

# Does Familiarity Breed Trust? Revisiting the Antecedents of Trust

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**This paper investigates how the history of interaction between organizations and between organizational boundary spanners contributes to the formation of trust between firms. Our findings, using data on the supplier–buyer relationships of two major US auto manufacturers, suggest that history affects trust formation in a complex non-linear fashion, involving a period of ambivalence early in a relationship. We show that certain kinds of exchange partners can systematically reap differential returns from a common history of interaction. Organizational similarity significantly enhances the ability of exchange partners to translate the benefits of the joint history of interaction into a stock of trust. Copyright © 2008 John Wiley & Sons, Ltd.**

## INTRODUCTION

In the past decade there has been a resurgence of interest in understanding the sources and consequences of trust in economic exchanges. This interest has resulted in new research from a variety of disciplinary perspectives that include social psychology (e.g., Kramer, 1999; Lount *et al.*, 2005), organizational theory and strategy (Uzzi, 1997; Zaheer and Venkatraman, 1995; Gulati and Nickerson, 2005; Gulati, 2007), business history (Fukuyama, 1992, 1999), and economics (e.g., Berg *et al.*, 1995; Guth *et al.*, 1998). With the growing interest in the topic, it is difficult to imagine that just over 15 years ago scholars were mentioning trust just ‘in passing...only to move on to deal with less intractable matters’ (Gambetta, 1988: foreword).

In recent years, scholars have also sought to delineate interorganizational trust from interper-

sonal trust (Barney and Hansen, 1994; Zaheer *et al.*, 1998). While the former refers to trust that is imbued in the relationship between two entities, the latter describes the relationship between individuals. The basic premise underlying this distinction is that trust may occur not only among individuals, but also among organizations, as similar sentiments can occur between collective entities. As such, interorganizational trust represents an organization’s expectation that another firm will not act opportunistically when dealing with that organization (Gulati, 1995a). Scholars acknowledged the measurement difficulties associated with interorganizational trust (see Gulati, 1998), but researchers have nonetheless found ways to measure this construct and this area of study has subsequently become a vibrant arena for research in recent years.

Research in strategy and organizational theory that has attempted to assess the implications of interorganizational trust can be loosely coupled into two broad domains. The first generally focused on investigating the benefits of trust on critical organizational outcomes. Studies in this

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domain suggested that higher levels of trust are related to reduced negotiation costs, lower levels of conflict, superior information sharing, and account for high levels of cooperation and organizational performance (e.g., Uzzi, 1997; Zaheer *et al.*, 1998; Dyer and Chu, 2003). The second domain includes research that focused on the role of interorganizational trust as a mechanism of governance. The key insight generated by this research stream is that trust serves as an effective social control mechanism, obviating the need for hierarchical controls in the face of potential moral hazards (e.g., Bradach and Eccles, 1989; Ring and Van de Ven, 1992; Gulati, 1995a; Dyer and Singh, 1998; Lincoln and Gerlach, 2004).

While both of these streams of research have generated valuable insight into the role of interorganizational trust, they have generally proceeded by treating the magnitude of trust between organizations as exogenous and reflected in indicators such as prior history of interaction between the organizations. In turn, they have focused primarily on the consequences and not the antecedents of trust. As a result of this growing body of research, we know that trust is good for organizations but we do not necessarily know where it comes from, as relatively little scholarly attention has been devoted to understanding the antecedents of trust in interorganizational relations. This paper attempts to fill this gap by focusing on some of the factors that lead to the formation of trust. While we do not claim to offer a comprehensive account of all possible antecedents of trust, we do conduct an in-depth investigation of how one of the factors alluded to most frequently by prior researchers—history of prior interaction—may account for the formation of interorganizational trust.

In assessing some of the antecedents of trust arising from prior experience, we expect to contribute to existing research in the following ways: first, we conduct a systematic examination of the contribution to the trust formation by the history of interaction between two organizations at multiple levels that include both the organizations themselves and the organizational boundary spanners who manage those relationships. This unique multilevel approach to understanding the formation of trust allows us to address interorganizational trust as a complex phenomenon, emerging both from the history of micro- and macro-level interaction (Rousseau, 1985; Zaheer *et al.*,

1998). Second, we uncover some of the enabling conditions that may moderate the impact of the history of interaction in fostering trust. Finally, following some unexpected statistical results, we challenge the currently predominant view of a linear relationship between trust and its antecedents.

## THEORY

While debates still continue around the antecedents and consequences of trust, most scholars generally agree that trust becomes important in situations characterized by risk and uncertainty (Das and Teng, 1998; Gulati and Sytch, forthcoming; Zaheer *et al.*, 1998). Many prior researchers have focused on behavioral uncertainty and resultant moral hazards as one of the key deterrents to the development of successful interorganizational collaboration. Given the importance of such hazards, researchers have suggested that trust can be a powerful lubricant in facilitating such interorganizational relations (Arrow, 1974). While much of prior research has recognized and assessed the beneficial consequences of interorganizational trust by making the interactions more productive or by reducing governance costs (Zaheer *et al.*, 1998; Kale *et al.*, 2000; Dyer and Chu, 2003), this focus has somewhat overshadowed the question, ‘Where does trust come from?’

The remainder of this paper is structured as follows. We first define the notion of trust and outline its multifaceted nature as well as its application to the study of interorganizational relationships. We then highlight the complex interrelationship that exists between prior experience between the partners—or what others have called the ‘shadow of the past’—and various elements of interorganizational trust (Rooks *et al.*, 2000; Arino *et al.*, 2001). In doing so, we adopt a multilevel approach by analyzing the role of the history of interaction at both interpersonal and interorganizational levels. We then focus on the possible boundary conditions that may impact the relationship between the longevity of the relationship and the accumulation of trust. Following the set of unexpected statistical results, we refine the initially proposed relationship between the history of interaction and interorganizational

trust and explore possible non-linearities in this relationship. We conclude by addressing the implications of this study for future research and business practice.

### Defining Trust

In our conceptualization of trust, we explicitly distinguish between dispositional and relational trust. While dispositional trust mainly reflects expectations about the trustworthiness of others in general (e.g., Rotter, 1971; Gurtman, 1992), relational trust pertains to a specific dyadic partner (e.g., McAlister, 1995).<sup>1</sup> In this study we focus our attention on the latter only. Hence, consistent with other studies that have looked at relational trust, we define trust as the expectation that another organization can be relied on to fulfill its obligations, to behave in a predictable manner, and to act and negotiate fairly even when the possibility of opportunism is present (Gulati, 1995a; Zaheer *et al.*, 1998).<sup>2</sup>

In accordance with prior research, we suggest that a complete account of trust should encompass both calculative and non-calculative elements (Shapiro *et al.*, 1992; Rousseau *et al.*, 1998; McEvily *et al.*, 2003; Perrone *et al.*, 2003).<sup>3</sup> The calculative component of trust reflects the focal organization's confidence in its partner's reliability and predictability, confidence that stems from the belief that costly sanctions for the breach of trust will exceed the gains from opportunistic behavior (Dasgupta, 1988; Ring and Van de Ven, 1992);<sup>4</sup> and that the rewards for being trustworthy will be more attractive compared to the gains obtained from self-seeking behavior (Lewicki and Bunker, 1996).

In contrast, the non-calculative component of trust encompasses learning about the partner and its motives as well as the possible identification with him and the internalization of his interests (Shapiro *et al.*, 1992; Lewicki and Bunker, 1996). The increased identification with the partner leads to trust as parties tend to adhere to collectively shared values and create cooperatively aligned goals, ultimately beginning to value collective benefits above any self-gains (Kramer, 1993). Parties to an exchange also develop greater trust in each other by learning about the partners' competence to carry out the task at hand (Barber, 1983; Mayer *et al.*, 1995; Sako and Helper, 1998; Child & Mollering, 2003)<sup>5</sup> as well as about the

benevolence and integrity of each other (Mayer *et al.*, 1995).

While the majority of existing research on trust has been conducted at the interpersonal level, subsequent investigations have looked at the role of trust between organizations (e.g., Gulati, 1995a; Zaheer *et al.*, 1998). The basic premise underlying some of these studies is that aside from (and often in relation to) trust emerging in interpersonal interactions between agents of partnering organizations, organizational members can have a 'collectively held trust orientation toward a partner firm' (Zaheer *et al.*, 1998, p. 143). A part of this collective orientation can certainly be treated as exogenous to the focal relationship: firms often go through a pre-relationship stage to evaluate one another's trustworthiness since a certain degree of trust is needed for a cooperative relationship to commence.<sup>6</sup> Yet, much of the theorizing on interorganizational trust—while frequently not addressing this issue empirically—has viewed trust as an emergent property of a particular relationship.

### Shadow of the Past and Trust

The recognition of the endogenous nature of interorganizational trust has led some scholars to advance numerous propositions that direct experience is often needed to fully evaluate and ensure the willingness of a potential business partner to engage in trustworthy behavior (Arrow, 1974; Sako, 1991). As a result, one of the most important indicators that prior research has used as reflecting interorganizational trust is the length of prior interaction between two firms. The general premise is that prior interaction creates 'familiarity' and in turn enables firms to develop confidence in each other's trustworthiness (Dore, 1983; Gulati, 1995a; Sako and Helper, 1998; Dyer and Chu, 2000; Uzzi and Gillespie, 2002). Such enhanced trustworthiness can manifest, for instance, in the firm's willingness to favor a particular partner over other firms by sticking to a pattern of repeated cooperative exchanges (Gulati, 1995b) and to use looser contracts to structure those agreements (Gulati, 1995a).<sup>7</sup>

Scholars have long suggested that extensive histories of interactions between two firms can provide increased opportunities for the development of trust between them. As parties transact over time, they tend to progress only

gradually from engaging in less risky to more risky business interactions (Blau, 1964). Since trust can be utilized and hence demonstrated and reinforced only in situations of risk and uncertainty, long-lasting histories of interaction provide unparalleled opportunities for building mutually trusting relationships. This, along with other related observations, has led many researchers to conclude that the 'shadow of the past' may indeed play a role in engendering trust (Parkhe, 1993).

There are two components of the shadow of the past between organizations that can impact the level of trust between them. The first has to do with the history of interaction between the firms and its role in propagating both calculative and non-calculative trust. As firms progress through a joint history of interaction, they are likely to develop a more effective system of rewards and penalties and to learn about each other's competence. They similarly are likely to develop stronger identification with their exchange partners and confidence in their integrity. The second reflects the fact that trust can arise not only through interactions between the organizations, but also through the history of interaction between the boundary spanners within those organizations (Zaheer *et al.*, 1998). We will explore both the interorganizational and interpersonal origins of trust in turn in the sections below.

### Organizational History and Trust

*The role of organizational history in the formation of calculative trust.* There are several ways in which the duration of an interorganizational relationship can enhance the calculative component of trust in the relationship. First, considering that contractual safeguards constitute an important mechanism for deterrence, a lasting history of interorganizational interaction is likely to enable parties to configure the most effective safeguards from the point of ensuring trustworthy behavior. This can result from both partners' identifying through experience the potential ways in which trust can be breached in a focal relationship and subsequently installing the requisite contractual safeguards in the right places, thus diminishing temptations for self-seeking behavior in the relationship (Lewicki and Bunker, 1996). For instance, as Mayer and Argyres (2004, p. 395), demonstrate firms are unable to anticipate contractual hazards in advance, but rather 'had to

experience an adverse situation before addressing it in new contracts.' Furthermore, for any safeguard to be effective, parties have to have confidence in the credibility of the punishments it entails (Dasgupta, 1988). It is quite plausible that with a continuing history of business interaction, organizations—while abstaining from outright defection—will probe in more subtle ways the efficacy of the formal deterrents installed. Having observed the capacity of their business partners to detect self-seeking behavior (Shapiro *et al.*, 1992) and the determination to enforce the punishments (Dasgupta, 1988), firms are likely to become more consistent in adhering to more cooperative patterns of behavior. This, in turn, will boost the levels of predictability in business interactions, subsequently enhancing the levels of trust in the relationship (Zaheer *et al.*, 1998).

Second, the calculative component of trust is driven not just by the fear of punishments for untrustworthy behavior, but also by comparing the gains available from self-seeking deviations with the rewards for trustworthy behavior (Lewicki and Bunker, 1996). As organizations accumulate knowledge about each other's business values and motivations over a period of time, they can adjust the incentive system in a way that would make trustworthy behavior an economically preferable option for their business partners (Mayer and Argyres, 2004). Furthermore, as the history of interaction between two firms unfolds over time, the continuity of interaction between the partners fosters an extended business horizon of the relationship or a shadow of the future (Ring and Van de Ven, 1992; Kumar *et al.*, 1998). The extended business horizon can in turn even further increase the expense of sacrificing future exchanges as a result of opportunistic behavior. Relational longevity can thereby enhance the levels of trustworthy behavior in an exchange relationship (Stinchcombe, 1986; Heide and Miner, 1992).

In sum, we propose that a longer history of interaction between firms enables them to install more effective and credible safeguards and a more compelling reward system. This in turn substantially enhances the predictability of and the confidence of exchange partners in each other's behavior. Hence, we submit that the longer the economic interaction between two organizations in an exchange, the higher the levels of calculative trust in the relationship.

*The role of organizational history in the formation of non-calculative trust.* In addition to calculative trust, the history of interorganizational interaction is likely to influence the formation of non-calculative trust. As stated earlier, one way through which non-calculative trust accrues is the accumulation of knowledge about the partner (Shapiro *et al.*, 1992; Gulati, 1995a; Lewicki and Bunker, 1996). The key here is to learn about the likely behavior of the partner to the extent that his behavior can be anticipated (Lewicki and Bunker, 1996). Because actors' proclivity for self-seeking behavior can vary as a function of the relationship (Ghoshal and Moran, 1996), learning where exactly the business partner stands in his attitude and inclination toward untrustworthy behavior in the focal relationship is one way to enhance the partner's predictability (Doz, 1996). Furthermore, in today's technologically sophisticated environments, much of the expectation that a business partner can be relied on to adequately carry out its business obligations essentially rests on the assumptions of its competence and expertise, and not just on its willingness to cooperate (Mayer *et al.*, 1995).

A history of interaction enables firms not only to adjust their expectations with regard to each others' expertise, but also to gain the benefits of enhancing their competence based on the growing experience in the focal interaction (Cyert and March, 1963; Yelle, 1979), thereby increasing the predictability of and the confidence in each other's behavior. Some of these gains in knowledge about the partner's expertise can be attributed to the improved coordination processes among firms, an outcome often resulting directly from the longevity of interaction (Gulati and Singh, 1998).

A durable history of interaction usually also results in the bilateral accumulation of moral obligations that could not be easily specified in the contractual form (Macaulay, 1963; Blau, 1964; Sako, 1992). As organizations—following joint history—develop an extended business horizon and establish a strong normative environment (Heide and John, 1992), it becomes easier for them to establish a reciprocal and equitable exchange of trusting acts (Gulati, 1995a; Dyer, 1997). This further facilitates the willingness of parties to adhere to the norms of trustworthy business behavior, leading to strong positive feedback for their partners who look for manifestations of trustworthiness.

In addition to learning about the partner's expertise and behavioral inclinations, non-calculative trust can stem from the increased identification with the partner. This manifests itself in an increased identification of each partner with the desires and intentions of its other partners (Lewicki and Bunker, 1996) and internalization of those partners' values (Shapiro *et al.*, 1992). Needless to say, while learning about the partner and internalizing his interests can be presented as distinct sources of non-calculative trust, they can be deeply interrelated. Identification is reinforced as actors gain a deeper understanding of each other's worth, while broad and fine-grained knowledge of each other can help identify more bases for co-identification. It has been suggested that the lasting history of interorganizational interaction leads to the increased sentiment for the partner, higher levels of inclusion, and common understanding (Ring and Van de Ven, 1994). This, in turn, enhances the positive feeling for the entity, a condition that curbs the attitude toward the self-seeking behavior in a business relationship (Ghoshal and Moran, 1996). In sum, the history of interaction seems to enable the development of non-calculative trust through partners' full or partial internalization of each other's interests as well as through their accumulation of knowledge about each other's behavioral motives and levels of competence.

Taken together, the discussions above indicate that the duration of an interorganizational relationship leads to higher levels of calculative and non-calculative trust, suggesting the following hypothesis:

#### **Hypothesis 1:**

The longer the history of interaction between the two firms, the higher the level of interorganizational trust in the relationship.

Although interorganizational relationships become institutionalized over time, these relationships are ultimately supported by sets of activities carried by individual organizational members (Ring and Van de Ven, 1994; Rosenkopf *et al.*, 2001). Accordingly, much of the research that focused on interorganizational trust has dutifully acknowledged that feelings of trust ultimately reside within individuals who sustain an interorganizational tie (Gulati, 1995a; Zaheer *et al.*, 1998; Dyer and Chu, 2000). Given this multilevel

nature of trust, a complete view of interorganizational trust must address its antecedents at both interorganizational and interpersonal levels (Rousseau, 1985).

### **Interpersonal (Boundary Spanner) History and Trust**

In considering the role of interpersonal relationships in fostering interorganizational trust, existing research has focused primarily on the role of boundary-spanning organizational actors (Zaheer *et al.*, 1998). Boundary spanners are usually viewed as organizational actors that are closely involved in interorganizational relationships with partner organizations (Friedman and Podolny, 1992; Zaheer *et al.*, 1998). Indeed, because of their frequent contact with partner organizations while representing their own firms, boundary spanners appear to be effectively positioned on the intersection of the two firms and can play an important role in sustaining those relationships. By being responsible for contacting people at the partner organizations, boundary spanners ultimately shape the perceptions and expectations of one organization with respect to the other (Adams, 1976; Staw, 1991; Friedman and Podolny, 1992; Staw and Sutton, 1998). As a result, they have the ability to influence the dynamics of interorganizational cooperative relationships. The role boundary spanners can play in forging and maintaining cooperative organizational ties led us to consider the role of interpersonal history among boundary spanners of partnering organizations in the formation of interorganizational trust.

Given the inherently multilevel nature of interorganizational trust and the critical role that boundary spanners can play in fostering this trust, it is surprising that very little prior research has investigated such micro–macro linkages in the formation of interorganizational trust. In one of the few studies on the subject, Zaheer *et al.* (1998) examined how interpersonal and interorganizational trust can covary, hinting at the possibility of a reciprocal relationship between these constructs. The focus of this study remained on assessing the consequences of these multiple facets of trust. Building on some of these ideas, we examine how interorganizational trust can result from a history of interaction not only between the organizations but also

among the boundary spanners of those organizations. In this section, we begin by highlighting how a history of interaction between boundary spanners may contribute to the development of calculus-based trust.

While the administration of rewards and punishments—the key base of calculative trust—by the occupant of the boundary spanning role may be constrained by the limitations of her role description, it is still plausible to suggest that calculative trust can emerge from the prolonged history of interaction between boundary spanners of partnering organizations. As individuals—following a history of continued business interaction—increasingly form close and deeply embedded ties, violation of trust has been observed to lead to the increased determination to carry out a punishment against the violator (Axelrod, 1984). For instance, in his detailed account of 23 women's better-dress firms in the New York City apparel industry, Uzzi (1997) found that if strong assumptions of trust and cooperation are exploited in embedded ties, vendettas and endless feuds tended to arise. As one interviewee said, 'If you screw a guy [a close interpersonal tie] like that he'll stay in business just long enough to get even' (Uzzi, 1997, p. 59). The calculative reasoning resulting from such knowledge is likely to serve as an effective deterrent, leading to a more cooperative and trusting behavior.

In addition to enhancing calculative trust, direct interpersonal contact is important in accumulating knowledge about the partner organization, one of the prerequisites for the formation of non-calculative trust. In his rich qualitative account of the French engineering firms, Lorenz (1988, pp. 207–208) cites a manager of a firm engaging in subcontracting relationships: "... it is important to visit and talk, to know each other. This is partnership. If we know each other, it is easier to resolve problems and adjust." As organizational boundary spanners progress through a history of interpersonal interaction, they are able to develop more open and seamless communication, facilitating unimpeded learning about each other's motives (Macneil, 1980; Larson, 1992; Zajac and Olsen, 1993). Improved communication coupled with a history of interpersonal interaction makes it more difficult for parties to misconstrue each other's intentions, thus positioning such relationships for more substantive levels of understanding and enabling the parties to sustain their trusting

intentions (Good, 1988; Ring and Van de Ven, 1994; McKnight *et al.*, 1998). This is likely to stimulate a positive self-reinforcing cycle since acts of trust are usually reciprocated (Weber *et al.*, 2004). Hence, we can conclude that the learning component essential for the formation of non-calculative trust emerges out of the extended history of interaction between boundary spanners.

Furthermore, as the boundary spanning agents progress through a long history of interaction, they are more likely to experience amplified identification with each other, which in turn results in the convergence of their values, attitudes, and goals (French and Raven, 1959; Turner, 1975; Turner *et al.*, 1979; Ring and Van de Ven, 1994). Such convergence and partial internalization of the other's goals and values ensure that both parties in the relationship adhere to the same set of mutualistic behavioral principles, fostering closely aligned trustworthy behavior (McFall, 1987; Mayer *et al.*, 1995). Hence, direct interpersonal contact fosters non-calculative trust not only through enhanced learning about the partner, but also through increased identification.

The preceding discussion enumerated how the history of interaction between organizational boundary spanners contributes to the formation of calculative and non-calculative trust. Yet the question remains of whether the generated trust just remains at the interpersonal level or is elevated to the interorganizational level. We propose that there are at least two mechanisms that account for the development of *interorganizational* trust from the history of interaction between organizational boundary spanners. First, the emerging interpersonal trust between boundary spanners is likely to transform with time into organizational trust as the initially informal interpersonal commitments between individuals become routinized and institutionalized at the organizational level as the relationship unfolds (Ring and Van de Ven, 1994; Zaheer *et al.*, 1998; Rosenkopf *et al.*, 2001).

Second, the history of interaction between organizational boundary spanners can foster interorganizational trust directly as those individuals are viewed first and foremost as occupants of constrained organizational roles. As a result, boundary spanners will often invoke *role* attributions rather than *personal* behavioral attributions, such that actions of boundary spanners are viewed

as being driven primarily by specific role descriptions (Guitot, 1977; Ring and Van de Ven, 1994; Perrone *et al.*, 2003). Put differently, the interaction between boundary spanners will reflect to others not just an interpersonal connection, but also an institutionalized role relationship (Gabarro, 1987). Because the institutionalized role descriptions—in which role occupants are extensively socialized through formal training, mentoring relationships, and many informal processes (Louis, 1980; Chatman, 1991)—tend to be determined by the set of values and policies adopted by the firm, individual organizational members are likely to make trust attributions to the partner firm as a collective entity when observing the behavior of its boundary spanners. Altogether, the arguments advanced above enable us to posit the following hypothesis.

#### **Hypothesis 2:**

The longer the history of interaction between organizational boundary spanners, the higher the level of interorganizational trust in the relationship.

The arguments advanced thus far suggest that the longer the history of interorganizational interaction and interpersonal interaction between their boundary spanners, the higher a level of interorganizational trust is engendered. Yet a question remains of whether all organizations are equally likely to benefit from the continuing history of business interaction? More specifically, can there be additional factors in how partners match each other on certain structural and social dimensions that could subsequently enable or constrain organizations in their ability to develop trust from a prolonged history of business interaction? Some prior research hints at this contingent effect of history in promoting trust among economic actors. For instance, research in the sociology of organizations supports the notions that actors in a social system are more likely to trust those who are similar to themselves on some social or structural dimensions, regardless of their prior interactions (Zucker, 1986; Granovetter, 1992; Powell, 1996). There is less evidence, however, on how such factors as similarity on certain attributes may affect the partner's ability to exploit the lasting history of interaction to generate trust. We now explore such possible boundary conditions in detail.

### Organizational Similarity and History of Interaction

A few recent studies have hinted that organizational similarity may be one of the factors affecting the quality of interorganizational interaction (Fey and Beamish, 2001; Child and Mollering, 2003). The long-established underpinnings of the effect of similarity is the presence of homophilous interaction (Lazarsfeld and Merton, 1954). Homophily can be broadly described as the tendency of social actors to interact more with those similar to themselves (McPherson and Smith-Lovin, 1987). The logic underlying this phenomenon is that similarity often triggers attraction, fostering faster and closer bonding (Byrne, 1969; Kale *et al.*, 2000). Conversely, the absence of similarity tends to lead to decreased communication and decreased cohesiveness in the interactor interaction (Pfeffer and O'Reilly, 1987). Can these basic outcomes of similarity influence how successfully exchange partners can translate benefits of joint history into trust? More specifically, we are interested in whether organizational similarity can enhance the returns of organizational and boundary spanner history into trust.

We have previously established that the accumulation of non-calculative trust is related to the history of interorganizational and boundary spanner interaction. The longer the duration of the relationship, the more knowledge partners tend to accumulate about each other's competence and behavioral motives, hence being more comfortable in predicting each other's behavior. They similarly may move toward partial or full internalization of partner's interests, fostering increased predictability of each other's behaviors.

Yet the amount of useful knowledge about each other that exchange parties may accrue as a result of direct experience is likely to be affected by how frequent, seamless, uninterrupted and spontaneous the learning process will come to be. By fostering stronger attraction between exchange partners, organizational similarity is likely to enhance the generation of knowledge-driven trust through common history in several ways. First, by simplifying coordination, organizational similarity positions the firms for a less conflictful interaction, thereby facilitating a more effective information exchange and uninterrupted learning about one another (Pfeffer, 1983; Pelled *et al.*, 1999). Second, the attention of organizational agents freed up due

to improved coordination is likely to enable each party to attend more carefully to learning about behavioral inclinations and motivations as well as the competence of the other (cf., Ocasio, 1997). Finally, similarity and the resulting attraction often facilitate the transmission of tacit knowledge, helping uncover the subtle behavioral tendencies and the unique expertise of each partner (Cross *et al.*, 2001). The less conflictful and better coordinated learning process coupled with the sharing of unique tacit knowledge—all stimulated by the attraction of homophilous exchange partners—enable parties to accumulate more knowledge about each other in the time available for interaction.

Along similar lines, the extent of internalization of partner's interests and the resulting identification-driven trust arising from experience is also likely to be moderated by the extent of similarity and the resulting homophily among the actors. This is likely to occur because the extent to which exchange parties identify with each other and are willing to internalize the other's values and preferences is likely to be impacted by how similar they perceive each other to be (Shapiro *et al.*, 1992). The willingness of actors to sustain a positive self-identity may foster strong identification with the members of their organization (Tajfel *et al.*, 1971; Tajfel, 1982; Tajfel and Turner, 1986). In business firms, such stimuli for identification can be further reinforced by formal and informal socialization processes that make employees converge on a set of common organizational values and social knowledge (Chatman, 1991). Additionally, the quest for the strong and unique self-identity can subsequently stimulate the desire to disassociate from other groups. How strongly different groups can dissociate from other groups is driven by the strength of faultlines, or the number of overlapping differentiating characteristics (Lau and Murnighan, 1998). While organizational boundaries certainly contribute to the divide existing between the two groups, the similarity of the organizations is likely to soften the divide, fostering stronger identification with the business partner.

In contrast, the absence of similarity may impede the emergence of mutual identification by aggravating the ingroup-outgroup social comparison and competitive processes (Lewicki and Bunker, 1996; Jones and George, 1998). As a result, members of the partner organization—



being clearly identified as an outgroup—will be more likely to be viewed as less trustworthy, honest, and cooperative (Brewer and Silver, 1978; Tajfel, 1982). Such perceptions have been shown to translate into less cooperative and less risk-taking behavior (Dawes and Messick, 2000). It is therefore very likely that in such relationships, returns of joint history to partners' identification with each other and the resulting trust can be diminished.

In exchange relationships where levels of similarity stimulate rather than impede co-identification, however, exchange partners are likely to progress faster to forming a shared system of values and a collective identity. As levels of identification appear to be critical for the development of non-calculative trust, the effect of joint history on the formation of trust is likely to be amplified at higher levels of similarity.

The preceding discussion indicates that by triggering the effects of homophily, organizational similarity serves as a critical enabling condition for past history, affecting the efficacy with which exchange partners can convert the advantages of joint history into interorganizational trust. The enabling effect of similarity manifests especially strongly in the formation of non-calculative trust, as organizational similarity both facilitates a more seamless learning about a partner and stronger identification processes over a course of continuing history of interaction. Given our earlier argument that non-calculative trust derives from both interorganizational and interpersonal histories of direct interaction, we predict that the effect of organizational similarity is likely to serve as a boundary condition at both levels of analysis. Hence, we posit the following hypotheses.

**Hypothesis 3:**

Organizational similarity is likely to positively moderate the effect of history of interaction on trust.

**Hypothesis 3a:**

Organizational similarity will enhance the effect of *interorganizational* history on the formation of interorganizational trust.

**Hypothesis 3b:**

Organizational similarity will enhance the effect of *interpersonal (boundary spanner)* history on the formation of interorganizational trust.

## METHODS

The analysis presented in this paper is based on a survey of lead buyers of components that go into the assembly of an automobile at the Ford Motor Company and at the Chrysler Corporation. The unit of analysis for this study is the component, with each survey respondent providing data on a particular component that goes into an automobile, as well as data on two of their largest suppliers for that component. This sampling approach is akin to one used by Monteverde and Teece (1982) in their seminal study of sourcing in the automotive industry. Because the sampling frame consisted of all components that go into the assembly of an automobile, this study offers an advance over those studies that focus on only a subset of exchanges and thus are more restrictive in their sampling. Drawing on previous studies of the automobile sector and discussions with informants in the automobile industry, we used a list of 120 components that go into most automobiles. The comprehensiveness of this list was verified with several executives in the industry and also by comparing it with component lists used by the firms to monitor the quality of their own parts. For each component, senior managers at the two automobile assemblers supplied the names of buyers with oversight for the sourcing of that component. In addition, the controller's office in each company verified the expert status of each survey respondent.

In implementing the survey we took several standard steps to ensure a good response rate, ranging from securing the senior management's endorsement of the project to conducting multiple follow ups with non-respondents (Fowler, 1993). Sixty-four buyers responded from Ford and 67 buyers responded from Chrysler, representing response rates of 53 and 56%, respectively, and a total response rate of 55%. The non-response bias was examined by comparing the characteristics of the components for which responses were received against those for which no response was received for two key component characteristics—type of sourcing and engineering complexity (Monteverde and Teece, 1982)—using the Kolmogorov–Smirnov test (Siegel and Castellan Jr., 1988). No significant differences between the respondents and non-respondents were observed. The respondents provided information on 262 exchange relationships. Elimination of 89 observations with

missing data and 30 observations on components supplied in-house led us to retain 143 observations for the analysis that pertained to 109 unique suppliers.

### Measures

*Trust* is the variable we employed in measuring interorganizational trust. The six items that were used in the construction of the scale for this dimension correspond closely to those used by other scholars investigating interorganizational trust (Zaheer *et al.*, 1998). Each question was answered on a 7-point Likert scale that ranged from 1 for 'strongly disagree' to 7 for 'strongly agree.' To create a set of items measuring *Organizational Similarity*, we first obtained the scores of supplier's and manufacturer's organizations on various dimensions characterizing their respective organizations. These dimensions ranged from the flexibility of organizational culture and bureaucratization of organizational procedure to the clarity of information systems. We then calculated distance scores that reflected differences in manufacturer's and supplier's scores on all these dimensions. Finally, we took the reverse of the distance scores on each measurement dimension to create a set of items measuring organizational similarity.

Exploratory factor analysis, which is the appropriate statistical technique for measuring unobservable theoretical constructs using reflective indicators, was used to create measures of trust and similarity (Kim and Mueller, 1978; Zeller and Carmines, 1980). Common factor analysis followed by the varimax rotation procedure<sup>8</sup> yielded a two-factor solution with Factor 1 reflecting trust and Factor 2 reflecting organizational similarity scales.<sup>9</sup> Factor 1 had an eigenvalue of 3.278, explaining 71.3% of the variance in the data. Factor 2 accounted for 23.6% of the variance with an eigenvalue of 1.086. Taken together, the factors explained about 95% of the variance in the data. All but two items—clarity of information systems and temporal aspect of organizational orientation—loaded uniquely and unequivocally on one of the factors (see Table 1). Since these two items could not differentiate between our two constructs, we dropped them from consideration in scale construction.

To mitigate possible substantive scale variations due to the choice of the rotation procedure and the

scoring technique, as well as to avoid the enforcement of orthogonality on the two constructs given our choice of varimax (orthogonal) rotation procedure, we averaged the items in constructing the scales. Scale reliability checks using Cronbach's alpha yielded coefficients of 0.85 and 0.59 for trust and organizational similarity, respectively. While the latter reliability falls short of the frequently used threshold of 0.7 (Nunnally, 1978), recent research on reliability measures explicitly stated that this should not be considered a benchmark every scale has to pass (Pedhazur and Schmelkin, 1991; John and Benet-Martinez, 2000). Instead, as John and Benet-Martinez (2000, p. 346) state, 'the goal in measurement is to maximize validity rather than internal consistency, and issues of meaning and conceptualization play a key role in all decisions about measurement.' Contingent on the validity of construct conceptualization, reliabilities of as low as 0.5 can be viewed as acceptable (Pedhazur and Schmelkin, 1991). In addition, as the classical test theory suggests, losses in reliability of constructs only make it harder to capture significant relationships between constructs, hence making our analysis more conservative while leaving the likelihood of our making type I error intact (Lord and Novick, 1968; Cohen and Cohen, 1975).<sup>10</sup>

We measured the history of organizational interaction using two variables. *Organizational History* was measured as the logged number of years the automotive manufacturing organization has been engaged in the procurement of any parts or components from the supplier organization. *Component History*, in turn, was measured as the logged number of years the supplier has been supplying the focal component to the manufacturing organization. Finally, to capture the history of interaction between boundary spanners we used the variable *Boundary Spanner History*, which reflected the logged number of months the manufacturer purchasing agent was in direct contact with the supplier selling representative. Given a natural turnover among boundary spanners and considering that our sample is characterized by rather long histories of interorganizational interaction, we essentially focused on the most recent dyads of manufacturer and supplier agents. We thus measured the duration of history of interaction between boundary spanners that were assigned to the focal interorganizational relationship at the time the survey was administered.

**Table 1. Common Factor Analysis Loadings for Trust and Dissimilarity Constructs, Varimax Rotation**

	Factor 1	Factor 2
Items 1–6 are measured using 7-point Likert scale with options ranging from 1 ‘Strongly disagree’ to 7 ‘Strongly agree.’		
1 You trust this supplier to treat you fairly	<b>0.402</b>	–0.126
2 You trust that confidential/proprietary information shared with this supplier will be kept strictly confidential	<b>0.345</b>	–0.078
3 The supplier has always been even handed in its negotiation with your company	<b>0.573</b>	–0.147
4 This supplier may use opportunities that arise to profit at your expense (reversed)	<b>0.703</b>	0.013
5 Based on past experience, you cannot with complete confidence rely on this supplier to keep promises made to you (reversed)	<b>0.794</b>	0.003
6 You are hesitant to transact with this supplier when specifications are vague (reversed)	<b>0.552</b>	–0.131
The items reflect the absolute value of the similarity in manufacturer’s and supplier’s scores on each of the following characteristics: <sup>a</sup>		
7 Flexibility of organizational culture <sup>b</sup>	–0.094	<b>0.543</b>
8 Clarity of information systems <sup>c</sup>	–0.046	0.151
9 Temporal aspect of organizational orientation <sup>d</sup>	–0.288	0.136
10 Formality of organizational style <sup>e</sup>	–0.213	<b>0.494</b>
11 Bureaucratization of organizational procedures <sup>f</sup>	0.200	<b>0.500</b>
Eigenvalue	3.278	1.086
Proportion of variance explained	0.713	0.236
Cronbach’s alpha for trust construct = 0.85		
Cronbach’s alpha for similarity construct = 0.59		

<sup>a</sup>To obtain the measure of similarity we used the reverse of the difference in the manufacturer’s and supplier’s scores on those characteristics.

<sup>b</sup>Measured using 7-point Likert scale with options ranging from 1 ‘Rigid culture’ to 7 ‘Flexible culture.’

<sup>c</sup>Measured using 7-point Likert scale with options ranging from 1 ‘Clear information systems’ to 7 ‘Complicated information systems.’

<sup>d</sup>Measured using 7-point Likert scale with options ranging from 1 ‘Long-term orientation’ to 7 ‘Short-term orientation.’

<sup>e</sup>Measured using 7-point Likert scale with options ranging from 1 ‘Informal’ to 7 ‘Formal.’

<sup>f</sup>Measured using 7-point Likert scale with options ranging from 1 ‘Bureaucratic’ to 7 ‘Streamlined.’

### Controls

We used a comprehensive set of control variables to ensure the robustness of our results. We first controlled the factors associated with the characteristics of the exchanged component, namely, its levels of *Criticality*, *Complexity*, and *Standardization*. All three of these dimensions of the component reflect the need for coordination across organizational boundaries and hence may influence the existing levels of trust. Criticality and complexity were measured on a 7-point Likert scale with respondents indicating their level of agreement with the statements that the focal component was: (1) critical to the functioning of the automobile and (2) complex in relation to other components. Standardization was measured as a categorical variable which took the value of 1 if the component was used in one trim line within a model; 2, if it was used in one model only; 3, if it was used in one platform only; 4, if it was used in more than one platform, and 5, if it was used company wide.

We further controlled for the availability of alternative supply relationships, following a simple intuition that if partners are forced into an exchange relationship by exogenous pressures resulting from the non-availability of alternative partners, trust dynamics are likely to be affected. The measure of *Alternative Supply* was recorded based on a 7-point Likert scale with respondents indicating their agreement with the statement that there are satisfactory alternate sources of short-term supply available for this commodity. Given that prior research has established that trust can be heavily affected by the expected duration of the current relationship (Heide and Miner, 1992; Perrone *et al.*, 2003), we controlled for this effect with a variable that captures the *Shadow of the Future*. Respondents indicated on a 7-point Likert scale their agreement with the statement that the manufacturer has made an informal commitment to purchase from the focal supplier in the future. Likert scale options in the cases of alternative supply and shadow of the future ranged from 1 ‘strongly disagree’ to 7 ‘strongly agree.’

It has been shown that trust may accumulate as a result of a reputational lock-in resulting from the concern over a possible reputational loss following self-serving behavior (Dasgupta, 1988). A highly interconnected or closed network facilitates a quick spillover of reputational information, hence enabling a close monitoring of actors' behavior as well as positions actors to develop a set of collective sanctions that can further guide behavior (Coleman, 1988; Greif, 1989; Coleman, 1990). We thus controlled for the degree of contact between the focal supplier and other suppliers to the manufacturer with the measure of *Closure*. Respondents indicated on a 7-point Likert scale their agreement with the statement that the supplier works with other organizations who are also suppliers to the manufacturer. In addition, a rich stream of research on embeddedness suggested that trust may be derived from the multilayered or multiplex structure of relationships (Uzzi, 1999; Uzzi and Gillespie, 2002). Hence, we controlled for the degree of Multiplexity of the relationship by asking respondents to indicate on a 7-point Likert scale their agreement with the statement that the manufacturer and supplier were tied through additional business ties. For both closure and multiplexity, Likert scale options ranged from 1 'strongly disagree' to 7 'strongly agree.'

A *Governance Mode* variable that distinguishes between external strategic alliances and market-like arrangements was used to capture the unique effects of the governance structure of the relationship with the external supplier on interorganizational trust. An 'external strategic alliance' denotes a governance arrangement with an outside supplier that is characterized by relatively long-term and open-ended contracts. In contrast, an 'external market-like arrangement' is defined here as a relationship with an outside supplier that could be described in terms of relatively short-term contracts and competitive bidding. The dummy variable took on the value of 0 if the exchange was organized as an external market arrangement and 1 if it was organized as an external strategic alliance. Finally, to control for assembler-specific effects, we included a dummy variable *Firm* which took on the value of 1 for Chrysler with Ford being a default category.

## RESULTS

Table 2 reports the means, standard deviations, and correlations of the measures. The two measures designed to capture the history of organizational interaction, namely Organizational History and Component History, were relatively highly correlated ( $r = 0.683$ ,  $p < 0.001$ ). Similarly, a high correlation was observed between their respective interaction terms with Organizational Similarity ( $r = 0.755$ ,  $p < 0.001$ ). Hence, in order to monitor the potential effects of multicollinearity, we computed variance inflation factors (Cohen *et al.*, 2003). Calculated for each independent variable in every regression equation, these values are used to test whether the amount of variance in any given independent variable that is explained by other independent variables is reasonably low. The variance inflation factor values did not exceed 4.0, which is below the recommended threshold limit of 10 (Chatterjee and Price, 1991; Cohen *et al.*, 2003).

We used a set of stepwise ordinary least square (OLS) regression models to test the hypotheses (see Table 3). A close examination of the data revealed that certain suppliers supplied more than one component to the same manufacturer, thus leading to the non-independence of observations.<sup>11</sup> To relax the OLS stipulation of observation independence, the reported results reflect robust standard errors that were calculated using a clustering correction for suppliers. This adjustment allowed us to assume that the distribution of  $(x_i, e_i)$  is not independent and to develop a new set of standard error estimates robust to the deviation from the standard case (Rogers, 1993).

Among the control variables, several appear to be related to levels of interorganizational trust. The positive significant coefficients for component complexity and component criticality indicate that these features of exchanged parts may be associated with higher levels of trust with suppliers providing those components. It is worth noting, however, that these results appear to be unstable as these coefficients become insignificant in some model specifications. Our baseline model (Model 1, Table 3) indicates support for the closure or reputational lock-in argument, suggesting that organizations situated in closed networks may indeed be better positioned for generating and sustaining trust. Yet, the effect of closure becomes insignificant in later models once the effects of history are introduced. It is possible that the

**Table 2. Correlations (all values above 0.17 in absolute terms are significant at  $p < 0.05$ ; all values above 0.211 in absolute terms are significant at  $p < 0.01$ )**

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12
1 Trust	4.900	1.011	—											
2 Complexity	4.657	1.645	0.097	—										
3 Criticality	4.860	1.912	0.227	0.253	—									
4 Standardization	3.559	1.411	-0.103	0.101	0.115	—								
5 Alternative supply	3.475	1.834	0.297	-0.345	-0.067	-0.104	—							
6 Governance mode	0.636	0.483	0.007	0.099	-0.178	-0.123	0.046	—						
7 Shadow of the future	5.566	1.577	0.044	0.056	-0.256	0.100	0.038	0.106	—					
8 Closure	5.364	1.387	0.229	-0.038	0.155	0.018	0.067	0.146	0.076	—				
9 Multiplexity	3.329	1.514	-0.028	0.218	-0.101	-0.087	-0.125	0.107	0.072	0.074	—			
10 Firm	0.497	0.502	0.024	0.011	-0.037	0.311	0.010	-0.005	0.301	0.103	0.015	—		
11 Organizational history	2.823	0.740	-0.075	0.058	0.121	0.001	0.010	0.124	-0.082	-0.073	0.056	0.047	—	
12 Component history	2.416	0.766	-0.154	-0.110	-0.033	-0.001	0.099	0.159	-0.101	-0.155	0.066	-0.100	0.683	—
13 Boundary spanner history	3.167	0.756	-0.113	0.118	-0.152	0.116	-0.139	0.156	0.217	0.022	0.023	0.294	0.081	0.186
14 Organizational similarity	0.000	1.000	0.227	0.030	0.236	-0.026	-0.063	0.067	-0.009	0.097	0.009	0.219	0.089	-0.097
15 Organizational history × Organizational similarity	0.065	0.789	0.098	-0.002	0.191	-0.155	-0.050	0.114	-0.059	0.019	0.131	0.024	-0.101	-0.210
16 Component history × Organizational similarity	-0.074	0.835	0.104	-0.009	0.171	-0.071	-0.078	0.113	-0.002	0.119	0.080	0.113	-0.205	-0.141
17 Boundary spanner history × Organizational similarity	0.003	0.689	0.139	0.006	-0.013	-0.038	-0.020	-0.066	-0.113	0.085	0.075	-0.080	-0.139	0.075
13 Boundary spanner history			13	14	15	16	17							
14 Organizational similarity			—	—	—	—	—							
15 Organizational history × Organizational similarity			0.004	—	—	—	—							
16 Component history × Organizational similarity			-0.119	0.210	—	—	—							
17 Boundary spanner history × Organizational similarity			0.063	0.253	0.755	—	—							
			0.045	-0.191	-0.103	-0.008	—							

**Table 3. OLS Regression Results Examining the Effects of Organizational History and Boundary Spanner History on Interorganizational Trust, Robust standard errors**

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	2.680** (3.43)	3.037*** (3.66)	3.140*** (3.70)	3.091** (3.50)	3.152** (3.57)	3.152** (3.54)	3.114** (3.55)
Complexity	0.121* (2.30)	0.121* (2.29)	0.109 (1.95)	0.113 (1.95)	0.128* (2.18)	0.128* (2.17)	0.116* (2.13)
Criticality	0.105* (2.27)	0.113* (2.38)	0.111* (2.38)	0.108* (2.28)	0.077 (1.58)	0.076 (1.61)	0.081 (1.78)
Standardization	-0.010 (1.64)	-0.100 (1.63)	-0.092 (1.47)	-0.092 (1.47)	-0.074 (1.18)	-0.074 (1.19)	-0.067 (1.10)
Alternative supply	0.190*** (4.37)	0.191*** (4.42)	0.195*** (4.59)	0.191*** (4.31)	0.201*** (4.54)	0.201*** (4.55)	0.203*** (4.85)
Governance mode	-0.081 (0.45)	-0.047 (0.25)	-0.022 (0.12)	-0.014 (0.08)	-0.076 (0.41)	-0.077 (0.41)	-0.024 (0.13)
Shadow of the future	0.045 (0.65)	0.040 (0.58)	0.047 (0.68)	0.049 (0.70)	0.047 (0.66)	0.048 (0.67)	0.069 (0.92)
Closure	0.136* (2.16)	0.127 (1.98)	0.116 (1.82)	0.118 (1.83)	0.121 (1.92)	0.118 (1.84)	0.096 (1.53)
Multiplexity	-0.035 (0.60)	-0.032 (0.54)	-0.025 (0.45)	-0.028 (0.50)	-0.030 (0.56)	-0.029 (0.55)	-0.035 (0.73)
Firm	0.059 (0.33)	0.076 (0.42)	0.033 (0.17)	0.061 (0.32)	-0.034 (0.18)	-0.039 (0.20)	-0.051 (0.28)
Organizational history		-0.129 (1.13)	-0.012 (0.08)	-0.022 (0.15)	-0.070 (0.46)	-0.056 (0.39)	0.034 (0.25)
Component history			-0.165 (1.34)	-0.143 (1.16)	-0.083 (0.63)	-0.092 (0.75)	-0.186 (1.48)
Boundary spanner history				-0.062 (0.52)	-0.058 (0.45)	-0.062 (0.50)	-0.069 (0.63)
Organizational similarity					0.194* (2.25)	0.191* (2.25)	0.227** (2.83)
Organizational history × Organizational similarity					0.026 (0.21)		
Component history × Organizational similarity						0.037 (0.36)	
Boundary spanner history × Organizational similarity							0.301* (2.15)
R-squared	0.229	0.237	0.244	0.246	0.278	0.278	0.313
F	4.29***	4.17***	5.80***	5.61***	4.92***	4.97***	6.43***
Df	(9, 108)	(10, 108)	(11, 108)	(12, 108)	(14, 108)	(14, 108)	(14, 108)

*N* = 143 (number of clusters = 109); absolute values of *t*-statistics in parentheses. \*\*\**p* < 0.001; \*\**p* < 0.01; \**p* < 0.05; two-tailed tests.

supplier's formation of ties with other suppliers that are working with the focal manufacturer can be predicated on the history of interaction with the manufacturer. The only control variable that appears to have a remarkably strong and consistent effect on interorganizational trust is the availability of potential suppliers for the component. It appears that higher levels of competition in the market for short-term supply make organizations develop higher levels of trust toward each other. This finding is consistent with much of the theorizing on organizational embeddedness that suggests that it is precisely in the presence of strong competitive pressures that organizations realize the superior value of ties imbued with high levels of trust (e.g., Uzzi, 1997). In contrast, in

situations where the focal actor is locked in with the only available exchange relationship, its partner has all the impetus for exploiting the effectively more dependent party, thus debilitating the climate required for trust formation (Gulati and Sytch, forthcoming). Other controls did not appear to have a consistent and significant impact on trust.<sup>12</sup>

To test Hypothesis 1, which predicted a positive relationship between the history of organizational interaction and interorganizational trust, we first introduced organizational history into Model 2 (see Table 3). We then added component history, a variable that was also designed to capture the effects of interorganizational history by looking at the history between the firms for that specific

component (see Model 3, Table 3). Neither of the variables in either model displayed a significant beta coefficient, thus refuting Hypothesis 1.<sup>13</sup>

We introduced boundary spanner history into Model 4 (see Table 3) to test Hypothesis 2 which predicted a positive association between the length of interaction of organizational boundary spanners and interorganizational trust. The test rendered an insignificant beta coefficient, thus rejecting Hypothesis 2.

Models 5–6 (see Table 3) were designed to test Hypothesis 3a that argued for a positive moderating influence of organizational similarity on the history of interorganizational interaction. While the direct effect of organizational similarity on trust (not predicted) was positive and significant, its interaction term with neither organizational history (Model 5) nor component history (Model 6) reached the desired level of significance. Hence, Hypothesis 3a was not supported.

Hypothesis 3b predicted that organizational similarity will enhance the effect of the interpersonal history between organizational boundary spanners on the accumulation of interorganizational trust. Consistent with our prediction, the interaction term of boundary spanner history and organizational similarity was positive and significant ( $b = 0.301$ ,  $p < 0.05$ ), hence indicating support for our argument (see Model 7, Table 3).<sup>14</sup>

In sum, we find no support for the hypothesized direct effects of organizational and boundary spanner (interpersonal) history of interaction on the levels of interorganizational trust. The predicted moderating effect of organizational similarity receives partial support: the enhancing role of organizational similarity seems to have an effect only at the level of boundary spanners but not at the level of organizations. Needless to say, this pattern of results—in particular, the absence of support for the direct effects of history on trust—was quite surprising. The results looked especially puzzling given the strong theoretical support for this argument. In order to understand the relationship between history and trust in greater depth, we felt compelled to revisit our initial theoretical argument and investigate this link further.

### Is There a Period of Ambivalence in the Generation of Trust?

Some studies on the formation of trust suggest that there may be a time lag before a plausible

inference with regard to the trustworthiness of a partner can be made. Shapiro *et al.* (1992), for instance, argue that the development of knowledge-based trust entails a courtship process which entails due diligence in determining the trustworthiness of a potential partner *prior* to engaging in a relationship. However, there are limited opportunities for conducting due diligence without having the benefit of first-hand experience. Once in a direct relationship, however, actors often need some time before they can render a more or less conclusive judgment with regard to the trustworthiness of a partner. With regard to the formation of calculative trust, for example, evidence suggests that while organizations do eventually learn how to install more effective contractual safeguards and how to anticipate potentially unfavorable contingencies, their initial attempts at this are rarely successful (Mayer and Argyres, 2004). It also takes time for each exchange partner to fully assess the expertise of the other, thus ensuring that they are capable of carrying out the entrusted task properly (Mayer *et al.*, 1995). Similarly, while deterrents to self-seeking behavior can be installed from the outset of a relationship, only after a certain period of time can an actor be reasonably sure in the determination of its partner to enforce punishments for deviations from the norms of trustworthy behavior (Dasgupta, 1988).

It is possible that the formation of trust in interorganizational exchanges is preceded by a period when the relational norms are formed and mutual commitments are tested for their credibility (Macneil, 1983; Zajac and Olsen, 1993). In other words, organizations and boundary spanners may first have to form explicit or implicit agreements on what constitutes trustworthy behavior in the focal relationship (Mayer and Argyres, 2004). For instance, while both parties may agree on the disclosure of relevant information as an element of trustworthy behavior, it takes time to define which kind of information are viewed as relevant by both parties to the exchange. Both parties also have to collect a reasonable amount of first-hand evidence that would enable them to view their partner as either trustworthy or untrustworthy. Indeed, as Lorenz's (1988, p. 207) study suggests, relationships in these early stages operate in the mode of 'conscious testing process.'

That a considerable amount of time is needed to form a conclusive judgment regarding the part-

ner's trustworthiness is further supported by the observation that firms only gradually progress to higher levels of risk taking in the relationship (Blau, 1964, 1994). Since it is only in situations of risk and uncertainty that trust can be demonstrated in a compelling manner, early stages in the relationship can provide limited opportunities for the development of trust. In sum, it appears that before reaping trust returns to the joint history of interaction, parties may go through a period of ambivalence, which is characterized by limited opportunities for trust development. These limitations stem from the interrelated reasons that (a) firms have and give their partners paltry opportunities for showing trustworthiness because of high-risk aversion in early relational stages and (b) firms possess minimal evidence about the trustworthiness of exchange partners, which makes it difficult to form initial judgments with regard to the trustworthiness or untrustworthiness of their exchanger counterparts.

The possibility of such lagged dynamics in the development of trust led us to investigate the possibility of a non-linear relationship between the duration of a business interaction and the formation of trust. It appears that there could be a certain threshold in the relationship prior to which the formation of trust is negligible, if not non-existent. A natural question then has to do with the specific temporal point in the relationship at which the conditions for trust formation are finally set in place, enabling parties to convert the benefits of direct interaction into the stock of trust. The evidence on the location of such a temporal point in prior research is highly inconclusive and mixed. For instance, managers interviewed in Lorenz's study (1988, p. 207) indicated that assessing the trustworthiness of a subcontractor required a considerable amount of time in direct interaction, ranging from a year and a number of contracts to two or even three years. Some other investigations found that trust increased sharply after a threshold of five years in direct interaction (Burt and Knez, 1996). Due to mixed evidence on the likely threshold period before trust starts to develop in partnerships, we refrain from predicting a specific threshold after which trust can form, while formalizing our arguments in the following hypotheses.

#### **Hypothesis 4:**

There is a non-linear relationship between history of interaction and the formation of interorganiza-

tional trust such that direct experience leads to interorganizational trust only after a certain temporal breakpoint.

#### **Hypothesis 4a:**

There is a non-linear relationship between *organizational* history and the formation of interorganizational trust such that direct organizational experience leads to interorganizational trust only after a certain temporal breakpoint.

#### **Hypothesis 4b:**

There is a non-linear relationship between *interpersonal* (boundary spanner) history and the formation of interorganizational trust such that direct interpersonal experience leads to interorganizational trust only after a certain temporal breakpoint.

## **RESULTS**

We used a linear spline model specification to investigate the presence of the hypothesized threshold effect (Ertel and Fowlkes, 1976; Smith, 1979). The specification of this model can be expressed as follows:

$$y = b_0 + b_1 \log(t) + b_2 \log(t/t_{bp})d_{bp} + b_3x_3 + \dots + b_nx_n + e,$$

where  $b_0$  is a constant term;  $t$  is the length of organizational or boundary spanner history, measured in years or months, respectively;  $t_{bp}$  is the temporal breakpoint (change point) or the knot, after which we expect to observe the effect of history on trust;  $d_{bp}$  is the dummy variable that takes on the value of 1 if  $t > t_{bp}$  and 0 if otherwise;  $(b_3x_3, \dots, b_nx_n)$  are other independent variables including controls; and  $e$  is the error term. In other words, this specification allows the regression line to 'break' or change its slope upon reaching the prespecified breakpoint  $t_{bp}$ .

As stated earlier, our analysis in this stage was largely exploratory. We used increments of one year for component and organizational history and searched within the time window spanning five years since the inception of the relationship. Similarly, we looked within a five-year window to capture a possible threshold in the joint history of organizational boundary spanners. Since the



duration of interaction between boundary spanners was measured in months, we initially used six-month increments in selecting the temporal breakpoints. We planned to engage in one-month increment proximate search to determine the exact temporal breakpoint, should the conceptual specification of the model be supported.

We failed to locate a temporal breakpoint for the history of organizational interaction: no threshold effects were found for organizational and component history measures. Hence, Hypothesis 4a was not supported. Yet our results presented in Model 2 (Table 5) clearly indicate a presence of the temporal breakpoint for the history of interaction between boundary spanners, suggesting support for Hypothesis 4b. This breakpoint was found to occur at  $t_{bp} = 25$  months or just after two years of joint history (see Table 4 for additional correlations). Once the duration of a relationship crosses this threshold, history of interaction becomes highly and significantly related to trust ( $b = 0.766$ ,  $p < 0.05$ ).<sup>15</sup> Consistent with our earlier results obtained for a non-truncated variable of boundary spanner history, organizational similarity was found to positively moderate the effect of history of interaction after the temporal breakpoint as well (Model 3, Table 5).

In sum, we find some support for the predicted non-linear relationship between joint history and trust. While our results do not allow us to establish the presence of a temporal breakpoint for the history of organizational interaction, we find strong support for the hypothesized threshold effect in the history of interaction between boundary spanners. Once the duration of their interaction crosses the point of just over two years, it shows a strong and significant association with trust.

## DISCUSSION

This paper provides a systematic analysis of the antecedents of trust that has been most frequently suggested by prior research, namely past history of interaction. Viewing trust as a multilevel phenomenon, deriving from organizational- as well as interpersonal-level processes, we argued that trust can emerge from the history of interorganizational interaction as well as from the history of interpersonal interaction between organizational boundary spanners. One of the key contributions of this work lies in unveiling the non-linear relationship between past history and interorganizational trust. This non-linear relationship reflects

**Table 4. Additional Correlations**

	Boundary spanner history post $t = 25$ months	Boundary spanner history post $t = 25$ months $\times$ Organizational similarity
Mean	0.280	0.004
S.D.	0.429	0.371
Trust	-0.014	0.245
Complexity	0.211	0.062
Criticality	-0.074	0.121
Standardization	-0.190	-0.092
Alternative supply	0.085	-0.043
Governance mode	0.286	0.106
Shadow of the future	0.097	-0.129
Closure	0.016	0.178
Multiplexity	0.055	0.048
Firm	0.145	0.040
Organizational history	0.161	0.104
Component history	0.155	0.037
Boundary spanner history	0.821	0.017
Organizational similarity	0.009	0.496
Organizational history $\times$ Organizational similarity	0.030	0.033
Component history $\times$ Organizational similarity	0.087	0.080
Boundary spanner history $\times$ Organizational similarity	0.013	0.546
Boundary spanner history post $t = 25$ months	—	0.022
Boundary spanner history post $t = 25$ months $\times$ Organizational similarity	0.0223	—

**Table 5. OLS Regression Results Examining the *Non-Linear* Effects of Boundary Spanner History on Interorganizational Trust, Robust standard errors**

Variables	Model 1	Model 2	Model 3
Constant	3.091** (3.50)	2.954** (3.30)	3.093** (3.47)
Complexity	0.113 (1.95)	0.103 (1.78)	0.105 (1.84)
Criticality	0.108* (2.28)	0.105* (2.23)	0.082 (1.78)
Standardization	-0.092 (1.47)	-0.101 (1.65)	-0.077 (1.26)
Alternative supply	0.191*** (4.31)	0.198*** (4.49)	0.208*** (4.92)
Governance mode	-0.014 (0.08)	-0.110 (0.59)	-0.175 (0.94)
Shadow of the future	0.049 (0.70)	0.060 (0.88)	0.077 (1.05)
Closure	0.118 (1.83)	0.122 (1.95)	0.100 (1.62)
Multiplexity	-0.028 (0.50)	-0.031 (0.57)	-0.032 (0.65)
Firm	0.061 (0.32)	0.140 (0.72)	0.054 (0.28)
Organizational history	-0.022 (0.15)	-0.097 (0.64)	-0.143 (0.93)
Component history	-0.143 (1.16)	-0.080 (0.64)	-0.053 (0.41)
Boundary spanner history	-0.062 (0.52)	-0.431 (1.94)	-0.454 (1.88)
Boundary spanner history post $t = 25$ months		0.766* (2.48)	0.814* (2.61)
Organizational similarity			0.101 (1.04)
Boundary spanner history post $t = 25$ months $\times$ Organizational similarity			0.489* (2.45)
<i>R</i> -squared	0.246	0.274	0.329
<i>F</i>	5.61***	5.93***	7.71***
Df	(12, 108)	(13, 108)	(15, 108)

$N = 143$  (number of clusters = 109); absolute values of  $t$ -statistics are in parentheses. \*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ ; two-tailed tests.

the existence of a particular temporal breakpoint, after which the history of interaction begins to translate into stocks of trust. We further demonstrate that different exchange dyads may reap returns to joint history with different degrees of success. Our paper highlights the enabling condition of organizational similarity: we show that organizations that are more similar to each other can derive greater stocks of trust from joint history compared to more heterogeneous sets of partners.

While our initial argument implied a positive linear relationship between history and trust, we did not find this relationship for organizational or interpersonal history. While some of this may be explained by our unique context—supplier–buyer relationships in the automotive industry—nonetheless, this set of surprising empirical results

made us revisit our initial theoretical propositions. We subsequently proposed that the effects of history on trust may not necessarily occur in a linear fashion; more specifically, we suggested that parties to an exchange relationship may initially observe a period of ambivalence, after which they may begin to convert the benefits of joint history into trust. With our empirical assessment, we uncovered a threshold effect in the relationship between past history of boundary spanners and trust. This threshold effect showed that the joint history of boundary spanners indeed contributes to the formation of interorganizational trust, but only after they have spent just over two years in direct contact.<sup>16</sup>

The discovery of a temporal breakpoint in the effect of history of interaction on trust is consistent with the literature on duration dependence that

has demonstrated that it is precisely in the early stages of an interorganizational relationship (up to two to four years since its inception) that the hazard rate of a relationship dissolution increases (Levinthal and Fichman, 1988; Fichman and Levinthal, 1991). Our findings suggest that one of the possible explanations for this effect—also referred to as the liability of adolescence—is that exchange partners extensively probe the trustworthiness of each other in the early stages of interaction, exiting the relationship should the experience prove to be dissatisfactory.

We were unable to locate a similar temporal breakpoint for organizational history. This null result can possibly be explained by the peculiarities of our sample. As stated earlier, our exploratory search for the temporal breakpoint spanned the period of five years since the inception of the relationship. Yet, only nine dyads in our sample have been engaged in an exchange of any component (organizational history) for fewer than 5 years. Furthermore, only 25 dyads had a history for the focal component (component history) for fewer than 5 years. Hence, it is very likely that we may simply lack the requisite variation in our sample to capture the temporal breakpoint within the pre-specified 5-year time interval.

However, if so many of our observations are past the potential temporal breakpoint, a reasonable question is why is not there a significant *linear* relationship between history and trust? Indeed, our previous argument suggests that once past this point, history translates into trust in a linear fashion. A closer look at our sample reveals that the exchange relationships in our sample display *dramatically long and durable histories of interaction*. For example, an interorganizational relationship where companies have been exchanging some component for 10 years falls only in the 20th percentile in our sample. In general, however, interorganizational relationships develop more intensively in the early stages and then stabilize (e.g., Mayer, 2005). A reasonable inference from this is that once the history of interaction continues for such a long period of time, the role of common history in trust formation becomes more equivocal than at early stages. More specifically, it is plausible to suggest diminishing returns to history in the formation of trust: intuitively, we would not expect partners that have transacted for 20 years to have twice as much trust as those who have transacted for 10 years.

Furthermore, once past a distant threshold, common history may become irrelevant to trust formation as the dynamics of co-identification and the exchange of substantive knowledge about the behavioral inclinations of a partner, its reward preferences and its sensitivity to the existing contractual penalty system are likely to subside. We thus view our null result with respect to the role of interorganizational history in the formation of trust as very important: it adds complexity to the relationship between history and trust and discourages research from the unqualified use of history as an antecedent of trust.<sup>17</sup> This null effect does not necessarily contradict other studies that have postulated that prior organizational history generates interorganizational trust since we have focused on a specific context—buyer–supplier relationships in the automotive industry—that has not been considered before in most of these prior accounts.<sup>18</sup>

While our discussion thus far has focused exclusively on the unidirectional effect of joint history on trust, it is plausible to suggest the existence of a reciprocal causal relationship between duration of interaction and trust. It is possible that the level of trust in the relationship is likely to influence whether parties elect to continue their contractual ties at some point and hence may partially account for the duration of the relationship. We checked for the possibility of this causal link by running an additional set of analyses where we used trust as an independent variable to explain variations in the duration of organizational history, component history, and manufacturer agent history. Trust was not found to influence the duration of interaction on either dimension, hence providing no support for a possible bidirectional causal relationship.

Our results also provide partial support for the enabling role of organizational similarity on the relationship between history and trust. While we find no interactive effect of similarity and organizational history on trust, our results provide compelling evidence that similarity positively moderates the effects of the history of interaction between organizational boundary spanners on the level of interorganizational trust. Considering our early discussion on some of the possible reasons for the lack of a direct relationship between organizational history and trust, the lack of moderating influence of similarity here is hardly surprising: as exchange partners pass the stage of

co-identification and learning about each other, the enabling condition of homophilous interaction is likely to become less important. In contrast to these long and durable interorganizational histories, when analyzing the sample of much shorter histories of interaction between boundary spanners (most of which do not exceed six years in duration), we show not only the moderating impact of organizational similarity on the relationship between interpersonal history and trust, but also that this moderating effect remains just as strong after the temporal breakpoint.

In sum, we extend the realm of the research on trust in organization studies and strategy by demonstrating precisely how prior experience is likely to shape the extent of trust between firms. In doing so, we contribute to the existing research on trust in the following ways: first, we explicate the complex non-linear relationship that exists between past history of interaction and trust. Our results indicate that prior to common history of interaction leading to interorganizational trust, actors tend to go through an ambivalence period in which trust formation is virtually non-existent.

Second, notwithstanding the intricacies brought about by non-linearity, we highlight the temporal instability of the link between common history and trust by showing that this relationship may disappear altogether once the substantive exchange of knowledge and the identification processes have subsided after a long common history.

Finally, in uncovering the enabling effects of organizational similarity, we show that the role of relational characteristics in the formation of trust can be fully understood only if they are considered in tandem with the characteristics of partnering organizations.

Taken together, these findings have important theoretical implications for research on trust and cooperation in interorganizational relations (Ring and Van de Ven, 1992; Zajac and Olsen, 1993; Ring and Van de Ven, 1994; Gulati, 1995a; Zaheer *et al.*, 1998; Gulati and Sytch, forthcoming). The general pattern of our results suggests that the dynamics of formation of trust in interorganizational relationships appears to depend heavily on the relationships' temporal stage. Our results suggest that in order to understand more fully the formation of trust, scholars may need to take a more dynamic stance and decompose those relationships into distinct temporal phases (*cf.*, Levinthal and Fichman, 1988; Fichman and

Levinthal, 1991), subsequently identifying their respective impact on the development of trust.

Our finding with respect to the enhancing role of organizational similarity in allowing history to shape trust indicates that exchange partners can systematically differ in their ability to translate the benefits of joint history into trust. It thus encourages a more nuanced analysis that would combine the characteristics of a relationship with those of exchange partners into an integrative view of interorganizational trust.

### Limitations and Future Research

One limitation of this study arises from its use of cross-sectional data. A longitudinal analysis could be instrumental not only in examining more fully the causal relationships between the explored constructs but also in applying a dynamic, time-sensitive lens advocated in this paper. More specifically, a longitudinal research design would enable researchers to carry out a more stringent examination of a potential bidirectional relationship between joint history and trust. It would similarly position scholars to garner the much needed insight into the nature of the quality of the relationship at each temporal phase.

While our cross-sectional investigation did not allow us to explore the quality of the exchange relationships over time, future research can profit from a careful consideration of the content of those relationships as well as its variation over time as it is likely to serve as a critical boundary condition for the role of history in the formation of trust.

Another limitation of this investigation lies in considering the accumulation of trust along its calculative and non-calculative dimensions at only a conceptual level. This distinction opens a very promising avenue for future research: there is a pressing need to disentangle empirically the formation of trust along its calculative and non-calculative dimensions. A more refined empirical investigation along these lines will allow for the possibility that the accumulation of trust along these dimensions may not be fully explained by a simple additive relationship. For instance, some evidence suggests that the formation of calculative trust may undermine the development of non-calculative trust, as the attribution of trustworthy behavior to contractual and other situational constraints can prevent actors from building

confidence in the integrity and benevolence of the partner (Malhotra and Murnighan, 2002). Furthermore, we argued that accumulation of calculative trust over a period of joint interaction may stem from the enhanced ability of the firm to detect the opportunities and subsequently safeguard against the potential self-seeking advances of its partner. While outright defection is likely to lead to the dissolution of a relationship, it is rather the subtle probing by the partner of possible loopholes for opportunistic behavior that will enable the firm to install the requisite safeguards in the right places and subsequently boost its calculative trust in the partner. In other words, a partner's minor violations of trust can in fact position the firm for developing a strong contractual foundation for calculative trust. Yet, while benefiting the calculative component of trust, these self-seeking advances by the partner are quite likely to diminish the formation of knowledge-based and identification-based forms of trust. Research that would contrast and compare accumulation of trust across these distinct dimensions and across different temporal stages of a relationship would add enormous insight to the current state of knowledge on interorganizational trust.

We encourage future research to dig deeper to gain insights into the nature of interorganizational relationships in order to explicate so that more dimensions of interorganizational attributes that can potentially give rise to or impede the formation of interorganizational trust. For instance, the nuanced decomposition of interdependence in interorganizational relations into dependence asymmetry (the difference in partners' dependencies on each other in the dyad) and joint dependence (the sum of partner's dependencies on each other in the dyad) indicates that the dimension of joint dependence can lead to the formation of more embedded ties (Gulati and Sytch, forthcoming). It may be reasonable to expect that in relationships characterized by higher joint dependence, the common history of interaction can have more far-reaching implications for the emergence of trust.

Finally, while we tried to mitigate the shortcomings of our single-informant-per-dyad survey design with a careful construction of survey items and thorough pretesting, the benefits of obtaining data on trust in interorganizational relationships not just from multiple informants representing a single organization (Kumar *et al.*, 1993), but

rather from informants representing both sides of a dyadic relationship are obvious. This methodological advance would enable scholars to overcome the limiting assumption of existing research that views trust as a symmetric property of a relationship and explore the potential asymmetries in perceptions of trust. Yet, as recent reviews of the literature show, this still remains an insurmountable methodological challenge for much of research on interorganizational relationships (Gulati, 1998).

## CONCLUSION

By shifting the current research focus from the benefits generated by interorganizational trust to understanding where trust comes from, this study highlighted the relationship that exists between history of interaction between firms and trust between them. It demonstrated that while familiarity through prior interactions does generate trust, there is a complex non-linear relationship between history of interaction and trust: only when exchange partners pass the initial ambivalence period do they begin to convert the benefits of joint history into the stock of trust. The efficacy with which exchange partners are able to utilize the joint history of interaction for the formation of trust is partially determined by levels of similarity in the relationship and the resulting mutual attraction. Further adding to the complexity of the link between history and trust, this study provides some suggestive evidence that this link may disappear altogether once parties find themselves in very long and durable relationships. While inviting future research to take a close look at the benefits of temporal decomposition of interorganizational relationships to unveil the time-sensitive patterns of trust formation, we also encourage scholars to exercise caution when using joint history as an antecedent of trust.

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## NOTES

1. Similarly, some researchers have elected to focus on the dispositional feature of trustworthiness, which

- was presumed to remain fixed across different relationships (e.g., Barney and Hansen, 1994). This remains an important issue but is not the focus of our study.
2. Given that our methodology allowed us to obtain a measure of trust from only one side of a dyadic tie, we have to assume that relational trust is essentially a symmetrical property of a relationship. In other words, we have to rule out the possibilities of severely misaligned perceptions of trust, where trust would be emanating from one partner, but not the other. We discuss the prospects of collecting and exploring dyadic measures of trust in our section on directions for future research.
  3. In contrast to the research that recognized and explored the concept of calculative trust, some scholars have argued that calculative trust should not be considered a form of trust except for in situations of personal trust where no monitoring takes place (Williamson, 1993). Resolving this debate is beyond the scope of this paper.
  4. This subelement of calculative trust is sometimes referred to as deterrence-based trust (Gulati, 1995a; Rousseau *et al.*, 1998).
  5. Some refer to this component of non-calculative trust as competence trust (e.g., Sako and Helper, 1998).
  6. One of the ways to do that, for instance, is to investigate the reputation of a partner for being trustworthy (Klein *et al.*, 1978; Greif, 1989; Dollinger *et al.*, 1997).
  7. Some of this research has used the number of discrete prior contracts between two organizations, as opposed to duration of interaction, as an indicator of trust (e.g., Gulati, 1995a); our investigation in this paper is more in line with studies that focused on the temporal duration of relationships as an antecedent of trust (Dyer and Chu, 2000).
  8. Loadings resulting from the varimax orthogonal rotation procedure were verified using the promax form of oblique rotation (Conway and Huffcutt, 2003). No significant differences in factor loadings were observed.
  9. We used factor loadings of 0.300 and higher for classifying items across factors (Zeller and Carmines, 1980).
  10. This claim is contingent on the random error variance assumption (e.g., Lord and Novick, 1968).
  11. While our sample included 143 observations, it comprised only 109 unique suppliers.
  12. Because our pairs of exchange partners could self-select into different organizational modes, i.e., alliances and market exchanges, our coefficient estimates could be biased due to unobservable factors that affect both the choice of an organizational mode and the level of trust in the relationship. To verify the accuracy of our empirical results, we employed a two-stage switching regression model with the inverse Mills ratio correction, which is considered as an appropriate remedy for the self-selection problems we could be encountering in our sample (Heckman, 1979; Hamilton and Nickerson, 2003). In the first stage, we used an ordered probit model to predict the choice of a governance mode, utilizing component volume of exchange as an instrument (Gulati *et al.*, 2005). Using the obtained ordered probit estimates, we then calculated inverse Mills ratios for each of the governance modes and used them in the second stage OLS regressions segregated by governance modes. Results from this analysis appear consistent with those of regular OLS and thus are not reported here.
  13. We also introduced the variables of organizational and component history separately in the regression models. This variation in the testing procedure rendered no discernable differences in the pattern of results.
  14. We also acknowledge the possibility that exchange relationships may come into existence or self-select based on the degree of similarity between the manufacturer and the supplier organizations. In our study, we cannot apply the conventional selection correction (Heckman, 1979) because we lack information on the characteristics of the exchange relationships that failed to materialize. We can, however, treat the unique suppliers for Chrysler, or suppliers that *have been* selected by Chrysler and *have not been* selected by Ford, as reflecting the non-selected relationships for Ford and vice versa (we lack the statistical power to examine the selection issue at the level of a purchasing unit). We aggregated the scores on the three dimensions used to measure organizational similarity (flexibility of organizational culture, formality of organizational style, and bureaucratization of organizational procedures) for purchasing units and found significant differences between Ford and Chrysler ( $t = 3.08$ ,  $p < 0.01$ ). We then used the mean values for each firm to construct firm-level (rather than purchasing unit-level used in other analyses) measures of organizational similarity with supplier organizations and introduced them into logit models where the dependent variable reflected the choice of unique suppliers for either Ford or Chrysler. No significant effect for organizational similarity was observed. We can therefore conclude that self-selection on organizational similarity does not pose a serious threat to the validity of our analyses.
  15. Strictly speaking, this coefficient denotes the additional increment in the effect of history on trust after the temporal breakpoint. In our case, however, because the beta for  $\log(t)$  is zero, this coefficient effectively reflects the overall effect of the history of interaction between boundary spanners on inter-organizational trust.
  16. We also tried the more conventional non-linear model specifications by introducing the squared terms of organizational and boundary spanner history in both logged and non-logged forms. Each of those models produced a substantially worse fit than the proposed breakpoint specification.
  17. We acknowledge a potential empirical limitation leading to this result, namely the low statistical

power resulting in a failure to reject the false null hypothesis. The power tests based on varying hypothetical values of effect sizes at  $\alpha = 0.05$  that used both the baseline and the complete model specifications revealed that we would need a sample size of 327–562 cases to detect the significant relationship at the 0.10 probability of making Type II error. Our current sample of 143 cases results in the statistical power of under 0.50 (Cohen *et al.*, 2003).

18. This result may also be the result of our use of duration of prior interaction as a measure of organizational history. Some other studies have used the cumulative number of contracts between the parties as an indicator of prior history (e.g., Gulati, 1995a) and perhaps such measure would have shed further light onto this phenomenon. Unfortunately, our unique setting and our data did not allow us to explore this facet of experience in further detail.

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