



**Risky Trust:  
How Multi-entity Teams  
Develop Trust in a High Risk  
Endeavor**

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**RISKY TRUST:**

**HOW MULTI-ENTITY TEAMS DEVELOP TRUST IN A HIGH RISK ENDEAVOR**

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**ABSTRACT**

This paper explicates the challenge of *risky trust*, which we define as trust that exists between parties vulnerable to high economic, legal or reputational risks at individual or organizational levels. Drawing from analyses of data collected in a grounded case study of a multi-million dollar construction project, we identify dimensions, antecedents and behavioral consequences of risky trust. Undertaken in the United States construction industry, a context known for its lack of trust, our study offers insights for trust repair.

## INTRODUCTION

Launching a space shuttle, producing a big budget movie, managing the response to a high-impact disaster, providing medical care in the battlefield, and delivering a large engineering and construction project are all examples of complex, risky work. Each requires multiple areas of expertise and multiple organizations for its completion. Teams that engage in such work face high stakes, especially in legal, financial, and reputational terms, and the role of trust in such contexts is undeniable. Yet, *how* members of teams engaged in complex and risky endeavor *learn* to trust each other, particularly in industry contexts in which trust has been severely damaged or is characteristically low, remains relatively understudied.

This paper explicates the challenge of *risky trust*, which we define as inter-personal and/or inter-organizational trust that exists between parties vulnerable to high economic, legal or reputational risks. Risky trust does not imply blind trust that all will go well without conscious effort, attention or a functioning process, nor does it mean eschewing documentation or controls. Rather, risky trust involves forays into novel collaborative agreements for the execution of high-risk endeavors, where much can go wrong and guarantees of success cannot be provided at the outset. Although trust is never risk free, risky trust refers to trust in a setting where risk is both unusually high and multi-dimensional.

To examine the interpersonal and inter-organizational trust relationships that can (but do not automatically) occur when risks are demonstrably high, we undertook a grounded case study of a multi-million dollar construction project. The multi-entity project team – comprised of individuals from different organizations, each with unique expertise – was trying out a radical new type of collaboration intended to improve how the design and construction industry worked.

Team members faced objectively high financial, legal and reputational risks. For the collaboration to work, involved parties had to learn to trust each other. Yet, in the broader industry context, trust had been severely undermined for decades.

Drawing from analyses of qualitative data from this study, we propose a model that describes how teams engaged in high-risk endeavors build trust. We identify three dimensions of risky trust, pertaining to intentions, competence, and process. We also identify antecedents of risky trust, including leader *framing*, team member *interactional expertise*, *procedural transparency*, and *procedural impartiality*. Lastly, we propose that risky trust fosters behaviors that improve team performance, including monitoring behaviors (*authorized peer pressure* and *continuous co-validation*) and learning behaviors (*swift corrective action* and *adaptive problem solving*). Given that our study was undertaken in a context known for its lack of trust, we discuss implications of our model for trust repair.

## **MISTRUST AND RISK IN THE UNITED STATES CONSTRUCTION INDUSTRY**

In 2008, the trillion-dollar U.S. construction industry (U.S. Department of Commerce 2009) provided jobs to over seven million people (Bureau of Labor Statistics 2008). A major contributor to country's GDP and employment, the industry had been replete with budget overruns and schedule delays amounting to billions of dollars in waste (LePatner 2007). Although estimates vary, the industry's total annual waste was frequently estimated to be as high as \$300 billion (Bernstein 2010, Simpson 2009), due to factors such as rework on site, uncoordinated drawings, and process inefficiencies. Fragmentation along professional, occupational and organizational lines, reinforced by legal boundaries, created both process inefficiencies and

pervasive mistrust in the industry. Given that over half of America's total building stock was projected to be built between 2000 and 2030 (Nelson 2004), developing a better process and restoring trust in this industry was of vital importance to society.

### **Institutionalized Mistrust**

By the early 21<sup>st</sup> century, changes in firm specialization, industry legal and regulatory environment (such as the rise of U.S. tort laws during 1970s, an increased involvement of lawyers in design and construction contracts, and more stringent building codes) had contributed to well-etched legal and knowledge boundaries in the U.S. construction industry; these boundaries separated roles and responsibilities of the multiple stakeholders in any good size construction project.

As firms pushed for more specialization and for transfer of legal accountability to other parties to minimize their own risk exposure, the process behind the design and construction of buildings became profoundly fragmented. For instance within design, engineering, and construction, several new experts had emerged (such as waterproofing consultants) that specialized and worked independently on discrete building aspects; these discrete parts came together later with no guarantees of optimal alignment with the building as a whole. As this fragmented model began to shape contracts throughout the industry (Puddicombe 1997, Gibbons 2007), behaviors such as avoidance and transfer of risk, finger pointing, and hoarding of information intensified. Barry LePatner, a prominent construction attorney, noted in his book *Broken Buildings, Busted Budgets: How to Fix America's Trillion-Dollar Construction Industry*, "Many of those involved in the construction industry—from the lowliest laborer to the loftiest lawyer—are finger pointers. It isn't my fault but his or her fault" (LePatner 2007, p. 134). According to LePatner, the U.S.

construction industry lacks real intermediaries, “shuns risk at all levels and hordes information on its day-to-day operations” (LePatner 2007 p. 5). Despite the potential for dramatic process improvement, these behaviors continue to hinder collaboration in this industry, and frequently lead to building designs that fall outside project parameters and to projects that run into schedule delays and budget over-runs. Together these dynamics contribute to billions of dollars of annual waste in the industry.

### **High Risk at Multiple Interfaces**

The nature of the work in this industry as it is practiced today introduces high levels of uncertainty and unpredictability. Every building project presents a unique process – one that brings together different expertise and different organizations in a customized design with unique constraints and goals. The stakeholders in a building project (owners, architects, engineers, contractors and others) thus face multiple (short-term and long-term) risks. Long after a building is completed, individuals and companies remain liable for problems, ranging from a crack in a sidewalk that causes someone to fall to collapse of a room ceiling (LePatner 2007).

Each party experiences considerable risk. Owners assume manifold risks, including securing government approval for land acquisition and building permits, making decisions about project scope despite incomplete cost and schedule information, securing long term financing and ensuring site safety. In hiring an architect and contractor, they hope for a good match between them, but as architect-contractor teams rarely work together in multiple projects, the forging of a new relationship presents another source of risk.<sup>1</sup> Architects are liable for errors and omissions in

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<sup>1</sup> Passage of time between projects is often accompanied by changes in taste and finances, such that many owners choose a different team for different projects. Further, as owners run into cost overruns and schedule delays in their current projects they prefer to hire a new team for their next project (LePatner 2007).

a large number of drawings, and many buy professional liability insurance worth millions of dollars. Architects also assume the risk of ensuring the design is in compliance with building codes. Contractors bear financial risks related to delivering buildings within schedule and budget, based on what they could reasonably infer from unique attributes and combinations in architects' drawings. Each party's simultaneous involvement in multiple projects compounds these risks at both the personal and organizational levels (LePatner 2007). In short, people in this setting face very high risk, and trust is neither automatic nor easy to build.

### **RISKY TRUST**

Trust is not a homogenous or monolithic phenomenon. Dimensions and consequences of trust vary with context, an observation that has implications for how trust is built and sustained. In general, trust refers to a person's confidence in the reliability of another person with respect to certain outcomes (Giddens 1990). Analogously, inter-organizational trust refers to shared confidence held by members of an organization that another organization's people, processes and systems are reliable with respect to certain outcomes (Sydow 2000, Zaheer et al. 1998). While most definitions of trust include risk (e.g., Jones and George 1998, Kramer 1999, Mayer et al. 1995, Meyerson et al. 1996);<sup>2</sup> *risky trust* exists when the magnitude of risk is significantly objectively higher than in most work or life settings.

We first distinguish risky trust from rational, relational and common cognition models of trust, by showing how these prior conceptions connect to but do not fully capture the phenomenon we

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<sup>2</sup> Risk is a recurrent aspect in definitions of trust. In their highly cited work on trust, Roger Mayer, James Davis and F. David Schoorman define trust as one party's willingness to be vulnerable to another party's actions due to the expectation that the trusted party will perform the action desired by the truster regardless of truster's ability to monitor the other party (Mayer et al. 1995). Trust has also been defined as confidence between parties "that they will not be harmed or put at risk by the actions of the other party" (Jones and George 1998, pp. 531-32).

study. First, under the *rational model of trust*, individuals make a calculative choice to trust others on a basis of expected loss minimization and expected benefit maximization (Kramer 1999). Risky trust, however, occurs in situations where cost-benefit calculus cannot be easily conducted because risks are too high, too intertwined, and too uncertain.

Second, the *relational model of trust* proposes that rationality alone cannot explain people's choice to trust (Kramer and Tyler 1996). Trust is thus a social orientation towards people and society, and trusting another may be more an affective than calculative choice (Kramer 1999); further, the choice to trust sometimes reflects a moral obligation (Kramer and Goldman 1995), such that people can engage in trusting behavior irrespective of others' behavior (Brann and Foddy 1988, Messick et al. 1983). Also described as non-instrumental bases of trust, this perspective encompasses research on how identification with a group enables human cooperation in social dilemmas (Brewer and Kramer 1986; Kramer and Brewer 1984, 1986; Dawes and Thaler 1988 in Kramer and Tyler 1996). Non-instrumental bases of trust (such as identification with a new group) are particularly challenging to develop for teams engaged in high-risk endeavors because of the large consequences of being wrong in the decision to trust. Moreover, in the context we examine, distinct and enduring memberships (professional, occupational, and organizational) precede the temporary shared team membership, contributing to the challenge. Additionally, a clear cost-benefit analysis cannot be undertaken because of the interdependent nature of high risk work. Hence, neither the rational nor the relational model of trust enables us to fully capture the phenomenon of risky trust.

Third, the *common-cognition model of trust* presents shared expectations about interpersonal interactions and social order as primary enablers of trust (Simmel 1978, Blau 1967, Garfinkel



1967, Zucker 1986, Luhmann 1979, Barber 1983, Giddens 1984 in Lane 2000). When teams include people from many professions, occupations and organizations, cognitive congruence is neither a given nor easy to achieve. Different backgrounds of team members often bring a multiplicity of interpretive frames and mental models; these differences complicate knowledge sharing (Bechky 2003). And, when people perceive a collective task differently, conflicts arise due to incompatible interpretations (Cronin and Weingart 2007). Risky trust occurs in situations where shared expectations about interpersonal interactions and social order are neither automatic nor easy to build.

### **Elements of Risky Trust**

Trust in any context entails risk, however, three elements of risky trust distinguish the concept from other trust experiences – breadth and depth of risk, combined personal and procedural nature of the work, and level of analysis.

***Breadth and depth of risk.*** High-risk, complex tasks often present multiple forms of interdependence at the same time (namely pooled, sequential and reciprocal), creating uncertainty and giving rise to financial, legal, or reputational risk for involved parties. Pooled interdependence allows people to bring individually produced contributions together with minimal adjustment; sequential interdependence requires attention to sequence because people engage in tasks that use inputs from and/or produce outputs for others, each affecting what the next person in the sequence does. Reciprocal interdependence requires people to actively coordinate decisions and adjust their actions to produce an outcome (Thompson 1967). When pooled, sequential and reciprocal interdependencies co-exist, uncertainty and risk are particularly high, and trust may be challenging to achieve. Further, under these interdependencies, people

incorporate work that is outside their knowledge and organizational boundaries and thereby assume risks that lie beyond their expertise and responsibility. Our focus is on trust that occurs in settings with some or all of these inherent task-based risks that are higher than what people face in many work or life settings.

***Combined personal and procedural focus.*** In general, trust pertains to the trustworthiness of other people. In risky contexts, trust takes an additional form; in addition to trusting the intentions and competence of others, having a procedure in place that people trust matters greatly. When risks are objectively high (at personal and organizational levels) trust in others' intentions and competence may be insufficient to build confidence in joint action. In risky endeavors, therefore, when team members trust that a procedure in place mitigates risk and enables task achievement, they are better able to monitor each others' actions and to align their own actions with the requirements of the shared process.

It can be argued that such a process is in fact a product of ongoing human relationships. Just as organizations are comprised of the ongoing organizing that transpires from sequences of events (Weick 1979), the process we describe is actually an ongoing process-*ing* that transpires through interpersonal interactions. *Trust in process* during a risky engagement means trust in the rules and procedures that govern team life and serve as behavioral and task guidelines for team members.

***Level of analysis.*** Using risky trust as a lens, we hope to offer insights into the dynamics of trust among entities at individual and organizational levels of analysis in a high-risk setting. In our study of the dynamics of risky trust, we cross levels of analysis (Hackman 2003) to examine links (i) between the broader context and individual behavior, (ii) among individuals (iii) and

between individual behavior and organizational outcomes (Coleman 1986, 1990). We thus investigate mechanisms that foster and reinforce trust in risky contexts at the individual, interpersonal, and organizational level of analysis. To illustrate, when we examine trust between an architect and a contractor, we not only study the individual attributes that may influence interpersonal interactions, but we also examine the group context (such as the contractual agreement between team members) and the organizational context (such as level of trust in industry) that are likely to influence the dynamics of risky trust in work settings.

## METHODS

Given the lack of prior research on how people in multi-entity teams learn to trust in a context of extreme risks, we undertook a grounded method case study (Charmaz 2007). Our method fit our goal of generating a suggestive new theory (Edmondson and McManus 2007) that invites future work across a breadth of issues.

### Research Setting

We studied a team comprised of people from multiple organizations and with diverse expertise engaged in the delivery of a multi-million dollar building. Team members faced individual and firm-specific risk due to the high stakes, complex, interdependent nature of the task, as depicted in Figure 1.

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Insert Figure 1 here

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The team we studied included members from three areas of expertise (architecture, engineering and construction) and from three major organizations – along with several subcontracting organizations. These individuals and firms converged to undertake an ambitious building retrofit

project. The team experimented with a new model of risk management and inter-organizational collaboration called Integrated Project Delivery (IPD). Each party entered the arrangement viewing IPD as very risky, due both to its novelty and to the terms of its legal agreement.

At the time, fewer than twenty (completed and ongoing) projects in North America had engaged in IPD (Bernstein 2010), which introduced substantially unconventional legal and governance structures. In IPD, all parties signed a single contract and agreed to share all project risks, to jointly manage the project and make decisions through unanimous consensus, and not to sue each other except in cases of clear negligence. By contract, architect and contractor firms agreed to tie their profit to the achievement of project outcomes (related to cost, schedule, design quality, and sustainability targets) thereby assuming risk for what lies within as well as outside their primary expertise and individual and organizational control.

*Data sources.* We collected data using in-depth, semi-structured group and individual interviews with ten people from the owner, contractor, architecture, engineering and interior planning organizations. We conducted a total of twenty interviews, including two (three-person) group interviews, ten individual interviews and eight (individual) follow-up interviews. Interviewees' level of expertise, experience and position within their organization and within the project team varied. Interviewees were recruited to participate in the study through electronic mail.

Participation in this study was voluntary and interviewees were ensured confidentiality. No team member declined participation. Although we did not request group interviews, interviewees suggested that this would be a fruitful way for researchers to learn about the project; thereby we added the group format of interviewing to our study. All participants in group interviews were also interviewed individually.

Interviews varied in length from 60 to 180 minutes. After the first round of interviews, several follow up interviews were conducted with team members to clarify and/or probe deeper into emerging themes. This cycle was repeated until conceptual saturation was reached. In addition to interviews, we examined project documents such as presentations and meeting minutes. We conducted a site visit to develop a visual understanding of various building elements that interviewees had described. (Weiss 1994)

We also collected data about the technical features and performance of the project, and we attended presentations by other practitioners to understand the state of the U.S. construction industry. These additional data sources allowed us to understand the degree to which IPD was widely understood to be novel, risky, and even heretical by some in the industry. We then helped organize a conference on IPD as a new delivery process at Harvard University in October 2009, bringing together about 100 professionals including architects, contractors, subcontractors, owners, academics, and researchers to debate multiple perspectives.

*Data analyses.* Although we had not set out to study trust, trust emerged as a salient and recurrent theme in the data. Even before formal analyses, the prevalence of references to trust in interviews was impossible to miss. Interviewees from all organizations mentioned trust and behaviors related to trust. Many spoke at length, unprompted, about the role of trust in the success of this project and provided detailed comparative anecdotes of the dynamics of trust on this project and others they have engaged in. Many interviewees had decades of work experience in the industry and their insights helped us situate this project in the broader context of pervasive industry-wide mistrust.

All interviews were tape recorded and transcribed within 48 hours of an interview. Notes were

also taken on interview transcripts to record interviewer's observations and interviewees' offer to share follow-up material (Emerson et al 1995). Presentations attended were also tape recorded and transcribed within 48 hours. Documents such as project meeting minutes and team presentations were used to triangulate findings from interview transcripts.

Data collection and analyses were done in parallel. A one page summary of an interview or presentation was generated immediately after transcription. A one page summary was also developed for all project documents we received. In summaries we identified key findings and made tentative, preliminary conclusions. Recurring themes were recorded in a separate document; they were classified into categories such as 'trust' 'leadership' 'process' and used to sort existing and incoming data. *In vivo* codes (taken from transcripts) were identified if they occurred frequently across interviews and presentations or accurately captured a nuanced experience by a team member. Transcripts, data, summaries and recurring themes were used to form clarifying questions for follow-up interviews. This analytic process was repeated for follow-up interviews. When we ceased to identify new ideas and themes, we reflected upon emerging higher-order themes (Baker 1999, Biernacki and Waldorf 1981, Charmaz 2007, Miles and Huberman 1994, Strauss and Corbin 1990). We culled our findings related to trust and sorted them into antecedents, dimensions, and consequences of risky trust.

## **FINDINGS**

### **Overview of the Case Study**

To work under IPD conditions, which placed individuals from different organizations in a single team from project start to completion, team members were co-located near the site. From the first day of the project, they worked together to solve problems of design, engineering, and

construction. As neither the individuals nor the organizations had worked together in the past, no prior relationship existed to mitigate the anxiety of engaging in the novel approach. In addition, the complexity of the task and the financial, legal and reputational stakes made the arrangement seem extremely risky to all interviewed. Moreover, the team faced aggressive targets in budget, deadline, aesthetics, and sustainability making their task especially challenging.

Facing these challenges, and working within a broader context of industry-wide mistrust, the project nonetheless became an unqualified success. Its outcomes were assessed both by an independent project evaluator (with expert knowledge of the construction industry) and by the client, a global software company. The building was completed ahead of schedule and within budget despite scope addition of over 30 percent. The new building also met very high standards of sustainability. The evaluator gave the building the highest possible rating on aesthetics and functionality and commended the team on their ability to orchestrate seamless transitions between the design and construction aspects of the building. Finally, the building won two industry wide awards for excellence in design and construction.

Not surprisingly, team members reported a positive experience; every team member (unprompted) commented on how much he or she learned during this project and noted a desire to work again as part of this team. The client was extremely pleased by the result, as well as by how the team adapted to emerging challenges. To illustrate, during the project, the client, not entirely satisfied with design progress, challenged the team to design and construct an additional, unique architectural feature. Facing tight cost and schedule constraints, the team nonetheless delivered the additional feature through a combination of cross-expertise/inter-organizational

collaboration, proficient use of technology, and integrative thinking that satisfied multiple project constraints.

### **Dimensions of Trust in a Risky Context**

We identified three dimensions of trust in this context: purposive, cognitive, and procedural.

Team members described all three dimensions, depicted in Figure 2, as critical for success. Both people and procedure were implicated in establishing trust in risky contexts.

The purposive dimension refers to team members' trust in each other's intentions. Interviewees frequently expressed this as a feeling that everyone wanted the best for the project. A contractor on the team commented, "I got a great sense that everyone wanted to share the burden of this job... We had a lot of trust among us that we all cared for this job." An architect similarly noted, "We had this meeting after the kick-off where we talked about our personal goals for this project... and you could feel how people cared holistically about the project."

One could argue that if the intentions of another person are known, there is no room for trust because a key element of trust is willingness to be vulnerable to another despite uncertainty about another's intentions (Kramer 1999, Mayer et al. 1995). Consistent with this, our interview data showed trust in others' intentions was not based on any guarantees but on a feeling, one that people understood could turn out to be misleading. We distinguish this "feeling" from affect-based trust, which arises from an emotional bond with another person (see for example, Chen and Chen 2004, Drolet and Morris 2000, Lewis and Weigert 1985a, McAllister 1995, Rempel et al. 1985) and is measured through responses to questions such as how comfortable a person feels to approach the other party and discuss their personal difficulties, hopes and dreams (see for example McAllister 1995, Chua et al. 2009). The purposive dimension of trust we observed, was



not related to comfort sharing personal issues with one another but rather to feelings about others' intentions with respect to the project goals.

Consistent with literature on cognition-based trust (see for example, Chua et al. 2009, Lewis and Weigert 1985b, McAllister 1995) the cognitive dimension refers to team members' trust in each others' competence or work. It represents people's level of confidence that their own and others' capabilities, training and experience are adequate for accomplishing team goals. A senior team member noted, "We selected individuals for this team who were very comfortable with each other's capability especially for the technology we were using. It was very important that we trusted our self and each other on being able to actually do this because this was a very fast paced project." A junior team member explained, "We had meetings with people from all firms...in a big way we had trust and team wide understanding that we can pull this off."

The procedural dimension refers to trusting the team process—trusting that team rules and procedures were appropriate for the risky, complex task. As a senior project architect observed,

A lot of field architects [who oversee design implementation during construction] are conditioned to not speak and not offer their opinion. And when they find a problem they try to deflect it right away. But in this project you step up and do what is right for the project because you trust that is going to make it right for you in the end through the process in place.

Another added,

What was different about this project is the way process was set up. We debated but we knew we had to reach a resolution because the process enforced that. Conventional process is very adversarial and leaving a meeting with no resolution is perfectly normal. But here we had to and we did reach resolution because we trusted that the process enforced that for our good.

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Insert Figure 2 here

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### **Antecedents of Trust in a Risky Context**

Our analyses surfaced several factors that could facilitate individuals' trust in each other's intentions and competence, as well as trust in the team process, despite the risks and industry context of mistrust. These factors include how leaders framed the process with respect to the task, team members' interactional expertise, procedural transparency, and procedural impartiality. Because our research was exploratory, our intention here is to motivate future research to test and extend these ideas. Moreover, the antecedents we identify here may be idiosyncratic to this study, which several informants described as unique in its approach.

*Leaders' framing.* Consistent with literature on the role of framing on people's decision making (for example, Brewer and Kramer 1986, Edmondson 2003), the data suggested that leaders from all three organizations played a role in enabling trust through explicit framing. Specifically, project leaders—senior professionals from the architecture, contractor and client organizations—sought to foster shared understanding of the rules of project governance and desired team behaviors, so as to interrupt taken-for-granted beliefs and routines that reinforced mistrust. Notably, project leaders explicitly invited and authorized team members to question any behaviors they observed that might undermine trust.

In accordance with research that demonstrates the enduring influence of what happens at group launch on subsequent group life (Ginnett 1993), early actions by leaders helped signal the salience of trust for the success of this project team. First, leaders of all three organizations engaged in a tripartite contractual agreement. The contract served as a structural representation of participating parties' shared understanding with respect to the formal needs of their project, sending an official signal of what Creed and Miles (1996) call managerial philosophy and predisposition towards trust. It also codified some new rules of governance to guide behavior.

A crucial form of leadership was shown by the firm that sought the building (the “client”) through an RFP (request for proposal). The client organization indicated that the winning firms would have to sign an Integrated Project Delivery (IPD) contract. As noted above, the IPD contract posed a radical shift from business-as-usual in the industry. With a shared compensation system, joint accountability, and joint management for the collective control of resources, IPD was different. The client believed that such dramatic change was necessary to provoke different beliefs and behavior. As one executive from the owner’s firm put it, “A comprehensive shift through a new model for management, compensation, and risk was needed to clearly signal that this was a departure from usual.” Additionally, the owner required the design and construction firms to compete together, rather than individually, for the project. Partnership during the competition phase allowed all firms a chance to test their compatibility and mutual areas of competence.

After the IPD contract was signed, leaders from the three firms worked together to frame the project as one that needed trust and collaboration. They tried to alleviate concerns by reassuring team members of the value of this new process. In sum, teamwork was not about building good relationships for their own sake but rather was a means to accomplishing ambitious project goals. One team member put it concisely.

We decided that it was worth it to do it differently because we understood the value added. They [project leaders] talked a lot about why this process works better and that really helped us in trusting this new process.

Through discussion and training, the leaders reinforced their initial framing by explaining desired behaviors under the new rules of governance. Expected behaviors were explained in practical terms, such as “just pick up the phone and ask if you have a question,” or “validate your

conclusions continuously.” Team members recalled that they were encouraged to focus on collective responsibility for achieving overall project outcomes. One reported, “Right from the start we were told to focus on a detailed description of outcomes such as cost and schedule. We didn’t talk much about roles in the beginning. It was nothing like a diffusive process where you create distinct roles and responsibilities and adversarial territories.” Various activities, such as a kick-off meeting to set the stage, a meeting to identify personal project goals, and training on how to conduct efficient meetings, were organized by project leaders to help the new process work and to help team members build confidence in their ability to deliver the project. In addition to behavioral guidelines, artifacts such as a large sign on the project site “We all work for the project,” visually reinforced the project framing.

However, even with overt verbal and visual discourse to promote trust, the pull to revert to more traditional ways of executing tasks was strong. Many described learning about and adapting to this new process as not automatic. A team member noted, “In the beginning we had moments where you say okay we don’t usually do it like that. And then someone would remind you that this wasn’t business as usual.”

***Interactional expertise.*** In our data analyses, trust in others’ competence – seemingly a function of members’ ability to assess others’ competence and thereby confer upon them technical legitimacy – surfaced as an important issue for team members. Those from the same organization shared work history, unlike those from different organizations. Differences in expertise among team members only made it harder to assess others’ technical competence in the absence of a shared work history. Social interaction, with critical support of team members’ interpersonal and linguistic skills, was thus a conduit through which people assessed each other’s competence, in

advance of more concrete evidence to support these assessments.

Interpersonal skill refers to the ability of people to communicate clearly and respectfully with one another. As one project leader put it, “I don’t care how brilliant you are, how talented you are in your design or engineering ability. If you can’t work well as a team then you got a big problem and talent alone won’t take you anywhere.” To assess others’ competence first-hand, people appeared to rely on linguistic skills or *interactional expertise* (a term used by Collins and Evans, 2002). Developed through prior linguistic exchanges, interactional expertise enable people to meaningfully converse about expertise that they personally do not have (Collins and Evans, 2002). Given that people tend to trust their own information the most (Granovetter 1985) interactional expertise enabled people to assess first-hand others’ competence.

Team members used interactional expertise to engage swiftly in meaningful discussions with people from different expertise and organizations. These early conversations helped people gauge each other’s competence and interpersonal fitness for the job. A senior professional from the construction firm explained, “Right from the start, I found him, like many others from [the architecture firm], very knowledgeable, very reasonable and definitely a talent in the industry. I felt I could trust his input quite a bit because you know when you ask him for his input he always seems very helpful and very informed.” A team member from the design firm commented, “I found them very informed. I would explain the intent behind a certain [design] feature and ask them questions and they would ask me questions and we would go back and forth and I could tell pretty early on we had very smart people in the room.”

Team members from each firm may have acquired interactional expertise in prior collaborative work, including participation in cross-expertise committees, industry associations and past

experience on multi-entity teams. Selecting individuals who demonstrated interactional expertise was deliberate. A senior team member explained the role of interactional expertise in their firm's choice of an architect for the team, "I picked her not just because she is the first person I would pick anyway given the great work she does but also because she is very active in her professional life...She is very informed about various aspects of construction and we knew she would be really key in establishing our relationship with [the construction firm] early on."

***Procedural transparency.*** A high level of procedural transparency seemed to promote trust in the team process and in others' work. As one team member put it, "There were no little in-house secrets on this project. It was a very open book process from the beginning which really helped us trust each other." Besides fostering a sense of honesty and openness, procedural transparency enabled team members to develop empathy for how other professions and organizations worked.

We identified three strategies that supported procedural transparency: co-location, early participant involvement, and joint project management. During design, a construction manager re-located to the design office; during construction, an architect re-located to the building site. Co-location helped team members to develop an understanding of organization- and expertise-specific challenges faced by their fellow team members. By providing an immersion experience into the context and routines of others, co-location helped team members understand the intent behind proposed solutions. Co-location also gave people the opportunity to engage in problem solving discussions, which over time, helped co-locators develop a deep understanding of others' work styles. An architect on the team noted, "Co-locating you spend so much time together you begin to see how others see things." A construction manager explained,

This was my first time co-locating and so it wasn't something I was used to or understood

fully. But it was critical for building trust. It helped me understand so many things about [the design firm] especially what they are up against on a daily basis. I understood why things took the time they did. Later on it really helped me understand the design and I saw its benefit in what we contributed during design and what we built.

Second strategy that seemed to support procedural transparency was early involvement of all parties. Team members frequently addressed the role of early involvement in building trust in team's ongoing work. They noted the substantive implications of earlier design decisions on eventual construction quality, cost and schedule. Early involvement seemed to facilitate timely contributions from team members such that surprises were minimized later on. As a construction manager explained, "Early involvement really turned out to be very beneficial because things did not come as a surprise to us later on. You are there when these decisions were made. And when you build you have a level of trust in what you are making because it is not coming as news to you. Surprises are not uncommon on other projects and they are often not good for trust." For architects, early involvement fostered trust in the practicality of their design. As an architect noted, "Having people with knowledge of cost and schedule in the room makes you trust that what you are proposing will be built one day."

Lastly joint management allowed all sides to monitor, in real time, critical performance variables on this project including cost, schedule, and design progress. A senior team member explained, "We kept live budget and schedule with us and we all knew where we stood at any given time of a project. [The architect] knew what money we had, we [the contractor] knew, the owner knew." Another added, "All of us knowing the budget may seem like a very common-sense thing to do but it is very uncommon in our industry. Here we all knew the numbers and it gave us a lot of trust in the process, in decisions we made, in work we produced."

*Procedural impartiality.* In interviews, team members regularly linked a sense of impartiality to trust. We identified three factors that seemed to contribute to this self-reported sense of impartiality among team members: impartial record keeping, independent evaluation, and technology.

Impartial record keeping was in place from the beginning of the project. The owner hired a person from a project management company to take notes during weekly progress meetings. Meeting minutes were issued to all team members on a weekly basis; they included a list of what various people had committed to during a specific meeting. Multiple team members commented on the benefit of a neutral party keeping a record of meetings. For example, one team member noted, “It was very useful to have a neutral party take notes because not only when you look at project records you get a clear sense that this was one project done by one team but you also trust the notes more because they were taken by someone with no personal agenda and vested interest.”

Team members knew from the beginning that the project would be evaluated on five criteria (functionality, aesthetics, workmanship, materials and sustainability) by an independent judge. This evaluation had a direct impact on team profit. Team members thought that an independent evaluation created a sense of a fair, shared fate among everyone and made them trust that all aspects of the completed building were to have equal weight on total profit. As one team member explained, “[The independent evaluation] made us trust that the process is set up in a way that all these different aspects will really matter in the end.” Informants also reported that an independent evaluation preempted any conflicts over inherent differences in quality assessments by different people. As an architect explained, “It made everyone feel comfortable because



otherwise you can easily debate over what counts as high quality.”

A visual, 3-D modeling technology served as a repository of live project information (such as budget spent, schedule progress, compatibility of design features). This technological tool functioned as a neutral integrating platform where, for instance, clashes between system subcomponents and project parameters were virtually detected pre-construction. Team members frequently referred to this technology with third party references such as “Then *it* [the model] detected,” which seemed to minimize the emotional blame that arises when people detect problems. This technology also fostered trust that everyone’s work was continuously being checked for its coherence with others’ work. A member from the construction firm explained, “This technology gave us a repository of live information at our hands at all times. We made decisions that did not negatively impact any of the key project goals. If they did the model would detect clashes and we would fail virtually. It really gave us confidence and trust in our work.”

### **Behavioral Consequences of Trust in a Risky Context**

Our analyses surfaced several behavioral consequences of risky trust, which seem to enable maintenance of project speed and quality and contribute to the project’s successful outcome. We categorized these into monitoring behaviors (*authorized peer pressure* and *continuous co-validation*), and learning behaviors (*swift corrective action* and *adaptive problem solving*).

Through authorized peer pressure and continuous co-validation team members monitored project speed and quality. Through swift corrective action and adaptive problem solving, people seemed to have fostered team learning, which in turn improved project speed and quality. As these behaviors demonstrate, trust in a risky context does not imply that people can sit back, or expect relationships or problems to manage themselves. As a team member explained, “We were

certainly expected to do some heavy breathing on this project. Not hyperventilating but heavy breathing for sure.” Hence, trust in a risky context seems to keep people on edge and allows them to engage in (monitoring and learning) behaviors that emanate from trust and appear to be necessary for success; in the following sections we explain these behaviors further.

*Authorized peer pressure.* Authorized peer pressure emerged as the legitimate, mutually-accepted use of pressure among peers. Because the stakes were high, the task complex and the timeline aggressive, people believe that it was critical that everyone delivered their work on time. Authorized peer pressure occurred between same-level participants when someone believed team progress was lagging; it was applied between project executives or project managers or junior team members from different firms. The data suggested that team members perceived this peer pressure as legitimate because of the trust that had been established in each others’ intentions and in the team process. And, those applying peer pressure explained that they trusted the other’s competence to deliver, such that, as one team member put it, “it was worth it to put a little pressure to speed things up and make sure they don’t drop the ball after all this good work.”

To illustrate, at various times during the project the team was beginning to fall behind schedule. Those affected by delays felt legitimate in speaking up for speeding up. For example, during design, the project manager from the construction firm asked the project manager from the architecture firm to fly in their engineers to expedite the design specification process. The architect who received the request recalled, “When I got that call I knew we needed to pick up speed. I agreed with him. Given the process, the risks we were sharing, he needed the work from us. I am glad we did that because without it we would have done it but not on time.” The construction manager added, “Because I trusted them [people from design firm] and we both

knew we are in this together, it was okay to ask them to pick up pace.”

***Continuous co-validation.*** Continuous co-validation referred to a practice of team members repeatedly checking each other’s solutions to new or old problems against overall project constraints. Facing the multiple project goals, team members tested the coherence of their local solutions with global project criteria through the process of continuous co-validation. For example, it was common for people from the design firm to get input on design elements from contractors, who had know-how that could lower cost without harming design quality and intent.

Informants repeatedly noted the recurring dynamics of day-to-day conversations where team members openly shared, tested, and challenged each other’s ideas. This process was reported to require high levels of trust. As one explained, “We often ran past each other what we were doing.

But to do that you have to trust it is for the good of the project to ask and check on each other.”

A designer commented, “You have to trust that the collaborative process and continuously questioning each other is there to improve design not to hurt it. And that the [cost and schedule] input is there so you are not just putting the design out but you are actually proposing something that will someday be built.” A junior member of the team explained,

We all trusted the process a lot! That’s why it was very normal to pick up the phone and run things by someone who knows some stuff better than you. You trust each other and check on each other and everyone is okay with that.

***Swift corrective action.*** On a project with high complexity and interdependence, missing a small learning opportunity can contribute to large consequences. As a team member noted, “In projects like this covering up small failures leads to major breakdowns.” The project team frequently expressed how raising issues, learning from mistakes and taking timely corrective action proved beneficial for their performance. As a team member explained, “You try your best to get the right

players, the right process but there are no guarantees. So you have to be a continuous learning team and some of what you learn may mean tough choices like firing someone who is not a good fit for the job or admitting a mistake you made.”

The salience of trust was hard to miss in team members’ narratives on swift corrective action. Especially recurrent was team members’ willingness to absorb short-term costs for achieving long-term collective good for the project. For instance, after considerable time on the project, a subcontracting firm was fired. It was a difficult decision because team members trusted this firm’s technical competence. However, over the course of the project it became increasingly evident that the firm was evading the level of procedural transparency necessary for creating and maintaining trust. The decision to terminate this relationship had a cost for all who remained: the firm had to be compensated for their work thus far and project managers had to look for a replacement against the clock. Team members recalled this action as a “severe remedy,” but one that was necessary given the process. A project manager recalled, “You had everyone playing by the rules, you have everyone trusting one another and then you have one firm that is being difficult to work with...we made the call to let them go. We trusted each other and the process to make this decision even though it cost us then. But it was the right decision in the long run.”

***Adaptive problem solving.*** Trust was recurrent in interviewees’ anecdotes of adapting and innovating in the face of new information and emerging challenges. Leaders’ framing, procedural transparency, and use of technology were frequently expressed in the way this team adapted to emerging challenges. From the beginning, project leaders encouraged team members to trust each other, collaborate and step outside their organizational and knowledge boundaries. Procedural transparency seemed to help people understand each other and their specific strengths

and challenges. Procedural transparency also appeared to foster trust in the credibility of information offered by team members, which seemed to encourage people to genuinely push for a workable solution. As a team member recalled, “We had an open budget. If you have an idea to spend money in a better way, you could propose that. We had so much trust that money on this project was being spent properly. It was not whose money, it was about money for what.” One designer recalled, “In another job we wouldn’t try the really cool things we tried here and we did because we had credible information from the construction side. We were told to work together but then this process was set up in a way that it was easy to say this is what I know but I don’t know whether it will work within cost and schedule, so what do you think?”

Visual 3-D technology provided a blame-free, neutral integrating platform that enabled trust in the coherence of the team’s work and fostered a dynamic of virtual experimentation. With this technology the team built a single working model on which everyone jointly worked. As team members began to trust each other’s technical competence, it seemed to foster people’s willingness to use the model in adaptive ways for creative solutions. For example, team members used their model to generate various scenarios for an unexpected request for a critical design element to enhance building aesthetics. Through collaborative thinking they adapted to this challenge and agreed on a cost-effective solution and then used the 3-D model to communicate with and get approval from the owner

## **DISCUSSION**

This paper examines how teams facing pervasive rational and institutional barriers to trust may nonetheless develop a high level of interpersonal trust, thereby also building inter-organizational trust. Our aim was to learn from this unusual setting so as to offer insights about how trust may

be built and repaired in other challenging endeavors and contexts.

First, in a context of pervasive mistrust, leaders may need to follow an integrative approach of combining changes in interpersonal structural agreements with rhetoric and coaching that fosters shared beliefs and clarity about expected behaviors. Our findings suggest that re-structuring interpersonal relations and process innovation were important in building trust, as was leaders' framing of the project (as one that required trust) and leaders' explanation of expected behaviors (as a reference for people's monitoring of their own and others' behavior). This self and collective monitoring seems to be critical in a context where the pull back to old behaviors is strong. Hence, in a low trust context, leaders may consider repairing trust by overcoming not only formal organizational barriers to trust, through process innovations, but also overcoming cognitive and social barriers to trust through task-specific process framing, discourse and coaching that enable internalization of new ways of being and acting.

Second, we propose that fostering trust in a high-risk engagement and a low-trust context requires more than just trust in others' intentions and competence. It requires trust in process as well. This implies that team selection is important, but as important is setting up team processes that enable people's confidence in the reliability of their interpersonal and inter-organizational relationships for achieving a given set of outcomes.

Third, we argued that trust at an inter-personal level does not automatically translate to trust at the inter-organizational level. Our data suggested that trust between organizations has a procedural dimension, in addition to the purposive (intentions-based) and cognitive (competence-based) dimensions of trust in dyadic relationships.

In this study we crossed levels of analysis and explored the links between the macro-level industry context of the team and team behavior and project outcomes. We examined IPD as an external process innovation that affects, in this case positively, team dynamics. We developed antecedents and dimensions of trust, and examined potential consequences of trust in a risky engagement to explicate the influence of context and individual behavior on group performance. Finally, although the project was highly successful, our data do not allow us to make claims about other projects in the construction industry<sup>3</sup>.

### **Limitations and Future Research**

Case studies present inherent limits to generalizability, but are a particularly good method for understanding mechanisms underlying complex, social processes (Yin 2003). Conducting a single case study thus allowed us to undertake an in-depth examination of trust in multi-entity teams engaged in a risky endeavor. The framework we developed (shown in Figure 2) is intended to serve as a platform to motivate future work on trust in multi-entity teams, trust dynamics in high-risk engagements, and trust repair.

Nonetheless, our findings need to be compared to results from multiple teams. Study of teams with more people or organizations, may reveal that the constructs in our framework need to be revised. Other teams facing barriers to building trust, such as virtual teams (Leonard et al. 1998, Sole and Edmondson 2002), where geographic dispersion poses challenges to building and sustaining trust, could also be examined through this lens. Relationships between various

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<sup>3</sup> The project we studied and other IPD projects in the industry demonstrated high level of trust among team members (Cohen 2010); however, many in the industry remain skeptic. Architects worry that joint project management under IPD may undermine their autonomy and subsequently adoption of their best design ideas. Contractors remain concerned about taking responsibility for design quality, sharing decision making over budget and schedule, and delaying their profits till the project is complete. And owners continue to hold reservations about shifting from conventional wisdom of contracts that avoid and transfer risk to unconventional contracts with risk and profit-sharing and joint accountability (Bernstein 2010).

antecedent conditions and dimensions of trust, identified under our framework, may be explicated by undertaking hypothesis driven research. Finally, our study indicates that trust in a high risk, low trust setting requires conscious effort.

Studying a setting characterized by complexity, high risk, and a history of mistrust brings new insights to how those who are highly vulnerable when undertaking interdependent work can establish trusting relationships. Most notably, we argue that when team tasks are complex and much is at stake, it helps to build trust not only between people but also in processes. Our study highlights the facilitative role of both monitoring and learning behaviors in building trust, as well as the role of trust in promoting team performance in a high-risk setting. Although our observations about factors influencing interpersonal and inter-organizational trust may not generalize across tasks and contexts, they suggest that task- and context-specific research can help to further our understanding of the dynamics of trust at work.



## References

- Baker, Therese, 1999. *Doing Social Research*, McGraw-Hill.
- Barber, B. 1983. *The Logic and Limits of Trust*. New Brunswick, NJ: Rutgers University Press.
- Bechky, Beth A. 2003. "Sharing Meaning across Occupational Communities: The Transformation of Understanding on a Production Floor," *Organization Science*, Vol. 14, No. 3 (May - Jun., 2003), 312-330
- Berger, Peter L. and Thomas Luckmann. 1966. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*, Garden City, NY: Anchor Books.
- Bernstein, Philip G. 2010. "A Way Forward? Integrated Project Delivery," *Harvard Design Magazine* 32, Spring/Summer 2010, 74-77.
- Biernacki, Patrick, and Dan Waldorf. 1981. Snowball Sampling: Problems and Techniques in Chain Referral. *Sociological Methods and Research* 10(2): 141-163.
- Blau, P.M. 1967. *Exchange and Power in Social Life*. London: John Wiley.
- Brann P and Foddy M. 1988. Trust and the consumption of a deteriorating resource. *Journal of Conflict Resolution*, 31:615-30
- Brewer, M.B., and Roderick M. Kramer. 1986. Choice behavior in social dilemmas: Effects of social identity, group size and decision framing. *Journal of Personality and Social Psychology*, 50, 543-549.
- Bureau of Labor Statistics, 2008. "Employment Projections: Employment by Major Industry Sector," Available at WWW: <http://data.bls.gov/cgi-bin/print.pl/emp/empmajorindustry.htm>, Accessed June 20, 2010.
- Charmaz, Kathy, 2006. *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*. Thousand Oaks, CA: Sage Publications.
- Chen, C., Chen, Y., and Xin, 2004. Guanxi practices and trust in management: A procedural justice perspective. *Organization Science*, 15(2): 200–209.
- Chua, Roy Y. J., Michael W. Morris, and Paul Ingram. 2009. Guanxi vs networking: Distinctive configurations of affect- and cognition-based trust in the networks of Chinese vs American managers. *Journal of International Business Studies* Vol. 40, 490–508
- Cohen, Jonathan, 2010. "Integrated Project Delivery: Case Studies," Report under A Joint Project of AIA California Council, Integrated Project Delivery Steering Committee, and AIA National Integrated Project Delivery Interest Group, Copyright AIA California Council, Sacramento, CA

Coleman, James S. 1990. *Foundation of Social Theory*. Cambridge, MA: Harvard University Press.

Coleman, James S. 1986. "Social Theory, Social Research, and a Theory of Action." *American Journal of Sociology* 91: 1301-35.

Collins, Harry and Robert Evans, 2007. *Rethinking Expertise*. Chicago: University of Chicago Press, 2007

Committee on Advancing the Competitiveness and Productivity of the U.S. Construction Industry, National Research Council, 2009. *Advancing the Competitiveness and Efficiency of the U.S. Construction Industry*. Washington, DC: The National Academies Press, 2009.

Creed, Douglas W.E. and Raymond E. Miles. 1996. "Trust in organizations: a conceptual framework linking organizational forms, managerial philosophies, and the opportunity costs of controls," in *Trust in Organizations: Frontiers of Theory and Research* (eds.) by Roderick M. Kramer and Tyler Tom, Sage, Publications, London

Cronin, Matthew A. and Laurie R. Weingart, 2007. "Representational gaps, information processing, and conflict in functionally diverse teams," *Academy of Management Review*, 2007, Vol. 32, No. 3, 761–773

Dawes, Robyn and Richard H. Thaler. 1988. "Anomalies: Cooperation." *Journal of Economic Perspectives* 2, 187-197.

Drolet, A. L., & Morris, M. W. 2000. Rapport in conflict resolution: Accounting for how face-to-face contact fosters mutual cooperation in mixed-motive conflicts. *Journal of Experimental Social Psychology*, Vol. 36, No. 1: 26–50.

Edmondson, Amy C. 2003. "Framing for learning: Lessons in successful technology implementation," *California Management Review*, Volume 45, No. 2: 34-54.

Edmondson, Amy C. and Stacy E. McManus, 2007, "Methodological Fit in Management Field Research," *Academy of Management Review*, Vol. 32, No. 4, 1155–1179.

Emerson, Robert, Rachel Fretz, and Linda Shaw. 1995. *Writing Ethnographic Fieldnotes*. Chicago: University of Chicago Press.

Garfinkel, H. 1967. *Studies in ethnomethodology*. Englewood Cliffs, NJ: Prentice Hall.

Gibbons, Erin N. 2007. "Effects of Litigation in the Construction Industry: Stratification and Insolubility," Proceedings of The Construction and Building Research Conference of the Royal Institution of Chartered Surveyors, 6-7 September 2007, Atlanta, Georgia USA

Giddens Anthony. 1984. *The Constitution of Society*. Cambridge: Polity Press.

Giddens, Anthony, 1990. *The Consequences of Modernity*. Cambridge: Polity Press

Ginnett, R. C. 1993. "Crews as groups: Their formation and their leadership," in E. L. Wiener, B. G. Kanki, and R. L. Helmreich (Eds.), *Cockpit resource management*, pp. 71-98.

Granovetter, Mark. 1985. "Economic Action and Social Structure: The Problem of Embeddedness," *The American Journal of Sociology*, Vol. 91, No. 3, 481-510

Hackman, Richard, J. 2003. "Learning more by crossing levels: evidence from airplanes, hospitals, and orchestras," *Journal of Organizational Behavior*, Vol. 24, Issue 8, pp. 905-922.

Handy, Charles. 1995. "Trust and the Virtual Organizations." *Harvard Business Review* 73 (May-June), 40-50.

Jones, Gareth R. and Jennifer M. George. 1998. "The Experience and Evolution of Trust: Implications for Cooperation and Teamwork." *Academy of Management Review* 23(3): 531-46.

Kramer, Roderick M. and M.B. Brewer. 1984. "Effects of group identity on resource use in a simulated commons dilemma," *Journal of Personality and Social Psychology*, 46: 1044 - 1057.

Kramer, Roderick M. and Goldman, L. 1995. "Helping the group or helping yourself? Social motives and group identity in resource dilemmas," in D.A. Schroeder (ed.). *Social dilemmas: Perspectives on individuals and groups*. Praeger, Westport, Connecticut London.

Kramer, Roderick M. 1999 "Trust and Distrust in Organizations: Emerging Perspectives, Enduring Questions." *Annual Review of Psychology* 50: 569-98

Lane, Christel. 2000. "Introduction: Theories and Issues in the Study of Trust," in *Trust Within and Between Organizations*, ed. by Lane Christel and Bachman Richard (eds), Oxford University Press Inc., New York, pp. 1-32.

LePatner, Barry. 2007. *Broken Buildings, Busted Budgets: How to Fix America's Trillion-Dollar Construction Industry*. The University of Chicago Press, Chicago.

Leonard, Dorothy A., Paul A. Brands, Amy C. Edmondson, and Justine Fenwick. 1998. "Virtual Teams: Using Communications Technology to Manage Geographically Dispersed Development Groups." In *Sense and Respond: Capturing Value in the Network Era*, edited by Stephen P. Bradley and Richard L. Nolan. Boston: Harvard Business School Press.

Lewis, J. D., and Weigert, A. 1985a. Trust as a social reality. *Social Forces*, Vol. 63, No. 4: 967-985

Lewis, J. D., and Weigert, A. 1985b. "Social Atomism, Holism, and Trust," *The Sociological Quarterly*, Vol. 26, No. 4. 455-471

Lofland, John and Lyn Lofland. 1984. *Analyzing Social Settings*, Belmont, CA: Wadsworth Publishing

Luhmann N. 1979 *Trust and Power*, Chichester: John Wiley

- Mayer Roger C., James H. Davis, and F. David Schoorman. 1995. "An Integrative Model of Organizational Trust." *Academy of Management Review* 20(3): 709-34
- McAllister, D. J. 1995. Affect- and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal*, Vol. 38, No. 1: 24–59.
- Messick DM, Wilke H, Brewer MB, Kramer RM, Zemke PE, Lui L. 1983. Individual adaptations and structural change as solutions to social dilemmas. *Journal of Personality and Social Psychology*, 44: 294 - 309
- Meyerson, D., Weick, Kark. E., and Kramer, Roderick. M., 1999. "Swift trust and temporary groups," in Roderick. M. Kramer and Tom. R. Tyler (eds.), *Trust in organizations: Frontiers of theory and research*. Sage Publications, Thousand Oaks, CA. pp. 166-195.
- Miles, Matthew B., and A. Michael Huberman. 1994. *Qualitative Data Analysis: An Expanded Sourcebook*, 2<sup>nd</sup> edition. London: Sage.
- Nelson, Arthur C. 2004. "Toward a New Metropolis: The Opportunity to Rebuild America," Brookings Institution, Discussion Paper for The Brookings Institution Metropolitan Policy Program, December 2004
- Puddicombe, Michael S. 1997. "Designers and Contractors: Impediments to Integration," in *Journal of Construction Engineering and Management*, 123: 3. 245-52
- Rempel, J. K., Holmes, J. G., & Zanna, M. D. 1985. Trust in close relationships. *Journal of Personality and Social Psychology*, Vol. 49, No. 1: 95–112.
- Simmel, G. [1900] 1978. *The Philosophy of Money*. Translated by T. Bottomore & D. Frisby. London: Routledge & Kegan Paul.
- Simpson, Scott. 2009. "Twice as Nice: How BIM and IPD are Revolutionizing the Design and Construction Industry." Presentation prepared and delivered by Simpson to industry practitioners on March 10 2009 and shared with researchers on March 17 2009.
- Snook, S.A. *Friendly fire: the accidental shootdown of U.S. Black Hawks over Northern Iraq*. Princeton University Press, Princeton, N.J., 2000.
- Sole, Deborah and Amy C. Edmondson, 2002, "Situated Knowledge and Learning in Dispersed Teams," *British Journal of Management*, Vol. 13, S17–S34
- Strauss, A. and Juliet Corbin. 1990. *Basics of Qualitative Research*, Sage
- Sydow, Jörg, 2000. "Understanding the constitution of interorganizational trust," in *Trust Within and Between Organizations*, ed. by Lane Christel and Bachman Richard (eds), Oxford University Press Inc., New York, pp. 31- 63.
- Thompson, J.D. 1967. *Organizations in action*. NY: McGraw-Hill.

Tyler Tom R. and Kramer Roderick M. 1996. "Whither Trust?" in *Trust in Organizations Frontiers of Theory and Research*, ed. by Roderick M. Kramer and Tyler Tom, Sage Publications, London

United States Department of Commerce, 2009. "December 2009 Construction at \$902.5 Billion Annual Rate," *U.S. Census Bureau News* press release, February 1, 2010. Available at WWW: <http://www.census.gov/const/C30/pr200912.pdf>

Weick, Karl E. 1979. *The Social Psychology of Organizing*. Second Edition. Reading, MA: Addison-Wesley.

Weiss, Robert, 1994. *Learning from Strangers: The Art and Method of Qualitative Interview Studies*. The Free Press. New York.: NY

Yates, J.K. and Leslie C. Battersby. 2003, "Master Builder Project Delivery System and Designer Construction Knowledge," in *Journal of Construction Engineering and Management*, 129: 6. 635-44.

Yin, Robert. 2003. *Case Study Research: Design and Methods*, 3<sup>rd</sup> edition. London: Sage.

Zaheer, A., McEvily, B., & Perrone, V. 1998. "Does trust matter? Exploring the effects of interorganizational and interpersonal trust on performance." *Organization Science*, 9(2), 141–159.

Zucker L.G. 1986. "Production of Trust: Institutional Sources of Economic Structure, 1840 1920," in *Research in Organizational Behavior*, vol. 8, 53-111

**Figure 1: Trust in a Risky Context**



**Figure 2: Antecedents, dimensions and behavioral consequences of risky trust**

