Koles, 2001; Resick, Whitman, Weingarden, & Hiller, 2009). In turn, the relative distribution of power within the TMT shapes the dynamics between individual executives, such as the CIO and CEO (Krotov, 2015), and the CMO and the TMT (Nath & Mahajan, 2011). Finally, the hierarchical position of middle managers enables them to serve as a key conduit, filter, and sense-making device for information and events flowing between the lower and top levels within the organization (Sun & Anderson, 2012). Their formal position also allows them to play a bridging and brokerage role, by screening or selling opportunities (Ren & Guo, 2011).

Second, it has been widely recognized in past research that strategic leaders are embedded in a wider system of informal intra-organizational and inter-organizational relational networks (Balkundi & Kilduff, 2006; Chen, 2013; Geletkanycz & Hambrick, 1997; McDonald & Westphal, 2003). These networks facilitate interface development by giving leaders portals of access to contacts for advice and information (Adler & Kwon, 2002). For example, Westphal (1999) found that CEOs with friendship ties to the board of directors were inclined to confer with the board more often for strategic advice. The external networks of CEOs also facilitate advice seeking for strategic issues (McDonald & Westphal, 2003), and serve as a source of social support (Westphal et al., 2012). However, these very same ties can also hinder the operation of certain interfaces, such as between the board of directors and the CEO. While Westphal (1999) found no evidence of such an effect, Bruynseels and Cardinaels (2014) found that audit committees do not monitor CEOs as rigorously when they are friends.

Third, organizational characteristics, such as the size, stage of development, and contextual features of the firm have been proposed to have a strong influence on whether and how frequently leaders come into contact with one another. West and Meyer (1998) suggested that in younger, entrepreneurial firms, CEOs would have a greater influence on the TMT than in older, established firms. Similarly, de Jong, Song & Song (2013) proposed that new ventures lack well-established structures, placing a premium on the role of founder in shaping interpersonal processes. Most recently, Friedman, Carmeli, & Tishler (2016) noted that entrepreneurial firms rely heavily on the leadership of the CEO and the TMT in strategic decision-making, compared to larger, more established organizations. While these arguments have intuitive appeal, there have been few tests of specific organizational influences on SLIs. Other scholars have hinted that the social context of family firms facilitates SLI development, by creating opportunities for interaction and minimizing the need for a formal governance regime (Pieper, Klein & Jaskiewicz, 2008; Zona, 2016). For example, in a study of private-owned family enterprises in Germany, Pieper and colleagues (2008) found that goal alignment between owners and managers, by serving as a source of informal control, reduced the need for a board of directors. Similarly, the extent to which the organization emphasizes collegiality (de Jong et al., 2013), facilitates debate and sharing perspectives (Hmieleski & Ensley, 2007), and encourages continuous improvement (Adelman, 2012) can facilitate the development of more seamless interfaces with employees and middle managers.

Fourth, the interfaces of strategic leaders are also shaped by the presence of shared national cultural values, norms, and belief systems. Aside from the fact that these cultural influences can limit managerial discretion (Crossland & Hambrick, 2007), variations in cultural norms may shape the way in which leaders interact (e.g., Bai, Li, & Xi, 2012; Rodriguez, 2005). For example, Ou and colleagues (2014: 37) pointed out that that Confucianism and Daoism teach leaders to be self-deprecating and “lead without overtly

appearing to lead” and find that CEO humility leads to perceptions of empowering relationship which subsequently influences TMT integration. Interestingly, Li and Tang (2013) found that the hubris of CEOs appears to be “contagious” in a sample of Chinese CEOs, but the effect was not present in the US sample, which may be due to the fact that Chinese are more influenced by their peer group, while Preston, Karahanna, and Rowe (2005) find the means by which CIOs are able to effectively educate their peers in the TMT differ between the French and US contexts.

Contact in SLIs

What is intersected at the interface? Because executives inject themselves into their interactions with others (Hambrick & Mason, 1984), explaining how interfaces create and confer influence requires accounting for what strategic leader and stakeholder attributes (demographics and dispositions), aspirations (interests, goals, and preferences), and activities (actions and role behaviors) are intersected. For the sake of clarity and space, we consider these intersections for each interface individually (e.g., CEO-TMT, CEO-BOD, etc.).

Intersection of CEOs and TMTs: The single most common study “template” is how the attributes of CEOs influence TMT activities – in particular the level of behavioral integration or “teamness” (Hambrick, 1994; Simsek et al., 2005). In our review, we identified seven studies that examined the influence CEO leadership style (whether charismatic, empowering or transformational) on the tendency for the TMT to be behaviorally integrated, and the performance implications thereto (e.g., Carmeli et al., 2011; Simsek et al., 2005; Ling et al., 2008; Raes, Bruch, and de Jong, 2013). Others have studied the influence of CEO personality attributes on TMT dynamics and processes (Kisfalvi & Pitcher, 2003; Peterson et al., 2003). For example, using a novel Q-sort methodology, Peterson and colleagues (2003) demonstrated how CEO personality traits, such as agreeableness, neuroticism, and extraversion, impacted the inner workings of the TMT by shaping the level of cohesion,

flexibility, and group process. Similarly, in a study of technology new ventures, deJong and colleagues (2013) illustrate how lead founder personality influenced the level of task and relational conflict in the founding team.

Intersection of CEOs and BODs: There is a similarly robust tradition of examining the CEO-BOD interface and the activities of the board in mitigating agency conflicts and altering CEO decision making (Boyd et al., 2011). Many studies have investigated how boards can play an active role in guiding the CEO's decision-making and developing their capabilities (e.g., Chen et al., 2013; Judge and Dobbins, 1995; Shen, 2003). Taking an evolutionary perspective of the CEO's tenure, Shen (2003) theorizes how the focus and dynamics of the board-CEO interface shifts over time. Early in the CEO's tenure, when the threat of managerial opportunism is low, the focus of the board is on developing the CEO's leadership capabilities. However, as the CEO's power base grows, the role of the board shifts to controlling managerial opportunism. Others, such as Chen and colleagues (2013: 381), have demonstrated how board social capital represents an "important conduit to link firms to critical information and essential resources" and provides a source of advice for CEOs that improves their capabilities and decision-making in the context of R&D.

Findings from studies of boards in family settings have revealed that the attributes and make-up of the board, particularly the presence of outsiders and family members, increases the extent to which the board's skills are leveraged by the CEO (Zona, 2016), and whether the CEO prioritizes family goals (Goel, et al., 2013). Other studies have teased apart how boards and CEOs both gain power through the appointment of new board members and use power through their position on the board (Krause & Semadeni, 2014; Roberts & Stiles, 1999; Westphal & Zajac, 1995; Westphal, 1998). Krause and Semadeni (2014) examined the qualitative differences in CEO-board chair separations and found that the CEO's career horizon is associated with the type of separation that occurred. Finally, a succession of

studies has examined how board monitoring is either aided or impeded by the nature of the interface between the board and top managers (e.g., Bruynseel & Cardinaels, 2014; Del Brio et al., 2013; Tuggle et al., 2010). Drawing on social exchange theory, Del Brio and colleagues (2013) argue that the resource provision and monitoring roles of boards do not occur in a vacuum but within the context of their interpersonal relations with the CEO. Positive perceptions of CEO integrity, benevolence, and ability influence the extent to which directors engage in monitoring and provide resources. Others, however, have shown that personal relations between the board and executives can undermine the monitoring efficacy of the board. For example, Bruynseels and Cardinaels (2014) find consistent evidence that social ties formed through the network of the CEO reduces audit committee effectiveness.

Intersections of CEOs and individual executives: A growing body of research has begun to profile the intersection of CEOs and TMTs with individual, specialized functional executives within the TMT (for a related review, see Menz, 2012). Research on individual executive interfaces tended to focus on relational dynamics with the CEO, such as the level of mutual understanding and alignment (Johnson & Lederer, 2005; 2010), relational quality (Krotov, 2015), interpersonal trust (Zhen, Xuan, & Jing, 2012), social capital (Karahanna & Preston, 2013), and effectiveness (Hambrick & Cannella, 2004). A particularly promising direction has been studies that unravel the conditions under which functional executives acquire and maintain structural power and decision-making influence within the TMT (Klaus, Edvardsson, Keiningham & Gruber, 2014; Nath & Mahajan, 2011).

Intersections of strategic leaders and internal stakeholders: In terms of the internal-SLI interfaces, a focus of research has been on the wider implications of CEO and TMT leadership style throughout the organization (Bai et al., 2012; Berson, Da'as & Waldman, 2015; Huang, Cheng & Chou, 2005; Niehoff et al., 1990; Raes et al., 2013; Sun & Anderson, 2012). For the most part, these studies have traced the implications of CEO's

transformational or empowering leadership style for employee outcomes, such as shared vision (Berson et al., 2015), perceived organizational support (Bai et al., 2012), employee-organization value fit (Huang et al., 2005), and commitment, satisfaction, and role clarity (Niehoff et al., 1990). Others have demonstrated how leaders create voice opportunity for employees through visibility, approachability, and the use of both formal and informal communication channels (Adelman, 2012), and how the level of behavioral integration at the TMT level converts into greater levels of productive energy among employees (Raes et al., 2013). Concerning the TMT-middle manager interface (e.g., Raes et al., 2007, 2011), research shows that middle manager perceptions of support is influenced by the complementary leadership styles of the CEO and the TMT (Song et al., 2014).

Intersection of strategic leaders and external stakeholders: Research on the interface of strategic leaders and external stakeholders has a long tradition in social network theory and resource dependence theory (for a review, see Hillman, Withers, and Collins, 2009). While studies of the external social networks and resource linkage roles of CEOs, TMTs, and board provide a useful starting point for understanding the strategic leader-external interface, they have tended to take an aggregate view of the interface without delving into the individual dynamics between specific strategic leaders and external stakeholders. Although we know that these linkages represent conduits of information, influences, and resources, relatively few studies have delved into micro-dynamics of these interfaces.

Some recent studies have begun to shine a light into the black box of the strategic leader- external stakeholder interface. In a conceptual paper, Fanelli and Misangyi (2006: 1058) theorized how the CEO's charisma represents a means of influence in the relationship between the CEO and external stakeholders by affording the CEO "needed salience in the competition for outsiders' attention and evaluation." Empirically, a few studies have investigated the micro-dynamics of strategic leaders' external interfaces such as Westphal

and colleagues' (2012) study of impression management exchanges between CEOs of different firms, and how these supportive behaviors influenced the favorability of journalists' evaluations of CEOs following negative earnings surprises.

What are the manifestations of interface? The manifestations of SLIs can be described in terms of the *frequency of interaction* (how often strategic leaders and stakeholders interact), the *mode of interaction* (whether interaction is virtual or face-to-face), and the *scope of interaction* (whether a series of bilateral exchanges or one all-inclusive multi-lateral exchange and interaction). Because these variables are rarely specified or measured, our discussion is limited to inferences based upon author's arguments and assumptions to discern the main patterns of SLI manifestations. First, consistent with the view that the work of strategic leaders is ill-structured and ambiguous (Hambrick, 1989; Mintzberg, 1973), most authors operate on the assumption that the interface among leaders is ongoing, with few clear demarcations between episodes of contact (cf., Raes et al., 2011). In contrast to interfaces among leaders, interfaces of strategic leaders and external stakeholders are more periodic, and tend to be dictated by exogenous events, such as changes in the environment or performance shocks. Second, the majority of studies are limited in scope to bilateral interactions, treating each interface separately. While some studies have tracked the cascading influence of CEOs on middle managers via TMTs (e.g., Ou et al., 2014), we are not aware of any studies that examine the multilateral, simultaneous, and reciprocal interactions of multiple strategic leaders. Finally, despite the proliferation of new forms of communication, we found very little reference to the mode or channel through which strategic leaders interact. All told, there has been little attention to the manifestations of SLIs in terms of frequency, mode, and scope.

What is the nature of influence at the interface? Building on prior theories and definitions of leadership, a core feature of our definition of SLIs is that they are consequential

in influencing firm behavior, actions, processes, and outcomes. The concept of *influence mechanisms* captures the type, direction, and pattern of that influence.

Influence type: Influence type represents the basis and nature of influence, whether *socio-cognitive* (e.g., CEO shaping the mental models of the TMT through sense-making activities), *regulatory* (e.g., the board chair improving the self-efficacy of the CEO by setting challenging goals), *political* (e.g., CEO lobbying the board for support for a strategic initiative), *behavioral* (e.g., CEO coordinating the contributions of TMT members) or *cultural* (e.g. CEO enculturating values among employees through role modelling).

To begin, the parties that comprise SLIs often interact for the purposes of sharing, consolidating, and processing information. To accomplish these goals, the parties engage in socio-cognitive activities such as information processing, sense making, and sense giving. Johnson and Lederer (2005) examined the role of communication frequency and channel richness on the convergence between the CEO and CIO, and found that while communication frequency predicted convergence, channel richness did not. Consistent with this, Miller, Hickson and Wilson's (2008) case analysis illustrates that CEOs and the stakeholders deemed as "core heavy weights" (high in involvement and influence) can jointly construct the most salient aspects of a strategic decision. In so doing, they act as carriers and interpreters of the organizational memory. A range of studies on CEO transformational leadership, have theorized that CEOs play a critical socio-cognitive role in "intellectually stimulating" members of the TMT, and the wider organization, to view and frame problems from different perspectives and to come up with novel solutions to problems (de Jong et al., 2013; Friedman et al., 2016; Ling et al., 2008; Sun & Anderson, 2012).

Beyond the transfer and interpretation of information, SLIs are a vehicle to motivate counterparties to collaborate, work together, and share insights. To achieve these objectives, socio-regulatory activities such as goal regulation, performance monitoring, or empowerment

can be undertaken. For example, in a study of the relationship between TMT social integration and organizational ambidexterity, Jansen, George, Van den Bosch and Volberda (2008) found the effects of social integration were strengthened in the presence of transformational leaders, who through role modelling behaviors enabled the “synergetic and integrative efforts of socially integrated teams [to] permeate across hierarchical levels” (p. 990). Bringing middle managers into the picture, Song and colleagues (2014) find that middle managers who perceive top managers as providing support and social exchange are motivated to perform better. Furthermore, CEOs who exhibit caring leadership will motivate middle managers, who will gratefully reciprocate with higher performance and dedication. Taking an agency perspective, Zona (2014) illustrates that boards play a role in motivating long-tenured CEOs, otherwise pre-occupied with the status quo, to invest in R&D.

Interface participants may also rely upon socio-behavioral activities such as mobilizing resources, coordinating actions, developing trust and pro-social actions. For instance, Simsek and colleagues (2005) demonstrate how collectivistic CEOs create a collaborative and behaviorally integrated environment for their TMTs. Yucel, McMillan, and Richard (2014) found that Turkish TMTs express less normative and affective commitment when their CEOs exhibit moderate levels of transformational leadership in comparison to low or high levels of transformational leadership. It has also been widely espoused that CEOs influence their immediate cadre of executives through socio-behavioral means, notably motivating individuals to cooperate with each other and engage in more intensive exchanges (Friedman et al., 2016). This is evidenced in the findings of studies, such as Ou and colleagues (2014), which show that CEO transformational leadership fosters high levels of TMT integration, with spillover consequences at middle and lower organizational levels.

The use of these behavioral mechanisms within an organization can be so consistent and pervasive (or not) that it generates a common sense of purpose and culture. These socio-

cultural mechanisms of influence include discourse, acculturation, and other symbolic processes which allows the interactions within and between strategic leaders to cascade to the rest of the organization. For example, Hayibor and colleagues (2011) found that when the TMT members had similar values to their CEO, they were more likely to perceive the CEO as charismatic. This alignment of goals and beliefs appears to make it easier for TMT members to “drink the Kool-aid.” Examining how these influences can affect the greater organization, Liao and Subramony (2008) showed that to the extent that the senior leadership team was customer orientated, employees exhibited a similar customer orientation for three different functional roles (customer contact, production, and support).

Due to the socio-political forces at the interface, parties will often engage in behaviors to advance or protect their interests. For example, Enns and colleagues’ (2003) study of influence tactics how CIOs worked to push IT issues further up the agenda and found a wide range of influence behaviors were used, including rational persuasion, consultation, ingratiation, personal appeals, exchange, coalition tactics, and pressure. Taking the perspective of the CEO, Zhang and colleagues (2015) dug deeper into the implications of transformational leadership and found that individualized attention by transformational leaders was harmful because it created perceptions of favoritism (group level transformational leadership behavior had the expected positive effect). Westphal and Zajac (1995) revealed that the relative balance of power between the CEO and the current board had a significant influence on whether new board members would be sourced from other insider- or outsider- dominated boards. Huse (1998) reported that the board’s relationship with stakeholders was somewhat transitive depending upon the balance of power between the stakeholders and the top managers.

Influence direction: Influence direction represents whether the direction of influence is upward (e.g., the TMT influencing the CEO or board), downwards (e.g., the CEO

influencing employees), or lateral (e.g., the CFO influencing the CMO). Consistent with the broader literature on strategic leadership, studies on inter-SLI interfaces have examined the downward influences of CEO behaviors, actions, and leadership styles on top manager, middle manager, or employee attitudes, behaviors, and outcomes (e.g., de Jong et al., 2013; Ling et al., 2008; Ou et al., 2014; Simsek et al., 2005; Zhang et al., 2015).

A few studies have also considered upward influences and typically fall into two categories: studies examining how CEOs attempt to directly shape or curry favor with the board of directors, and studies of the upward influences of middle managers on top managers. With respect to the former category, Westphal (1998) found that changes in board structure that increase the board's independence from management are associated with higher levels of CEO ingratiation and persuasion behaviors towards board members; and that these upward influences offset the effect of enhanced board independence on corporate strategy and CEO compensation. Others, such as Sauerwald and colleagues (2016) have shown how powerful CEOs can control the director selection process, remove directors, and limit their career prospects at other firms. In the latter category, a range of studies have shown how middle managers play a championing role selling issues and opportunities to top managers (Ren & Guo, 2011). Research on lateral influences typically includes studies of the interface between individual functional executives and the CEO (e.g., Enns et al., 2003; Krotov, 2015), or between strategic leaders and external stakeholders (Dai et al., 2014). Finally, studies examining multi-directional influences are rare, and typically deal with power struggles between the CEO/TMT and board (e.g., Kor, 2006, Westphal & Zajac, 1995), or push-back on CEO's initiatives from the TMT (Costanzo & Di Domenico, 2015).

Influence pattern: By influence pattern, we mean whether the influence of leaders on others is enabling (e.g., the CEO encourages the TMT to take risks), constraining (e.g., the board limits the managerial discretion of the CEO), or more complex. For the most part,

there has been a subtle but prevalent assumption that leaders have an enabling influence by facilitating the achievement of organizational goals. A focus on the enabling role of CEOs is particularly typical of studies that examine the socio-regulatory influences of CEO transformational leadership on TMTs and employees. By engaging in transformational and charismatic behaviors, CEOs empower their immediate cadre of executives to achieve ambitious, sometimes audacious, aspirations (Colbert, Kristof-Brown, Bradley, & Barrick, 2008; Jansen et al., 2008; Ling et al., 2008). CEOs can also have an enabling influence on TMT members by providing the TMT with the latitude to act consistent with their capabilities (Carmeli & Paulus, 2015), encouraging collaboration (Carmeli et al., 2011; Jansen et al., 2008), and fostering cohesion (Waldman & Yammarino, 1999). With respect to the CEO-board interface, boards may have an enabling influence on CEOs by engaging in mentoring activities (Shen, 2003), providing the CEO with the resources to invest in innovation (Chen, 2013). And interfaces between CEOs and external stakeholders may also be enabling by providing access to information (Luo et al., 2014) and by offering CEOs support under hostile conditions (Westphal et al., 2012).

However, several studies have also documented how interfaces between strategic leaders and stakeholders may constrain rather than enable task and goal accomplishment. The biggest source of constraint is observed at the CEO-board interface, where boards can potentially limit the latitude of action of CEOs (Judge & Dobbins, 1995), discourage experimentation (Zona, 2014), veto the CEO's strategic initiatives and proposals (Deng & Hendrikse, 2015), and suppress the CEO's innate predilections (Goel et al., 2013). By extension, CEOs might also constrain the creativity and ingenuity of the TMT by imposing their own perspectives (Pitcher & Smith, 2001) or by oversteering TMT members towards the pursuit of short-term goals (Costanzo & Di Domenico, 2015). Similarly, even as advice

networks might be enabling, they can also result in cognitive lock-in, making it hard for CEOs to break out of their modes of thinking (McDonald & Westphal, 2003).

Consequences of SLIs

What are the proximal impacts of interfaces? SLIs have been shown to explain and predict strategic change and entrepreneurial activity, R&D investment, and decision quality. Ling and colleagues (2008) found that the CEO transformational leadership facilitated the development of three different TMT behaviors - decentralization of responsibilities, a risk-taking propensity, and a long-term compensation philosophy - that in turn facilitated the pursuit of corporate entrepreneurship. Costanzo and Di Domenico (2015: 502) reported that while the CEO of the venture initially lacked entrepreneurial drive and imposed existing roles onto the TMT, a “dialectical–paradox” of tension was created via misfit with the market and ultimately resolved itself through upheaval and strategic change. Yoo and Reed (2015) found that for TMTs dominated by within-industry hires, the presence of outside directors was associated with resource substitution strategies in comparison to resource imitation strategies (which they use as a measure of strategic conformance).

With respect to R&D investment, Chen and colleagues (2013) found board social capital diminishes the negative relationship between CEO tenure and R&D investment and enhances the positive relationship between CEO education and R&D. Similarly, Chen (2014) found that powerful CEOs are able to harness the board’s education, industry-specific experience, and interlocking directorate ties to enhance the level of firm R&D activity. However, these findings must be tempered in the light of Kor’s (2006) examination of the power struggles between the TMT and the board of directors. She found negative interactions between TMT tenure, TMT shared experience, and functional diversity and the outsider board member ratio when predicting the level of R&D investments.

Lastly, in terms of decision quality, Raes and colleagues (2011) provides a compelling summary of the likely effects of the top management team processes on middle management functioning and the resultant implications for both strategic decision quality as well as the quality of decision implementation. In an empirical study, Lin and Rababah (2014) find that CEO-TMT exchange processes correlate with TMT psychological empowerment, which results in higher quality decisions as assessed by the group. Similarly, Friedman and colleagues (2016) find that CEO transformational leadership is able to enhance the team's decision comprehensiveness through the development of a behaviorally integrated team.

What are the distal impacts of interfaces? Not only are SLIs important for understanding the strategic choices that leaders make, but also for firm outcomes and performance. For example, Colbert and colleagues (2008) examine the goal congruence of the CEO with the TMT and find that transformational leadership does increase goal congruence, and that this congruence is related to overall organizational performance (measured by ROA). In the context of new ventures, Hmieleski and Ensley (2007) find that matching leadership type to the level of environmental dynamism is critical for making the most of heterogeneous TMTs, with directive leadership resulting in higher performance (measured by revenue and growth rates) in high dynamism environments, whereas empowering leadership is better suited for low dynamism environments. Looking at alignment more generally, Karahanna and Preston (2013) found that alignment between the CIO and other TMT members on information systems strategy resulted in higher levels of financial performance. Most recently, Georgakakis and colleagues (in press) find that TMT fault lines are less detrimental for performance when CEOs have shared experience, increased career variety, or are similar socio-demographically.

Turning to the relationship between strategic leaders and stakeholders, Balkundi and Kilduff (2006) theorized that the extent to which a leader plays a role in three networks—the

ego network, the organizational network and the inter-organizational network– will influence the efficacy of that leader in achieving desired outcomes (including survival, growth and innovation). Empirically, these arguments were explored by Luo and colleagues (2014), who showed that as the CEO progresses through the seasons of their tenure and switches from mode of learning to one of holding power, the relative emphasis placed on employee and customer relations changes, and the extent to which these relationships are nurtured has a significant impact on the overall tenure to performance link.

Collective Synthesis

Reviewing the literature on SLIs is somewhat like trying to navigate the city of Rome – it is difficult to know where to start and finish, and the sprawling development makes it challenging to connect insights across the different research streams and theoretical traditions. Our goal with this review was to endeavour to synthesize key research themes, concepts and insights across the various sub-fields that constitute this literature. To illustrate the overall trends across the various themes and concepts in our organizing framework, we provide a tabular summary in Figure 3 and a representative sample of thirty articles in Appendix 1 as a summary of the prior work. From Figure 3, we can observe the areas of SLIs that have received more and less scholarly attention in the literature, and can further deduce what is known and unknown about SLIs. Building from this descriptive summary which shows what has (or has not) been studied in detail, we now elucidate some of the key findings, ambiguities and unknowns in the literature, and potential inconsistencies in the existing evidence that need resolution.

--- *Insert Figure 3 about here* ---

A first major take-away is that studying the attributes, aspirations, and activities of strategic leaders in isolation can be an inadequate lens to describe, explain, and predict the influence of strategic leaders. In study after study, we found that leader attributes,

aspirations, and activities have vastly different consequences depending on what other attributes, aspirations, and activities they come into contact with. This is illustrated, for example, in studies that have found that the impact of CEO tenure on R&D intensity varies depending upon the level of board human and social capital (Chen, 2013; Chen et al., 2013), that the influence of transformational and empowering CEO leadership on performance depends upon whether the CEO and TMT members differ in their informational demographics and tenure (Ling, Wei, Klimoski & Wu, 2015), and that CEO networks are of greatest benefit to ambidexterity when CEOs and TMTs have a high degree of communication richness (Cao, Simsek & Zhang, 2010). The results of our review support our initial intuition that interfaces are the means and conduits through which the aspirations, attributes, and activities of strategic leaders are animated, come alive, play out, and are transformed in social settings. This is especially apparent in studies that illustrate how strategic leaders vary their actions and behaviors based on the traits of other leaders, such as delegating influence based on functional background expertise or locus of control similarity (e.g., Buyl, et al., 2014). As an illustration of the pervasive influence of interfaces in organizational functioning, of the 65 empirical studies where the downward or upward influence of one party on another were discussed or hypothesized (out of a total of 74 studies, which also include conceptual papers), support for a significant interface-driven effect was found in the vast majority of the studies.

A second finding is that interfaces are the key conduits and means by which CEO (and TMT) leadership cascades throughout the wider organization. Most of scholarly attention on interfaces has been directed to leadership in “close quarters” (Waldman & Yammarino, 1999), as in the case of CEO-TMT and/or CEO-board interfaces. However, a growing number of studies examine the interfaces through which leadership spills over and cascades throughout the entire organization. Leadership cascades through a sequence of

interfaces in which the CEO influences the TMT, the TMT influences middle managers, and middle managers influence employees (e.g. Ou et al., 2014; Raes et al. 2013; Song et al., 2014). Through these and other studies, we have learned that interfaces represent a key explanatory mechanism through which influence is conveyed, perceptions and impressions are formed, and by which the attributes, aspirations, and activities of strategic leaders permeate the wider organization and beyond. Indeed, we located eight studies that simultaneously considered both interfaces among strategic leaders (CEO, BOD, and TMT) and other internal or external stakeholders, with several discussing or testing the “knock-on” effects of one interface on another.

Third, our review sheds light on the ways in which the board of directors can serve as a constraint, catalyst, and a complement to the CEO and wider TMT. Viewed from the lens of agency theory, boards are often seen as constraint upon the agency of CEOs (Jensen & Meckling, 1976), limiting the range of actions and behaviors in which they can engage, as exemplified in Gulati and Westphal’s (1999) study of how distrust between the CEO and the board can limit the extent to which CEOs engage in alliance formation. But our review also found that boards can serve as a catalyst, by developing the leadership competences of CEOs (Shen, 2003), and by improving the action capability of the entire management team (Kim et al. 2009). Finally, by providing complementary expertise, knowledge, and resources, boards can serve as a countervailing force against the biases and ingrained habits of CEOs (Deng & Hendrikse, 2015). As evidence of this balance, we found that while 11 papers exclusively considered the constraining role of the board, another 10 focused on the potential enabling role that boards play, while others considered both effects in concert.

Fourth, we have learned that it is nearly impossible to separate interfaces, the interdependencies upon which they are founded, and the social context in which they arise in the body of existing work. Although our framework provides a clear delineation of these

elements, many of these concepts are theoretically underdeveloped and are empirically entangled, rendering the direction of causality ambiguous. So, as much as we would like to say that these concepts can be parsed into neat, self-containing bundles, further development of how interfaces emerge from the co-evolution of the task and social context is needed.

Finally, just like the city of Rome, the literature on SLIs is marked by several contrasts and seemingly paradoxical findings. CEO transformational leadership can empower and animate key processes, but they can engender dependency and cause disenfranchisement among some. Social networks between CEOs and boards can improve the flow of information and create a supportive context, but can hinder the monitoring activities and vigilance. Middle managers can both facilitate and obstruct the agency of CEOs and top managers. The literature on top management teams is dominated by the concepts of team-ness and collaboration but the literature on the interactions of individual members of these teams is often framed from the lens of power, politics, and negotiation. To fully understand these countervailing influences, we need to move beyond considering these facets in isolation towards more encompassing theories and models to determine which factors can radically change the implications of interface characteristics such as these—as we discuss next.

FUTURE RESEARCH DIRECTIONS

Building on our summary of the “big picture themes” related to SLIs, we draw from the “bird’s eye” view of prior research in Figure 2 and 3 to bring into sharper focus some of the key ambiguities, blind spots, and “known unknowns” concerning SLIs. First, one blind spot in our understanding of SLIs is the details of circumstances and context in which they emerge. While we know that interdependence is a necessary, but not always sufficient condition, we know considerably less about the nature or substance of these interdependencies, or how the strategic and social context co-evolve and conspire to shape the interdependencies. We offer two promising directions to advance understanding on the

origins and emergent dynamics of SLIs: (1) further developing the construct of interdependencies and (2) building process models of emergence.

Second, interfaces occur when the attributes, aspirations, and activities of strategic leaders and other stakeholders come into contact. But our understanding of this contact is hindered by a dearth of research on the mechanisms through which interfaces convey influence. We identify four directions to enrich extant understanding of what happens at the interface: (3) specifying different forms of contact; (4) cross-fertilizing research from other disciplines to better ground interfaces; (5) paying greater attention to governance mechanisms; and (6) examining contact more holistically.

Finally, our review has shown that SLIs are consequential for a range of proximal and distal outcomes. While there is significant scope to extend the range of outcomes studied in future research, we believe two important directions are to (7) explore the potential dark side of SLIs, and (8) examine the role of performance feedback processes. Below we discuss each of these promising future directions in detail. We present a summary of these directions and selected research propositions in Appendix 2.

Developing Interdependencies

We invoked Thompson's (1967) taxonomy of pooled, sequential, and reciprocal interdependence to provide insight as to how SLIs may differ. However, it is possible that a more nuanced and customized taxonomy of interdependence could provide a renewed basis for explaining SLI dynamics and processes. Consider four alternative types of interdependencies: *resource* (e.g., CEO's dependence on external stakeholders for access to resources or funding); *informational* (e.g., the CEO depends on the CFO for financial information); *decisional* (e.g., the TMT relies on the CEO for permission to pursue a strategic initiative); and *psychological* factors (e.g., a newly appointed CEO depends on the board for guidance and support). These interdependencies are not mutually exclusive, and can operate

simultaneously, in harmony or conflict, in shaping SLIs. Their interactions will likely give rise to qualitatively different forms and intensities of interfaces. Consider, for example, the type of interface that might arise between the CEO and board when the CEO depends on the board for decisional authority versus when the CEO relies on the board for psychological support and reassurance. By specifying the underlying nature of interdependencies at play, future research can better explain the emergence and evolution of SLIs.

Building Process Models of Emergence

We also encourage future studies on the development of multi-level process models that can provide a richer understanding of why and how SLIs emerge. As our review demonstrates, strategic leaders are nested in a strategic and social context that impose demands and constraints, which shape whether and to what extent strategic leaders interact with one another and other parties. Distinct from variance models, process models direct attention to the “how” and “why” effects, and help to understand the causal relationships between inputs and outputs (Fischer, Dietz, & Antonakis, 2017). In the case of SLIs, a multi-level account of how strategic imperatives – emanating from the position, organization, and environment – co-evolve with the social context to create interdependencies would provide a useful starting point for understanding the genesis of interfaces. Future researchers might particularly leverage insights from research on micro-foundations of strategy (Felin, Foss & Ployhart, 2015) to understand how these various “inputs” interact to shape the formation of SLIs. Methodologically, so doing will require ingenuity both in the choice of research settings and research designs. In terms of settings, studies in new venture or founding contexts, or in established firms that have experienced major leadership changes, could provide useful backdrop to study the formation of interfaces in real-time. In terms of research design, we encourage in-depth longitudinal case studies, along the lines of Kisfalvi, Sergi, and Langley’s (2016) study of micro-dynamics, to unpack the processes underpinning

formation of SLIs. We also see potential merit in the use of narrative approaches, including autobiographies, biographies, diaries, and letters to shareholders (Mathias & Smith, 2016).

Specifying Different Forms of Contact

Recognizing the multifaceted forms in which strategic leaders and others engage one another is essential to developing higher fidelity theoretical accounts of SLI influence mechanisms and outcomes. From our review, two dimensions of contact seemed worthy of consideration, but were not examined in sufficient detail by prior studies: temporal and spatial. The temporal dimension of SLIs refers to the timing, frequency, and duration of contact (Raes et al., 2011), or whether interfaces are *ongoing* (no clear demarcation between periods of contact and non-contact), *episodic* (well-defined hiatuses between intensive periods of contact), or *punctuated* (where long periods of time occur between contact and non-contact). The temporal dimension would allow for questions to be asked about whether interface effects are persistent, subject to sharp discontinuities, or exhibit lock-in or imprinting effects. By contrast, the spatial dimension refers to whether interface captures contact between leaders that are *close* or *distant*. This distance can be considered in multiple ways, such as hierarchical level, physical, or cultural.

Juxtaposing the temporal and spatial dimensions of contact reveals that “contact” may take on different forms and meanings, ranging from ongoing contact between strategic leaders that are physically, hierarchically, or culturally proximate to punctuated contacts that are physically, hierarchically, or culturally distant. In so doing, future research can alleviate the risks of construct misspecification and omission by providing a more comprehensive profile of the variety of different forms of contacts under the conceptual umbrella of SLIs, particularly in relation to subtler and less observable interfaces, such as between CEOs and employees. Above all, by defining interfaces in terms of their temporal and spatial parameters, future researchers can achieve better methodological fit by aligning measurement

and time lag features of research design with the properties of different interfaces, reducing the risk of Type II errors arising from measuring interfaces at the wrong level or time. This is one area where the literature on SLIs could benefit from greater adoption of observational and ethnographic approaches. Although ethnographic methods are extremely time consuming, they can offer deep insights through “studying events, language, rituals, institutions, behaviors, artifacts, and interactions” (Cunliffe, 2010: 227). Network ethnography, which combines well-established social network analysis with a set of ethnographic techniques (Berthod, Grothe-Hammer, & Sydow, 2016), may be helpful in capturing detailed interface process across the right actors at the right time intervals.

Opportunities for Cross-fertilization

In further grounding and conceptualizing periods of contact, we suggest that cross-disciplinary research may also give us “new ways of seeing” SLIs by providing new constructs, tools, and vocabulary to more accurately conceptualize and capture the dynamic characteristics of SLIs (Shaw, 2017). Some of the greatest advances in studies of strategic leadership have come from “retrofitting” constructs in psychology, such as shared mental models, core self-evaluations, and executive values (Hambrick, 2007). Indeed, because interfaces are relational constructs, synthesizing research on organizational behavior and psychology is a natural way forward. By way of example, in a recent review of the psychology literature on relationship science, Finkel, Simpson, and Eastwick (2017) deduced fourteen principles, many of which have relevance to SLIs. The principle of integration, refers to “opportunities and motivations for interdependence tend to facilitate cognitive, affective, motivational, or behavioral merging between partners” (p. 387). Parallel concepts such as maintenance (exhibition of cognitions and behaviors that promote the relationship’s persistence over time), diagnosticity (situations that allow partners to evaluate one another’s true goals and motives), and uniqueness (the unique patterns that emerge when partners’

qualities intersect) also seem readily applicable. Moreover, sociological research on how economic power and social position translate to political influence (Walker & Rea, 2014), and the connections between business and political elites (Mizruchi & Marshall, 2016) can help researchers study the political interfaces of CEOs, boards, and top executives. The institutional context of the country in which strategic leaders embedded can also shape the content, dynamics, and types of SLIs (Olie, van Iterson, & Simsek, 2013).

Attention to Governing Mechanisms

While much is known about the mechanisms through which leaders in close proximity influence one another, we know less about how these mechanisms play out when parties to the interface are distant, such as the cascading influence of CEOs – either directly or indirectly – on employees. Although there is evidence that these effects exist, greater attention is required to understand the mechanisms and channels by which CEO persona and leadership style influences employees throughout the organization, and precisely which mechanisms are at play. The dominant focus has been indirect mechanisms, such as the role of organizational climate (Berson et al., 2015), reputation (Men, 2012), and productive energy (Raes et al., 2013). Less attention has been devoted to the direct channels, such as individual interactions between CEOs and employees, and visibility of CEOs to employees. Although such periods of contact may be short and infrequent, they represent opportunities for the CEO to shape employee perceptions through role modelling and symbolic behaviors.

One specific direction might be to study the concept of CEO visibility to employees, defined as the extent to which CEO actions and behaviors are visible to rank-and-file employees. Another related possibility is to examine the mechanisms by which CEO and TMT behaviors and processes “leak out” from the executive suite. Explaining how the ‘tone at the top’ cascades requires greater attention to the informational and influence channels through which employees, at various hierarchical levels, make sense of leadership behaviors.

Holistic Approaches to Examining Contact

Prior research on SLIs have typically investigated each interface in isolation, except for some recent studies that look at cascading leadership effects inside organizations. While this is understandable given the theoretical and methodological challenges entailed in studying phenomena at the interface, there is a need for theoretical models that examine SLIs in a more integrated and holistic fashion. It is logical, for example, to expect that the interface of the CEO and the board of directors will have spillover consequences for the interface of the CEO and the TMT. And by extension, the interface of the CEO and TMT will have consequences for the interface of the TMT and middle managers. One specific possibility would be to examine whether the level of information exchange and collaboration between the chair and independent directors influences the level of information exchange and collaboration between the CEO and members of the TMT. Does collegiality and collaborative behavior cascade? Or similarly, does a lack of goal alignment between the CEO and the board chairman have spillover consequences for the interface of the CEO and the TMT? Another direction to take is to examine the circumstances under which the board of directors hinders the interface of the CEO and TMT, perhaps by commanding a disproportionate share of the CEO's attention, or by interfering in key strategic processes.

Exploring Potential Dark Sides

For the most part, research has tended to focus on the enabling role, or "bright side" of SLIs. While our review also documents the constraining influence of SLIs, we are not aware of focused studies that have considered the potential negative consequences. Although interfaces are purposive to facilitate the transfer of knowledge, resources, advice, and support, the fact that they engender dependence might lead to power struggles that could slow down decision-making or otherwise hinder the quality of decision-making. It is also possible that interdependence, particularly of a psychological variety, might have a range of

dysfunctional outcomes, as well as the potential for ethical or legal lapses. From a modularity perspective, systems composed of tightly coupled components are more susceptible to disruption and a threshold level of instability that can cascade out of control (Perrow, 1984). Interfaces might, thus, act as “carriers” of contagion effects, such as a dysfunctional personality traits or negative interactions, such as executive narcissism and hubris, “leak out” from the executive suite and become acculturated in the wider organization and beyond.

Modeling Feedback Processes

A convenient assumption in most treatments of SLIs is that they have reached a steady rate of equilibration, in which the level of interdependence, influence mechanisms, and outcomes have crystallized (Simsek et al., 2015). But SLIs can also operate in a more fragile state of equilibrium and can be transformed by feedback processes. As an example, consider the issues of how a deviation from performance aspirations might shift the interface between the CEO and the board, or the board and external stakeholders. A performance deviation, either positive or negative, might alter the interface by increasing or decreasing the level of interdependency, or by altering the attributes, aspirations, and activities of leaders/stakeholders party to the interface. Leadership traits and emotions, such as aggression or anxiety that otherwise remain latent might be activated because of feedback processes. This activation may then destabilize the interface. Thus, greater attention to feedback processes in SLIs is clearly warranted.

Conclusions

In closing, the theme of the 77th Annual Meeting of the Academy of Management, “*At the Interface*,” provided an opportune time to reflect upon, and to rejuvenate decades of rich but scattered inquiry on SLIs. To that end, we first provided an encompassing definition to anchor studies across levels, units, and theories. Second, we advanced a framework to organize and synthesize what is currently known, or knowable about SLIs from extant

research. Based on the framework and review, we finally highlighted several direction ripe for further theorizing and testing. Together, we are hopeful that the review will help to establish SLIs as the next frontier of strategic leadership research and reaffirm their importance for understanding how and why executives do what they do to shape firm behavior and performance.

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ENDNOTES

¹ Example based on DRW Technologies case (Greyser & Ellet, 2015; Harvard Business School Publishing).

² Specifically, biology, chemistry, physics, computer science, mathematics, sociology, psychology, geography, economics, and marketing.

³ The Web of Science searches were performed between October and November 2016.

⁴ Our third criteria, party interdependence, could not be deduced from abstract or title information alone. This is considered in the final step.

TABLES AND FIGURES

**Table 1
Representative Definitions of Interfaces**

Management Definitions of Interfaces		
Author / Year	Type of Interface	Definition of Interface
Wren (1967)	Inter-organizational interface	“Interface is defined as the contact point between relatively autonomous organizations which are interdependent and interacting as they seek to cooperate to achieve some larger system objective. Interface is proposed as a research tool aiding understanding of interorganizational problems” (p. 69)
Hillman & Keim (1995)	Business-government interfaces	“One way of thinking about variation in the government- business interface is to view some actors in the political process as demanders and others as suppliers of public policies, and some institutions in the process on the demand side and others on the supply side. Different institutional settings may affect the interaction of the actors and institutions and subsequent public policy outcomes in systematic ways” (p . 199)
Moenart & Souder (1996)	R&D/Marketing Interface	The interface is defined in terms of extra-functional communication – the interpersonal transfer of information. Develops a model of information utility based on the receiver’s perception of the comprehensibility, credibility, relevance, and novelty of information.
Araujo, Dubois & Gadde (1999)	Resource interfaces	“Resource interfaces are primarily concerned with the technical interdependencies that arise when the resource bases of buyer and supplier are connected through exchange activities.” (p. 499)
Zaccaro & Klimoski (2002)	Leader-Team Interface	“We refer to the various ways that leadership and team processes become intertwined so as to influence collective performance. At is basic level, the interface can refer to the direct effect of each set of processes on performance (e.g., leadership processes influencing team performance; team processes influencing leader effectiveness). At a higher level, leadership and team processes can affect one another and be affected by prior collective performance. At the most complex level, leadership and team processes can be inextricably integrated such that the boundaries of each set of processes become fairly indistinct” (p. 6)
Ashenbaum & Terpend (2010)	Inter-functional interfaces	“An inter-functional interface is a set of boundary-spanning activities across which two (or more) functions are assigned some measure of collective responsibility and engage in a set of integration efforts” (p. 178)
Raes, Heijtes, Glunk, & Roe (2011)	Top management team-middle manager interface	“We conceptualise the interface of the TMT and MMs as a place where the separate worlds of the TMT and MMs intersect, characterized by an alternation of episodes of contact during which interaction or “interface processes” take place, and periods of no contact during which TMT and MMs act on their own on the basis of assumptions, expectations, and roles. A critical postulate in the interface model is that what happens during the episode of contact influences what happens in the periods without contact” (p. 103)
Mollenkopf, Frankel & Russo (2011)	Cross-functional interfaces	Cross-functional integration at the marketing-operations interface: “Functional integration across the two domains refers to how operations and marketing communicate and coordinate their activities in order to align them towards common goals” (p. 392)
Albers, Wohlgezogen, & Zajac (2013)	Alliance Interfaces	“The interface between partners can vary in strength, that is, the number and type of boundary spanners involved, the number of connections among them, and the intensity of their interaction. We can term these parameters of interface strength the scope, density, activity” (pp. 9-11).
de Bloke et al (2014)	Modular system interfaces	“Interfaces, in general, prescribe how two components or service providers in a modular system mutually interact” (p. 175)
Rau, Moslein, & Neyer (2015)	Knowledge interfaces	“At established interfaces among actors of different functions, knowledge sharing is part of actors’ primary task within the innovation process and is determined by specialization. Actors’ interdependence is based on specialization and division of labor at the newly emerging interfaces, actors not being part of the original and formally defined innovation process are integrated to improve innovation processes’ output” (p. 341-342)
Cross-Disciplinary Definitions of Interfaces		
Author / Year	Discipline	Definition of Interface
Nel et al. (2009)	Biochemistry	“The ‘nano-bio’ interface comprises the dynamic physicochemical interactions, kinetics and thermodynamic exchanges between nanomaterial surfaces and the surfaces of biological components (for example proteins, membranes, phospholipids, endocytic vesicles, organelles, DNA and biological fluids).” (p. 543)

Heinz & Ramezani-Dakhel (2016)	Chemistry	“Simulation results have indicated the dynamic nature of the interfaces in which the peptides move on and off the silica surface, effectively spending a certain fraction of time in close contact with the surface” (p. 430)
Schaschke (2014)	Engineering	The boundary between two phases such as two immiscible liquids, a liquid and vapour or gas, a gas and a solid, or a gas and a vapour or gas. The interfacial area is the area of the boundary between the two phases. The interfacial tension is the surface tension at the surfaces between two phases.
Mayhew (2015)	Geography	The zone of interaction between two systems or processes. Estuaries are the interfaces between fluvial and marine systems.
Protti et al (2013)	Geology	“The interface between convergent plates produces most of the world’s largest earthquakes” (p. 1) “Along the subduction interface, the transition between subducted segments corresponds to differences previously noted in the depth of microseismicity , predicted thermal profiles, tomographically defined slab morphology and long-term net forearc uplift over multiple seismic cycles.” (p. 3)
Berenson (1968)	Marketing	“An interface can be defined as a common boundary between systems. Chemists and chemical engineers have developed a fairly well structured and eminently useful body of knowledge about the transfer of materials and energy across an interface” (p. 9)
Murray & Habul (2011)	Information Systems	We use the terms computer interface and interface as defined by Benyon, Turner, and Turner (2005) to refer “those parts of the system with which people come into contact physically, perceptually and conceptually” (p. 12). Physical contact includes pushing buttons and clicking on the functional features of the interface (e.g., radio buttons, pull down menus and hyperlinks). Perceptual contact refers to what the user sees. Conceptual contact refers to the user’s efforts to try to work out what the interface does and what it should be doing, including messages from the device that help the user to figure it out. From this general perspective, the interface is an integral part of how people interact with computer systems and, thus, understanding how small changes in the functional design of the interface affect use and preference is important to the management of information systems”
Encyclopaedia Britannica	Physics	Interface, surface separating two phases of matter, each of which may be solid, liquid, or gaseous. An interface is not a geometric surface but a thin layer that has properties differing from those of the bulk material on either side of the interface. A common interface is that between a body of water and the air, which exhibits such properties as surface tension, by which the interface acts somewhat like a stretched elastic membrane. Interfacial effects, or processes that occur at interfaces, include the evaporation of liquids, the action of detergents and chemical catalysts, and the adsorption of gases on metals.

Figure 1
Article Review Process

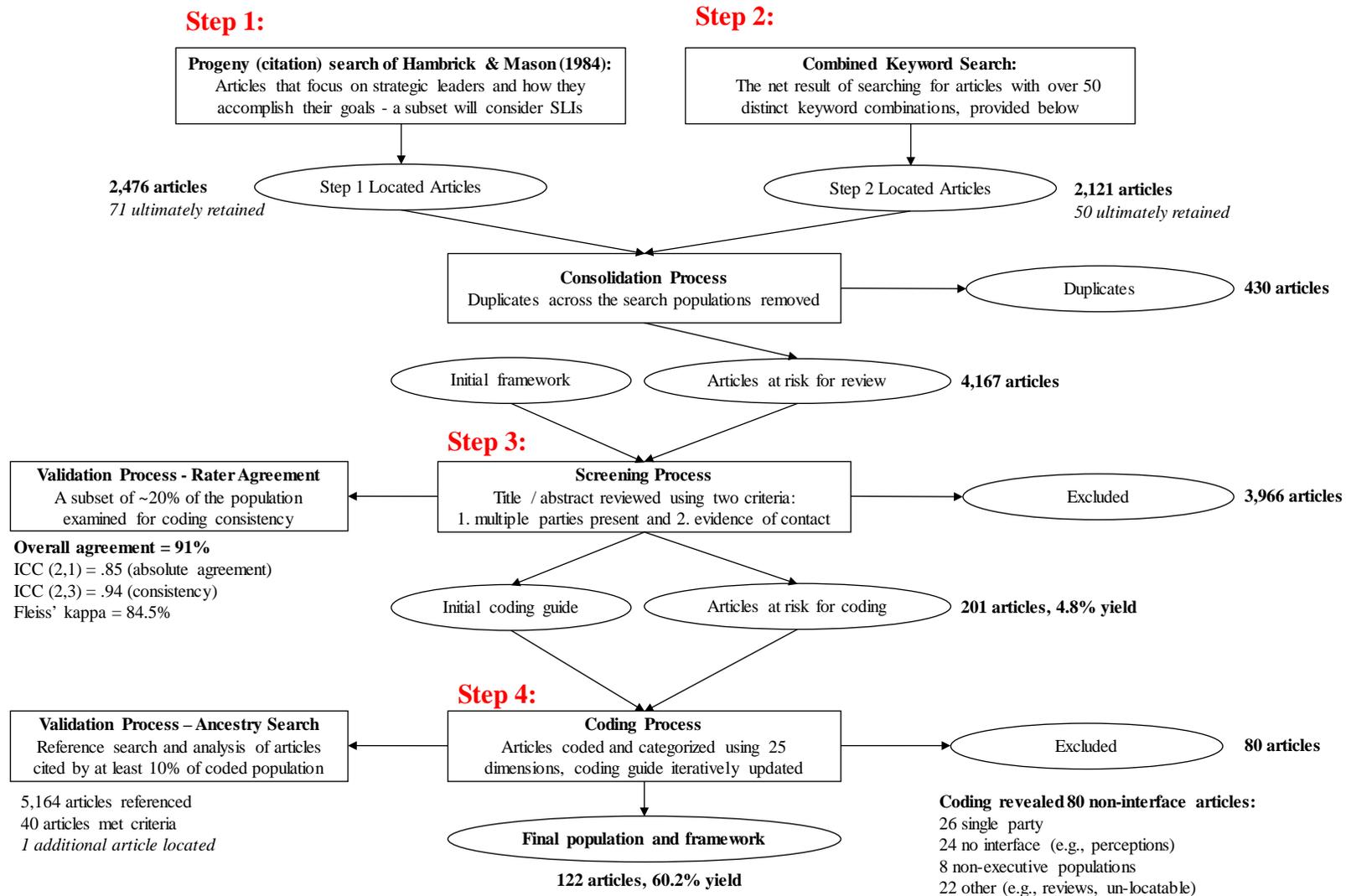


Figure 2
A General Framework for Strategic Leader Interfaces (SLIs)

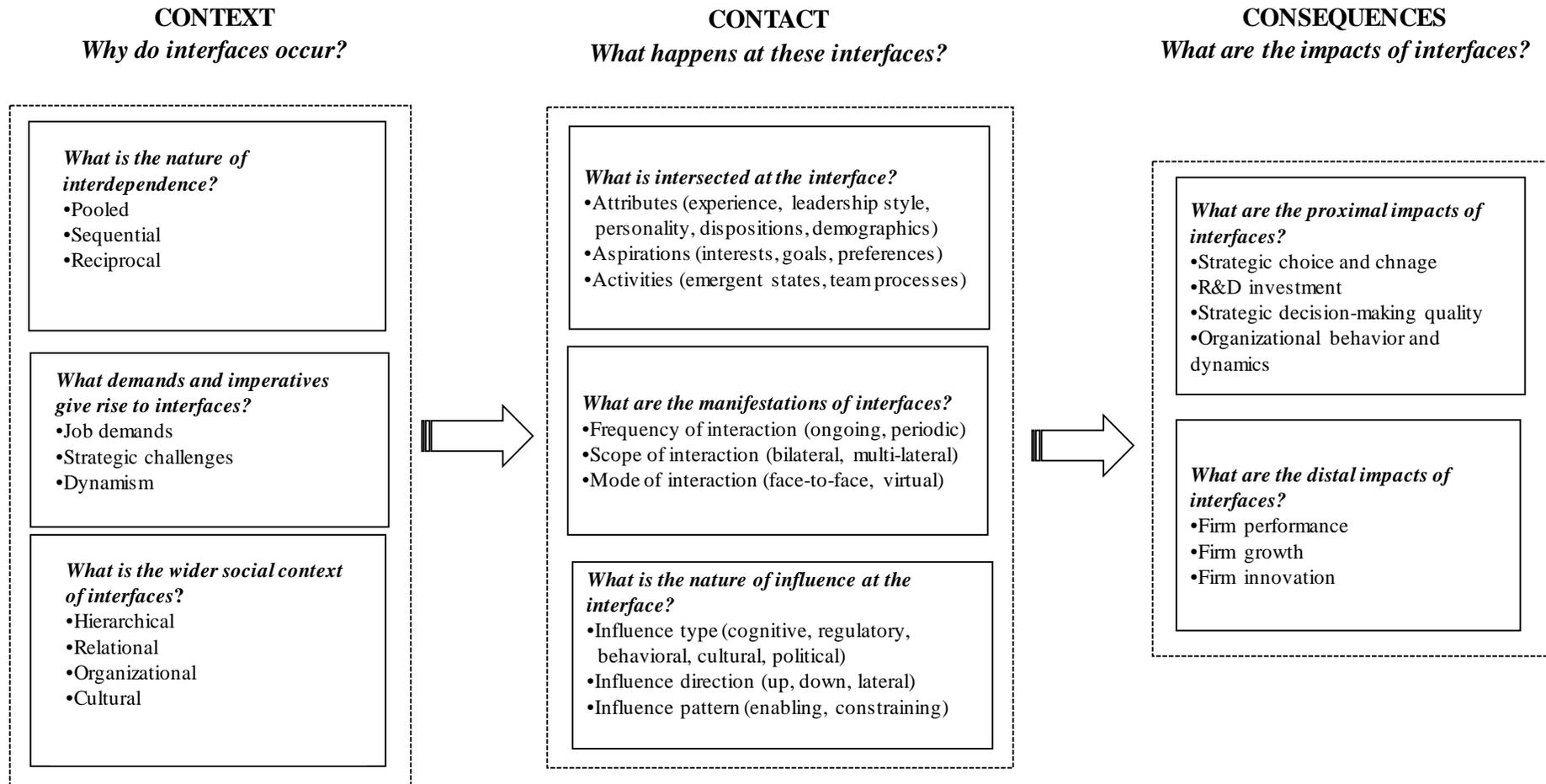


Figure 3
Descriptive Summary of Interface Studies

	Category	Number of studies in category combination																																Count	Unique Articles	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32			
Context	1 Form of interdependence	Pooled	22																															22	108	
	2	Sequential		56																														56		
	3	Reciprocal			30																													30		
	Context	4 Demands and imperatives	Job demands	1	3	3	6																												7	28
		5	Strategic challenges	3	4	3		10																											11	
		6	Dynamism	2	5	5	1	1	10																										12	
		Context	7 Social context	Hierarchical	6	21	3	4	3	6	26																									31
	8		Relational	8	13	9	1	3	2	2	26																								31	
	9		Organizational	3	7	5	1	1	1	1	1	2	14																						18	
	10		Cultural	5	9	9			4	2	1	1	19																						23	
Contact	11 Parties present	Inter-SL	6	41	17	3	1	7	21	8	9	11	77																					85	122	
	12	SL-Internal	9	12	4	1	4	4	3	6	1	6	4	15																				25		
	13	SL-External	7	3	9	2	5	3	2	12	4	2	4	6	11																			21		
	Contact	14 Influence direction	Downwards	7	35	12	2	2	6	19	12	6	15	41	14	4	59																		59	117
		15	Upwards	4	10		1	2	2	4	6	3	2	10	4	14		15																	15	
		16	Lateral	6	6	12	3	7	1	4	9	6	3	19	4	3			26																26	
		17	Multidirectional	5	5	6	1		3	4	4	3	2	14	3					17															17	
	Contact	18 Influence pattern	Constraining	2	9	4	3	6	1	5	3	1	2	12	2	4	9	2	5	2	18														18	117
		19	Enabling	13	28	17	2	4	7	16	18	7	17	31	16	13	37	9	11	3		60													60	
		20	Multiple	5	13	7	1	1	3	6	7	4	3	19	5	2	9	3	6	9			27												27	
21		Unclear	2	6	2	1	1		3	2	6	1	8	2	2	4	1	4	3				12											12		
Consequences	22 Influence mechanisms	Socio-cognitive	1	13	5	1	1	1	3	3	2	4	8	1	1	17	1	2		4	12	4		9										20	84	
	23	Socio-regulatory	7	18	11	1	5	2	6	10	8	6	20	2	8	18	6	11	4	13	13	8	5	3	20									39		
	24	Socio-behavioral	3	6	5		1	2	1	1	1	8	6	1	2	10	1	3	1	3	7	3	2	3	3	6								15		
	25	Socio-cultural			1							1	1			1										1								1		
	26	Socio-political	8	20	10	3	3	9	11	7	4	4	18	6	4	22	7	4	6	11	15	10	3	5	13	3		18						39		
Consequences	27 Proximal outcomes	Strategic change	1	2	3		1	1	1	3		2	2	2	3	2		2	2	3	2	1			2		2						7	28		
	28	R&D investment		2	1					1			3			2		1	1	1	1			1		3							3			
	29	Decision quality		1	4	1			1	2	1	1	4	1		3		2		3	2			1	2	1		2							5	
	Consequences	30	Other	3	8	1			4	3	1	3	9	5		10	2		2	2	9	2	1	3	4	2	1	2						13		
		31	Performance	3	14	8	2		7	8	7	4	7	21	4	3	22	1	3	2	6	14	8		9	7	3		14	1					28	
		32	Other		1	1			1	2			2		1	1			2		1	2												3		
Number of Blank Cells:		4	2	3	8	9	6	2	1	4	4	0	3	5	0	6	5	2	3	0	1	8	4	1	5	9	3	5	10	7	8	4	13			

Interpreting Figure 3: For example, reading off column 7 (which pertains to hierarchical social contexts), 26 articles exclusively focused on this context, while 2 articles examined the interplay of hierarchical and relational context jointly (see row 8, col. 7). Similarly, 19 of the 31 articles were focused on downward influence direction (row 14, col. 7), but only four considered upward influence direction (row 15, col. 7). Finally, the bottom row of the table indicates how many rows are blank, indicating no study in our sample considered the two sub-aspects of the framework simultaneously based on our coding.

Notes:

1. The count column represents unique articles in that category, and therefore the rows will not sum to the total count since articles can be counted more than once.
2. Articles coded to more than three categories within a certain group (e.g., socio-cognitive, socio-behavioral, and socio-political) are not counted in this table.
3. Red colored cells indicate where no articles are present. Grey cells are for mutually exclusive categories or for dependent variables that are rarely studied simultaneously.

Appendix 1 Summary of Representative Interface Articles

Author / Year	Method	Research Context / Sample	Key Findings / Arguments	Interface		Influence			Outcomes
				Context	Parties	Direction	Pattern	Mechanisms	
Friedman, Carmeli, & Tishler (2016)	Cross-sectional survey	Random sample of 324 small firms that applied for a loan through Israel's SME Fund. Cross-industry sample	CEO transformational leadership is positively associated with TMT behavioral integration, which mediates the relationship between CEO transformational leadership and strategic decision comprehensiveness. In turn, comprehensiveness mediates the relationship between behavioral integration and organizational capability to adapt.	Hierarchical	CEO-TMT	Downwards	Enabling	Socio-political; Socio-cognitive; Socio-regulatory	Decision quality; Adaptability
Sauerwald, Lin, & Peng (2016)	Longitudinal archival	8197 firm-year observations of publicly held US corporations included in the RiskMetrics Directors universe between 1999 and 2010	Firms with high external board social capital will have greater excess CEO returns when the CEO has more power. Powerful CEOs are able to weaken the negative effects of internal board social capital on CEO excess returns.		CEO-BOD	Upwards	Enabling		
Mannor, Wowak, Bartkus, & Gomez-Mejia (2016)	Multi-method (survey, interview, archival)	84 top executives and 154 unique strategic decisions in US firms. Gathered data on anxiety from CEO spouse	CEOs use TMTs for social buffering, but only when the top executive is facing a loss context.		CEO-TMT	Lateral	Enabling	Socio-regulatory	
Costanzo & Di Domenico (2015)	Longitudinal case study	Single UK company start-up venture observed over two years with 20 interviews of multiple TMT members supplemented with ethnographic observation and organizational documents	CEO's lack of risk-taking intrapreneurialism and imposition of TMT roles and structures better suited to the larger parent company initially constrain change processes. However, 'dialectical-paradox' tensions are created and resolved through upheaval, resulting in a change in strategic direction	Cultural	CEO-TMT	Multidirectional	Constraining		Strategic change
Lin & Rababah (2014)	Cross-sectional survey	210 Jordanian Firms with responses at the TMT level only	CEO-TMT exchange leads to TMT empowerment, which in turn results in higher levels of decision quality (the mediating relationship is supported)	Relational; Cultural	CEO-TMT	Downwards	Enabling	Socio-political; Socio-cognitive	Decision quality
Ou, Tsui, Kinicki, Waldman, Xiao, & Song (2014)	Multiple survey	Survey data gathered twice from 328 TMT members and 645 middle managers in 63 private companies in China	CEO humility was positively associated with CEO empowering leadership. In turn, CEO empowering leadership was related positively to TMT integration, which subsequently predicted empowering organizational climate. This in turn was positively related to middle manager work engagement, affective commitment, and job performance.	Cultural	CEO-TMT TMT-Internal	Downwards	Enabling	Socio-cognitive; Socio-regulatory; Socio-behavioral	Employee outcomes
Bruynseels & Cardinaels (2014)	Longitudinal archival design	Three Board-Ex derived samples depending on the dependent variable: 10,922 firm-years for audit effort, 3,187 for going-concern opinions, 7,283 for internal controls	Social ties formed through the friendship network of the CEO (i.e., via other activities) reduces audit committee effectiveness. However, not all connections are detrimental, because the negative impact was not observed for social ties formed between a CEO and their audit committee through employment or education	Relational	CEO-BOD	Upwards	Enabling		

Krause & Semadeni (2014)	Longitudinal archival study	352 separations of CEO / board chair roles, using firms in the Corporate Library database which draws from Fortune 1000 / S&P 1500	Poor performance increases the likelihood of a demotion separation of CEO-board chair positions (i.e., becoming CEO only). Also found evidence to suggest that dual CEO chairs who become a chair only have the shortest career horizon, while those who become CEO only have the longest career horizons. Totally exiting CEOs are somewhere in between.	Hierarchical	CEO-BOD chair	Lateral	Multiple		
Chen (2013)	Longitudinal, archival design	876 firm-year observations of Taiwanese electronics firms	The reduction in R&D intensity at early and late stages of CEO tenure is less prominent for boards with high levels of human / social capital	Relational	CEO-BOD	Downwards	Multiple	Socio-political; Socio-regulatory	R&D investment
Jong, Song, & Song (2013)	Cross-sectional survey	323 new ventures in technology industries	Several findings, including: (1) CEO Openness increases TMT task conflict but decreases relationship conflict (2) CEO Neuroticism increases TMT relationship conflict but has no effect on task conflict (3) CEO Extraversion decreases TMT relationship conflict but has no effect on task conflict (4) CEO Agreeableness increases TMT task conflict but has no effect on relationship conflict (5) CEO Conscientiousness leads to lower levels of TMT task and relationship conflict	Hierarchical	CEO-TMT	Downwards	Enabling	Socio-political; Socio-cognitive	Firm performance
Heyden, Doorn, Reimer, Van den Bosch, & Volberda (2013)	Cross-sectional survey	3,518 firms in the Netherlands from a variety of different industries, with manufacturing, services, construction and transport all being at least 10% of the sample	Environmental dynamism increases external advice seeking, while firm underperformance increases internal advice seeking. Evidence suggest that TMT heterogeneity is negatively related to CEO external advice seeking and positively related to internal advice seeking.	Hierarchical ; Relational	CEO-TMT CEO-Internal CEO-External	Upwards	Enabling	Socio-political	
Raes, Bruch, & De Jong (2013)	Cross-sectional survey	191 top management team members and 5048 employees in 63 German organizations	TMT behavioral integration also impacts employee outcomes of job satisfaction and turnover intentions both directly as well as through its impact on productive energy.	Hierarchical	TMT-Internal	Downwards	Enabling	Socio-political; Socio-cognitive; Socio-regulatory	Employee outcomes
Song, Zhang, & Wu (2014)	Cross-sectional survey	Sample of 608 middle managers, 140 top managers, and 40 CEOs in China	CEO caring leadership weakens the relationship between team-level top managerial support and middle manager performance. CEO authoritative and task-oriented leadership appears to strengthen the relationship between top manager support and middle manager performance.		CEO-Internal TMT-Internal	Downwards	Enabling	Socio-cognitive	
Westphal, Park, McDonald, & Hayward (2012)	Longitudinal survey	Sampling frame of mid-sized US companies with >\$100MM in sales; 367 CEOs over 16 quarterly spells from 2004 - 2007, with 5 years of rolling data (meaning 9 years of data altogether)	CEOs who previously received impression management support from a fellow CEO will be more likely to provide that support to the fellow CEO, another CEO in the same industry, particularly if the focal CEO is aware that the fellow CEO has helped others in the past.	Relational	CEO-External	Lateral	Enabling	Socio-regulatory	
Carmeli, Tishler, & Edmondson (2012)	Cross-sectional survey	Sampling frame of 500 alumni from Israeli executive MBA program, of which 77 CEOs responded	Relational leadership of the CEO leads to TMT trust which explains learning from failures and decision quality	Relational	CEO-TMT	Downwards	Enabling	Socio-behavioral	Decision quality

		with a sufficient number of their TMT members							
Ren & Guo (2011)	Conceptual	N/A	Argues that the two functions of middle managers are to pre-screen opportunities and that they will also be strategic in how they sell these issues to top management.	Hierarchical	TMT-Internal	Upwards	Multiple	Socio-political	
Raes, Heijltjes, Glunk, & Roe (2011)	Conceptual	N/A	Argues that information exchange, mutual influencing, TMT role behavior, and MM role behavior are salient aspects of the MM-TMT interface.		TMT-Internal	Multidirectional	Multiple	Socio-political; Socio-regulatory	Decision quality; Firm performance
Buyl, Boone, Hendriks, & Matthysens (2011)	Cross-sectional survey	Sample of 32 Belgian and Dutch IT companies from a sampling frame of 206 firms	The relationship between TMT diversity and performance is negative for generalist CEOs and founder CEOs. However, when CEOs and TMTs share past experience, they tend to do perform better. There is evidence to suggest that information exchange and diversity may partially explain these effects.	Organizational	CEO-TMT	Downwards	Enabling	Socio-political; Socio-regulatory	Firm performance
Hayibor, Agle, Sears, Sonnenfeld, & Ward (2011)	Multi-sample cross-sectional survey	Two survey samples: 253 CEOs and their TMTs and CEOs of 79 companies and non-profit organizations located in the United States.	Top management team members who reported that their values were generally similar to those of their CEO were more likely to report that their CEO demonstrated charismatic leadership.	Cultural	CEO-TMT	Downwards	Unclear	Socio-behavioral	
Ling, Simsek, Lubatkin, & Veiga (2008)	Cross-sectional survey	Sampling frame of 795 New England SMEs, of which 152 firms with matched CEO / TMT samples were available	Transformational leadership imparts a number of characteristics on the TMT, including behavioral integration, responsibility decentralization, risk-taking propensity, and LT compensation philosophy. All behaviors except for behavioral integration were subsequently linked to corporate entrepreneurship	Cultural	CEO-TMT	Downwards	Enabling	Socio-political; Socio-cognitive; Socio-regulatory; Socio-behavioral	Strategic change
Raes, Glunk, Heijltjes, & Roe (2007)	Longitudinal case study	Longitudinal case study of a public Dutch TMT over a six month period of observation	TMT sense-making about leadership contains three elements: (a) image of middle managers and their leadership expectations; (b) self-image and preferred leadership approaches, and (c) the relationship between the two as a basis for action	Hierarchical	TMT-Internal	Downwards	Unclear	Socio-political; Socio-regulatory	
Arendt, Priem, & Ndofor (2005)	Conceptual	N/A	Argued that as environmental dynamism increases, CEOs will be more likely to rely on informal advisory systems for information and advice in making strategic decisions. Further, CEOs of organizations pursuing cost leadership and defender strategies should tend to rely more on their organizations' formal advisory systems for information and advice in making strategic decisions while differentiation and prospector strategies tend to rely more on an informal advisory system.	Relational	CEO-Internal CEO-External	Upwards	Enabling	Socio-political	
Hambrick & Cannella (2004)	Longitudinal archival study	3168 firm-year observations of 404 firms in 21 industries available in D&B book of corporate management	No evidence that industry dynamism (operationalized in multiple ways) was related to the presence of COOs, but extraordinary organizational task demands will prompt a CEO to have a COO, we found a strong effect from company size. Interestingly, CEOs who have COOs deliver lower performance than those who do not	Hierarchical	CEO-Exec	Downwards	Constraining	Socio-political	Firm performance

Peterson, Smith, Martorana, & Owens (2003)	Multi-method (archival, q-sort)	Observations of chief executive officer (CEO) personality and TMT dynamics for 17 CEOs	CEO Conscientiousness related to team-level concern for legalism and sense of control over the environment. CEO emotional stability related to team cohesion, intellectual flexibility, and leader dominance. CEO Neuroticism not significantly related to team risk taking. CEO Agreeableness significantly related to team-level cohesion and decentralization of power. CEO Extraversion was significantly related to the group process measure of leader strength or dominance. CEO Openness was significantly related to team risk-taking and team intellectual flexibility.	Relational	CEO-TMT	Downwards	Multiple		Firm performance
McDonald & Westphal (2003)	Multi-method (survey, archival)	241 firms in the industrial and service sectors from the Forbes list	When CEOs are in low performing firms, they seek more advice from their friends and people with the same industry experience. In particular, to the extent to which they get information from their friends less strategic change will occur and the level of change is less effected by poor performance.	Relational	CEO-External CEO-Internal	Lateral	Constraining	Socio-political; Socio-regulatory	Strategic change
Enns, Huff, & Higgins (2003)	Multi-method (interviews, survey)	69 matched pair CIOs and other executives in Canadian and US firms	CIO relational persuasion and personal appeal are positively associated with CIO influence, however exchange and pressure are influence tactics that are negatively associated with influence.	Hierarchical	TMT-Exec	Lateral	Multiple		
Shen (2003)	Conceptual	N/A	Argues that boards need to provide CEO development opportunities early in tenure, and then transition to monitoring later - if this happens, increased performance will result. To that end, boards should use behavior-based compensation, rather than outcome-based compensation early in CEO tenure and modify approach as tenure increases.	Hierarchical ; Relational	CEO-BOD	Downwards	Multiple	Socio-cognitive; Socio-regulatory	Firm performance
Roberts & Stiles (1999)	Interviews	In-depth interviews with 30 chairmen/chief executive dyads in large UK public companies	The division of CEO and board responsibilities - notably concerning strategy and external relationships is ambiguous and complex. Negotiation of responsibilities is shaped by founding conditions of the relationship, both at the firm level, and in terms of the history of the personal relationship.	Hierarchical	CEO-BOD Chair	Lateral	Enabling		
Westphal (1999)	Multi-method (survey, archival)	Survey of 243 CEOs and 564 outside directors.	CEO-board friendship ties are positively related to the level of advice and counsel interactions on strategic issues. As CEO ownership or longer-term incentive plan compensation increased, the negative effects of friendship ties on board monitoring grew weaker, and the positive effect of such ties on advice interactions grew stronger.	Relational	CEO-BOD	Downwards	Enabling		Firm performance
Zajac, & Westphal (1996)	Longitudinal archival	491 directors who were also CEOs for firms listed in the Forbes and Fortune 500 lists for 1986, with data collected from 1985 - 1992 inclusive	For boards that alter the outsider ratio, whether the CEO is also a board member, or change the structure of CEO compensation, their directors of that board are more likely to go to similar boards in the future.	Relational	BOD-External	Lateral	Constraining		

Appendix 2 Potential Future Research Directions

Key Opportunities	Future Research Direction	Select Propositions
Better understand the conditions that give rise and shape the structure of SLIs	<p><i>Developing interdependencies:</i> Move past useful, but limiting conceptualizations of interdependence to capture not only the directionality, but the basis of dependence between parties.</p>	<p>P1: Reciprocal interdependence is more likely to characterize an SLI interface if more than one interdependence type (resource, informational, decisional, and psychological) is present compared to only one interdependence type.</p> <p>P2: Informational interdependence is positively associated with psychological interdependence in later periods, with this effect being stronger at the CEO-TMT than the TMT-MM interface.</p> <p>P3: The co-evolution of environmental dynamism (strategic context) with a collectivistic cultural orientation (social context) leads to psychological interdependencies, which in turn promotes socio-regulatory influence mechanisms in the CEO-board interface.</p>
	<p><i>Building process models of emergence:</i> Using case and narrative approaches, develop higher fidelity accounts of how the strategic and social context co-evolve to shape the genesis and emergence of interfaces.</p>	<p>P4: Ongoing, close contact between the CEO and the board chair during the early stages of CEO/board chair tenure fosters trust and goal alignment and is conducive to the development of routines that facilitate subsequent punctuated distant contact.</p>
Generate “new ways of seeing” by constructing or importing constructs, tools, and vocabulary	<p><i>Specifying different forms of contact:</i> Identifying the main types and manifestations of contact based on temporal (ongoing, episodic, punctuated) and spatial dimensions (close, distant). Deploying observational and ethnographic techniques to observe SLI contact “in the wild”</p>	<p>P5: The level of CEO-BOD diagnosticity (situations where partners can evaluate one another’s true goals and motives) moderates the relationship between board monitoring and firm performance such that the relationship is less positive at higher levels of diagnosticity.</p>
	<p><i>Opportunities for cross-fertilization:</i> Find suitable constructs from related disciplines and resituate them in the SLI nomological network to more accurately describe the processes that unfold at the interface.</p>	<p>P6: CEO transformational leadership is related to employee commitment through two mechanisms: a) direct contact with front line employees, and b) through promulgation of employee-centric employee policies.</p>
	<p><i>Attention to governing mechanisms:</i> Determine what micro-processes are the underlying basis for cascading effects and determine the conditions that facilitate or hamper the presence of these second order effects.</p> <p><i>Holistic approaches to examining contact:</i> Consider multiple interfaces simultaneously and assess how they can complement, counter-act, or nullify each other.</p>	<p>P7: As the level of board monitoring of the CEO increases, the a) quantity and b) quality of CEO-TMT exchanges will decrease.</p>
Develop understanding of the wider implications of SLIs and the impact of performance feedback processes on SLIs	<p><i>Exploring potential dark-sides:</i> Greater attention to the constraints created by SLIs, as well as interfaces as carriers and amplifiers of negative behaviors.</p>	<p>P8: Ongoing and frequent communication and information exchange between the CEO and TMT may reduce the opportunity and motivation of CEO and/or TMT members to seek external advice and information, accelerating groupthink.</p> <p>P9: Episodic, distant contact between the CEO and board of directors may slow down the pace of decision-making, inhibiting the ability of firms to seize external opportunities (i.e., those investment projects requiring approval at board level)</p>
	<p><i>Modeling feedback processes:</i> Examining the impact of past performance on the stability of SLIs through feedback processes.</p>	<p>P10: Performance below aspirations increases the degree of interdependency between the CEO and board of directors; CEO and top management team; and top management team and middle managers.</p>