

Trust in a
product development context:

Drivers, dynamics and consequences

Trust in a product development context

Drivers, dynamics and consequences

Anna Brattström





Dissertation for the Degree of Doctor of Philosophy, Ph.D.,
in Business Administration,
Stockholm School of Economics, 2014

Trust in a product development context: drivers, dynamics and
consequences

© SSE and the author, 2014

ISBN 978-91-7258-933-9 (printed)

ISBN 978-91-7258-934-6 (pdf)

Front cover illustration:

© Anna Brattström, 2014. Created with software from Tagul.

Back cover photo:

Lasse Lychnell, 2014

Printed by:

Ineko, Göteborg, 2014

Keywords:

Trust, product development, alliance governance

Foreword

This volume is the result of a research project carried out at the Department of Management and Organization at the Stockholm School of Economics (SSE).

This volume is submitted as a doctor's thesis at SSE. In keeping with the policies of SSE, the author has been entirely free to conduct and present her research in the manner of her choosing as an expression of her own ideas.

SSE is grateful for the financial support provided by VINNOVA and Volvo Construction Equipment AB, which have made it possible to fulfill the project.

Göran Lindqvist

Director of Research
Stockholm School of Economics

Carin Holmquist

Professor and Head of the
Department of Management
and Organization

Acknowledgements

Writing a thesis is an interesting endeavor and I am most grateful to my colleagues, my friends and my family for joining me. First, I want to thank Anders Richtnér for being an encouraging coach, for your ability to always see the positive side of things and for sharing your thoughtful understanding of teaching, research, parenthood, and life. Pär Åhlström, thank you for all your insightful comments and for prompting me to keep at least one foot on the ground, that helped me not to get lost. I want to offer a special thanks to Dries Faems for taking on the cumbersome task of teaching me how to take this job to the next level: for debating theory development on 11 p.m. Saturday evenings, for friendship and for your hospitality in Groningen. Jan Mouritsen, to you I am ever so grateful for opening up my eyes to the more complex side of things and for encouraging my various projects-on-the-side. Meeting with you is always inspiring.

I would like to thank Hans Löfsten for being the hidden committee member and for all the fun you have added into this journey. Your help in the final stage of writing has been essential. Magnus Mähring, you are a great researcher and I think this is the beginning of a beautiful friendship. Karl Wennberg, thanks for being a source of inspiration and encouragement. Having you on the side has meant a lot to me. Martin Carlsson-Wall, thank you for your enthusiasm, support and theoretical curiosity.

Malin Malmbrandt, thanks for being such an extraordinary good friend, brilliant discussion partner and dinner companion. Adis Murtic, thanks for making our room such a fun place and for all the bosnian honey. Lasse Lychnell, thank you for the very useful gift. Martin Sköld, thank you for all the discussions and comments and for suggesting that I apply to the PhD

program in the first place. To Kerstin Wedin, Mattias Axelsson, Martin Wiener, Malin Schmidt, Maria Booth, Mattia Bianchi, Ryusuke Kosuge, Pär Mårtensson, Jon Rognes, Åke Freij, Lotta Hultin, Katrin Laestander, Rui Lu and Niklas Modig: a warm thank you for making Plan 4 such a nice place to work at. Udo Zander, Emre Yildiz and Henrik Glimstedt, thanks for the inspiration and your insightful comments. To Karl Wennberg, Karin Fernler, Andreas Werr and Erik Wetter; thank you for letting me into your classrooms.

I would like to offer a special thanks to all the warm and welcoming people that I have met at Heavy Machinery. To Jenny Elfsberg for providing me with such an insightful understanding about organizations and to Henrik Nordin, Peter Wallin, Rikard Mäki, and Richard Karlsson Atencio for interesting discussions and a lot of fun.

I would also like to thank my friends for putting up with me, and for being there when I have needed it the most; Anna, Calle, Carl Emil, Lina, Lollo, Sanna and Sofia. Birgitta and Markku, thank you for all the love you give my children and for the support over the years. Farmor, thank you for the ring, I will wear it with pride. Mamma och Pappa, you are fantastic, thanks for being just that. Josef and Niels, what wonderful brothers you are to share life with; Emma and Christel, I'm very glad that you are part of the family. Lo and Gunnar; you came into my life during this period and you have taught me a lot about how to live it.

Anders. Thank you for caring so profoundly about me while not caring the least bit about this book. You mean the world to me.

Stockholm, May 30, 2014

Anna Brattström

Contents

CHAPTER 1. INTRODUCTION	1
Trust in product development	2
Research gaps and research questions	3
CHAPTER 2. THEORETICAL BACKGROUND	9
What is trust?	9
The role of trust in product development	11
Expanding the frontiers of research: my objectives with this thesis	14
The need for additional insights into how group-level trust influences inter-organizational trust	15
The need for additional insights about inter-organizational trust repair	17
The need for more refined insights about the consequences of trust in a product-development context	18
CHAPTER 3. METHODOLOGICAL APPROACHES	21
Qualitative case studies at Heavy Machinery	23
Survey among 99 medium-sized Swedish technology-based firms	26
CHAPTER 4. SUMMARIES OF THE FIVE PAPERS	27
Paper 1. <i>Good Cop – Bad Cop: Trust, Control and the Lure of Integration</i>	27
Paper 2. <i>Inter-Organizational Trust Repair: Drivers and Implications of Cross- Group Trust Consensus and Discord</i>	29
Paper 3. <i>Dealing With Trust Violations in Alliances: How to Repair Broken Trust</i>	31
Paper 4. <i>Creativity, trust and systematic processes in product development</i>	33
Paper 5. <i>Similar, yet different: a comparative analysis of the role of trust in radical and incremental product innovation</i>	34
CHAPTER 5. KEY FINDINGS AND THEORETICAL IMPLICATIONS	37

Towards a multi-level understanding of inter-organizational trust: the importance of the group level	38
Towards a multi-level understanding of inter-organizational trust repair	45
Towards a refined understanding of trust in a context of product development.....	49
Limitations and future research	52
CHAPTER 6. A SHORT REFLECTION ON THE CORE INSIGHTS OF THIS THESIS.....	55
REFERENCES	59
PAPER 1. <i>GOOD COP - BAD COP: TRUST CONTROL AND THE LURE OF INTEGRATION</i>	69
PAPER 2. <i>INTER-ORGANIZATIONAL TRUST REPAIR: DRIVERS AND IMPLICATIONS OF CROSS-GROUP TRUST CONSENSUS AND DISCORD</i>	105
PAPER 3. <i>DEALING WITH TRUST VIOLATIONS IN ALLIANCES: HOW TO REPAIR BROKEN TRUST</i>	163
PAPER 4. <i>CREATIVITY, TRUST AND SYSTEMATIC PROCESSES IN PRODUCT DEVELOPMENT</i>	199
PAPER 5. <i>SIMILAR, YET DIFFERENT: A COMPARATIVE ANALYSIS OF THE ROLE OF TRUST IN RADICAL AND INCREMENTAL PRODUCT INNOVATION</i>	239

Chapter 1

Introduction

“Trust comes to the fore as a focal problem (and solution) whenever there is a gap that cannot be reduced further but might be crossed”
(Möllering, 2007: 193)

In a relationship, to trust is to accept vulnerability. We need trust when we are dependent on others to achieve what we want, but cannot predict with certainty how they will act. Innovation represents such a situation. To innovate is to deal with profound uncertainty; it means creating something that has never existed before. In the process, the innovator builds on what has gone before and realizes the potential of their ideas with the help of those around them. Trust lies at the very heart of this shared journey into the unknown.

In this thesis, I set out to study the concept of trust in a context of innovation. Specifically, my focus is on new product development: an organizational activity into which many firms channel their innovation efforts. At the most general level, I aim to provide a context-sensitive, dynamic and multi-level investigation into how trust develops in this context, how it can be repaired once it is violated, and implications of trust for product-development management and performance.

Trust in product development

Product development is an activity characterized by uncertainty and interdependence. This makes product-development management a challenging task: depending on others under conditions of uncertainty is not easy. Each new development project brings its own set of problems. Any specification of output, behavior, risk, or reward is inevitably incomplete. At the same time, working with product development is an inherently interdependent activity, requiring extensive coordination across different areas of expertise.

Product development, therefore, is an activity that is hard to measure and control, but nevertheless demands both coordination and careful management. In such a context, trust is crucial. Trust allows more open and honest sharing of information, supports shared understanding, reduces the need to guard against opportunistic behavior, and reduces conflict. In short, trust functions as an organizing principle (see Kogut & Zander, 1992) that enables the alignment of tasks and incentives under conditions where formal control mechanisms fall short (for a discussion, see McEvily, Perrone, & Zaheer, 2003).

The importance of trust has been acknowledged within the product-development literature. For example, it has been correlated with product success, time to market, knowledge creation, and team learning (e.g. Barczak, Lassk, & Mulki, 2010; Dayan & Di Benedetto, 2010; Dayan, Di Benedetto, & Colak, 2009) as well as with the stability and performance of inter-organizational product-development relationships (e.g. Bstieler, 2006; Bstieler & Hemmert, 2010; Krishnan, Martin, & Noorderhaven, 2006). Trust is also a central concept in the broader management literature, and the last two decades have witnessed a tremendous surge of research interest in the topic (for reviews, see for example Fulmer & Gelfand, 2012; Möllering, 2007; Rousseau, Sitkin, Burt, & Camerer, 1998; Schoorman, Mayer, & Davis, 2007). These studies provide rich insights into the multi-dimensional and multi-level elements of trust, as well as the underlying positive and negative spirals through which it develops.

Research gaps and research questions

Despite these important insights, there are some frustrating lacunae in these two literature streams for students of product development. They relate particularly to i) how group-level trust processes influence inter-organizational trust; ii) the process of inter-organizational trust repair; and iii) finer-grained studies of the implications of trust in a context of product development.

A first shortcoming of the organizational trust literature is a lack of research into how group-level trust influences organization-level trust. On the one hand, trust scholars (e.g. Currall & Inkpen, 2002; Rousseau et al., 1998) emphasize that trust at the organizational level is a compositional construct that encompasses both individual- and group-level trust. At the same time, surprisingly little systematic research attention has been paid to how interactions between different intra-organizational groups influence trust at the organizational level (see Fulmer & Gelfand, 2012 for a review that shows this very clearly). Instead, trust at the organizational level is conceptualized as the “collective trust orientation” of individual organizational members (Zaheer, McEvily, & Perrone, 1998: 143). This collective trust orientation, in turn, is assumed by trust scholars to be determined by the trust of the “dominant coalition” (Schoorman et al., 2007: 346) within the firm.

However, this assumption excludes the possibility that the firm is composed of different coalitions, each with its own idiosyncratic norms, competences, and trust orientations. In the context of product development, this limitation becomes problematic. Product development is an activity that requires the involvement of various, specialized groups (see Brown & Eisenhardt, 1995; Takeishi, 2002; Wheelwright & Clark, 1992). An inter-organizational product-development relationship, for example, requires the involvement of engineers, procurement staff, and corporate managers. It might be that one of these groups represents the dominant coalition (Schoorman et al., 2007), which determines the level of trust in the inter-organizational relationship. However, it is equally possible that these groups are sufficiently distinct from one another to develop divergent trust orientations towards the same partner. If so, understanding trust at

the organizational level requires attention not only to the trust attributions of individuals or the dominant coalition, but also to the composition of different intra-organizational groups and the interactions between them. Thus, we can gain a deeper understanding of how trust develops in a context of product development by specifically studying trust formation at the group level. Against this background, I aim to explore this specific research question: *what are the mechanisms and processes that connect and differentiate between trust development on the (inter)group and (inter)organizational levels?*

A second shortcoming of the inter-organizational trust literature is the lack of attention to inter-organizational trust repair, meaning the “process where a transgression causes the disappearance of trust and/or the emergence of distrust, as perceived by one or both parties, and activities by one or both parties to substantively return the relationship to a positive state of trust” (Kramer & Lewicki, 2010: 249). While trust repair has been studied between individuals (e.g. Dirks, Kim, Ferrin, & Cooper, 2011; Ferrin, Bligh, & Kohles, 2007; Kim, Dirks, Cooper, & Ferrin, 2006), between individuals and organizations (e.g. Gillespie & Dietz, 2009; Reb, Goldman, Kray, & Cropanzano, 2006), and between individuals and institutions (e.g. Gillespie & Hurley, 2013); multi-level, empirical studies of inter-organizational trust repair are still lacking.

Instead, the inter-organizational trust literature offers rich insights into how continuous spirals of trust and distrust evolve. Moreover, inter-organizational trust scholars often assume that positive spirals lead to the continuation of inter-organizational relationships (Gulati, 1995; Madhok, 1995) while negative spirals will “break down trust permanently” (Kroeger, 2012: 757) and therefore lead to the failure and termination of the relationship (Zaheer, Lofstrom, & George, 2002).

Within the context of inter-organizational product-development relationships, however, there are also reasons to expect more discontinuous trajectories of trust development, where negative spirals are turned round and trust is repaired. Faems, Janssens, Madhok, & Van Looy (2008), for instance, provide the first indications of the relevance of trust repair in this context. Studying two consecutive collaborations between the same firms, these authors illustrate how mutual dependence can keep a relationship

going despite low trust. They also show that a negative trust trajectory can be reversed, and that trust can be repaired. Indeed, mutual dependence is common in inter-organizational product-development collaborations, since partners often make relationship-specific investments in the hope of realizing long-term profit (Koza & Lewin, 1998). This leads to lock-in, making it difficult for partners to exit the relationship even if trust has been violated, and making trust repair very pertinent on a practical level. Thus, a greater understanding of how trust develops in a context of product development may be gained by studying the process of inter-organizational trust repair. Against this background, I aim to explore the following specific research question: *what are the mechanisms and processes underlying inter-organizational trust repair?*

Within the product-development literature, trust is often included towards the bottom of long lists of nice-to-have concepts, showing that trust has a positive impact on product development performance (e.g. Koskinen, Pihlanto, & Vanharanta, 2003; Madhavan & Grover, 1998; McCutcheon & Stuart, 2000; McCutcheon, Grant, & Hartley, 1997). However, trust is less one-dimensional and unproblematic than that treatment implies, and deserves more fine-grained attention than it typically has received. For example, while there seems to be a consensus that the competence dimension of trust has different implications from its integrity dimension (e.g. Das & Teng, 1998; Malhotra & Lumineau, 2011; Mayer, Davis, & Schoorman, 1995; Sako, 1992), this distinction is rarely made within the product-development literature. Moreover, while trust is assumed to be important in general, the contingencies of this assumption have not yet been fleshed out. Thus, we can gain a deeper understanding of the consequences of trust in a product-development context by providing a more refined investigation of trust in this context. Against this background, I aim to explore the following specific research question: *what are the implications of trust for product-development performance?*

In sum, while the product-development literature has largely acknowledged the importance of trust, multi-dimensional and multi-level investigations are still scarce. The organizational trust literature, on the other hand, provides important insights into the many dimensions of trust and its development at different levels of analysis. At the same time,

however, this literature has largely ignored the group level in its theoretical models – and also provides very few insights into the process of inter-organizational trust repair. In a context of product development, where the group level is important and trust repair is likely, these are important shortcomings, which this thesis aims to address. In doing so, I respond to calls for multi-level, dynamic, and context-specific examinations of trust (e.g. Dirks, Lewicki and Zaheer, 2009; Fulmer & Gelfand, 2012; Schoorman et al., 2007).

My thesis is in the form of a compilation of five individual papers, each providing a complementary perspective on my broad research question. Table 1 provides a short overview of these studies, including their focus and their methodological approach. In the following chapter, I provide a general theoretical background for my research; in the process, I also establish and substantiate the relevance of my objectives. In Chapter 3, I provide a general discussion about the methodological approaches I have taken, and in Chapter 4 I summarize the results of the five studies. Thereafter, in Chapter 5, I synthesize and discuss the main findings of my research, discuss its implications and main limitations, and propose avenues for future research. Finally, in Chapter 6, I provide a general conclusion, linking my main contributions to the broader research agenda.

Table 1 – The papers in this thesis

Paper	Methodological approach	Focus	About
Paper 1 <i>Good Cop – Bad Cop: Trust, Control and the Lure of Integration</i>	Multiple case study	Addresses my first thesis objective by investigating how group composition influence trust and control in inter-organizational product development collaborations	Published in <i>Journal of Product Innovation Management</i> 31(3) 2013
Paper 2 <i>Inter-Organizational Trust Repair: Drivers and Implications of Cross-Group Trust Consensus and Discord</i>	Longitudinal, single case study	Addresses my first and second thesis objectives by investigating how drivers of trust consensus and discord across intra-organizational groups influence the process of trust repair	Under second round of review in <i>Academy of Management Journal</i>
Paper 3 <i>Dealing With Trust Violations in Alliances: How to Repair Broken Trust</i>	Conceptual	Addresses my second thesis objective by developing managerial advice on how to deal with trust violations and repair trust in inter-organizational relationships	Working paper
Paper 4 <i>Creativity, trust and systematic processes in product development</i>	Statistical analysis of survey-based data	Addresses my third thesis objective by investigating how trust can have a mediating effect, enabling firms to combine systematic processes with creativity in product-development activity	Published in <i>Research Policy</i> 41 (4) 2012
Paper 5 <i>Similar, yet different: a comparative analysis of the role of trust in radical and incremental product innovation</i>	Statistical analysis of survey-based data	Addresses my third thesis objective by investigating trust in firms inclined towards radical innovation, compared to firms inclined towards incremental innovation	Under second round of review in <i>International Journal of Innovation Management</i>

Chapter 2

Theoretical background

What is trust?

Within the management literature, there is a general consensus that trust is an aspect of relationships (Schoorman et al., 2007; Zaheer et al., 1998). This means that trust is not only an inherent quality of the mind or character of an individual, nor an external “object” that can be manipulated and controlled (Mouritsen & Thrane, 2006). Instead, trust represents “a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another” (Rousseau et al., 1998: 395). Distrust, on the other hand, represents “confident negative expectations regarding another’s conduct” (Lewicki, McAllister, & Bies, 1998: 439). Since trust encompasses the intention to accept vulnerability, it essentially entails the “willingness to take risk” (Schoorman et al., 2007: 346) under conditions of dependence on another (Mayer et al., 1995). Trust therefore goes further than cooperation, confidence, predictability, and control, since these aspects of a relationship do not necessarily put actors at risk. Individuals, groups, and firms can, for example, cooperate even in the absence of trust. They can also induce confidence, predictability, and control into their relationships to the extent that a perception of risk is no longer present (see, for example, Das & Teng, 1998 and Mayer et al., 1995, for discussions).

Organizational-trust scholars also agree that trust is a multi-dimensional construct. One frequently cited framework is proposed by Sako (1992, 1998), who makes the conceptual distinction between competence trust, i.e. trust that the other party can do what they promise, and goodwill trust, i.e.

trust in the moral integrity of the other party (Ring & van de Ven, 1994). A related framework is proposed by Mayer et al. (1995), who distinguish between ability-based trust, i.e. “the group of skills, competencies, and characteristics that enable a party to have influence within some specific domain” (p. 717); benevolence-based trust, i.e. “the extent to which a trustee is believed to want to do good to the trustor” (p. 718); and integrity-based trust, i.e. “the trustor’s perception that the trustee adheres to a set of principles that the trustor finds acceptable” (p. 719).

Organizations are multi-level systems, and trust operates at the individual, group, and organizational levels (Currall & Inkpen, 2002). Essentially, however, it is individuals who engage in trust-building activities (Kroeger, 2012), while at the organizational level of analysis, trust is a compositional construct (Dirks, Lewicki, & Zaheer, 2009), reflecting the “extent to which organizational members have a collectively held trust orientation” towards the trusted referent (Zaheer et al., 1998: 143). Trust at the organizational level thus implies that there is a general consensus about the trustworthiness of the referent within the organization. Moreover, trust at this level also implies that trust is embedded into the routines, management practices, and culture of the organization (Gillespie & Dietz, 2009). When such a collective trust orientation is present and reflected in the larger system of the organization, this indicates that trust has been institutionalized (Tolbert & Zucker, 1996; Zaheer et al., 1998), which, in turn, increases the organization’s propensity to engage in risk-taking behavior towards the trusted referent (Mayer et al., 1995).

There is a long-standing debate over the antecedents of trust (see Möllering, 2007 for an excellent review). Some scholars (see Poppo, Zhou, & Ryu, 2008; Ring & van de Ven, 1992) have modeled trust as the outcome of calculative evaluations, meaning that trust is present simply because the trustor believes that, for the referent, the costs of distrustful behavior will exceed the benefits. Other scholars (e.g. Gulati, 1995; Gulati & Sytch, 2008, but see also Mayer et al., 1995; Ring & van de Ven, 1992) have emphasized the relationship between trust and previous behavior, arguing that signals of predictability, fairness, and competence incrementally build up the level of trust in relationships. Integrating these views, some scholars (e.g. Dietz & Hartog, 2006; Ring & van de Ven, 1992) have pictured trust on a

continuum, ranging from distrust through calculative trust to complete trust.

The role of trust in product development

Product development represents “the set of activities beginning with the perception of a market opportunity and ending in the production, sale, and delivery of a product” (Ulrich & Eppinger, 2004: 2). Trust is a frequently mentioned performance driver in this activity. To illustrate, Dayan & Di Benedetto (2010) and Dayan et al. (2009) show that managerial trust can have a positive impact on product success, team learning, and speed to market in product-development settings. In a similar vein, Madhavan & Grover (1998) and Koskinen et al. (2003) show that trust in product-development teams facilitates learning and knowledge transfer.

When product-development work is conducted via relationships between firms, trust becomes even more important. For example, McCutcheon et al. (1997) find that cooperativeness outweighs technical competence when persuading a supplier to engage in future development projects. On a similar theme, McCutcheon & Stuart (2000) as well as Littler et al. (1995) emphasize the importance of building trust between partners, while Bstieler (2006) finds that trust between partners is linked to project performance in collaborative product development.

In the following sections, I discuss the main rationale for why trust is important in a context of product development. To do so, I first explore the idea of trust as an organizing principle (McEvily et al., 2003) that enables tasks and incentives to be aligned under conditions of uncertainty and interdependence. Thereafter, I build on relational governance theory (e.g. Dyer & Singh, 1998; Gulati, 1995; Ring & van de Ven, 1992) to explain the role of trust in inter-organizational relationships.

Trust, uncertainty, and interdependence

Product development is inherently uncertain. Since each new development process comes with its own set of problems, the outset of each project involves a gap between “the amount of information required to perform a

task and the amount of information already possessed by the organization” (Galbraith, 1973: 5). Some product-development scholars refer to this gap as “project-related uncertainty” (Davila, 2000). However, product development also involves a second type of uncertainty: the risk of over-exploiting well-known domains and missing out on groundbreaking opportunities as a result (Alvarez, Barney, & Anderson, 2013). Because of these two types of uncertainty, product development is an activity that cannot be fully specified, monitored, or controlled.

Product development also creates strong interdependence between the specialized and often geographically dispersed actors involved (individuals, groups, and organizations). For example, complex products require cross-functional collaboration, while a multinational market presence may require a globally dispersed product-development team (Brown & Eisenhardt, 1995; Takeishi, 2002). Moreover, the pursuit of radical innovation, or innovation that clearly departs from existing practice (Dewar & Dutton, 1986), may require semi-autonomous teams that can break free from established norms (Benner & Tushman, 2003). Such teams are on the fringes of the organizational control structure.

The more diverse the actors involved in product development, the less they can rely on shared processes, norms, and cultures to coordinate their work. In their place, trust is a mechanism that can enable diverse and interdependent actors to move forward (Mayer et al., 1995). When present in relationships, trust works as an “organizing principle”, defined as “the logic by which work is coordinated and information is gathered, disseminated, and processed within and between organizations” (McEvily et al., 2003: 92). For example, trust can pull trusted individuals and organizations together – and push untrusted ones apart (McEvily et al., 2003). Moreover, trust promotes stability and fairness within the organization, and therefore provides the opportunity for experimentation and learning (Cyert & March, 1963). Finally, trust has a motivating effect – for example, by encouraging the sharing of knowledge between individuals and groups (Dirks & Ferrin, 2001).

Whereas trust implies a willingness to take risk, most other organizing principles imply a reduction of risk. Contracts and other control mechanisms, or “regulatory processes by which the elements of a system

are made more predictable through the establishment of standards in the pursuit of some desired objective or state” (Leifer & Mills, 1996: 117), are built on the notion of closing the “information gap” (Galbraith, 1973) by specifying outputs, behaviors, and methods for aligning incentives and coordinating activities (Das & Teng, 1998, 2001). Trust, in contrast, enables the coordination of activities even when the “information gap” cannot (Galbraith, 1973) – or should not (Alvarez et al., 2013) – be narrowed. This makes trust important in the context of product development.

Trust and inter-organizational product development

Product development is increasingly performed in the context of inter-organizational relationships such as buyer-supplier relationships, joint ventures, or university-industry collaborations (Faems, Van Looy, & Debackere, 2005). Such relationships enable the firm to leverage knowledge and competences that it lacks, in order to respond more quickly to technological changes and reduce the time and cost of in-house development (Littler et al., 1995; Ragatz, Handfield, & Scannell, 1997). The nature of such inter-organizational relationships adds two kinds of complexity to product development: appropriation concerns and coordination concerns (Dekker, 2004).³ Appropriation concerns relate to the potential misalignment of partner interests, exemplified by the possibility of the other party shirking, stealing information, or taking advantage of the relationship in other ways (i.e. opportunistic behavior). Coordination concerns, on the other hand, relate to the potential misalignment of inter-organizational activities, exemplified by the possibility of failing to harmonize schedules, company cultures, or budgeting processes. So one would expect trust to be even more important when product development is conducted in an inter-organizational setting, as opposed to within the firm.

Increasingly, inter-organizational governance scholars (e.g. Dekker & van den Abbeele, 2010; Dyer & Singh, 1998; Malhotra & Lumineau, 2011; Ring & van de Ven, 1992) are applying a relational perspective to inter-

³ See also Gulati, Wohlgezogen, & Zhelyazkov (2012), who make a distinction between “cooperation concerns” and “coordination concerns”.

organizational governance. This view emphasizes that positive trust dynamics initiate virtuous cycles that promote collaborative success and stability in inter-organizational relationships. Conversely, this perspective also predicts that negative trust cycles are likely to become self-perpetuating, leading to opportunistic action, competitive learning races, and eventually the failure and termination of the alliance (Ariño & de la Torre, 1998; Doz, 1996; Madhok, 1995; Makino, Chan, Isobe, & Beamish, 2007). From a relational perspective, building and sustaining trust is therefore a managerial priority. This is because trust reduces the likelihood of conflict (Zaheer et al., 1998), promotes a constructive interpretation of the other's intentions (Gulati & Singh, 1998; Uzzi, 1997), and encourages the free flow of information (Sako, 1992). Trust, thereby, enables firms to overcome both cooperation and coordination concerns, increasing the likelihood of successful inter-organizational product development (Kogut & Zander, 1996).

Expanding the frontiers of research: my objectives with this thesis

As is evident from the preceding literature review, organizational-trust scholars have proposed several models of trust and trust building. The role of trust is largely recognized within the product-development literature, and the relational-governance literature provides rich evidence for the importance of trust in inter-organizational settings. Even so, some gaps remain, and they are particularly significant in the context of product development. In this thesis, I emphasize three such lacunae: i) how group-level trust processes influence inter-organizational trust; ii) the process of inter-organizational trust repair; and iii) studies that are more finely grained concerning the implications of trust in a context of product development.

The need for additional insights into how group-level trust influences inter-organizational trust

It has been firmly established that trust in an organizational setting is a multi-level construct, operating at the individual, group, and organizational levels (see Currall & Inkpen, 2002; Rousseau et al., 1998; Zaheer et al., 1998). However, reviews of the organizational-trust literature (e.g. Fulmer & Gelfand, 2012; Gulati & Sytch, 2008; Schoorman et al., 2007) consistently show that these different levels are often considered in isolation, and that research has been slow to develop multi-level theorizing on how trust develops. Recently, there have been some moves to fill this gap, as a few scholars (Kroeger, 2012; Schilke & Cook, 2013; Sydow, 1998, 2006) have started to unpack the relationship between interpersonal and inter-organizational trust. Relying on institutional theory (e.g. Tolbert & Zucker, 1996) and structuration theory (e.g. Giddens, 1990), it is argued that organizations become trusting subjects when trust in a person is transferred (Sydow & Windeler, 1998) to an organization. Organizations become trusted objects by means of objectification: trust diffuses among individuals until a collective trust orientation (Zaheer et al., 1998) is established at the organizational level.

However, these multi-level conceptualizations still lack any analysis at the group level. Instead, it is often assumed that “the trust of either the dominant coalition or the management team is critical to understanding organizational trust, since it is this level of trust that will govern the strategic actions of the organization” (Schoorman et al., 2007: 346). What this assumption essentially implies is that trust at the organizational level is determined by the trust of a single dominant group. This is interesting, given that specialization and coordination among *different* groups is an essential element of organization. March (1962), for instance, describes the organization as a political coalition composed of different groups, each pursuing its individual interest, reaching mutual coordination through negotiation and sequential mediation. Pfeffer (1982: 64) describes organizations as “pluralistic, divided into interests, sub-units, and subcultures.” Along similar lines, Floyd & Lane (2000) emphasize the

different roles played by corporate- and operational-level managers, arguing that these two groups sometimes operate under divergent goals and logics. Organizational trust theory, however, has yet to look at how this biodiversity influences trust at the organizational level.

This omission is even more interesting when we consider that organizational-trust scholars (e.g. Currall & Inkpen, 2002) explicitly recognize that trust at the group level is distinct from trust at the individual and organizational levels. It is also recognized that group membership influences the level of trust that an individual puts in a referent. Perrone, Zaheer, & McEvily (2003), for instance, show that procurement representatives are more readily trusted when they are able to break free from the group context to which they belong (i.e. it is easier to trust an individual than a procurement manager). Analogously, Ring & van de Ven (1994: 96) argue that “even though individuals may rely on trust in their ‘qua persona’ relationships, they may be unable to do so when acting as agents for their organizations.” This means that although we may trust, and be trusted, as individuals, we might still be less trusting, or trustworthy, as representatives of the group to which we belong.

In sum, the group level is identified as a distinct level of analysis; group membership has been shown to influence the degree to which individuals are trusted, and trust others; and it is widely recognized that different groups can develop divergent goals and logics. Even so, group-level trust has only been considered in isolation, and has not yet been incorporated into the big picture of how individual-level trust becomes organizational-level trust. Instead, scholars studying trust at the organizational level seem to implicitly assume that the individual members of an organization comprise a single, homogenous group – neglecting the possibility that they might belong to different groups, and thereby develop very divergent perceptions about the trustworthiness of a referent.

In a context of product development, this assumption becomes problematic. Product development is, in essence, an activity that requires different groups to specialize – and, at the same time, coordinate. Inter-organizational product development, in particular, requires extensive coordination among different intra-organizational teams (Takeishi, 2002). Yet, models of organizational trust building are clearly underspecified with

respect to how such multi-group settings influence trust at the organizational level. Against this background:

My first objective with this thesis is to explore the mechanisms and processes that connect and differentiate between trust on the (inter)group and (inter)organizational levels.

The need for additional insights about inter-organizational trust repair

There are strong empirical indications that trust in inter-organizational relationships oscillates between positive and negative states over time. For example, in their analysis of two consecutive product-development collaborations between the same two firms, Faems et al. (2008) observe how a negative trust spiral was turned round, and inter-organizational trust repaired. In a similar vein, MacDuffie (2011) observes “pendulum swings” between states of trust and distrust within the same relationship, in the context of buyer-supplier relationships within the automotive industry.

In spite of these empirical observations, theoretical models of trust development often make assumptions that “regardless of a history of trust, one sufficiently grave breach of trust by one actor may be able to break down trust permanently” (Kroeger, 2012: 757). Such institutionalization of distrust is further assumed to result in the unsuccessful termination of the relationship (Ariño & de la Torre, 1998; Doz, 1996; Madhok, 1995; Makino et al., 2007). Consequently, inter-organizational trust scholars (e.g. Kroeger, 2012; Schilke & Cook, 2013; Zaheer et al., 1998) have theorized the stable paths by which inter-organizational trust and distrust are institutionalized. Still absent, however, is empirical research focusing on the more discontinuous process through which a negative trajectory is turned around and inter-organizational trust repaired following a transgression.

Instead, trust repair has been studied between individuals, between individuals and a single organization, and between individuals and institutions (for reviews, see Dirks et al., 2009; Kramer & Lewicki, 2010; and also Paper 2 in this thesis). While these studies provide important

insights, they also have limitations when applied to the inter-organizational level of analysis. Specifically, the compositional nature of inter-organizational trust – where trust encompasses the individual, group, and organizational levels – makes trust repair at the organizational level more complex (for a discussion, see Dirks et al., 2009; Janowicz-Panjaitan & Krishnan, 2009). Dirks et al. (2009), for instance, point out that trust repair between individuals only requires a single individual to change their opinion about the attributes of another. Trust repair between organizations, on the other hand, requires one collective of individuals to build consensus about trust being repaired in another collection of individuals.

In the context of inter-organizational product-development relationships, there is good reason to expect trust repair to be relevant. These relationships are often formed on a long-term basis, and involve relationship-specific investments (Koza & Lewin, 1998). These conditions create strong lock-in effects, meaning that even if trust is violated, exiting can be difficult and trust repair is a more likely alternative. The lack of empirical studies about processes of inter-organizational trust repair therefore represents an important shortcoming for researchers and managers who are interested in trust in the context of inter-organizational product development. Against this background:

My second objective with this thesis is to explore the mechanisms and processes underlying inter-organizational trust repair.

The need for more refined insights about the consequences of trust in a product-development context

Trust is a heavily cited performance driver in the product-development literature, but we lack a finely grained understanding of it. Product-development scholars (e.g. Bstieler, 2006; Bstieler & Hemmert, 2010; Dayan & Di Benedetto, 2010) refer to trust in a general sense, largely ignoring the possibility that trust in a referent's competence may follow different trajectories, and have different outcomes, than trust in their

goodwill. There are also inconsistencies over the relationship between trust and creativity. Whereas some scholars have argued for a positive link (Bidault & Castello, 2009), some have been unable to establish a significant relationship (Chen, Chang, & Hung, 2008), while others have concluded that there could be an “optimal level” of trust, beyond which additional trust might even impair creativity (Bidault & Castello, 2010). Moreover, because the literature has tended to assume that “the more trust, the better,” there is also a risk that it has inflated the importance of trust without genuinely understanding it. For example, scholars have yet to investigate whether the antecedents and implications of trust is similar in a context of radical product innovation, compared to incremental product innovation. Against this background:

My third objective with this thesis is to explore the implications of trust in a context of product development.

Chapter 3

Methodological approaches

Within the management literature, it is generally acknowledged that nascent theory development requires open-ended questions and qualitative data that yields its meaning through interpretation, while mature theory refinement requires narrow questions and large-scale quantitative data in order to generate generalizable knowledge (Edmondson & McManus, 2007; Eisenhardt & Graebner, 2007). Since my first two thesis objectives relate more to new theory development, while my third objective is more related to theory refinement, I use both qualitative and quantitative data. Table 2 provides an overview of the specific objective and empirical or conceptual design of each study.

Table 2 - Methodological approaches taken in the five different studies

Thesis objective	Paper	Specific objective	Study design
1st : explore group-level trust	Paper 1. Good Cop – Bad Cop	To study empirically the effect of integrating the R&D and procurement departments on the extent of goodwill trust and formal control in inter-firm product development projects	Inductive pilot study, deductive main study: two polar groups of cases are selected with the purpose of generating different outcomes for predictable reasons (Eisenhardt, 1989; Yin, 1994)
1st and 2nd : explore group-level trust and trust repair	Paper 2. Inter-Organizational Trust Repair	To develop theory on the process of inter-organizational trust repair	Abductive: longitudinal single case study, allowing for in-depth data collection on a complex phenomenon that involves multiple individuals interacting within and across organizational boundaries over time (Gioia et al., 2013; Pettigrew, 1990).
2nd : explore trust repair	Paper 3. Dealing With Trust Violations in Alliances	To develop a synthesizing framework, providing guidance for managers when dealing with trust violations, specifically when seeking to repair broken trust	Conceptual: provides an overview and synthesis of existing research
3rd : explore implications of trust in product development	Paper 4. Creativity, trust and systematic processes	To elaborate and nuance the apparent tradeoff between having systematic processes and structures versus creativity. This is done by explicitly examining the concept of trust	Deductive: leverage survey data about innovation practices among 99 firms. Standard correlation, regression, and mediation (Baron & Kenny, 1986) analysis applied.
3rd : explore implications of trust in product development	Paper 5. Similar, yet different: a comparative analysis of trust in radical and incremental product innovation	To test empirically whether the degree of innovativeness (i.e. more radical vs. more incremental) in product-development activity influences the relationship between trust and business performance	Deductive: leverage survey data about innovation practices among 99 firms. Standard correlation, regression, and sub-group analysis (Arnold, 1982; Sharma et al., 1981) is applied.

As illustrated in Table 2, I utilize different techniques for collecting and analyzing data, ranging from – at the one extreme – a grounded and processual analysis of a single case (Gioia, Corley, & Hamilton, 2013; Poole, van de Ven, Dooley, & Holmes, 2000; van de Ven & Poole, 1995), to – at the mid-point – a multiple case study, relying on a polar-group sampling strategy (Eisenhardt, 1989; Yin, 2003), to – at the other extreme – econometric analysis of mediating (Baron & Kenny, 1986) and moderating (Arnold, 1982; Sharma, Durand, & Gur-Arie, 1981) effects based on a large sample of firms. Below, I describe the general process for collecting the two data sets underlying this thesis: qualitative case studies at Heavy Machinery (a pseudonym) and a survey among 99 medium-sized Swedish technology-based firms.

Qualitative case studies at Heavy Machinery

Why case studies?

Case studies are “rich, empirical descriptions of particular instances of a phenomenon that are typically based on a variety of data sources” (Eisenhardt & Graebner, 2007: 25). Compared to large-scale quantitative data, case studies make it easier to collect multi-level data about how different circumstances unfold and interact over time (Eisenhardt & Graebner 2007; Langely et al. 2013). Moreover, because case studies usually imply an iterative process where the researcher moves between data collection and data analysis, they are also suitable for exploring open-ended questions and discovering unexpected findings (Poole & van de Ven, 1989). Case studies provide an opportunity to build theory by creating new concepts and developing novel propositions (Eisenhardt, 1989), and are therefore particularly suitable for developing nascent theory about relatively unexplored phenomena (Edmondson & McManus, 2007; Eisenhardt & Graebner, 2007). Since my first two research objectives concern such relatively unexplored phenomena, case studies provide a suitable empirical foundation for these studies (see Table 2).

Case sampling

Theory building from case studies implies that the findings of one case are contrasted and compared against the findings of other cases, or against the findings of existing theory (Eisenhardt, 1989; Eisenhardt & Graebner, 2007; Yin, 1994). The logic for sampling cases, therefore, is not that of random sampling. Instead, a case is sampled because it is expected to provide new, revelatory insights about a phenomenon, because it represents an extreme representation of that phenomenon, or because the researcher has good access to that particular case (Eisenhardt & Graebner, 2007; Yin, 1994).

For my thesis, Heavy Machinery (a pseudonym), a global manufacturer of heavy construction vehicles, provided such access. Heavy Machinery provided financial support to my university for funding a PhD candidate. My role at Heavy Machinery, however, has not been that of an action researcher who actively drives change within an organization. Instead, Heavy Machinery has generously allowed me to observe their operations; in exchange, I have delivered lectures and workshops of general relevance to my research topic. In total, I have conducted about 90 formal interviews with representatives of Heavy Machinery and its suppliers, and met another 150 individuals representing Heavy Machinery in lectures and workshops over the years. I have also reported the results of my studies to a steering group of product-development managers at Heavy Machinery every sixth month. Maintaining this regular contact with Heavy Machinery has given me a more in-depth understanding of the context of my studies, helping me to make sense of my data. Reporting regularly on the results of my studies has also served as a sanity check for my conclusions. In other words, I have made sure that they do not only make sense to me, but also to the practice that I have set out to study.⁴ As a result, these regular meetings have pushed me to maintain a healthy balance between theoretical and practical relevance in my research.

⁴These steering-group meetings were held with managers who were not directly involved in the specific cases that I have studied. In addition to these meetings, I have also conducted feedback interviews and sent my material for verification to the informants that I have interviewed. This type of data feedback and triangulation is reported in full in paper 1 and paper 2.

Since a detailed description of case sampling is provided in Papers 1 and 2, I will not replicate it here, but instead describe my process for identifying cases in more general terms. My overall objective to study trust in a context of product development has remained fairly consistent over time. Scanning the trust and product-development literature, I also realized early on the potential of collecting context-rich, multi-level data, and hoped that the generous access provided by Heavy Machinery would enable me to identify interesting cases related to this topic. At this point, however, I did not know what those cases would be. Instead, as described in Paper 1, *Good Cop – Bad Cop*, I started by studying trust and control in one pilot case: the relationship between Heavy Machinery and one particular supplier. Since this pilot study unearthed surprising and intriguing findings, I designed the polar-case sampling design underlying Paper 1 so I could replicate and contrast these findings across four cases in two polar groups (Yin, 1994). Please see Paper 1 for a more detailed description. Having completed the analysis for Paper 1, I realized that one of the relationships studied presented a revelatory case of trust repair, and decided to conduct a longitudinal analysis of trust repair in this case. Please see Paper 2 for a more detailed description.

Approach to qualitative data analysis

My analysis of these cases follows the neo-empiricist tradition (Johnston et al. 2006: 138): I try to capture as accurately as possible how different actors make sense of their everyday worlds and “investigate the implication of those interpretations for social interaction”. In order to do so, I rely on different techniques for collecting and analyzing data. I have, for instance, developed narrative descriptions, used critical-event analyses (following the recommendations of Poole et al., 2000 and Ariño & de la Torre, 1998), and deployed techniques for conducting a grounded analysis of the same (following the recommendations of Gioia et al., 2013). One important way in which I improved the reliability of my analysis was to have other researchers independently code and analyze my data. At the same time, I recognize that my understanding of how actors make sense of their everyday worlds is inherently incomplete, and also that there is never one,

“true” way to describe a pattern of events. Instead, I have tried to be as clear as possible about how I reached my conclusions, seeking to draw out the general implications of my analysis while retaining an awareness of its contextual boundaries.

Survey among 99 medium-sized Swedish technology-based firms

Why survey data?

A survey “involves the collection of information from individuals (through mailed questionnaires, telephone calls, personal interview, etc.) about themselves or about the social units to which they belong” (Forza, 2002: 155). Survey data thus encompass a large number of observations and lends itself to the testing of theoretical proposition (Edmondson & McManus, 2007). In my case, I found survey data suitable for exploring my third research objective, and used this type of data to test hypotheses about the implications of trust in a context of product development (see Table 2).

The survey that I relied on was distributed by Hans Löfsten and Anders Richtnér in May 2010 and focused on the effect of creativity and knowledge management on the innovativeness and performance of medium-sized technology-based firms in Sweden. I was invited to take part in this project after all the data had been collected. Since a substantial part of the survey related to trust, and since the empirical context was that of product development, I saw an opportunity to test hypotheses about the implications of trust in this context. Presented with this opportunity, Hans Löfsten and Anders Richtnér readily agreed to join me in this analysis. Details of the survey sample, the procedures for collecting and analyzing data, and the measurements applied are described in detail in Papers 4 and 5.

Chapter 4

Summaries of the five papers

Paper 1. *Good Cop – Bad Cop: Trust, Control and the Lure of Integration*

Based on a multiple-case study design, this paper focuses on how group composition influences goodwill trust and formal control in inter-organizational product-development collaborations, thereby offering a response to my first thesis objective. The *Good Cop – Bad Cop* paper was co-authored with Anders Richtnér and published in the *Journal of Product Innovation Management* 2013: 31(3).

Summary

Both goodwill trust and formal control are important in inter-organizational product development collaborations. Goodwill trust facilitates knowledge exchange and coordination of tasks while formal control, on the other hand, functions as both a coordination device and a safeguard against opportunism (Dekker, 2004). Both goodwill trust and formal control, however, are double-edged swords. While goodwill trust facilitates coordination, it also makes the trustor vulnerable to deception. Formal control, on the other hand, can alleviate concerns of opportunism, but has also been shown to impede learning and knowledge transfer (Lui, 2009;

Nielsen & Nielsen, 2009). If misused, formal control therefore hampers coordination.

Because goodwill trust and formal control have complementary effects, it would seem that firms that succeed in fostering goodwill trust in product-development collaborations – while at the same time maintaining a high level of formal control – should be more successful than other firms in managing such collaborations. Several scholars (e.g. Das & Teng, 1998; 2001; Lewicki et al. 1998; Sitkin & Roth, 1993), however, have suggested that goodwill trust and formal control are inherently incompatible concepts, and therefore cannot be combined. The underlying argument is that formal control assumes that the other party is opportunistic, and that this opportunism can be counteracted with formal control (Das and Teng 1998; 2001). Consequently, the very presence of formal control implies that the other party cannot be trusted.

In this respect, a central contribution of this paper is that it shows how goodwill trust and formal control can be combined in inter-organizational product development collaborations. That is, the empirical findings show that such combinations are possible by letting one department – in this case, the R&D department – foster trust while another department – in this case, the Procurement department – focuses on formal control. The trusting group, thereby, is the “Good Cop” while the controlling group is the “Bad Cop”. An important implication of this finding is that it points to a downside to cross-functional integration that has hereto been neglected. In particular, findings suggest that when the R&D department and Procurement department becomes integrated; goodwill trust is crowded out by formal control. This downside to integration is interesting, given that extant research (Clark & Fujimoto, 1991; Hillebrand & Biemans, 2004; Takeishi, 2001) mainly emphasize the many benefits of cross-functional integration. The paper also offers contribution to the ongoing discussion about the relationship between trust and control (e.g. Malhotra & Lumineau, 2011; Faems et al. 2008; Das and Teng, 1998). In particular, this paper suggests that rather than conceptualizing the relationship between goodwill trust and formal control as a continuum or as a matter of increasingly refined typologies, a more fruitful direction is to explore how the composition of different groups, and the interactions between them,

influences the presence of goodwill trust and formal control in relationships. One aim of this paper is to propose this shift in focus and thereby enable the trust-control debate to take a new direction.

The findings are supported through an intricate sample design (Harrigan, 1983) with polar cases (Yin, 2003). Specifically, two relationships in which the procurement and R&D departments were integrated were compared to two relationships in which these departments were separated. At the same time, all four relationships were carried out by the same buyer firm, which facilitates cross-case comparison. To make sense of the qualitative data and identify recurring and dominant themes, selective coding was utilized (Neuman, 2000; Strauss, 1987), and later crosschecked to ensure inter-coder reliability. Further, the analysis included pattern matching and explanation building (Yin, 2003). Data was reduced and analyzed individually and in parallel by both authors.

Paper 2. *Inter-Organizational Trust Repair: Drivers and Implications of Cross-Group Trust Consensus and Discord*

This paper examines one of the cases from *Good Cop – Bad Cop* (case D) in greater depth. Through a longitudinal investigation of this inter-organizational relationship, it explores the process of inter-organizational trust repair, thereby responding to my first and second thesis objectives. The paper was co-authored with Martin Carlsson-Wall, Dries Faems, and Magnus Mähring, and is currently under second-round review at the *Academy of Management Journal*.

Summary

Traditionally, trust research focuses on a single level of analysis, but trust scholars (e.g. Kroeger, 2012; Schilke & Cook, 2013; Zaheer et al., 1998) increasingly apply a multi-level perspective, pointing to interpersonal trust between boundary spanners as an important driver of inter-organizational trust. Moreover, they also argue that, once inter-organizational trust is

established, it functions as a framework that promotes subsequent trusting interactions. These multi-level studies conceptualize inter-organizational trust development as a “relatively stable path” (Kroeger, 2012: 757) consisting of positive reinforcing cycles between interpersonal and inter-organizational trust. While theory thus conceptualizes trust development as continuous, there are strong empirical indications that inter-organizational trust processes can also be more discontinuous. For example, in a study of the automotive industry, MacDuffie (2011: 40) points to the likelihood of “pendulum swings” between trust and distrust in buyer-supplier relationships over time. Calls (e.g. Dirks et al., 2009), therefore, have been made for more research about inter-organizational trust repair and this paper points to the need to complement prior theory-building with a focus on more discontinuous inter-organizational trust-development processes. In particular, the objective is to build theory on the process of inter-organizational trust repair.

A central contribution of this paper is the novel conceptual distinction between *cross-group trust consensus* – i.e. the presence of a similar trust orientation towards a referent across intra-organizational groups – and *cross-group trust discord* – i.e. the presence of a dissimilar trust orientation towards a referent across intra-organizational groups – in inter-organizational relationships. The paper also explains that these different cross-group trust states have important implications for understanding the process of inter-organizational trust repair. A core contribution in this respect is the identification of a specific type of cross-group trust discord: local trust repair. This takes place when, within the trustor organization, trust in the trustee organization is repaired within one group while persisting in other group(s). The paper also identifies specific mechanisms – i.e. decoupling, coupling, and temporal isolation – that influence the extent to which intra-organizational groups develop trust consensus or discord towards the partner organization. It develops propositions on the implications of these different cross-group trust states for the continuity of inter-organizational relationships.

The findings have important implications for the emerging multi-level perspective on (inter-)organizational trust development. In particular, they show how the existence of different intra-organizational groups, and

connections between them, shapes fundamental trust institutionalization processes at the organizational level. The paper also contributes to the trust-repair literature by developing a three-stage process model of inter-organizational trust repair. This model shows how local trust repair can be an important intermediate step in repairing inter-organizational trust when multiple groups are involved. Finally, the findings also make valuable contributions to inter-organizational governance research (e.g. Doz, 1996; Dyer & Singh, 1998) by showing that when inter-organizational relationships face a trust breakdown, partners might benefit from governance approaches that run counter to established views.

The findings are supported through a longitudinal study of three consecutive new-product-development projects between Heavy Machinery and one of its suppliers, Cooler Systems. This design allows for in-depth data collection on a complex phenomenon that involves multiple individuals interacting within and across organizational boundaries over time (Pettigrew, 1990). The theory-development process follows an abductive research approach “whereby theories are used to guide observation that further specifies the theories” (Poole et al., 2000: 115–117). This means that established procedures are followed to (i) identify critical events (following Ariño & de la Torre, 1998; van de Ven & Poole, 1995) (ii) deductively code trust statements and identify different trust stages (following Lander & Kooning, 2013) and (iii) inductively identify core concepts and link them together (following Gioia et al., 2013).

Paper 3. Dealing With Trust Violations in Alliances: How to Repair Broken Trust

This paper focuses on developing actionable advice on how managers can deal with trust violations – specifically, by planning and executing a process of inter-organizational trust repair. This responds to my second thesis objective. This paper adopts a more “managerial” writing style, such as can be found in the style guidelines of *California Management Review*.

Summary

Most executives appreciate the value of building and maintaining trust in alliances. As Daimler's CEO, Dieter Zetsche, stated when explaining why Daimler and Renault-Nissan expanded the scope of their relationship:

Over time, we have built up so much trust we are working like hand and glove.

Trust, however, cannot be taken for granted. In fact, trust is often violated (see for example Kogut, 1989; Ariño & de la Torre, 1998) – and without executive intervention; such violations can quickly turn even the most promising alliance into a value-destroying predicament. In fact, self-reinforcing negative spirals are not uncommon (see Collins, 2012), creating atmospheres of wariness, watchfulness, and vigilance, and often leading to expensive “divorces” (Zaheer et al., 2002). Therefore, executives need to know how to deal with trust violations and reverse these negative spirals. However, actionable advice about how to repair inter-organizational trust is still lacking.

Against this background, the central contribution of this paper is the development of a framework, which illuminates critical steps and key activities underlying inter-organizational trust repair. As such, the analysis also answers calls for integrative overviews of different trust-repair approaches (see Dirks et al., 2009; Kramer & Lewicki, 2010). The analysis clarifies that trust repair requires more drastic action than trust building, since negative spirals have a strong momentum and are difficult to turn round (see Tolbert & Zucker, 1996; Kroeger, 2012). Repairing trust, thereby, requires *first*, that the escalation of distrust is stopped. *Second*, trust repair requires that a platform for trust building become established, which provides the conditions for trust to grow without being subsumed by the distrust present in the alliance. Only thereafter, can partners engage in the *third* step: incremental trust building activities. The paper discusses a range of trust-repair actions: from addressing the root cause of the conflict by making apologies and implementing control, to ignoring the root cause of the conflict by shielding off less combative groups and repairing trust locally. Having said that, the analysis also demonstrates that each of these

actions can backfire, fueling a distrust spiral rather than repairing trust. To improve the chances of successful trust repair in an alliance, the paper emphasizes the importance of carefully assessing the situation when preparing for trust repair and provides checklists that can be used as a basis for reflection when doing so. The analysis is supported by a systematic review of the existent trust repair literature and several “mini-cases” are provided to illustrate the argument.

Paper 4. *Creativity, trust and systematic processes in product development*

This paper investigates how trust can have a mediating effect, enabling firms to combine systematic processes with creativity in product-development activity. This paper responds to my third thesis objective. The paper was co-authored with Hans Löfsten and Anders Richtnér and published in *Research Policy* 2012, 41(4).

Summary

Faced with inherent uncertainty in product-development work (e.g., Stockstrom & Herstatt, 2008), firms are advised on one hand to decrease variation through systematized processes and structures (e.g., Cooper, 1992), and on the other to increase variation in processes and structures in order to stimulate creativity (Amabile et al., 1996). Achieving both systematized processes and creativity, is therefore typically pictured as a delicate act of balancing between contradictive objectives (e.g. Clark & Fujimoto 1991).

A central contribution of this paper is that it shows how there is no inevitable tradeoff between being systematic with processes and structures and stimulating creativity in product-development work. More specifically, it shows that the process for obtaining information can be systematic, and organizational rules and structures can be explicit, even while the climate in the organization remains creative. The key to reconciling these apparent opposites lies in the way trust is achieved and managed within

organizations. Previous research has modeled trust as an outcome of predictability (e.g., Lewicki & Bunker, 1996) – i.e., when the actions of organizational members are perceived as predictable, trust will increase. Systematic processes and structures exist in order to reduce variation and thereby increase predictability. The paper argues, therefore, that systematic processes and structures will foster trust in an organization. Because previous researchers have linked trust to creativity (e.g. Bidault & Castello, 2009), this paper hypothesize and finds support for the hypothesis that trust function as a mediating variable that enables firms to combine systematic processes and structure with creativity. Thereby, the paper elaborates on previous theoretical suggestions (Feldman & Pentland, 2003; Gilson et al., 2005) that systematized rules and routines can result in creativity. The study is based on a survey of 99 medium-sized technology-based firms in Sweden. Standard correlation, factor, and regression analyses are applied and Baron & Kenny's (1986) procedure for testing mediating effects is followed.

Paper 5. Similar, yet different: a comparative analysis of the role of trust in radical and incremental product innovation

This paper examines the antecedents to and performance implications of trust in firms engaged in radical innovation compared to those working towards incremental innovations. This paper responds to my third thesis objective. The paper was co-authored with Hans Löfsten and Anders Richtnér it is currently under second-round review at the *International Journal of Innovation Management*.

Summary

Even though product innovation scholars have acknowledged the importance of trust (e.g. Bertels et al., 2011, Jassawalla and Sashittal, 1998, Dayan and Di Benedetto, 2010, Dayan et al., 2009), this research does not discriminate between radical and incremental product innovation. Radical

product innovation, or innovation that clearly departs from existing practice (Dewar and Dutton, 1986), enables firms to expand into new competitive spaces (Leifer et al., 2000). Radical innovation is also more uncertain and more complex than incremental innovation, and its management requires a different set of practices (Leifer, et al., 2000, Slater et al., 2014). Therefore, several scholars (e.g. Crossan and Apaydin, 2010, Slater, et al., 2014) have called recently for studies to show how radical innovation management is similar to, yet different from, incremental product innovation management.

Against this background, the central contribution of this paper is that it investigates the role of trust in firms inclined to radical innovation compared to firms inclined to incremental innovation. The analysis shows that the link between systematic processes and structures and trust is stronger for firms conducting radical innovation, compared to those conducting incremental innovation. At the same time, the paper does *not* find that the link between trust and business performance is stronger for radical innovation firms, even though this was initially hypothesized. A second contribution of this paper is that it provides a more refined understanding of trust in the context of product innovation. Trust is often included at the end of long lists of “nice-to-have concepts” (see for example, Adams, Day, & Dougherty, 1998; Bertels et al., 2011; Jassawalla & Sashittal, 1998; Koskinen et al., 2003) but is rarely properly defined, discussed, and problematized. This shortcoming is being addressed by a growing body of research on the role of trust in product innovation activity (e.g. Dayan & Di Benedetto, 2010; de Clercq et al., 2011; Kyriazis et al., 2012). This work provides more fine-grained analyses of the drivers of and implications of trust in product innovation activity. The paper contributes to this ongoing discussion by highlighting how the magnitude of innovativeness (radical vs. incremental) influences the antecedent conditions for trust in a context of product development.

The study is based on a survey of 99 medium-sized technology-based firms in Sweden. Innovativeness magnitude is conceptualized as a moderator, or a “variable that affects the direction and/or the strength of the relation between an independent or predictor variable and a dependent or criterion variable” (Baron & Kenny, 1986: 1174; see also Hayes, 2013).

Following the recommendations by Sharma et al., (1981) a sub-group analysis is applied to test the effect of this moderator. To test whether the difference between the two groups is significant, a Chow (1960) test is also performed.

Chapter 5

Key findings and theoretical implications

At the most general level, the implications of this thesis are threefold. First, it provides a multi-level understanding of trust. A key contribution is the illumination of as yet underspecified connections between trust at the group level and the organizational level. Second, this thesis provides a dynamic and multi-level view of inter-organizational trust repair. A main contribution here is the identification of novel mechanisms and characteristics of this process. Third, this thesis provides a more fine-grained investigation into the implications of trust in a context of product development. An important contribution in this area is a deeper understanding of how trust can function as an organizing principle, which enables the simultaneous pursuit of structure and creativity.

Towards a multi-level understanding of inter-organizational trust: the importance of the group level

The first research question that I explore in this thesis is: *what are the mechanisms and processes that connect and differentiate between trust development on the (inter)group and (inter)organizational levels?* Below, I describe my main findings in relation to this question, and their theoretical implications.

Findings

This thesis provides findings about how different intra-organizational groups build consensus (or discord) on the trustworthiness of a partner organization, and the possible implications of such cross-group sentiments. In essence, the findings presented in this thesis indicate that integration and interaction between different intra-organizational groups contributes to consensus-building across groups, whereas separation and limited interaction between groups increase the likelihood of cross-group discord.

Paper 1, *Good Cop – Bad Cop*, reports a comparative analysis across two polar groups (Yin, 1994) of cases: two in which the procurement department and R&D departments were integrated (i.e. physically and organizationally co-located), and two in which they were separated. In the two separated cases, R&D engineers emphasized that the ability to distance themselves from the procurement department made it easier to develop a trustful relationship with suppliers. The suppliers involved had a similar view, referring to the R&D engineers as “friends” while the procurement department was “the enemy”. In the two cases in which procurement and R&D were integrated, on the other hand, R&D engineers emphasized that the presence of procurement personnel made it harder to separate technical and commercial discussions. Instead, the integration increased wariness and watchfulness among R&D engineers, with a negative impact on trust. In sum, the findings presented in Paper 1 suggest that integration between the procurement department and the R&D department of a buyer organization

makes it more difficult to combine a perception of trust in the goodwill of the supplier with formal control over them.

The findings presented in *Inter-Organizational Trust Repair* (Paper 2) develop the logic of this argument in further depth and detail. This paper reports the findings of a longitudinal, in-depth study of a single relationship. In this case, a series of bilateral trust violations led to the supplier losing trust among corporate and operational group members of the buyer firm (Heavy Machinery). In this case, however, both groups eventually managed to repair trust in the supplier. By collecting in-depth data about the development of trust in this case over an extended time period, and by specifically focusing on trust development among corporate and operational representatives, this paper illuminates a dynamic and complex pattern of trust breakdown and repair.

An important contribution of Paper 2 is to identify the possibility of local trust repair – i.e. a situation where one group regains trust in the partner organization while distrust persists in other group(s) – and develop propositions on its drivers and implications. In this case, local trust repair was a critical step of the trust-repair process.

The paper also identifies specific drivers that contribute to local trust repair. The first is cross-group decoupling; meaning that interaction between more combative groups (in this case, corporate managers) and less combative groups (in this case, engineers) is restricted. Applying insights from social recategorization theory (Gaertner et al. 2000; Tajfel & Turner, 1986), the paper shows that the presence of cross-group decoupling helped engineers to see their counterparts in the other firm other as colleagues, instead of members of another organization that they did not trust. Cross-group decoupling thus helped to foster trust at the operational group, even as distrust remained present at the corporate level.

The second identified driver of local trust repair is temporal isolation: cultivating a focus on the present while disregarding transgressions in the past and ignoring potential implications for future collaboration. Applying Lindblom's (1959) notion of muddling through, the paper argues that temporal isolation enabled engineers to focus on a less conflict-laden aspect of the collaboration (i.e. technology development) while “suspending judgement” (McEviliy et al. 2003) about the more conflict-laden aspects of

the collaboration (i.e. distribution of costs). The study shows that ignoring these more contentious areas facilitated trust repair within this specific group.

Finally, the paper shows how cross-group coupling can allow the diffusion of distrust from more combative groups to less combative groups, leading to cross-group distrust consensus (i.e. the presence of distrust in all groups). The paper also suggests, however, that cross-group coupling can allow the converse effect: diffusion of local trust from less combative groups to more combative groups, leading to inter-organizational trust repair (i.e. presence of trust in all groups). The paper outlines a number of contextual variables, such as the absence of renewed transgression and removal of combative individuals, which can influence whether cross-group coupling leads to distrust consensus or trust repair.

Moreover, Papers 1 and 2 demonstrate that the presence of cross-group discord can have important consequences for the governance and structure of inter-organizational relationships. The findings in Paper 1, *Good Cop – Bad Cop*, indicate that by separation, a high degree of formal control can be combined with goodwill trust, whereas by integration, formal control is more likely to crowd out goodwill trust in a relationship. *Inter-Organizational Trust Repair* (Paper 2), on the other hand, shows that local trust repair at the operational level can provide a sufficient relational foundation for the continuation of an inter-organizational relationship, in despite of distrust at the corporate level.

Theoretical implications for organizational-trust research

Cross-group consensus, discord, and inter-organizational trust

This thesis highlights the possibility of cross-group trust discord and identifies drivers that make cross-group trust discord more likely (i.e. cross-group integration, cross-group decoupling and temporal isolation). Trust scholars (e.g. Currall & Inkpen, 2002, 2006; Rousseau et al., 1998) consistently emphasize that organizational trust is a multi-level phenomenon, which operates at the individual, group, and organizational levels. Even so, cross-level conceptualizations of trust remain scarce (e.g.

Fulmer & Gelfand, 2012; Gulati & Sytch, 2008; Schoorman et al., 2007), and the few scholars who have taken a cross-level perspective have ignored the group level in their analyses (Kroeger, 2012; Schilke & Cook, 2013; Zaheer et al., 1998). Implicitly, these scholars seem to assume that organizations are single, homogenous collectives of individuals, while ignoring the possibility of different groups within the organization pursuing different goals, logics, and activities.

One of this thesis' important contributions is to show that this assumption may not be entirely correct. Instead, the findings suggest that in order to understand the state of inter-organizational trust and the process of inter-organizational trust building, it is also important to understand the composition of different intra-organizational groups; the connections between them; and the norms, goals, and trust orientations within them. Ignoring these important analyses may lead to underspecified models of how organizational trust develops, what the "state" of organizational trust is at a singular point in time, and what the implications of this state might be.

The group level in relation to trust and control in inter-organizational relationships

A second contribution of this thesis is to show how cross-group trust discord can enable the co-existence of trust and control in inter-organizational relationships. There is a long-standing discussion within organizational trust research about whether the relationship between trust and control is substitutive or complementary. Some scholars (e.g. Das & Teng, 1998; Gulati et al., 2012; Malhotra & Lumineau, 2011; Woolthuis et al., 2005) have sought to disentangle the relationship between trust and control by developing increasingly refined typologies. Das & Teng (1998, 2001), for instance, make a conceptual distinction between goodwill trust and competence trust, as well as between social control and formal control; they suggest that the substitutive effect primarily relates to goodwill trust

and formal control.⁵ Woolthuis et al. (2005) make a conceptual distinction between opportunity control and incentive control, suggesting that incentive control is more difficult to combine with goodwill trust.⁶ In a similar line, Malhotra & Lumineau (2011) make a conceptual distinction between the control and coordination functions of contracts, and between goodwill trust and competence trust, finding that control provisions increase competence trust but reduce goodwill trust.⁷ Other scholars (e.g. Faems et al., 2008; Woolthuis et al., 2005) have focused on the actual application of trust and control in the context of inter-organizational relationships. Woolthuis et al. (2005) find that a certain level of trust often precedes contracts. Moreover, they find that “if a contract is not interpreted as a strict legal safeguard, trust and contract may go well hand in hand” (p. 834). On a similar theme, Faems et al., (2008) find that contracts can be applied with flexibility, thereby co-existing with goodwill trust. Even though the development of typologies is an important tool for theorizing (Delbridge & Fiss, 2013), there is also a risk that typologies become so fine-grained that they are of little practical relevance, or that practical phenomena are so multiplex that they do not fit into the typology boxes. Providing the empirical observation of trust and formal control that I have made in this thesis, this seems to be the case.

An important contribution of this thesis, therefore, is to disentangle the relationship between trust and control, based on the notion that different groups are involved in inter-organizational relationships and that these groups can apply and interpret control in very different ways. On the basis of this multi-level analysis, I propose that, in practice, trust and control can co-exist within a single inter-organizational relationship, even though they remain conceptually substitutive.

⁵ “Social control” refers to control where “focus is on developing shared values, beliefs, and goals among members so that appropriate behaviors will be reinforced and rewarded”. “Formal control” refers to control that “emphasizes the establishment and utilization of formal rules, procedures, and policies to monitor and reward desirable performance” (Das & Teng, 2001: 259).

⁶ “Opportunity control” refers to “limitation of opportunities for opportunism by restricting the range of a partner’s actions.” “Incentive control” refers to “limitation of material incentives to utilize opportunities for opportunism due to dependence on the relationship.” (Woolthuis et al., 2005: 815).

⁷ “Control” refers to the alignment of incentives, “cooperation” to the alignment of expectations and behavior.

First, findings from Paper 1, *Good Cop – Bad Cop*, indicate that goodwill trust and formal control can co-exist in inter-organizational relationships by dint of the separation between different organizational groups. In essence, findings indicate that letting one group be the “bad cop” (in this case, the procurement department) and another be the “good cop” (in this case, the R&D department), one group can pursue formal control while the other develops goodwill trust. At the same time, these findings suggest that if the two departments are integrated, it may be more difficult for the “good cop” to develop trust. Thus, these findings indicate that whereas goodwill trust and formal control co-exist on the organizational level, there seems to be a substitutive effect on the group level.

Findings from *Inter-Organizational Trust Repair* (Paper 2), on the other hand, indicate that control can have different implications for different groups. In this case, the implementation of a more detailed contract served as a control mechanism in the perspective of corporate managers, since it definitively constrained the opportunities for opportunistic behavior by the supplier. For operational engineers, on the other hand, the same contract served as a decoupling mechanism, as it limited the need for interaction between the operational and corporate groups. In this case, the presence of a more detailed contract thus allowed a process of local trust repair in the operational group.

The importance of trust at the operational level

Prior inter-organizational trust research has tended to assume that the trust of one dominant group – usually top managers – determines the collective trust orientation within organizations. For instance, Schoorman et al., (2007: 346) propose that “the trust of either the dominant coalition or the management team is critical to understanding organizational trust, since it is this level of trust that will govern the strategic actions of the organization.” Reflecting this assumption, most case studies (e.g. Ariño & de la Torre, 1998; Graebner, 2009) as well as surveys (e.g. Nooteboom, Berger, & Noorderhaven, 1997; Robson, Katsikeas, & Bello, 2008; Zaheer et al., 1998) rely exclusively on a single group – top managers – to measure and study inter-organizational trust. This thesis, in contrast, illustrates how several groups can simultaneously “dominate” inter-organizational

relationships. Moreover, it illuminates the importance of studying not only corporate managers but also operational groups. Both *Good Cop – Bad Cop* (Paper 1) and *Inter-Organizational Trust Repair* (Paper 2) show that trust at the operational level can have important outcomes, such as enabling a combination of trust and control, or enabling a continuation of the relationship in spite of distrust at the corporate level.

Theoretical implications for research on product development

A downside to cross-functional integration

One important contribution of this thesis is to highlight a downside to cross-group integration that previous research has neglected. In the literature, cross-group integration is identified as a central performance driver of product-development activity, both within and between firms. Barczak et al. (2009), for instance, note that most technology companies organize product development through cross-functional product-development teams (e.g. involving individuals from marketing, R&D, and purchasing). Clark & Fujimoto (1991) demonstrate that cross-functional integration enables more efficient problem-solving in product development because it links product and process engineering, brings together considerations of design and cost, and allows problem-solving to be frontloaded. Along similar lines, Gatignon & Xuereb (1997) argue that a close integration of different functional areas is critical for product-development success. Within the realms of inter-organizational product development, Takeishi (2001, 2002) and Hillebrand & Biemans (2004) show that efficient coordination of product-development activities across the firm's borders requires extensive coordination within the firm. Similar arguments are also proposed by several other product-development studies, both classical and more recent (e.g. Brown & Eisenhardt, 1995; Cooper & Kleinschmidt, 1987; Garrett & Neubaum, 2013; Slater et al., 2014). Moreover, Slater et al. (2014: 560) emphasize that “cross-functional integration is most likely to occur when team members view each other as colleagues, and identify with the group and have a stake in the collective success and failure.”

In contrast, this thesis suggests that the benefits of cross-group integration should also be weighed against the potential drawback that integration – under certain conditions – can hamper trust development. Both *Good Cop – Bad Cop* (Paper 1) and *Inter-Organizational Trust Repair* (Paper 2) show that cross-group separation can be an important condition allowing trust to develop in inter-organizational relationships. Relying on social categorization theory (Tajfel & Turner, 1986), these studies show that cross-functional integration can lead to diffusion of distrust, thereby hampering product-development performance. This thesis suggests circumstances – i.e. presence of distrust, or willingness to combine trust with control – where it is better to encourage team members *not* to view each other as colleagues, *not* to identify with the group, and *not* to have a stake in collective success or failure.

Implications for managers

A key dilemma for managers is the need to build trust in inter-organizational relationships without over-exposing their own firm to the opportunism of partners. The findings related to cross-group decoupling suggest that too much cross-functional integration, or too much top-management involvement in operational activities, risks crowding out important trust-building at the operational level. Instead, in order to build trust *and* retain formal control, operational-level individuals should be allowed to focus on day-to-day problem-solving. At the same time, procurement managers (Paper 1) or corporate managers (Paper 2) can focus on formal control, thus mitigating concerns of knowledge leakage or other opportunistic actions by the partner.

Towards a multi-level understanding of inter-organizational trust repair

The second research question that I explore in this thesis is: *what are the mechanisms and processes underlying inter-organizational trust repair?* Below, I

describe my main findings in relation to this question and discuss their theoretical implications.

Findings

This thesis provides findings about the process of inter-organizational trust repair. *Inter-Organizational Trust Repair* (Paper 2) sets out a three-step model of inter-organizational trust repair, showing how, after trust transgression(s), a collectively held distrust orientation towards the partner organization can shift into a collectively held trust orientation. The first step of this model is the decoupling of less conflict-laden groups from more conflict-laden groups. In the focal case, this involved decoupling the operational group from the corporate group by explicitly restricting communication between them. The second step entails the repair of trust at the less conflict-laden group. In the focal case, this entailed a strong focus on solving practical problems in the “here and now” by means of temporal isolation. Finally, the third step is the recoupling of the group where local trust has emerged to other groups. In the focal case, the promotion of one individual from the operational to the corporate group contributed to such recoupling.

Based on a review of the extant trust-repair literature, the conceptual paper *Dealing with trust violations* (Paper 3) proposes managerial advice about how to deal with trust violations. This paper outlines the situational conditions that make exiting the relationship, acquiring the partner, or repairing trust more or less desirable options following a trust violation. Focusing specifically on how to repair inter-organizational trust, this paper also identifies three generic approaches to repairing inter-organizational trust: i) the guilty party(ies) apologizing; ii) using monitoring and control to induce stability and predictability in the relationship; and iii) shielding off less combative groups and repairing trust locally. At the same time, the paper illuminates the possibility that these approaches can have unintended effects. Apologies, for example, can lead to substantial claims for compensation; control can trigger additional distrust; and local trust repair can hamper coordination across groups. To help managers think about and plan for inter-organizational trust repair, this paper develops advice about

how to assess the likelihood that apologies, control, and local trust repair will succeed in a particular alliance. Moreover, it provides a general three-step framework under which apologies, control, and local trust repair can work in sequence or in combination for best results.

Theoretical implications for organizational trust research

Trust repair beyond apologies

An important contribution of this thesis is that it identifies how trust can be repaired without any party accepting guilt or making apologies. Within organizational trust research, a specific stream has emerged, focusing on how trust can be repaired after it has been damaged by a transgression. This research stream has predominantly focused on trust repair between individuals, emphasizing the role of apologies and penance. In addition, some trust-repair scholars (e.g. Dirks et al., 2011; Gillespie & Dietz, 2009; Harmon, Kim, & Mayer, in press; Janowicz-Panjaitan & Krishnan, 2009; Nakayachi & Watabe, 2005; Sitkin & Roth, 1993) have applied a structural perspective, suggesting that trust can be repaired by means of distrust-regulating structures – notably, by the transgressor placing themselves in a self-hostage position (Nakayachi & Watabe, 2005) or implementing self-regulating structures that prevent future violations (Gillespie & Dietz, 2009). At the same time, these scholars argue that whereas structural mechanisms can help to preserve a relationship, they do not, in themselves, repair trust (e.g. Dirks et al., 2009; Janowicz-Panjaitan & Krishnan, 2009; Sitkin & Roth, 1993). Against this background, Gillespie & Dietz (2009) make clear that a critical first step in the trust-repair process is that the guilty party verbally “acknowledge the incident [i.e. trust violation], express regret, announce a full investigation, and commit resources to prevent a reoccurrence” (p. 137), before implementing structural remedies. In a similar line, both Harmon et al. (in press) and Dirks et al. (2011) emphasize the importance of combining structural mechanisms with apologies or penance.

In contrast, the notion of local trust repair does not require that any party formally accept responsibility, admit guilt, or offer apologies to the

other party. This is an important contribution, because there can be good reasons for not apologizing within the context of inter-organizational relationships. Firstly, it can be difficult to identify the guilty party in complex inter-organizational relationships that span different groups and domains. Moreover, acceptance of guilt can be followed by substantial claims for compensation. Instead, *Inter-Organizational Trust Repair* (Paper 2) i) identifies the notion of local trust repair; ii) outlines important drivers of trust repair, i.e. cross-group decoupling and temporal isolation; and iii) identifies an important driver in the diffusion of local trust repair to other groups, i.e. cross-group coupling. Further broadening trust repair beyond the notion of apologies, *Dealing with Trust Violations* (Paper 3) illuminates how different trust-repair strategies can work in combination or sequence, with or without any party making apologies.

Theoretical implications for research on product development

Trust repair as a relevant phenomenon

This thesis makes a contribution by identifying the relevance of trust repair in the context of product development, and by providing a context-sensitive analysis of trust breakdown in this context. Within product-development research, inter-organizational trust is identified as a central performance driver in inter-organizational relationships (Bstieler, 2006; Bstieler & Hemmert, 2010; Carson, Madhok, & Wu, 2006; Rijdsdijk & van den Ende, 2011). While these scholars have identified important conditions that facilitate the building of trust in inter-organizational product development relationships, they are silent on the processes of trust breakdown and trust repair.

Implications for managers

Actionable advice about how to repair trust

An important contribution of *Dealing with Trust Violations* (Paper 3) is that it provides both an overview of research on trust repair and an actionable framework for planning and executing a process of trust repair. Since inter-

organizational product development collaborations constitute a significant component of firms' product-development activities (Faems et al., 2005), and since conflict, tension, and trust violations are often present in such collaborations (Kogut, 1989), research on trust repair is an area of practical relevance. Yet, while there is much practical advice on how to build trust initially (e.g. Ariño, de la Torre, & Ring, 2001), managers seeking research-based advice on how to repair trust end up empty-handed.

Towards a refined understanding of trust in a context of product development

The third research question that I explore in this thesis is: *What are the implications of trust for product-development performance?* Below, I describe my main findings in relation to this question and discuss their theoretical implications.

Findings

Creativity, trust and systematic processes in product development (Paper 4) finds that there is no general trade-off between firms employing systematic work processes and structures and stimulating creativity in product-development activity at the same time. This paper starts from the notion that predictability builds trust (e.g. Ring & van de Ven 10992, 1994; Axelrod, 1984; Lewicki and Bunker, 1996). Systematic processes and structures represent one way for firms to increase predictability. When processes and structures are systematized, they serve as a proxy of both past interaction and future behavior. As such, they should also foster trust.

Second, this paper hypothesizes a positive link between goodwill trust and creativity. Being creative can be risky. For example, it can expose the lack of knowledge, planning, or a clear sense of how to carry forward product-development work. Since trust enables risk-taking (e.g. Mayer et al. 1995), this paper hypothesizes that the presence of goodwill trust in the product-development team should give people confidence that even apparently foolish or far-fetched ideas should be put forward, thus

encouraging creativity. Testing this hypothesis, this paper finds support for a positive relationship between i) systematic processes and goodwill trust, and ii) goodwill trust and creativity. By applying Baron & Kenny's (1986) test for detecting mediating effects, this paper thus finds that systematic processes can have a positive influence on creativity, even though they are often presented as mutually exclusive in the product-development literature (e.g. Amabile et al., 1996). At the same time, by making a conceptual distinction between competence trust and goodwill trust, the analysis only supports the link between goodwill trust and creativity, and not between competence trust and creativity.

Similar, yet different: a comparative analysis of the role of trust in radical and incremental product innovation (Paper 5) also provides a more granular investigation of trust in the context of product development. Findings suggest that the process by which trust is fostered differs when comparing firms inclined towards radical innovation to firms inclined towards incremental innovation. While those inclined towards radical innovation can foster trust by establishing a systematic process for building new knowledge and a clear organizational structure, such systematic processes and structures seems not to be linked to trust in firms inclined towards incremental innovations. The findings also suggest that trust is significantly linked to business performance in firms conducting radical innovation. The analysis, however, does not support the hypothesis that this link is stronger for radical innovation firms, compared to incremental innovation firms.

Implications for research on product development

A structured way to improve creativity

Within the product-development literature, trust is often mentioned towards the end of long lists of “nice to have” concepts, showing that trust has a positive impact on product-development performance. At the same time, we lack a more granular understanding of *why* trust is important. In particular, product-development research has largely ignored to explore the possibilities of considering trust as a principle (McEvily et al., 2003)

through which coordination can be achieved without uncertainty being reduced.

Instead of looking at trust as an organizing principle, product-development scholars (e.g. Brown & Eisenhardt, 1995; Cooper, 1992; Cooper & Kleinschmidt, 1987; Davila, 2000) have emphasized more formal principles of organization, such as stage-gate models (Cooper, 1992). While these scholars have emphasized the importance of formal organizing principles, they have also highlighted the need for balancing structure and flexibility in this context. Clark & Fujimoto, (1991: 161), for instance, describe product-development management as “a subtle balance of control and freedom, precision and flexibility, individualism and teamwork.” Along similar lines, creativity researchers (e.g. Amabile, 1998; Amabile & Conti, 1999) have argued that well-known routines and rigid rules and structures will make individuals less willing and able to be creative. Recent best-practice surveys (Barczak et al., 2009; Markham & Lee, 2013) also seem to suggest that as firms standardize their product-development activities, their innovations become more incremental and less radical.

By shifting the focus of analysis, from formal organizing principles to trust, this thesis offers a new way to look at this trade-off between structure and flexibility. That is, by investigating the mediating effect of trust in combining structure with flexibility, this thesis shows that trust in a context of product development opens up the possibility of simultaneously achieving both structure and flexibility. A contribution of this thesis is to show how trust can enable firms to be highly systematic yet stimulate a creative climate at the same time.

In addition, this thesis also offers a more finer-grained analysis of the implications of trust in a context of product development. While the importance of trust is widely recognized within product-development research, product development scholars have yet to investigate the contingencies of this assumption. By investigating how the magnitude of innovativeness (i.e. radical vs. incremental) influences antecedents and implications of trust, this thesis provides a more nuanced understanding of how trust operates differently across different contexts. Within the product development literature, it is also rarely recognized that the different dimensions of trust – such as goodwill versus competence – may have

different implications. A contribution of this thesis is that it shows that goodwill trust is linked to creativity, while competence trust may not be. The findings presented thereby help to resolve the empirical inconsistencies related to the relationship between trust and creativity (Bidault & Castello, 2009, 2010; Chen et al., 2008).

Limitations and future research

In accordance to the criteria of the Stockholm School of Economics, five individual papers constitute this thesis. Each paper contains a reflection on its specific limitations as well as suggestions about avenues for future research. Therefore, I will not go into detail here, but rather emphasize that my findings should be interpreted in the light of those limitations. In the discussion above, I have also tried to emphasize the more robust findings over the weaker results. Instead, in this section, I outline a two overarching limitations and areas of future research.

First, it ultimately falls to future empirical research to show whether the findings related to cross-group decoupling and cross-group separation from the case studies in Papers 1 and 2 are generalizable. My studies have focused specifically on a context of product development, and the role of corporate managers, procurement managers, and R&D engineers. I hope that future research will be interested in investigating whether the logics of cross-group decoupling and temporal isolation have similar outcomes in other contexts, and for other groups. In particular, I believe there is potential in conducting game-theoretical experiments on the cross-level decoupling mechanism. Berg, Dickhaut, & McCabe (1995) established a standard for trust games that has also been applied by McEvily, Weber, Bicchieri, & Ho (2006). It would be fruitful to test whether and how group membership and cross-level decoupling interact with the underlying logics of the findings of these experimental studies.

Second, whereas I have primarily emphasized the many qualities of building and repairing trust in a context of product development, there is also a darker side to trust that is given less recognition in this thesis. Even though trust is an evocative concept, it is also elusive, and it is not true that more trust is always better. Trust can be misplaced, thereby hindering the replacement of an opportunistic or incompetent partner (Patzelt & Shepherd, 2008). Trust can also make partners less prone to question information provided by the other (Gargiulo & Benassi, 2000; McEvily et al., 2003; Uzzi, 1997). Thereby, trust may induce strategic blindness and make the focal firm less responsive to changes in the external environment (Ferrin & Dirks, 2003; Krishnan et al., 2006; McEvily et al., 2003). Moreover, trust is not the only principle by which product-development work within and between firms is organized. Future research may find it interesting to explore the darker side of trust – or even explore the circumstances under which *distrust* can have a positive influence on inter-organizational collaboration.

Chapter 6

A short reflection on the core insights of this thesis

As stated in the introduction, my overall aim in this thesis has been to provide a context-sensitive, dynamic, and multi-level investigation of the implications of trust in a context of product development; how trust develops in this context; and how, once broken, inter-organizational trust can be repaired. This chapter focuses on the core insights of my thesis and puts them into perspective.

The question of how actors – individuals, groups, and organizations – form “positive expectations of the intentions or behavior of another” (Rousseau et al., 1998: 395) is a fundamental question for organizational theory. For example, it underlies the make-or-buy decisions stipulated within agency theory (Alchian & Demsetz, 1972; Jensen & Meckling, 1976), influences the cost of transactions as stipulated by Williamson (1991) and affects the extent to which partners rely on formal or relational governance to coordinate their inter-organizational relationships (e.g. Dyer & Singh, 1998; Gulati & Nickerson, 2008). While trust is not the only way positive expectations are formed, it is powerful, since it enables actors to form positive expectations even when faced with uncertainty and risk (Mayer et al., 1995; Das & Teng, 2001).

So, what are the implications of trust in a context of product development? Quite simply, my findings suggest that trust is an important performance driver, stimulating both creativity and potentially also business performance.

Moreover, my findings suggest that trust can have important consequences, such as enabling product-development teams to be highly systematic yet creative at the same time.

How, then, does trust develop in this context – and how can inter-organizational trust be repaired once broken? Trust scholars have already acknowledged that while individuals may rely on trust in their personal relationships, they can also find it more difficult to do so when acting on behalf of their organizations (Ring and van de Ven, 1994). In a similar vein, I have relied on social categorization theory (Tajfel & Turner, 1986) and role-making theory (Graen, 1976) to investigate how group composition influences trust formation in inter-organizational relationships. My findings show that the nature of an individual's role in the organization – corporate manager, procurement manager, or R&D engineer – influences their readiness to form “positive expectations” about a partner organization. In particular, findings indicate that when R&D engineers act as representatives of the organization, and therefore focus on protecting its commercial interests, they find it harder to trust the intentions of their supplier. On the other hand, when these engineers can distance themselves from the organization and act as representatives of their functional role, they are more ready to act “as if” appropriation concerns are absent, and find it easier to develop trust.

The contribution of these findings lies in a better understanding of trust as an organizational-level construct. What this thesis demonstrates is that when different groups within the organization are given sufficient autonomy, trust at the organizational level is not that of a homogenous “collective trust orientation” determined by the trust of the “dominant coalition” (c.f. Zaheer et al., 1998 and Schoorman et al., 2007). Instead, trust at the organizational level is characterized by cross-group trust discord, meaning that trust exists in one group(s) even as distrust is present in other group(s). To understand trust at the organizational level, therefore, we must understand the composition of, and interactions between, different inter-organizational groups, operating at both operational and corporate levels. This, however, is a perspective largely ignored in extant research.

My findings also indicate that the presence of cross-group trust discord can have relatively functional outcomes for the governance of inter-organizational relationships. They suggest, for example, that cross-group trust discord enables combinations of trust and control that might seem mutually contradictory at a conceptual level. Moreover, my findings indicate that cross-group discord seems to be an important first step in enabling inter-organizational trust repair. This is interesting, since extant research (e.g. Zaheer et al., 2002; Ariño & de la Torre, 1998) has argued that in the absence of trust at the corporate level (Madhok, 1995) and in the presence of alternative partners (c.f. Pfeffer & Salancik, 1978; Faems et al., 2008) a sufficiently grave breach of trust will lead to the termination of the inter-organizational relationship. Findings presented in this thesis, however, indicate that cross-group discord can be a sufficient explanation for why some inter-organizational relationships are maintained, in despite of corporate-level distrust and even though there are alternative partners to turn to.

Turning to the wider research agenda, my findings have implications for how we understand important inter-organizational governance decisions, such as whether a firm should continue an inter-organizational relationship, or impose formal governance on its partner.

There is a long history of work that encourages management scholars to focus on how internal structures and processes influence decision-making within firms. Behavioral theory, in particular, emphasizes how organizations are constituted by divergent coalitions pursuing multiple goals (see Cyert & March, 1963; March, 1962). Even so, inter-organizational governance scholars often outline governance decisions as a discrete set of structural alternatives pursued by corporate managers. Williamson (1991: 269), for example, argues that “the cost-effective choice of organization form is shown to vary systematically with the attributes of transactions”. In a similar line, Das & Teng (1998: 507) argue that “one of the key questions for partners in strategic alliances is whether to trust or to control”, and Gulati & Nickerson (2008: 17) argue that managers have the opportunity of “choosing wisely” between trust and formal governance.

The decision-making processes that I have observed, however, have little to do with the presence of super-managers who consciously and wisely

choose between discrete structural alternatives. Instead, structures are emergent and distributed: they involve decisions taken by different groups within the firm, sometimes simultaneously and often without due consideration of the overall attributes of the transaction or other situational conditions. I hope that my findings can stimulate an increased focus on how the social processes within organizations influence the structure of inter-organizational relationships.

References

- Alchian, A. A., & Demsetz, H. (1972). Production, information costs, and economic organization. *The American Economic Review*, 62(5), 777-795.
- Alvarez, S. A., Barney, J. B., & Anderson, P. (2013). Forming and exploiting opportunities: The implications of discovery and creation processes for entrepreneurial and organizational research. *Organization Science*, 24(1), 301-317.
- Amabile, T. (1998). How to kill creativity. *Harvard Business Review*, 76(5).
- Amabile, T. M., & Conti, R. (1999). Changes in the work environment for creativity during downsizing. *Academy of Management Journal*, 42(6), 630.
- Ariño, A., & de la Torre, J. (1998). Learning from failure: Towards an evolutionary model of collaborative ventures. *Organization Science*, 9(3), 306-325.
- Ariño, A., de la Torre, J., & Ring, P. S. (2001). Relational quality: Managing trust in corporate alliances. *California Management Review*, 44(1), 109-131.
- Arnold, H. J. (1982). Moderation variables: A clarification of conceptual, analytical and psychometric issues. *Organizational Behavior and Human Performance*, 29, 143-174.
- Bachmann, R., & Inkpen, A. C. (2011). Understanding institutional-based trust building processes in inter-organizational relationships. *Organization Studies*, 32(2), 281-301.
- Barczak, G., Griffin, A., & Kahn, K. B. (2009). Perspective: Trends and drivers of success in npd practices: Results of the 2003 pdma best practices study*. *Journal of Product Innovation Management*, 26(1), 3-23.
- Barczak, G., Lassk, F., & Mulki, J. (2010). Antecedents of team creativity: An examination of team emotional intelligence, team trust and collaborative culture *Creativity & Innovation Management*, 19(4), 332-345.
- Baron, R. M., & Kenny, D. A. (1986). The moderator mediator variable distinction in social-psychological research - conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- Benner, M. J., & Tushman, M. L. (2003). Exploitation, exploration, and process management: The productivity dilemma revisited. *The Academy of Management Review*, 28(2), 238-256.
- Berg, J., Dickhaut, J., & McCabe, K. (1995). Trust, reciprocity, and social history. *Games and Economic Behavior*, 10(1), 122-142.
- Bidault, F., & Castello, A. (2009). Trust and creativity: Understanding the role of trust in creativity-oriented joint developments. *R & D Management*, 39(3), 259-270.
- Bidault, F., & Castello, A. (2010). Why too much trust is death to innovation. *MIT Sloan Management Review*, 51(4), 33-38.
- Bosch-Sijtsema, P. M., & Postma, T. J. B. M. (2009). Cooperative innovation projects: Capabilities and governance mechanisms. *Journal of Product Innovation Management*, 26(1), 58-70.
- Bottom, W. P., Gibson, K., Daniels, S. E., & Murnighan, J. K. (2002). When talk is not cheap: Substantive penance and expressions of intent in rebuilding cooperation. *Organization Science*, 13(5), 497-513.
- Brattström, A., Löfsten, H., & Richtnér, A. (2012). Creativity, trust and systematic processes in product development. *Research Policy*, 41(4), 743-755.

- Brown, S. L., & Eisenhardt, K. M. (1995). Product development: Past research, present findings, and future directions. *The Academy of Management Review*, 20(2), 343-378.
- Bstieler, L. (2006). Trust formation in collaborative new product development. *Journal of Product Innovation Management*, 23(1), 56-72.
- Bstieler, L., & Hemmert, M. (2010). Increasing learning and time efficiency in interorganizational new product development teams. *Journal of Product Innovation Management*, 27(4), 485-499.
- Burgelman, R. A., & McKinney, W. (2006). Managing the strategic dynamics of acquisition integration: Lessons from hp and compaq. *California Management Review*, 48(3), 6-27.
- Carson, S. J., Madhok, A., & Wu, T. (2006). Uncertainty, opportunism, and governance: The effects of volatility and ambiguity on formal and relational contracting. *The Academy of Management Journal*, 49(5), 1058-1077.
- Chen, M.-H., Chang, Y.-C., & Hung, S.-C. (2008). Social capital and creativity in r&d project teams. *R&D Management*, 38(1), 21-34.
- Clark, K. B., & Fujimoto, T. (1991). *Product development performance*. Boston: Harvard Business School Press.
- Cooper, R. G. (1992). Stage gate systems for new product success. *Marketing Management*, 1(4), 20-29.
- Cooper, R. G., & Kleinschmidt, E. J. (1987). New products: What separates winners from losers? *Journal of Product Innovation Management*, 4(3), 169-184.
- Currall, S. C., & Inkpen, A. C. (2002). A multilevel approach to trust in joint ventures. *Journal of International Business Studies*, 33(3), 479-495.
- Currall, S. C., & Inkpen, A. C. (2006). On the complexity of organizational trust: A multi-level co-evolutionary perspective and guidelines for future research. In R. Bachman & A. Zaheer (Eds.), *Handbook of trust research* (pp. 235-247). Northampton, MA: Edward Elgar Publishing.
- Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm* (2nd ed.). New Jersey, USA: Prentice-Hall.
- Das, T. K., & Teng, B.-S. (1996). Risk types and the inter-firm alliance structures. *Journal of Management Studies*, 33(6), 827-843.
- Das, T. K., & Teng, B.-S. (1998). Between trust and control: Developing confidence in partner cooperation in alliances. *The Academy of Management Review*, 23(3), 491-512.
- Das, T. K., & Teng, B.-S. (2001). Trust, control, and risk in strategic alliances: An integrated framework. *Organization Studies*, 22(2), 251.
- Davila, T. (2000). An empirical study on the drivers of management control systems' design in new product development. *Accounting, Organizations and Society*, 25(4-5), 383-409.
- Dayan, M., & Di Benedetto, C. A. (2010). The impact of structural and contextual factors on trust formation in product development teams. *Industrial Marketing Management*, 39(4), 691-703.
- Dayan, M., Di Benedetto, C. A., & Colak, M. (2009). Managerial trust in new product development projects: Its antecedents and consequences. *R&D Management*, 39(1), 21-37.
- De Clercq, D., Thongpapanl, N., & Dimov, D. (2011). A closer look at cross-functional collaboration and product innovativeness: Contingency effects of structural and relational context. *Journal of Product Innovation Management*, 28(5), 680-697.
- Dekker, H. C. (2004). Control of inter-organizational relationships: Evidence on appropriation concerns and coordination requirements. *Accounting*,

- Organizations and Society*, 29(1), 27-49.
- Dekker, H. C., & van den Abbeele, A. (2010). Organizational learning and interfirm control: The effects of partner search and prior exchange experiences. *Organization Science*, 21(6), 1233-1250
- Delbridge, R. and Fiss, P. (2013). Styles of theorizing and the social organization of knowledge. *Academy of Management Review* 38(3), 325-331.
- Dewar, R. D., & Dutton, J. E. (1986). The adoption of radical and incremental innovations: An empirical analysis, . *Management Science*, 32(11), 1422-1433.
- Dewey, J. (1933). Analysis of reflective thinking. *The Essential Dewey*, 2, 137-144.
- Dietz, G., & Hartog, D. N. D. (2006). Measuring trust inside organisations. *Personnel Review*, 35(5), 557 - 588.
- Dirks, K. T., & Ferrin, D. L. (2001). The role of trust in organizational settings. *Organization Science*, 12(4), 450.
- Dirks, K. T., Kim, P. H., Ferrin, D. L., & Cooper, C. D. (2011). Understanding the effects of substantive responses on trust following a transgression. *Organizational Behavior and Human Decision Processes*, 114(2), 87-103.
- Dirks, K. T., Lewicki, R. J., & Zaheer, A. (2009). Repairing relationships within and between organizations: Building a conceptual foundation. *Academy of Management Review*, 34(1), 68-84.
- Doz, Y. L. (1996). The evolution of cooperation in strategic alliances: Initial conditions or learning processes? *Strategic Management Journal*, 17(Summer Special Issue), 55-84.
- Dyer, J. H., & Chu, W. (2000). The determinants of trust in supplier-automaker relationships in the u.S., japan, and korea. *Journal of International Business Studies*, 31(2), 259-285.
- Dyer, J. H., & Singh, H. (1998). The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *The Academy of Management Review*, 23(4), 660-679.
- Edmondson, A. C., & McManus, S. E. (2007). Methodological fit in management field research. *Academy of Management Review*, 32(4), 1155-1179.
- Eisenhardt, K. M. (1989). Building theories from case study research. *The Academy of Management Review*, 14(4), 532-550.
- Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50, 25-32.
- Emden, Z., Calantone, R. J., & Droge, C. (2006). Collaborating for new product development: Selecting the partner with maximum potential to create value. *Journal of Product Innovation Management*, 23(4), 330-341.
- Faems, D., Janssens, M., Madhok, A., & Van Looy, B. (2008). Toward an integrative perspective on alliance governance: Connecting contract design, trust dynamics, and contract application. *Academy of Management Journal*, 51(6), 1053-1078.
- Faems, D., Van Looy, B., & Debackere, K. (2005). Interorganizational collaboration and innovation: Toward a portfolio approach. *Journal of Product Innovation Management*, 22(3), 238-250.
- Ferrin, D. L., Bligh, M. C., & Kohles, J. C. (2007). Can i trust you to trust me?: A theory of trust, monitoring, and cooperation in interpersonal and intergroup relationships. *Group Organization Management*, 32(4), 465-499.
- Ferrin, D. L., & Dirks, K. T. (2003). The use of rewards to increase and decrease trust: Mediating processes and differential effects. *Organization Science*, 14(1), 18-31.
- Floyd, S. W., & Lane, P. J. (2000). Strategizing throughout the organization: Managing role conflict in strategic renewal. *Academy of Management Review*,

- 25(1), 154-177.
- Fulmer, C. A., & Gelfand, M. J. (2012). At what level (and in whom) we trust trust across multiple organizational levels. *Journal of Management*, 38(4), 1167-1230.
- Forza, C. (2002) Survey research in operations management: a process-based perspective. *International journal of operations & production management* 22(2), 152-194.
- Gaertner, S. L., Dovidio, J. F., Banker, B. S., Houlette, M., Johnson, K. M., & McGlynn, E. A. (2000). Reducing intergroup conflict: From superordinate goals to decategorization, recategorization, and mutual differentiation. *Group Dynamics: Theory, Research, and Practice*, 4(1), 98-114.
- Galbraith, J. R. (1973). *Designing complex organizations*. Boston: Addison-Wesley Longman Publishing Co.
- Garcia, R., & Calantone, R. (2002). A critical look at technological innovation typology and innovativeness terminology: A literature review. *Journal of Product Innovation Management*, 19(2), 110-132.
- Gargiulo, M., & Benassi, M. (2000). Trapped in your own net? Network cohesion, structural holes, and the adaptation of social capital. *Organization Science*, 11(2), 183-196.
- Garrett, R. P., & Neubaum, D. O. (2013). Top management support and initial strategic assets: A dependency model for internal corporate venture performance. *Journal of Product Innovation Management*, 30(5), 896-915.
- Gatignon, H. & Xuereb, J.-M. (1997) Strategic orientation of the firm and new product performance. *Journal of Marketing Research*, 34(1), 77-90.
- George, G. (2014). Rethinking management scholarship. *Academy of Management Journal*, 57(1), 1-6.
- Giddens, A. (1990). *The consequences of modernity*. Stanford: Stanford University Press.
- Gillespie, N., & Dietz, G. (2009). Trust repair after an organization-level failure. *Academy of Management Review*, 34(1), 127-145.
- Gillespie, N., & Hurley, R. (2013). Trust and the global financial crisis. In R. Bachman & A. Zaheer (Eds.), *Handbook of advances in trust research* (pp. 177-203). Cheltenham: Edward Elgar.
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research notes on the gioia methodology. *Organizational Research Methods*, 16(1), 15-31.
- Graebner, M. (2009). Caveat venditor: Trust asymmetries in acquisitions of entrepreneurial firms. *Academy of Management Journal*, 53(3), 435-472.
- Gulati, R. (1995). Does familiarity breed trust - the implications of repeated ties for contractual choice in alliances. *Academy of Management Journal*, 38(1), 85-112.
- Gulati, R., & Nickerson, J. A. (2008). Interorganizational trust, governance choice, and exchange performance. *Organization Science*, 19(5), 688-708.
- Gulati, R., & Singh, H. (1998). The architecture of cooperation: Managing coordination costs and appropriation concerns in strategic alliances. *Administrative Science Quarterly*, 43(4), 781-814.
- Gulati, R., & Sytch, M. (2008). Does familiarity breed trust? Revisiting the antecedents of trust. *Managerial & Decision Economics*, 29(2/3), 165-190.
- Gulati, R., Sytch, M., & Mehrotra, P. (2008). Breaking up is never easy: Planning for exit in a strategic alliance. *California Management Review*, 50(4), 147-163.
- Gulati, R., Wohlgezogen, F., & Zhelyazkov, P. (2012). The two facets of collaboration: Cooperation and coordination in strategic alliances. *The*

- Academy of Management Annals*, 1-53.
- Harmon, D. J., Kim, P. H., & Mayer, K. J. (In press). Breaking the letter vs. Spirit of the law: How the interpretation of contract violations affects trust and the management of relationships. *Strategic Management Journal*.
- Harrigan, K. R. (1983). Research methodologies for contingency approaches to business strategy. *The Academy of Management Review*, 8(3), 398-405.
- Hebda, J. M., Vojak, B. A., Griffin, A., & Price, R. L. (2012). Motivating and demotivating technical visionaries in large corporations: A comparison of perspectives. *R&D Management*, 42(2), 101-119.
- Hillebrand, B., & Biemans, W. G. (2004). Links between internal and external cooperation in product development: An exploratory study*. *Journal of Product Innovation Management*, 21(2), 110-122.
- Janowicz-Panjaitan, M., & Krishnan, R. (2009). Measures for dealing with competence and integrity violations of interorganizational trust at the corporate and operating levels of organizational hierarchy. *Journal of Management Studies*, 46(2), 245-268.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of financial economics*, 3(4), 305-360.
- Johnson, P., Buehring, A., Cassell, C., & Symon, G. (2006). Evaluating qualitative management research: Towards a contingent criteriology. *International Journal of Management Reviews*, 8(3), 131-156.
- Karlsson, C., & Sköld, M. (2007). The manufacturing extraprise: An emerging production network paradigm. *Journal of Manufacturing Technology Management*, 18(8).
- Kim, P. H., Dirks, K. T., Cooper, C. D., & Ferrin, D. L. (2006). When more blame is better than less: The implications of internal vs. External attributions for the repair of trust after a competence- vs. Integrity-based trust violation. *Organizational Behavior and Human Decision Processes*, 99(1), 49-65.
- Kogut, B. (1989). The stability of joint ventures: Reciprocity and competitive rivalry. *Journal of Industrial Economics*, 38(2), 183-198.
- Kogut, B., & Zander, U. (1992). Knowledge of the firm, combinative capabilities and the replication of technology. *Organization Science*, 3(3), 383-397.
- Kogut, B., & Zander, U. (1996). What firms do? Coordination, identity, and learning. *Organization Science*, 7(5), 502-518.
- Koskinen, K. U., Pihlanto, P., & Vanharanta, H. (2003). Tacit knowledge acquisition and sharing in a project work context. *International Journal of Project Management*, 21(4), 281-290.
- Koza, M. P., & Lewin, A. Y. (1998). The co-evolution of strategic alliances. *Organization Science*, 9(3), 255-264.
- Kramer, R. M., & Lewicki, R. J. (2010). Repairing and enhancing trust: Approaches to reducing organizational trust deficits. *The Academy of Management Annals*, 4(1), 245-277.
- Krishnan, R., Martin, X., & Noorderhaven, N. G. (2006). When does trust matter to alliance performance? *Academy of Management Journal*, 49(5), 894-917.
- Kroeger, F. (2012). Trusting organizations: The institutionalization of trust in interorganizational relationships. *Organization*, 19(6), 743-763.
- Kyriazis, E., Couchman, P., & Johnson, L. W. (2012). Psychosocial antecedents of communication, trust, and relationship effectiveness in new product development projects: A functional manager perspective. *R&D Management*, 42(3), 207-224.
- Langley, C., Smallman, C., Tsoukas, H., & van de Ven, A. H. (2013). Process studies

- of change in organization and management: Unveiling temporality, activity, and flow. *Academy of Management Journal*, 56(1), 1-13.
- Lander, M. W., & Kooning, L. (2013). Boarding the aircraft: Trust development amongst negotiators of a complex merger. *Journal of Management Studies*, 50(1), 1-30.
- Leifer, R., & Mills, P. K. (1996). An information processing approach for deciding upon control strategies and reducing control loss in emerging organizations. *Journal of Management*, 22(1), 113.
- Lester, R. K., & Piore, M. J. (2006). *Innovation: The missing dimension*: Harvard University Press.
- Lewicki, R. J., McAllister, D. J., & Bies, R. J. (1998). Trust and distrust: New relationships and realities. *The Academy of Management Review*, 23(3), 438-458.
- Lewicki, R. J., Tomlinson, E. C., & Gillespie, N. (2006). Models of interpersonal trust development: Theoretical approaches, empirical evidence, and future directions. *Journal of Management*, 32(6), 991-1022.
- Lindblom, C. E. (1959). The science of "muddling through". *Public Administration Review*, 19(2), 79-88.
- Littler, D., Leverick, F., & Bruce, M. (1995). Factors affecting the process of collaborative product development: A study of uk manufacturers of information and communications technology products. *Journal of Product Innovation Management*, 12(1), 16-32.
- Long, C. P., & Sitkin, S. B. (2006). Trust in the balance: How managers integrate trust-building and task control. In R. Bachman & A. Zaheer (Eds.), *Handbook of trust research* (pp. 87-107). Cheltenham: Edward Elgar Publishing Ltd.
- Lui, S. S. (2009). The roles of competence trust, formal contract, and time horizon in interorganizational learning. *Organization Studies*, 30(4), 333-353.
- MacDuffie, J. P. (2011). Inter-organizational trust and the dynamics of distrust. *Journal of International Business Studies*, 42(1), 35-47.
- Madhavan, R., & Grover, R. (1998). From embedded knowledge to embodied knowledge: New product development as knowledge management. *The Journal of Marketing*, 62(4), 1-12.
- Madhok, A. (1995). Revisiting multinational firms' tolerance for joint ventures: A trust-based approach. *Journal of International Business Studies*, 26(1), 117-137.
- Makino, S., Chan, C. M., Isobe, T., & Beamish, P. W. (2007). Intended and unintended termination of international joint ventures. *Strategic Management Journal*, 28(11), 1113-1132.
- Malhotra, D. K., & Lumineau, F. (2011). Trust and collaboration in the aftermath of conflict: The effects of contract structure. *Academy of Management Journal*, 54(5), 981-998.
- March, J. G. (1962). The business firm as a political coalition. *The Journal of Politics*, 24(04), 662-678.
- March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2(1), 71-87.
- Markham, S. K., & Lee, H. (2013). Product development and management association's 2012 comparative performance assessment study. *Journal of Product and Innovation Management*, 30(3), 408-429.
- Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integration model of organizational trust. *The Academy of Management Review*, 20(3), 709-734.
- McCutcheon, D., & Stuart, F. I. (2000). Issues in the choice of supplier alliance partners. *Journal of Operations Management*, 18(3), 279-301.

- McCutcheon, D. M., Grant, R. A., & Hartley, J. (1997). Determinants of new product designers' satisfaction with suppliers' contributions. *Journal of Engineering and Technology Management, 14*(3-4), 273-290.
- McDermott, C. M., & O'Connor, C. G. (2002). Managing radical innovation: An overview of emergent strategy issues. *Journal of Product Innovation Management, 19*(6), 424.
- McEvily, B., Perrone, V., & Zaheer, A. (2003). Trust as an organizing principle. *Organization Science, 14*(1), 91-103.
- McEvily, B., Weber, R., Bicchieri, C., & Ho, V. (2006). Can groups be trusted? In R. Bachmann & A. Zaheer (Eds.), *Handbook of trust research* (pp. 52-67). Northampton: Edward Elgar Publishing Ltd.
- Möllering, G. (2007). *Trust: Reason, routine, reflexivity*. Bingley: Emerald Group Publishing Ltd.
- Mouritsen, J., & Thrane, S. (2006). Accounting, network complementarities and the development of inter-organisational relations. *Accounting, Organizations and Society, 31*(3), 241-275.
- Nakayachi, K., & Watabe, M. (2005). Restoring trustworthiness after adverse events: The signaling effects of voluntary "hostage posting" on trust. *Organizational Behavior and Human Decision Processes, 97*(1), 1-17.
- Neuman, W. L. (2000). *Social research methods: Qualitative and quantitative approaches* (4 ed.). Boston: Allyn and Bacon.
- Nielsen, B. B., & Nielsen, S. (2009). Learning and innovation in international strategic alliances: An empirical test of the role of trust and tacitness. *Journal of Management Studies, 46*(6), 1031-1056.
- Nooteboom, B., Berger, H., & Noorderhaven, N. G. (1997). Effects of trust and governance on relational risk. *The Academy of Management Journal, 40*(2), 308-338.
- Patzelt, H., & Shepherd, D. A. (2008). The decision to persist with underperforming alliances: The role of trust and control. *Journal of Management Studies, 45*(7), 1217-1243.
- Perrone, V., Zaheer, A., & McEvily, B. (2003). Free to be trusted? Organizational constraints on trust in boundary spanners. *Organization Science, 14*(4), 422-439.
- Pettigrew, A. M. (1990). Longitudinal field research on change: Theory and practice. *Organization Science, 1*(3), 267-292.
- Pfeffer, J. (1982). *Organizations and organization theory*. Boston, MA: Pitman.
- Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. New York: Harper and Row.
- Poole, M. S., & van de Ven, A. H. (1989). Using paradox to build management and organization theories. *The Academy of Management Review, 14*(4), 562-578.
- Poole, M. S., van de Ven, A. H., Dooley, K., & Holmes, M. E. (2000). *Organizational change and innovation processes. Theory and methods for research*. Oxford: Oxford University Press.
- Poppo, L. (2013). Origins of inter-organizational trust: A review and query for future research. In R. Bachmann & A. Zaheer (Eds.), *Handbook of advances in trust research* (pp. 125-145). Cheltenham: Edward Elgar.
- Poppo, L., Zhou, K. Z., & Ryu, S. (2008). Alternative origins to interorganizational trust: An interdependence perspective on the shadow of the past and the shadow of the future. *Organization Science, 19*(1), 39-55.
- Ragatz, G. L., Handfield, R. B., & Scannell, T. V. (1997). Success factors for integrating suppliers into new product development. *Journal of Product Innovation Management, 14*(3), 190-202.

- Reb, J., Goldman, B. M., Kray, L. J., & Cropanzano, R. (2006). Different wrongs, different remedies? Reactions to organizational remedies after procedural and interactional injustice. *Personnel Psychology*, *59*(1), 31-64.
- Ren, H., & Gray, B. (2009). Repairing relationship conflict: How violation types and culture influence the effectiveness of restoration rituals. *Academy of Management Review*, *34*(1), 105-126.
- Rijsdijk, S. A., & van den Ende, J. (2011). Control combinations in new product development projects. *Journal of Product Innovation Management*, *28*(6), 868-880.
- Ring, P. S., & van de Ven, A. H. (1992). Structuring cooperative relationships between organizations. *Strategic Management Journal*, *13*(7), 483.
- Ring, P. S., & van de Ven, A. H. (1994). Developmental processes of cooperative interorganizational relationships. *Academy of Management Review*, *19*(1), 90-118.
- Robson, M. J., Katsikeas, C. S., & Bello, D. C. (2008). Drivers and performance outcomes of trust in international strategic alliances: The role of organizational complexity. *Organization Science*, *19*(4), 647-665.
- Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Introduction to special topic forum: Not so different after all: A cross-discipline view of trust. *The Academy of Management Review*, *23*(3), 393-404.
- Sako, M. (1992). *Prices, quality and trust: Inter-firm relations in Britain and Japan*. Cambridge: Cambridge University Press.
- Sako, M. (1998). Does trust improve business performance? In C. Lane & R. Bachman (Eds.), *Trust within and between organizations* (pp. 88-118). Oxford: Oxford University Press.
- Schilke, O., & Cook, K. S. (2013). A cross-level process theory of trust development in interorganizational relationships. *Strategic Organization*, *11*(3), 281-303.
- Schoorman, D., Mayer, R., & Davis, J. (2007). An integrative model of organizational trust: Past, present and future. *Academy of Management Review*, *32*(2), 344-354.
- Schumpeter, J. A. (1934). *The theory of economic development*. London: Transaction Publishers.
- Sharma, S., Durand, R. M., & Gur-Arie. (1981). Identification and analysis of moderator variables. *Journal of Marketing Research*, *18*, 291-300.
- Sitkin, S. B., & Roth, N. L. (1993). Explaining the limited effectiveness of legalistic "remedies" for trust/distrust. *Organization Science*, *4*(3), 367-392.
- Slater, S. F., Mohr, J. J., & Sengupta, S. (2014). Radical Product Innovation Capability: Literature Review, Synthesis, and Illustrative Research Propositions. *Journal of Product Innovation Management*. *31*(3), 552-566.
- Stark, D. (2009). *The sense of dissonance: Accounts of worth in economic life*. Princeton: Princeton University Press.
- Strauss, A. L. (1987). *Qualitative analysis for social scientists*. New York: Cambridge University Press.
- Sutcliffe, K. M., Sitkin, S. B., & Browning, L. D. (2000). Tailoring process management to situational requirements: Beyond the control and exploration dichotomy. In R. Cole & W. R. Scott (Eds.), *The quality movement and organizational theory* (pp. 315-330). Thousand Oaks, CA: Sage Publications.
- Sydow, J. (1998). Understanding the constitution of interorganizational trust. In C. Lane & R. Bachman (Eds.), *Trust within and between organizations* (pp. 31-64). Oxford: Oxford University Press.
- Sydow, J. (2006). How can systems trust systems? A structuration perspective on trust-building in inter-organizational relations. In R. Bachman & A. Zaheer

- (Eds.), *Handbook of trust research* (pp. 377-393). Northampton, MA: Edward Elgar Publishing.
- Sydow, J. r., & Windeler, A. (1998). Organizing and evaluating interfirm networks: A structurationist perspective on network processes and effectiveness. *Organization Science*, 9(3), 265-284.
- Takeishi, A. (2001). Bridging inter- and intra-firm boundaries: Management of supplier involvement in automobile product development. *Strategic Management Journal*, 22(5), 403-433.
- Takeishi, A. (2002). Knowledge partitioning in the interfirm division of labor: The case of automotive product development. *Organization Science*, 13(3), 321-338.
- Tolbert, P., & Zucker, L. (1996). The institutionalization of institutional theory. In S. R. Clegg, C. Hardy, & W. Nord (Eds.), *Handbook of organization studies* (pp. 175-190). London: Sage.
- Ulrich, K. T., & Eppinger, S. D. (2004). *Product design and development* (3rd ed.). NY: McGraw Hill.
- Un, C. A., Cuervo-Cazurra, A., & Asakawa, K. (2010). R&d collaboration and product innovations. *Journal of Product Innovation Management*, 27(5), 673-689.
- Uzzi, B. (1997). Social structure and competition in interfirm networks: The paradox of embeddedness. *Administrative Science Quarterly*, 42(1), 35-67.
- van de Ven, A. H. (2007). *Engaged scholarship - a guide for organizational and social research* (Vol. 1): Oxford University Press.
- van de Ven, A. H., & Poole, M. S. (1995). Explaining development and change in organizations. *The Academy of Management Review*, 20(3), 510-540.
- van Echtelt, F. E. A., Wynstra, F., van Weele, A. J., & Duysters, G. (2008). Managing supplier involvement in new product development: A multiple-case study. *Journal of Product Innovation Management*, 25(2), 180-201.
- Velez, M. L., Sanchez, J. M., & Alvarez-Dardet, C. (2008). Management control systems as inter-organizational trust builders in evolving relationships: Evidence from a longitudinal case study. *Accounting, Organizations & Society*, 33(7/8), 968-994.
- Wheelwright, S. C., & Clark, K. (1992). *Revolutionizing product development: Quantum leaps in speed, efficiency, and quality*. New York: The Free Press.
- Williamson, O. E. (1991). Comparative economic organization: The analysis of discrete structural alternatives. *Administrative Science Quarterly*, 36(2), 269-296.
- Woolthuis, R. K., Hillebrand, B., & Nooteboom, B. (2005). Trust, contract and relationship development. *Organization Studies*, 26(6), 813-840.
- Yin, R. K. (1994). *Case study research: Design and methods* (2 ed.). Beverly Hills, C.A.: Sage Publications.
- Yin, R. K. (2003). *Case study research: Design and methods* (Third ed.). Thousand Oaks, CA: Sage Publications.
- Zaheer, A., Lofstrom, S., & George, V. P. (2002). Interpersonal and interorganizational trust in alliances. In F. J. Contractor & P. Lorange (Eds.), *Cooperative strategies and alliances* London: Pergamon.
- 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.