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Strategic leaders' ecosystem vision formation and digital transformation: A motivated interactional lens

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Abstract

Research Summary: The question of why and how strategic leaders differ in the ecosystems they envision is central to firms' digital transformation. We unpack the cognitive microfoundations of how strategic leaders form their *ecosystem vision*—a mental model of a firm's multilateral complementarities with its partners to realize a value proposition. Our motivated interactional lens emphasizes the role of strategic leaders' cognitive motivation for shaping four interaction types with (prospective) partners: participatory, selective, collaborative, and reclusive. We theorize how these interactions shape the changes strategic leaders make in their mental models, and thus, to envision different levels and types of complementarities with (prospective) partners in the digital transformation. Our theory illuminates the roles of strategic leaders, their cognitive motivations, and social interactions in firms' ecosystem leadership.

Managerial Summary: Digital transformation is an ecosystem challenge for incumbent firms. As part of their ecosystem leadership, strategic leaders need to form a vision of how to complement their value offerings with (prospective) partners' offerings. This vision, in turn, can affect the types of ecosystems they enact. We develop a theoretical model that emphasizes the role of strategic leaders' cognitive

† In memoriam of Steven Floyd who passed away before publication of the manuscript.

motivation for the interactions they engage in with (prospective) partners and for the types of ecosystem visions they form as a result.

KEYWORDS
digitalization, innovation, managerial cognition, microfoundations, strategic change

Incumbent firms' *digital transformation*, that is, the "adoption of novel strategies and business models that are enabled by a myriad of new information technologies" (Furr et al., 2022: 597), is a powerful source of value creation. Digital transformation is an ecosystem challenge. Firms need to consider how to complement their value offerings with those of their (prospective) partners (see Ansari et al., 2016; Autio & Thomas, 2020; Furr et al., 2022; Hanelt et al., 2021; Sturgeon, 2021). To do this, they develop an *ecosystem vision* (Autio, 2022; Dattée et al., 2018; Ozcan & Eisenhardt, 2009), which represents here a mental model of a firm's multilateral complementarities with its partners to realize a value proposition. Such visions can reduce uncertainty, trigger investments, and propel others into mutually supportive roles (Dattée et al., 2018; Foss et al., 2023; Hannah & Eisenhardt, 2015; Ozcan & Eisenhardt, 2009). Therefore, we need to understand the drivers and processes that shape variation in ecosystem visions, because it helps explain variation in the ecosystems that are enacted in digital transformation.

Such visions are spearheaded by ecosystem leaders who initiate and maintain robust ecosystems (Foss et al., 2023; Moore, 1996). To reap the benefits of an ecosystem strategy in digital transformation, incumbent firms often aspire to become ecosystem leaders (Helfat & Raubitschek, 2018; Teece, 2018). They form a vision for an ecosystem, to which others defer (Adner, 2017). Incumbents, though aspiring to become ecosystem leaders, often face cognitive inertia (Barr et al., 1992; Gilbert, 2005; Hodgkinson, 1997), which prevents them from considering the mutually beneficial ways of creating value with (prospective) partners (e.g., Ozcan & Santos, 2015). This explains why digital transformation sometimes fails (Besson & Rowe, 2012; Tripsas & Gavetti, 2000). Further, firms face uncertainty to ex ante identify (Dattée et al., 2018) or misperceive (Siggelkow, 2002b) relevant complementarities that define the vision. Finally, ecosystem visions are not formed in isolation but are socially constituted in leaders' multilateral interactions with (prospective) partners. The envisioned complementarities are continually (re-)aligned with partners (Autio, 2022; Autio & Thomas, 2020; Moore, 1996) for the leader to understand, to develop tailored offerings, or to add value for both parties.

However, it remains poorly understood why and how leaders differ in the ecosystem visions they form. Specifically, the role of these *interactions* in shaping ecosystem visions and their drivers need to be understood. Research suggests that a firm's complementarities with partners are established or given (e.g., Adner, 2017; Adner & Kapoor, 2010; Milgrom & Roberts, 1990; Shipilov & Gawer, 2020). Yet, when forming an ecosystem vision, these complementarities need to be perceived (Dattée et al., 2018; Siggelkow, 2002b), or envisioned. It is the strategic leaders, that is, CEOs, TMT members, directors, and other executives who are responsible for establishing and orchestrating a firm's ecosystem strategy (Altman et al., 2023; cf. Hambrick, 1989), who envision such complementarities by engaging in value-creating interactions with (prospective) partners (cf. Breidbach et al., 2016). Variation in *whom* strategic leaders interact with and *how* likely shapes the ecosystems they envision. The strategic cognition literature focuses on strategic leaders' cognition within an organization or groups of organizations (see Hodgkinson & Healey, 2008; Kaplan, 2011; Narayanan et al., 2011; Porac et al., 2011; Walsh, 1995). However, it does not sufficiently account for the cognitive drivers and processes through which strategic leaders *variably* interact with other organizations to form a vision.

We develop a novel *motivated interactional lens* on the formation of strategic leaders' ecosystem vision, which we conceptualize as a mental model (Huff, 1990) of a firm's multilateral complementarities with (prospective)

partners to realize a value proposition. This lens integrates motivated cognition research (see Kruglanski, 1989; Kruglanski & Webster, 1996) into the literatures on strategic cognition and ecosystems. It emphasizes strategic leaders' cognitive motivation to theorize who they interact with and how to develop their mental models. We argue that their cognitive motivation shapes four interaction types when engaging with (prospective) partners: collaborative, participatory, selective, and reclusive. We apply this lens to strategic leaders' ecosystem vision formation. We theorize the roles of these interaction types for the levels and types of complementarities—generic, specific, supermodular, or few (Jacobides et al., 2018)—that strategic leaders likely envision between their firm and (prospective) partners. They shape the changes in leaders' mental models. These changes are provoked because the interaction types shape variation in the information strategic leaders are exposed to and in the ways of knowing they engage in with (prospective) partners.

With our focus on strategic leaders' ecosystem vision formation in digital transformation, we make key contributions. First, we address calls for research on strategic leadership for business ecosystems (Altman et al., 2023). While the cognitive perspective on ecosystem leadership emphasized the key role of ecosystem visions for the ecosystems that are enacted (Autio, 2022; Autio & Thomas, 2020; Dattée et al., 2018; Foss et al., 2023), our novel motivated interaction lens illuminates the individual-level drivers of their formation. It offers a first step toward unpacking the microfoundations of ecosystem leadership, which rests on "a foundation of interacting organizations and individuals" (Moore, 1996: 26), and of interorganizational networks more broadly (see Soda et al., 2017; Tasselli et al., 2015). Second, our lens theorizes the interrelations between strategic leaders' cognition and motivation (Foss & Lindenberg, 2013). To the strategic cognition literature, it contributes a novel mechanism of mental model development that foregrounds how strategic leaders *variably* interact with other organizations (see Bingham & Kahl, 2013; Gavetti et al., 2005; Hodgkinson, 1997; Hodgkinson & Healey, 2014; Porac et al., 1989, 2011; Reger & Palmer, 1996). Third, our model theorizes the role of strategic leaders' cognitive motivation and interactions with (prospective) partners for making changes in the envisioned value creation models with the firm's ecosystem in the digital transformation (see Furr et al., 2022; Hanelt et al., 2021; Helfat & Raubitschek, 2018; Sturgeon, 2021). It thus extends the research that emphasized the cognitive inertial forces that constrain firms' digital transformation (Besson & Rowe, 2012; Gilbert, 2005; Tripsas & Gavetti, 2000).

1 | STRATEGIC LEADERS' ECOSYSTEM VISION AND DIGITAL TRANSFORMATION

To create and capture value in the digital transformation, incumbent firms often develop an ecosystem strategy (see Ansari et al., 2016; Autio & Thomas, 2020; Besson & Rowe, 2012; Correani et al., 2020; ElSawy & Perreira, 2013; Furr et al., 2022; Hanelt et al., 2021; Iansiti & Lakhani, 2014; Mann et al., 2022; Sturgeon, 2021; Yoo et al., 2010). It is a "form of endogenous strategic action" that "seeks to shape the competitive context such that firms can build, leverage, and extend, rather than locate and occupy, a strong competitive position" (Autio, 2022: 96). Due to the increased interconnectivity, firms consider how to bundle complementary digital products, to adopt digital tools to optimize transactions (Furr & Shipilov, 2019), and/or to perform core activities (Lifshitz-Assaf, 2017; Lifshitz-Assaf et al., 2018).

To initiate and maintain ecosystem strategies in the digital transformation process (cf. Gioia & Chittipeddi, 1991), (incumbent) firms need to form a "vision" (Moore, 1996: 26) or "logic" (Adner, 2017: 42) for the ecosystem that defines the relevant complementarities with (prospective) partners (Autio, 2022). It is a key aspect of their aspired ecosystem leadership,[1] in which they seek to "initiate the process towards higher joint value and, if needed, ensure continuous adaptation when the ecosystem is more established" (Foss et al., 2023: 2).

The envisioned ecosystem encompasses *partners*, on whom a value proposition depends, irrespective of whether or not they have established links to the firm (see the "ecosystem-as-affiliation" view, Adner, 2017; Iansiti & Levien, 2004a). In digital transformation, partners may span geographic (Shaheer et al., 2020) and industry

boundaries (Iansiti & Lakhani, 2014; Matzler et al., 2018). A firm's ecosystem is shaped by its envisioned strategic alignment with its partners. It represent the "alignment structure with the multilateral set of partners that need to interact for a focal value proposition to materialize" (Adner, 2017: 40). This alignment rests on various levels and types of complementarities, that is, configurations of how the products, assets, and/or activities of the leaders and their partners complement one another to realize a value offering (see Adner, 2017; Jacobides et al., 2018; Milgrom & Roberts, 1990; Siggelkow, 2002a). Complementarities are economic relationships in which the functions performed by the partners' offerings create or increase a value proposition (Kapoor, 2018). They enable a firm to expand the value pool (Nalebuff & Brandenburger, 1997) and/or to fend off imitators (Rivkin, 2000). They can be generic, specific, or supermodular (see Jacobides et al., 2018; Milgrom & Roberts, 1990; Teece, 1986, 2007). Only nongeneric (specific and supermodular) complementarities enable a firm to create superior value in an ecosystem. In turn, generic complementarities can provoke other non-ecosystem-related benefits (Jacobides et al., 2018).

Because the ecosystem vision shapes the leader's and the partners' actions (see Dattée et al., 2018; Foss et al., 2023; Hannah & Eisenhardt, 2015; Ozcan & Santos, 2015; Santos & Eisenhardt, 2009), understanding the drivers and processes through which it is formed is key. Relevant complementarities may be misperceived (Ozcan & Santos, 2015; Siggelkow, 2002b). In emergent ecosystems (Dattée et al., 2018; Hannah & Eisenhardt, 2015) and/or those subject to change (Furr & Shipilov, 2018), as in a digital transformation (Hanelt et al., 2021; Helfat & Raubitschek, 2018; Teece, 2018), unpredicted opportunities for complementarities often arise from third parties, such as developers who control the technological setup (Parker et al., 2017) or more distant parties (Furr & Shipilov, 2018; Shaheer et al., 2020). Recent research suggests that ecosystem visions are formed by continuously (re-)aligning them in multilateral interactions with (prospective) partners (see Autio, 2022; Autio & Thomas, 2020; Moore, 1996), so that they are adaptive to changing circumstances, satisfactory also to (prospective) partners (Ansari et al., 2016; Hou & Shi, 2021). Strategic leaders, not firms, form ecosystem visions and engage in value-creating interactions with (prospective) partners (Breidbach et al., 2016). However, the role of strategic leaders' *interactions* in shaping variation in their ecosystem visions and their drivers are poorly understood.

2 | STRATEGIC LEADERS' ECOSYSTEM VISION FORMATION AS MENTAL MODEL DEVELOPMENT

Following the strategic cognition literature, we conceptualize strategic leaders' ecosystem vision as a mental model of a firm's ecosystem, that is, a cognitive representation of the multilateral complementarities between a focal firm and (prospective) partners for the realization of a value proposition (Foss et al., 2023; Siggelkow, 2002b). A mental model is a lay theory that describes how and why things happen. It entails concepts or meaning structures (Dane, 2010; Nadkarni & Narayanan, 2007) (e.g., customer data) and cause-effect relationships between concepts (Furnari, 2015; Hodgkinson et al., 1999; Hodgkinson et al., 2004; Huff, 1990) (e.g., the use of partners' customer data to create value-adding services).

Scholars have advanced the role of strategic leaders' mental model development to predict whether firms (re-) align with external circumstances (Martignoni et al., 2016; Reuter & Krauspe, 2022; Waddock & Isabella, 1989) and initiate a radical change (Barr, 1998; Barr et al., 1992; Barr & Huff, 1997; Isabella, 1990), such as a digital transformation (Gilbert, 2005; Tripsas & Gavetti, 2000). We define strategic leaders' *ecosystem vision formation* as a mental model development process in which the concepts and causal links that make up their cognitive representation of the multilateral complementarities with (prospective) partners are construed in interaction with these firms' strategic leaders. An *interaction* is a temporally bounded social exchange between a focal firm's strategic leaders and other information sources (e.g., prospective partners) to engage in the cognitive processes of mental model development (cf. Elsbach et al., 2005).

However, the strategic cognition literature has not sufficiently accounted for the social interactions that shape strategic leaders' mental model development or for their drivers. The literature has focused either on strategic leaders' mental models within one organization or in collectives of organizations. It focuses on individual psychological drivers—the

"cold" factors, such as experience (see Bingham & Kahl, 2013; Dane, 2010; Gary et al., 2012; Gavetti et al., 2005; Walsh, 1995), and on the 'hot' factors, such as emotions (see Healey & Hodgkinson, 2017; Hodgkinson & Healey, 2011b, 2014). Although the sociocultural perspective has recognized the role of strategic leaders' social interactions for perpetuating mental models in cognitive communities or macrocultures, they have not been studied explicitly (see Abrahamson & Fombrun, 1994; Barr & Huff, 1997; Porac et al., 1989, 2011; Reger & Palmer, 1996; Spender, 1989). Gilbert's (2005) study points to the role of strategic leaders' interactions with outside partners in overcoming cognitive inertia in digital transformation and argues that cognitive inertia has motivational roots. Yet, the literature does not explicitly account for these motivational drivers and/or social interactions through which a firm's strategic leaders interact more closely with other organizations to develop their unique mental models.

3 | TOWARD A MOTIVATED INTERACTIONAL LENS ON STRATEGIC LEADERS' ECOSYSTEM VISION FORMATION

We develop a novel motivated interactional lens to theorize differences in who strategic leaders interact with and how to develop their mental model of a firm's ecosystem. It emphasizes the role of strategic leaders' cognitive motivation for the interaction types they engage in with (prospective) partners, which likely shape the envisioned ecosystem types. To develop this novel lens, we first introduce the cognitive motivation concept and then theorize its links to the interaction types it likely triggers. We then apply this lens to the ecosystem vision formation.

3.1 | The role of strategic leaders' cognitive motivations

In digital transformation, a firm's potential complementarities with (prospective) partners often radically depart from its existing value offerings (Ansari et al., 2016). They imply (prospective) partners in novel domains (e.g. interoperability, automation, data architectures) and new offerings (Iansiti & Lakhani, 2014; Matzler et al., 2018). Although strategic leaders may form an initial ecosystem vision, they will experience meaning voids (Gioia et al., 2010), for instance, about the nature of (prospective) partners' offerings and ways to integrate them. This is due to the cognitive limitations they face (Siggelkow, 2002b; Tripsas & Gavetti, 2000) and to the emerging and radical nature of a firm's ecosystem strategy in a digital transformation for which strategic leaders lack precedent (Dattée et al., 2018; Furr & Shipilov, 2018).

Motivated cognition research suggests that actors' cognitive motivations shape how they fill such meaning voids. As this research has been influential in (political) psychology (see Kruglanski, 1989; Kruglanski & Webster, 1996), we integrate these insights into the strategic cognition literature to develop a novel motivated interactional lens. It helps account for how strategic leaders address meaning voids in interfirm settings. This lens assumes that actors are motivated problem-solvers (Fiske & Taylor, 1984). Actors' cognitive motivation represents the need to develop a sound understanding of the corporate environment. Mental models are developed to satisfy basic cognitive needs, goals, or desires (Dweck, 1986; Kunda, 1990; Tetlock, 2002). Following Kruglanski's theory, it entails two basic cognitive needs[2] that have been found to consistently shape actors' belief formation: the need for diversity and the need for openness (Kruglanski, 1989, 2004). Both needs represent dimensions of stable individual differences and situationally evocable states (Kruglanski & Webster, 1996: 263).

3.1.1 | The need for diversity

Strategic leaders rely on the self but also on others as information sources. Mental models are not only individually but also socially constituted (Hodgkinson, 1997; Hodgkinson & Johnson, 1994; Huff, 1982; Porac et al., 1989). While

we "cannot informationally manage without inputs from some of the people, we also cannot manage with inputs from all the people. We need to be selective about who we listen to" (Kruglanski, 1989: 2–3). The need for diversity is an interpersonal need that regulates who one accepts as a valid source or to whom one grants epistemic authority, i.e., whose beliefs or information are accepted as valid (Kruglanski, 2005; Kruglanski & Webster, 1996). A low (high) need for diversity represents the extent to which actors assign epistemic authority to specific or preferred (nonspecific) sources. Strategic leaders grant epistemic authority to specific sources, such as the self, established partners, partners from the same industry, to those who advance preferred views (Barr & Huff, 1997; Huff, 1982; Porac et al., 1989) or to more nonspecific sources, such as partners that cross industry (Matzler et al., 2018) or geographic boundaries (Shaheer et al., 2020), or to any stakeholder, such as the crowd (Hautz et al., 2017). They may prefer partners that advance technology rather than market rationales (Burgelman et al., 2004; Tripsas & Gavetti, 2000) or those who confirm a firm's performance (McDonald & Westphal, 2003).

3.1.2 | The need for openness

The *need for openness* is an intrapersonal need that regulates *why* a belief is entertained. It is the extent to which actors experience the need to avoid closure in their reasoning (Kruglanski, 2004). Actors with a high need for openness need to engage in comprehensive reasoning rather than desiring a "definite answer on some topic" (Kruglanski, 1989: 14). They refrain from closing their reasoning too soon, tolerate uncertainty and ambiguity, and integrate views that contradict one another or the preferred one. Actors with a low need for openness need to close (*freeze*) on definite conclusions to reduce uncertainty (Kruglanski & Webster, 1996; Tetlock, 2000). For example, strategic leaders prefer a known conclusion (e.g. suppliers' offerings can be integrated via the existing IT infrastructure), or one that is "satisfactory" (Simon, 1947), by using cognitive simplifications (Schwenk, 1984), or local analogies (Gavetti et al., 2005; Gavetti & Rivkin, 2007).

3.2 | Strategic leaders' cognitive motivations and interaction types in the digital transformation

We focus on these two cognitive needs, because they help theorize how strategic leaders *variably interact* with (prospective) partners to develop their mental model of a firm's ecosystem. We develop novel propositions on the four interaction types (collaborative, participatory, selective, and reclusive) that arise from the interaction between these two cognitive needs, which represent two continua on two orthogonal axes (see Figure 1.). An interaction type represents the distinct social interaction patterns between strategic leaders and (prospective) partners and is triggered by a cognitive motivation pattern. Such interactions can be facilitated by digital interfaces. We draw examples from published research.

3.2.1 | Interaction type 1: The participatory interaction

We argue that strategic leaders with a high need for diversity and a low need for openness will likely engage in participatory interaction—a social exchange type that is characteristic of a high participation of nonspecific (prospective) partners whose inputs strategic leaders readily accept as valid. Participation is a type of social exchange that centers on gathering content or meaning from a source.[3] (Prospective) partners act as input-givers. A high need for diversity drives these leaders to be informed by sources without specific directional commitment (Kruglanski, 2005; Kruglanski & Webster, 1996). Because these leaders engage with diverse and disconnected sources, they likely access a variety of information about value creating opportunities (Burt, 1992). They may seek out diverse

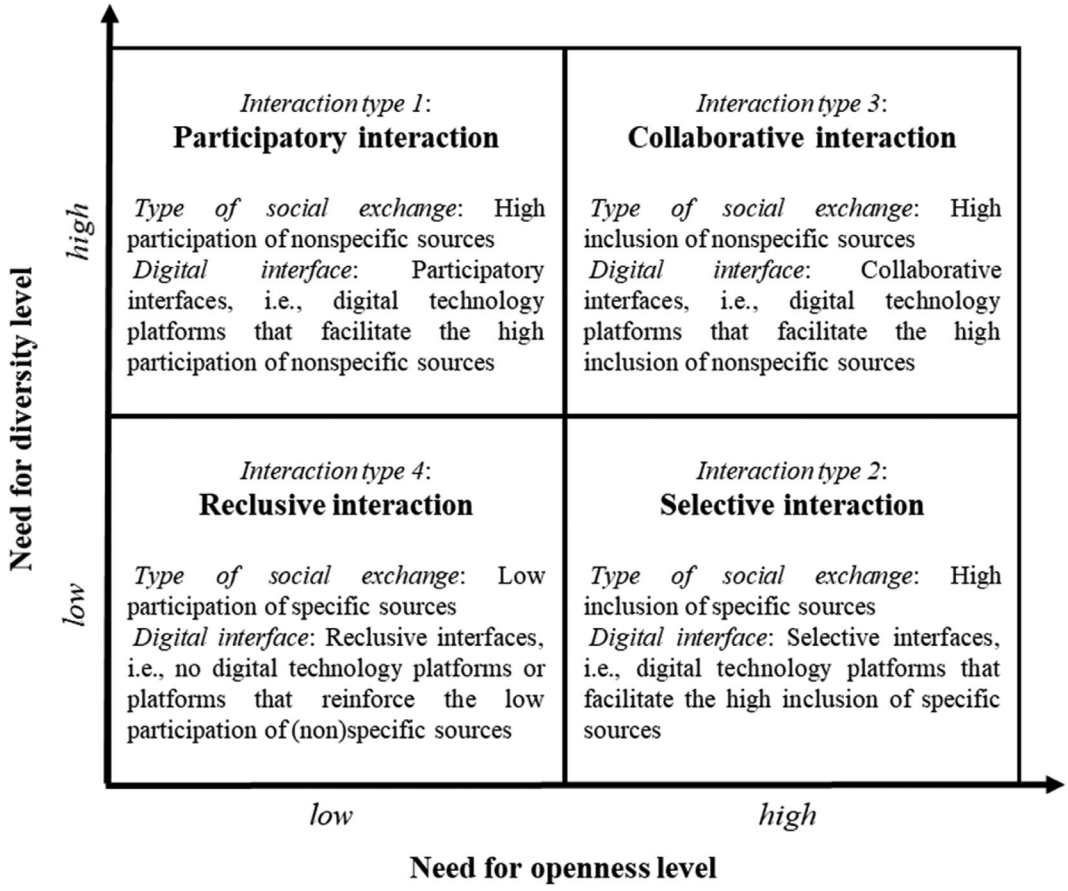

FIGURE 1 Strategic leaders' cognitive motivation and interaction type.

(prospective) partners (e.g., engineers, developers, and marketers) for inputs about the potential of novel technologies to create value (Burgelman et al., 2004). With their low need for openness, strategic leaders experience a need for cognitive economy, which drives them to seek rapid closure in their reasoning, to avoid or to swiftly abort probing the possible interrelationships among various inputs. Strategic leaders more readily accept and *freeze* on definite and available inputs from these diverse (prospective) partners (cf. Kruglanski & Webster, 1996). Thus, strategic leaders are "exposed" to diverse information but with little further elaboration on the information with these sources (Podolny & Baron, 1997).

The literature on digital transformation and openness describes strategic leaders' participatory interaction process. To generate new and varied insights into value creation alternatives with digital technologies, strategic leaders interact with diverse and/or unexpected (prospective) partners such as suppliers, distributors, developers, outsourcing firms, external innovators who assume a role as input-givers (Hansen & Sia, 2015; Iansiti & Levien, 2004b). The CEO of Klöckner, Europe's largest steel trader, interacted with Internet founders in Silicon Valley on platforms' value creation to uncover possible applications in the steel industry—"the Amazon of the steel industry" (Matzler et al., 2018: 18).

Strategic leaders' participatory interactions can be facilitated by participatory interfaces, that is, digital technology platforms that facilitate high participation of nonspecific (prospective) partners in strategic leaders' mental model development (e.g., open platforms). For instance, FlightQuest is an open platform through which GE Aviation in collaboration with Alaska Airlines solicited *any* external party to contribute a new concept for improving the predictions

of flight arrival times (Iansiti & Lakhani, 2014). As they blur physical boundaries (Menz et al., 2021), these interfaces can facilitate a high participation of nonspecific (prospective) partners to contribute inputs relating to a firm's digital value creation. This leads us to propose:

> **Proposition 1.** Strategic leaders with a high need for diversity and a low need for openness will likely engage in a participatory interaction process facilitated by participatory interfaces.

3.2.2 | Interaction type 2: The selective interaction

We argue that strategic leaders with a low need for diversity and a high need for openness will likely engage in selective *interaction*—a social exchange type that is characteristic of strategic leaders' selective inclusion of specific (prospective) partners with whom managers reason openly. Inclusion is a type of social exchange between actors that centers on engaging with a source in multiple ways of knowing. Although strategic leaders' high need for openness drives them to reason openly by engaging in various ways of knowing to satisfy their "fear of invalidity" (Kruglanski, 1990: 188), they do so while responding to their low need for diversity, which drives them to specific (prospective) partners whom they trust (cf. Coleman, 1988, 1990). Fulfilling these twin needs will drive strategic leaders to invest cognitive effort, but to elaborate alternative causal explanations only with specific (prospective) partners. They reason in self-serving ways (i.e., linking preferred concepts in selected knowledge domains only) by applying stringent evaluation criteria (cf. Kunda & Nisbett, 1986) or consistent norms that resonate with the preferred partners. Relatedly, scholars suggest that actors shape their information environment through cohesive interactions with ties in closed networks (Coleman, 1988, 1990).

To illustrate, despite signs of declining performance and ignoring market insights, Edwin Land, Polaroid's CEO, interacted with partners advancing preferred technology-focused rationales (i.e., technology satisfies human needs; technology creates markets) to justify that technology and not market research should drive Polaroid's transformation (Tripsas & Gavetti, 2000). When faced with the rise of new production technologies, Scottish knitwear producers, advanced rationales with established partners in favor of a high-quality rather than a low-cost strategy (Porac et al., 1989: 404). Both cases exemplify selective interactions that selectively included specific sources (i.e., technologists, established knitwear producers) to amplify their rationales around preferred concepts (e.g., analog technology and high-quality knitwear).

The digital transformation literature provides examples of strategic leaders' selective interactions. Hansen et al. (2011) showed how business leaders interacted with selected information systems leaders to elaborate on the strategic value of digital technologies' for these organizations(see also Bharadwaj et al., 2013; Sambamurthy et al., 2003). Since the digital technology setup often lies outside a firm's control and in the hands of digital startups or tech giants (Hanelt et al., 2021), strategic leaders often solicit specific developers as "digital experts" (cf. French & Raven, 1959). They interact with these digital experts to elaborate the drivers of value creation (Li et al., 2018) but also the remedies for value destruction, such as cybersecurity issues (Haggerty, 2017). Functional leaders engage in multiple ways of knowing with specific digital experts to elaborate on the significance of new blended concepts such as omnichannel retail (Brynjolfsson et al., 2013; Hansen & Sia, 2015).

Strategic leaders' selective interaction processes can be mediated by *selective interfaces*, that is, digital technology platforms that facilitate a high inclusion of specific (prospective) partners in strategic leaders' mental model development (e.g., knowledge-sharing platforms, virtual teams). For example, the joint venture, Covisint, promotes interactions among strategic leaders from selected firms (i.e., GM, Ford, Renault-Nissan, and Daimler) through virtual teams (Richard & Devinney, 2005). As they facilitate new exchange types based on novel software and digital practices (Menz et al., 2021), these interfaces can facilitate the inclusion of specific sources to co-create digital value creation alternatives for the firm.

Proposition 2. Strategic leaders with a low need for diversity and a high need for openness will likely engage in a selective interaction process, facilitated by selective interfaces.

3.2.3 | Interaction type 3: The collaborative interaction

We further argue that strategic leaders with a high need for diversity and a high need for openness will likely engage in a *collaborative interaction*—a type of social exchange that is characteristic of strategic leaders' high inclusion of nonspecific (prospective) partners with whom managers reason openly. Rather than committing to specific sources, a high need for diversity drives these strategic leaders to reach out to a variety of nonspecific and potentially unexpected (prospective) partners (cf. Kruglanski, 2005; Kruglanski & Webster, 1996). Their high need for openness and the associated "fear of invalidity" drives them to have heightened concerns about committing the costly error of premature closure (Kruglanski, 1990: 188). As a result of these twin needs, they invest cognitive effort to simultaneously access information from diverse (prospective) partners and to openly probe the validity of alternative and more distant arguments (Gavetti, 2005), by mobilizing a greater variety of reasoning strategies (Gavetti & Rivkin, 2007). Network scholars suggest that strategic leaders engage in unembedded (Quintane & Carnabuci, 2016) and collaborative (Soda et al., 2017) interactions to process and lever the information they access from diverse ties.

The digital transformation literature illustrates strategic leaders' collaborative interactions. Strategic leaders in tech companies and in traditional firms include a wide range of (prospective) partners to co-envision digital offerings that enhance a firm's value creation. For instance, GE interacted with companies such as Microsoft on opportunities for ongoing improvement in care, and with Accenture on new software and analytics solutions. It also interacted with Quirky, a product innovation platform with more than 700,000 members to co-construe new product ideas with GE's suppliers in diverse industries (Iansiti & Lakhani, 2014).

Strategic leaders' collaborative interactions can be mediated by collaborative interfaces, that is, digital technology platforms that facilitate a high inclusion of nonspecific (prospective) partners in strategic leaders' mental model development (e.g., open collaboration platforms, social media, wiki technologies). Web-based collaboration tools can include mechanisms that enable the remote and asynchronous collaboration of a great diversity of participants (Stieger et al., 2012). For example, the Chemical Industry Data Exchange is a platform through which an industry association facilitated information-sharing among diverse chemical companies and their trading partners as a basis for engaging in dialog and elaborating new value creation models (Richard & Devinney, 2005).

Proposition 3. Strategic leaders with a high need for diversity and for openness will likely engage in a collaborative interaction process, facilitated by collaborative interfaces.

3.2.4 | Interaction type 4: The reclusive interaction

Strategic leaders with a low need for diversity and openness will likely engage in *reclusive interaction*—a type of social exchange that is characteristic of a low participation of specific (prospective) partners whose inputs strategic leaders more readily accept as valid. The low need for diversity motivates strategic leaders to freeze on decisive conclusions from specific sources, such as the self as a source or preferred partners, and to deny and resist others (cf. Kruglanski, 1990). They are unlikely to reach out to new partners and tend to engage in closed networks which restrict their information environment (Burt, 1992). Because their preferred sources inspire trust (Coleman, 1988, 1990), identification, and liking (Tetlock, 2002), they prompt strategic leaders' fairly automatic acceptance of their conclusions, allowing them to preserve their low need for openness. Strategic leaders limit the amount of effort and time invested in their reasoning, introduce simplifications (Schwenk, 1984) to reinforce the arguments they prefer

(Tetlock, 2000) or that are considered satisfactory (Simon, 1947). Relatedly, strategic leaders in cohesive networks are more likely to rely on third-party interpretations of events (Burt, 1999).

The digital transformation literature provides insights into strategic leaders' reclusive interactions. Although they need to envision new value alternatives, these leaders may lack the necessary motivation to interact with new and/or varied (prospective) partners (Wirtz et al., 2010). When faced with declining sales due to the rising digital photography trend in the early 1980s, Polaroid executives focused on the superiority of analog cameras' photographic quality and on the razor/blade business model. Executives anchored their reasoning in the views of founder Edwin Land and his "absolute commitment to both science and instant photography" (Tripsas & Gavetti, 2000: 1150). Even after his role at Polaroid, Land remained a primary epistemic authority for incumbent executives. In the early 1990s, these executives refrained from considering data about opportunities in other technologies due to Land's influence and the persistent belief in the primacy of photographic quality. This led to the denial of obvious facts: "We had the capability… but there was disbelief that ink jet could be near photographic quality. Mathematical models and demos couldn't convince people" (Tripsas & Gavetti, 2000: 1156).

Reclusive interactions can be facilitated by *reclusive interfaces*, that is, either no digital technology platforms or platforms that reinforce a low participation of specific sources in strategic leaders' mental model development (e.g., knowledge management platforms).

> **Proposition 4.** Strategic leaders with a low need for diversity and a low need for openness will likely engage in a reclusive interactions process, reinforced by reclusive interfaces.

3.3 | Strategic leaders' interactions and envisioned complementarities in the digital transformation

So far, we have focused on the roles of strategic leaders' needs for openness and diversity for triggering the four interaction types they engage in with (prospective) partners to develop their mental models. We now apply our motivated interactional lens to develop propositions on the roles of these interaction types for the levels and the types of complementarities (i.e., generic, specific, supermodular, few) that strategic leaders likely envision, through the changes they imply in strategic leaders' mental models of the firm's ecosystem (see Figures 2 and 3).

Following the literatures on mental model structures (see Calori et al., 1994; Martignoni et al., 2016; Nadkarni & Narayanan, 2007; Walsh, 1995) and on integrative complexity theory[4] (see Suedfeld et al., 1992), mental model

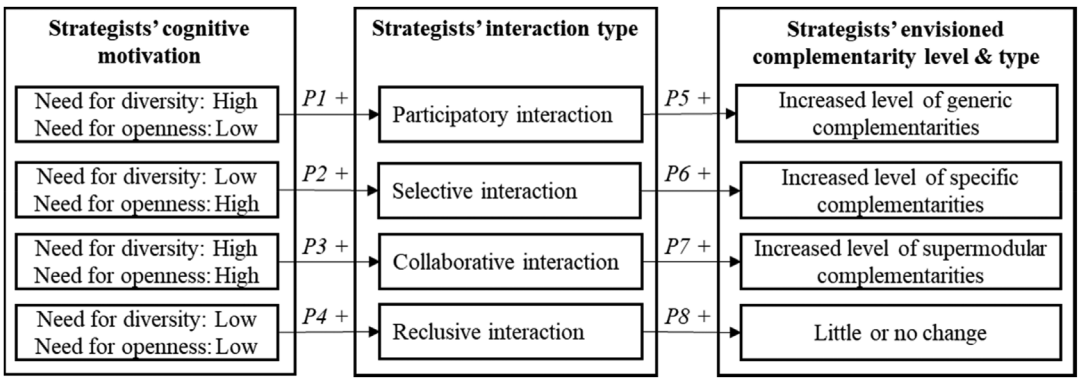

FIGURE 2 Strategic leaders' ecosystem vision formation in the digital transformation: A motivated interactional lens.

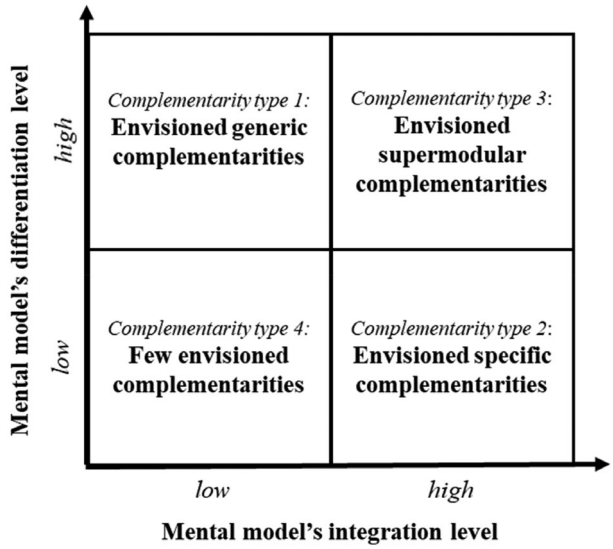

FIGURE 3 Strategic leaders' mental models and envisioned complementarities.

development implies making changes in the structure of mental models—*how* one thinks. The *differentiation level* refers to the level of conceptual breadth or the number and variety of concepts. The *integration level* refers to the level of interrelatedness between concepts (Driver & Streufert, 1969; Schroder et al., 1967). These two dimensions represent the complexity level of a mental model. Differences in these levels have been shown to explain differences in political leaders' responses to political events (Suedfeld, 2022), in strategic leaders' decisions, and in organizational actions (e.g., Barr et al., 1992; Calori et al., 1994; Martignoni et al., 2016; Nadkarni & Barr, 2008; Nadkarni & Narayanan, 2007). Scholars view these levels as fairly stable aspects associated with a leader's personality (Martignoni et al., 2016; Schroder et al., 1967), expertise (Graf-Vlachy et al., 2020), cultural (Tadmor et al., 2009), firm (Hodgkinson & Johnson, 1994), and/or industry contexts (Nadkarni & Barr, 2008). Yet, integrative complexity theory suggests that these dimensions are mutable, such that different behaviors can imply changes in them (Suedfeld, 2022). However, the micro-level drivers, notably the role of actors' social interactions for provoking changes in these levels, remain underdeveloped.

Developing a mental model of a firm's multilateral complementarities in interaction with (prospective) partners is a key aspect of strategic leaders' ecosystem leadership. We argue that differences in strategic leaders' interaction types likely explain differences in the levels and the types of complementarities that they envision between their firm and its (prospective) partners. This is because they provoke changes in the differentiation and integration levels of strategic leaders' mental models. Strategic leaders increase the differentiation level by adopting a greater number of more varied concepts about (prospective) partners' possible offerings, and/or the integration level by creating new links between concepts, for instance, about the potential of mutual value creation for the involved parties. As a result, strategic leaders likely envision different levels and types of complementarities between a firm and (prospective) partners.

3.3.1 | Participatory interactions and envisioned generic complementarities

First, strategic leaders who engage in participatory interactions likely envision increased levels of generic complementarities with the firm's (prospective) partners. This interaction likely increases the differentiation level in strategic

leaders' mental model of the firm's complementarities but makes few changes to its integration level (ceteris paribus). This results from their need to accept as valid inputs from diverse (prospective) partners with little integration.

Generic complementarities are an interdependence type between a focal firm's offering and a number and variety of general-purpose (i.e., standardized) complements without further integration or co-specialization[5] (cf. Helfat & Lieberman, 2002; Teece, 1986), such as the co-existence of products (e.g., power connections and devices) in a product system. These products create value for consumers in the system without further integration or specific alignment structures between the firm and its partners (Jacobides et al., 2018). From a cognitive perspective, increases in the generic complementarities that strategic leaders envision are characterized by increases in their mental model's differentiation level, that is, in the number and variety of general-purpose complements to the firm's offering with few changes in the level of interrelatedness (integration or co-specialization) between these firms' offerings.

When strategic leaders engage in a participatory interaction type with (prospective) partners, they are "exposed to multiplicity (cf. Tadmor et al., 2009) and to a wider variety of inputs from the firm's diverse (prospective) partners (cf. Vissa, 2010). This helps them to recognize fine distinctions among ideas and broadens the conceived possibilities for complements to the firm's offering. Gilbert's (2005) study of newspaper organizations' responses to digital media revealed that strategic leaders' interactions with outside partners resulted in new inputs about the Internet. This helped them envision new revenue models, distribution formats and/or features for online users and triggered a greater differentiation of the envisioned online venture from the core business. Because strategic leaders readily accept these inputs as valid without engaging in the efforts necessary to openly probe further interrelationships between them, they are likely to accommodate their mental model by increasing its differentiation level, hence, the number and variety of general-purpose complements by the firm's (prospective) partners, but with little change to its integration level. In a digital transformation, strategic leaders will readily accept standardized complements (e.g., USB, WiFi, ASCII codes) rather than tailored ones. As leaders explore novel application areas for a technology with possible partners, they will embrace a greater variety of niches and envision more loosely-coupled, diverse ecosystems (Iansiti & Levien, 2004b). In turn, they are unlikely to probe into further tailoring, stronger and/or more innovative interrelationships between complements, or between the parties' value propositions, and are therefore unlikely to form specific or supermodular complementarities.

To illustrate, strategic leaders interact with a broad range of different and fragmented suppliers (e.g., any restaurant) to adopt their offerings into the envisioned online platform ecosystem (e.g., a food delivery platform). In this vein, Alibaba initially interacted with and aggregated the offerings of a large number of small-scale suppliers onto their platform, facilitating the transaction processes without further integration (Pidun et al., 2022).

> **Proposition 5.** Strategic leaders engaging in participatory interactions will likely envision higher levels of generic complementarities with the firm's (prospective) partners.

3.3.2 | Selective interactions and envisioned specific complementarities

Strategic leaders who engage in selective interactions are likely to envision increased levels of specific complementarities with selected (prospective) partners. This interaction type likely increases the integration level in strategic leaders' mental model of a firm's complementarities and changes little in the differentiation level (ceteris paribus). This results from their need to engage in multiple ways of knowing with specific (prospective) partners only.

Specific complementarities are an interdependence type between a firm's value offering and selected complements that are highly integrated or co-specialized (Teece, 1986, 2007), such as product A (the coffee capsule) and the cospecialized product B (the capsule coffee machine). From a cognitive perspective, increases in the specific complementarities envisioned by strategic leaders are characterized by increases in their mental model's integration level, that is, in the level of interrelatedness between the offerings of the firm and of selected (prospective) partners.

Nespresso's leaders increased the level of envisioned specific complementarities around its proprietary coffee capsule system by construing tight interrelationships between its capsule system and the offerings of specific coffee producers and machine manufacturers (e.g. Braun and Krups) through common standards and IP (Jacobides et al., 2018).

In this interaction, strategic leaders selectively include specific (prospective) partners with whom they openly explore potential interrelationships between the own and their unique offerings. Strategic leaders interact with (prospective) partners whom they trust (cf. Coleman, 1988, 1990), and/or who can fulfill the needed requirements. In these encounters, actors infer interdependences (Balliet & Lindström, 2023). They make nuanced inferences about the possible links between their firm's offerings and the unique concepts of specific (prospective) partners, and evaluate tradeoffs (cf. Green et al., 2000). They will probe the value that could be created by combining and/or tailoring unique complements for a more integrated value proposition. They can elaborate a lower-level integration that describes the existence of a relationship (e.g., capsuled coffee consumption triggers the need for capsule recycling) or a higher-level integration that advances an overarching principle (e.g., an integrated one-stop shop) for circumscribing the complementarity (Tadmor et al., 2009). As they perceive higher possible complementarity, they are even more willing to invest effort (Columbus et al., 2021) to construe a vision around which (prospective) partners can find mutually supportive roles and engage in a (co-)specialization (Teece, 1986, 2007). For instance, Intel's CEO drove the tight interrelationships between Intel's microprocessors and Microsoft's Windows operating system software stimulating next software development (Burgelman, 2002). With this interaction, strategic leaders likely increase the integration level of their mental model, specifically the level of interrelatedness (or connectedness) (KPMG, 2020) between the complements of specific partners and a firm's offering. Yet, since they interact with selective partners only, they are unlikely to be exposed to a multiplicity of possible complements and to change the differentiation level.

To further illustrate, in Li et al.'s (2018) study of the digital transformations of seven small and medium-sized enterprises (SMEs), strategic leaders interacted with specific experts from the digital platform service provider Alibaba to elaborate value creation models for cross-border e-commerce and for more data-driven processes for these SMEs. As a result, strategic leaders envisioned higher-level interrelations between the SMEs' and Alibaba's offerings, (i.e., between the SMEs' customer/operations data and specialized platform functionalities that were necessary for these SMEs to lever the data), or between Alibaba's unique Chamber of Net Commerce and the related training programs for the SMEs.

> **Proposition 6.** Strategic leaders engaging in selective interactions will likely envision higher levels of specific complementarities with the firm's (prospective) partners.

3.3.3 | Collaborative interactions and envisioned supermodular complementarities

Third, we argue that strategic leaders who engage in collaborative interactions are likely to envision higher levels of supermodular complementarities, because this interaction type induces increases in both the differentiation and integration levels in strategic leaders' mental models of a firm's complementarities (ceteris paribus). This results from their need to engage in multiple ways of knowing with a wide diversity of (prospective) partners.

Supermodular complementarities are a type of system-wide interdependence that results from integrating a number of varied complements (see Jacobides et al., 2018; Milgrom & Roberts, 1990; Siggelkow, 2002a). For example, the coordination of production facilities A and a software B enables predictive maintenance C and/or quality control services D. Increases in the supermodular complementarities envisioned by strategic leaders represent increases in the differentiation and integration levels of their mental models, and therefore in the higher-level interrelatedness that stems from the integration of a firm's offerings with varied complements.

Strategic leaders openly probe the potential complementarities between the offerings of their firm and those of diverse (prospective) partners. In these encounters, they become exposed to multiplicity, which broadens the conceived possibilities for complements to a firm's offering, and likely increases the differentiation level of their mental model (cf. Tadmor et al., 2009). Strategic leaders will not only openly probe the interrelationships between possible complements and the firm's offerings but will also seek to integrate disparate possibilities for complements into a meaningful whole by articulating higher-order concepts (cf. Tadmor et al., 2009). An example is GE's "industrial internet" (Iansiti & Lakhani, 2014: 3), which circumscribes the higher-order or system-wide complementarities that emerge from the first-order coordination of complements. They probe further possible value creation opportunities that emanate from these new architectures (Jacobides et al., 2018; Milgrom & Roberts, 1990). They consider partners' views and accept making tradeoffs to lever the ecosystem as a whole (Iansiti & Levien, 2004b). As they mediate between parties and seek compromises to integrate interests into meaningful higher-order concepts, they also likely increase their mental model's integration level (Lavallee & Suedfeld, 1997; Tetlock et al., 1994).

As a result, strategic leaders will likely increase the differentiation and integration levels in their mental model of the firm's complementarities. Network research suggests that actors engaging in collaborative interactions likely create greater value from the diverse information they access (Soda et al., 2017). Leaders will envision more complex value propositions for the ecosystem (Dattée et al., 2018; Iansiti & Levien, 2004b). For example, leaders at the digital thermostat manufacturer Nest envisioned the specific complementarities between the physical thermostat and the digital sensors into what became a smart appliance for optimizing home temperature control (e.g., temperature setting, powering the heating, air-conditioning). Because the smart appliance is sensor-controlled, programmable, WiFi-supported, and has cloud services, it can collect, store, and exchange data. With this novel architecture, strategic leaders envisioned further system-wide complementarities with partners in remote industries, like, the aggregation of consumption data with electric utilities, or the scheduling of laundry systems with consumer electronics companies (Iansiti & Lakhani, 2014; Matzler et al., 2018).

Proposition 7. Strategic leaders engaging in collaborative interactions will likely envision higher levels of supermodular complementarities with the firm's (prospective) partners.

3.3.4 | Reclusive interactions and few envisioned complementarities

We argue that strategic leaders who engage in reclusive interactions are likely to envision few or no changes in the levels and types of complementarities between a firm and its (prospective) partners. This is because this interaction type likely induces few or no changes in their mental model's differentiation and integration levels (ceteris paribus). This results from their need to readily accept as valid inputs from specific or preferred partners only.

In a reclusive interaction, strategic leaders accept as valid inputs from preferred and/or fairly established partners whom they trust or from the self as a source (cf. French & Raven, 1959; Kruglanski, 2005).They are unlikely to reach out to a broader range of (prospective) partners, to be exposed to a multiplicity of new inputs (cf. Burt, 1992; Gargiulo & Benassi, 2000), to broaden the conceived possibilities (cf. Tadmor et al., 2009) or to increase the number and variety of envisioned complements, thus, unlikely to increase their mental model's differentiation level (or the envisioned generic complementarities). To preserve their need for cognitive economy, leaders are also unlikely to invest the necessary cognitive effort to probe possible new interrelationships between value offerings, and are thus unlikely to increase their mental model's integration level (or the envisioned specific complementarities). As a result, strategic leaders are likely to envision few or no changes in the levels and types of complementarities. Relatedly, scholars suggest that strategic leaders' cohesive networks and interactions prevent them from coordinating the higher task interdependencies that their role requires (Burt, 1999; Gargiulo & Benassi, 2000). Strategic leaders often fail to envision new ecosystem strategies in a digital transformation because they are not sufficiently "open to explore" complementarities with partners, as noted by Henkel's Lead of Digital Acceleration, Operations, and Strategy (Jacobides, 2019: 17). Rather than embedding their firms' value

propositions in an eCosystem with (prospective) partners, these leaders think instead of eGosystems centered around the focal firm and, if at all, with established or preferred partners (Eckhardt, 2019).

> **Proposition 8.** Strategic leaders engaging in reclusive interactions will likely envision few or no changes in the levels and types of complementarities with the firm's (prospective) partners.

Because the ecosystem vision likely shapes the strategic actions of the ecosystem leader and its partners (see Ansari et al., 2016; Dattée et al., 2018; Foss et al., 2023; Hannah & Eisenhardt, 2015; Ozcan & Eisenhardt, 2009), changes in the levels and types of envisioned complementarities are also likely to shape the complementarities that strategic leaders are likely to lead, hence, to initiate and to maintain (ceteris paribus) (Foss et al., 2023). This is so because a new vision reduces uncertainty, and motivates actions internally (Gioia & Chittipeddi, 1991), toward others (Levenhagen et al., 1993) and those by the firm's partners (Ozcan & Eisenhardt, 2009). Also the strategic cognition literature suggests that changes in strategic leaders' mental models motivate a firm's strategic actions (Barr, 1998; Barr et al., 1992; Barr & Huff, 1997; Gioia & Chittipeddi, 1991). Psychology research suggest that actors' perceived complementarities motivate action (Columbus et al., 2021). In turn, stable mental models prevent strategic leaders from initiating new efforts to increase a firm's complementarities with (prospective) partners, and rather lead them to maintain current efforts (see Barr, 1998; Barr et al., 1992; Barr & Huff, 1997; Hodgkinson, 1997; Porac et al., 1989, 2011; Reger & Palmer, 1996; Tripsas & Gavetti, 2000). Thus, strategic leaders engaging in reclusive interactions are less likely to fulfill an ecosystem leadership role, or if they do, more likely to lead narrower ecosystems (Iansiti & Levien, 2004b). They may also be less likely to lead a successful digital transformation, because they are more inward-focused (Tripsas & Gavetti, 2000) and lack the outside inputs that are necessary to overcome cognitive inertia (Gilbert, 2005).

4 | IMPLICATIONS

We have unpacked the cognitive microfoundations of strategic leaders' ecosystem vision formation. We conceptualized the ecosystem vision as a type of mental model of a firm's multilateral complementarities with (prospective) partners that strategic leaders develop in multilateral interactions with them. Our novel motivated interactional lens emphasizes strategic leaders' cognitive motivation that drives *who* they interact with and *how* to form an ecosystem vision for their firm. This led us to develop four interaction types: participatory, selective, collaborative, and reclusive that arise from the interrelations between strategic leaders' basic cognitive needs and that can be facilitated by four digital interface types. We applied this lens to shed light on strategic leaders' ecosystem vision formation in the digital transformation. We developed propositions on the roles of these four interaction types for the levels and types of complementarities that strategic leaders are likely to envision. This is so, because they shape the types of changes strategic leaders make in their mental models' differentiation and/or integration levels. With our focus on the cognitive microfoundations, we aim to contribute to the literatures on firms' ecosystems, digital transformation, and strategic cognition.

4.1 | Implications for the research into firms' ecosystems and digital transformation

We add to the literature on firms' digital transformation by complementing the focus on context-, firm-level, inter-, and intra-organizational aspects with a micro-level cognitive perspective (see Bodrožić & Adler, 2021; Hanelt et al., 2021; Lanzolla et al., 2020; Menz et al., 2021; Nambisan et al., 2019; Vial, 2019). We extend the research suggesting cognitive inertia as a reason why firms' digital transformation sometimes fails (Besson & Rowe, 2012; Gilbert, 2005; Tripsas & Gavetti, 2000). Our model offers cognitive motivation as a driver of cognitive change (versus

inertia) by theorizing its impact on the types and levels of changes that strategic leaders make in their mental models of the firm's value creation in the digital transformation. The four proposed interaction types (e.g., facilitated by digital interfaces) that strategic leaders engage in with (prospective) partners illuminate some of the ecosystem leadership tasks in the digital transformation (Furr et al., 2022). We add the cognitive factors that drive firms' value creation with ecosystem partners in the digital transformation (see Ansari et al., 2016; Besson & Rowe, 2012; ElSawy & Perreira, 2013; Hanelt et al., 2021; Sturgeon, 2021; Yoo et al., 2010).

Broadly, we contribute to calls for research on strategic leadership for business ecosystems (Altman et al., 2023). The emerging cognitive perspective on ecosystem leadership emphasized the role of the ecosystem leader's "vision" (Moore, 1996: 26) or "logic" for the ecosystems that are enacted (Adner, 2017: 42; see also, Autio, 2022; Dattée et al., 2018; Foss et al., 2023; Ozcan & Eisenhardt, 2009; Santos & Eisenhardt, 2009). We have developed a theoretical model that uncovers the micro-level cognitive drivers and processes of strategic leaders' ecosystem vision formation. We examined four interaction types through which strategic leaders (re-)align their ecosystem vision in interactions with (prospective) partners and the cognitive motivational drivers. The proposed theory and bridging constructs are a first step toward unpacking the multilevel phenomenon of ecosystem leadership, which rests on "a foundation of interacting organizations and individuals" (Moore, 1996: 26).

Our motivated interactional lens contributes to the cognitive microfoundations of interfirm strategic alignment. It theorizes differences in the levels and the types of complementarities (Jacobides et al., 2018; Kapoor, 2018) (or alignment structures) (Adner, 2017) that strategic leaders likely envision as a result of the social interaction types and the types of changes that these provoke in strategic leaders' mental models of their firm's ecosystem. These changes represent the increased levels of envisioned generic, specific, supermodular complementarities (Jacobides et al., 2018), or no or a few changes in the envisioned complementarities. We complemented the literature which suggests that the complementarities between a firm and (prospective) partners are neither given by exogenous technological interdependencies (Adner & Kapoor, 2010; Milgrom & Roberts, 1990; Shipilov & Gawer, 2020), nor designed only by the ecosystem leader (Adner, 2017). They may be envisioned differently as a result of the motivated interactions that strategic leaders engage in with (prospective) partners.

On the one hand, this helps account for still unexplained variance across firms' complementarities with partners in settings that share similar and given (technological) interdependencies among components (Ozalp et al., 2018; Shipilov & Gawer, 2020). Why do some leaders (mis)perceive given complementarities, while others do not (Siggelkow, 2002b)? On the other, it accounts for variations across firms' complementarities with partners in settings that are less constrained by given interdependencies (Ansari et al., 2016; Dattée et al., 2018; Furr & Shipilov, 2018; Hannah & Eisenhardt, 2015). It helps explain whether and how strategic leaders envision novel complementarities with (prospective) partners, as in the case of Bill Gates' ecosystem vision around cross-platform software rather than hardware. In turn, we acknowledge that it may be less important in settings where complementarities are established and partners have "defined positions and activity flows among them" (Adner, 2017: 42), as in the case of the more traditional or centralized ecosystems (Furr & Shipilov, 2018).

Further, we illuminate the microfoundations of interorganizational networks (Tasselli et al., 2015). First, a firm's complementarities with partners may not only be given by resource complementarities (Gulati et al., 2012), but envisioned differently as a result of the interactions that strategic leaders engage in in the latent network of partners. We uncover the interaction types through which the leader's strategic leaders form a "system-level" vision for a meta-organization and the role of their cognitive motivation and of digital interface types for shaping the extent to which they "include" partners to (re-)align it (Gulati et al., 2012). Second, by theorizing the role of strategic leaders' cognitive motivation for shaping who they interact with and how, as well as four interaction types between a firm and its ties, we add to the individual- and cross-level dynamics of interorganizational networks (Tasselli et al., 2015). The bridging constructs help explain whether and how strategic leaders activate more or less closed networks, and the benefits they realize for the firm as a result of their interactions with those ties (Burt et al., 2022; Gargiulo & Benassi, 2000; Podolny & Baron, 1997; Soda et al., 2017).

4.2 | Implications for the research into strategic cognition

Our lens contributes a novel mechanism of *mental model development* to the literature on strategic cognition. It complements the literature that foregrounded either individual psychological forces (Bingham & Kahl, 2013; Dane, 2010; Gary et al., 2012; Gavetti et al., 2005; Healey & Hodgkinson, 2017; Hodgkinson & Healey, 2011b, 2014; Walsh, 1995) or social and cultural forces (see Hodgkinson, 1997; Porac et al., 1989, 2011; Reger & Palmer, 1996) on mental model development. Strategic leaders' cognitive motivation explains how they *variably interact* with other organizations to develop their mental models. It likely shapes the social interaction types they engage in as well as the types of changes these interactions provoke in their mental models' differentiation and integration levels (Driver & Streufert, 1969; Suedfeld, 2022). Cognitive motivation is a key aspect of strategic leaders' "hot" cognition (Healey & Hodgkinson, 2017; Hodgkinson & Healey, 2011b) and illuminates some linkages between strategic leaders' cognition and motivation (Foss & Lindenberg, 2013). It further adds the motivational aspects of strategic leaders' cognitive change (Gilbert, 2005) versus inertia which represents the failure to update their mental models (Tripsas & Gavetti, 2000).

The proposed motivated interaction types act as bridging constructs (Furr & Funder, 2021) linking micro and collective levels. This lens helps explain the partly inconsistent findings which suggest, on the one hand, the largely shared nature of strategic leaders' mental models in interorganizational macrocultures (Hodgkinson, 1997; Porac et al., 1989, 2011; Reger & Palmer, 1996; Spender, 1989), on the other, that the mental models of strategic leaders situated in a macroculture still vary (Hodgkinson & Healey, 2011a; Hodgkinson & Johnson, 1994).

By theorizing the links between actors' cognitive motivations and the social interaction types that shape actors' mental model development, we have integrated the motivational (Dweck, 1986; Pintrich et al., 1993) and social (Mason, 2007; Walsh & Charalambides, 1990) influences on conceptual change. We added the roles of the four social interaction types for the changes they provoke in the differentiation and integration levels of the mental models to integrative complexity theory (Suedfeld, 2022; Suedfeld et al., 1992).

We add to the cognitive microfoundations of dynamic capabilities (Felin et al., 2015; Hodgkinson & Healey, 2011b). We illuminated the "sensing" stage (Foss et al., 2023; Helfat & Raubitschek, 2018). Our theoretical model emphasizes the roles of strategic leaders' cognitive motivation and the interaction types it triggers as key managerial aspects that shape whether and how strategic leaders envision a higher co-specialization with partners, which is central to dynamic capabilities (Teece, 1986, 2007). Strategic leaders' collaborative interactions likely increase the levels of envisioned supermodular complementarities or co-specialization with diverse partners owing to the higher levels of cognitive diversity and openness that motivate these interactions. In turn, leaders' selective interactions likely increase the levels of envisioned specific complementarities or co-specialization with selected partners only. Participatory and reclusive interactions are unlikely to increase the envisioned co-specialization.

Finally, we have unpacked a new cognitive alignment type: strategic leaders' cognitive alignment with other organizations. With its focus on strategic leaders' cognition within an organization or groups of organizations (see for reviews, Hodgkinson & Healey, 2008; Kaplan, 2011; Narayanan et al., 2011; Porac et al., 2011; Walsh, 1995) and their alignment to the strategic environment (Barr et al., 1992; Martignoni et al., 2016; Waddock & Isabella, 1989), the strategic cognition literature has not fully accounted for the cognitive drivers and processes through which strategic leaders *more variably* align with other organizations. Our motivated interactional lens advances leaders' cognitive motivation for shaping *who* they interact with and *how*, and for the types of alignment structures (or complementarities) they envision.

4.3 | Boundary conditions and future research

A key strength of this paper is that it offers a basis for empirical research on the proposed relationships between strategic leaders' cognitive motivation, mental model development, and ecosystem vision, for instance, in the digital

transformation. Future research may use different methodologies, ranging from large-sample quantitative and experimental research to small-sample qualitative research, to validate the proposed relationships and add nuances. While we have focused on strategic leaders' mental model development in the digital transformation, the theoretical model may be applicable (with some refinements) to other settings of strategic change, for instance, in response to other technological, regulatory, or competitive changes (Barr, 1998; Barr et al., 1992; Hodgkinson, 1997; Porac et al., 1989; Reger & Palmer, 1996) or of more centralized ecosystems (Furr & Shipilov, 2018). Alternatively, researchers may engage in competitive theory testing to uncover whether self-regulatory skills focused on emotions (Hodgkinson & Healey, 2011b), or—as advanced here—cognitive motivational factors best explain strategic leaders' mental model development. Scholars may add details on the interaction processes or the boundary conditions (e.g., time pressure, competitive tensions, managerial discretion) that strengthen or attenuate the relationships. We anticipate an attenuation or reversal of the proposed relationships at more extreme levels of cognitive needs. With our individual focus on the leader's strategic leaders, our theory remains silent about the relational aspects that also shape ecosystem vision formation, which eventually is a sort of negotiated order. Scholars may add the social constructivist factors (Berger & Luckmann, 1967) or the competitive tensions (Adner et al., 2013) that influence whether and how firms align around a shared vision.

The proposed theory opens up opportunities for more micro- and cross-level theorizing (Eckardt et al., 2019; Hodgkinson & Healey, 2011a) with the bridging constructs. First, future research can examine the cross-level implications of the interaction types. It could investigate their role in "selling" visions in emerging industries (Levenhagen et al., 1993) or for shaping 'shared' visions in ecosystems (Foss et al., 2023; Moore, 1996) or in other interorganizational arrangements, such as alliance teams (Standifer & Bluedorn, 2006), or the benefits that may be realized with a firm's partner network (Tasselli et al., 2015). Scholars could also study the contingencies in which these visions are shared and enacted. Second, the proposed theory may trigger scholars to study variation in mental model development by strategic leaders who are embedded in the same macroculture (Abrahamson & Fombrun, 1994; Hodgkinson & Healey, 2011a; Hodgkinson & Johnson, 1994). Scholars can investigate the more relational, collective, or multi-level drivers and mechanisms of the proposed interaction types. For instance, they can explore how shared mental models result from collectives of strategic leaders with varying cognitive needs who interact with one another.

Future research may extend the proposed lens to other strategic phenomena. Upper echelons scholars may expand the predominant research focus to including the motivational aspects. For instance, the cognitive motivation construct can help explain when and how strategic leaders are motivated to be influenced by different sources in their decisions (Simsek et al., 2022). CEOs' cognitive motivation may critically mediate who CEOs turn to for external advice (McDonald & Westphal, 2003) and how openly they engage with these sources in strategy formation (Hautz et al., 2017; Simsek et al., 2022; Whittington et al., 2011). It helps explain who they listen to in their inner circle (Mooney & Amason, 2011) or whether they seize the informational benefits from diverse teams (Bunderson & Sutcliffe, 2002).

Further, in contrast to the upper echelon's literature's focus on executive characteristics and traits (Hambrick, 2007), with its state dimension, the cognitive motivation construct opens research avenues on within-person differences, how it develops in strategic leaders over time, and the influencing factors. We anticipate that the needs for diversity and openness will change during a strategic leader's career or following a change in position. Following a change in position, they may be motivated to reason more openly and seek out diverse sources to validate their conclusions. To the extent that self-efficacy beliefs increase over time (Karoly, 1993), strategic leaders will focus on more specific sources or on the self, and reason less openly.

The proposed theory opens up avenues for research on openness in strategy formation (see Hautz et al., 2017; Simsek et al., 2022; Whittington et al., 2011). It suggests that variation in a firm's openness toward (prospective) partners is shaped by strategic leaders' cognitive motivation, which shapes the interaction types they engage in and the value configurations they envision. The different types of participatory, inclusive (selective vs. collaborative), or reclusive interactions help explain differences in inclusion versus participation in a

firm's ecosystem strategy formation (Hautz et al., 2017). Strategic leaders' need for diversity may shape the breadth of inclusion (specific vs. nonspecific sources) and their need for openness the extent of inclusion (open reasoning with others vs. others as input-givers). The four digital interface types add to the research that sees digital technologies as a channel through which strategic leaders *variably* interact with partners (Whittington et al., 2011).

Future research could investigate strategic leaders' interactions with the material context (Elsbach et al., 2005). It could study the consequences of a misfit between leaders' cognitive motivation and a digital interface. With the unprecedented amounts of information they produce, digital technologies erode the material bases of leaders' mental model development failures (Besson & Rowe, 2012). Their cognitive motivation may shape whether and how strategic leaders interact with these technologies to seize their informational benefits.

5 | CONCLUSION

Firms' digital transformation requires that strategic leaders develop a vision for the firm's ecosystem. We have developed a *micro-level cognitive* lens on leaders' ecosystem vision formation in the digital transformation. Connecting strands of psychology and management research, we first developed a novel motivated interactional lens. Second, we applied it to the ecosystem context. It emphasizes the role of strategic leaders' cognitive motivation for shaping how *variably* strategic leaders interact with (prospective) partners. In turn, we have developed four interaction types that shape the levels and the types of complementarities strategic leaders envision with (prospective) partners, because they shape the changes they make in their mental models of the firm's complementarities. These contributions guide the study of the roles of strategic leaders, their cognitive motivations, and social interactions in firms' ecosystem leadership in a digital transformation and in interorganizational networks broadly.

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ENDNOTES

[1] Also referred to as "ecosystem champion" (Dattée et al., 2018: 2), "ecosystem architect" (Snihur et al., 2018: 30), "lead innovator" (Teece, 2016: 1), or "focal firm" (Adner, 2017: 42).

[2] We refer to these needs as the need for openness and the need for diversity. They represent the reversals of the need for closure and the need for epistemic authority from the original theory (Kruglanski, 2004).

[3] Because participation centers on the gathering of information, it is seen as lower strength, compared to inclusion, which entails deeper interactions (see Hautz et al., 2017; Mack & Szulanski, 2017; Quick & Feldman, 2011).

[4] It is an offshoot of conceptual complexity theory (Schroder et al., 1967), which views a person's conceptual complexity as a fairly stable *trait*. Integrative complexity theory sees it as a mutable *state* (Suedfeld et al., 1992).

[5] *Co-specialization* refers to here as "a particular class of complementar[ity] where the value of an asset is a function of its use in conjunction with other particular assets" (Teece, 2007: 1338).

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