Department of Industrial Engineering and Management

Shared Leadership in Global Virtual Teams: Building Conditions for its Emergence and Team Effectiveness

Emma Nordbäck

Aalto University

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Shared Leadership in Global Virtual Teams: Building Conditions for its Emergence and Team Effectiveness

Emma Nordbäck

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Abstract

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Abstract

Along with digitalization and rapid advances in technology, organizations are increasingly relying on global virtual teams, composed of culturally diverse members who collaborate across geographical distance and technology, to perform their core work activities. These global virtual teams are riddled by complexity, and leaders are struggling with managing them towards success. Along with increased distance and cultural diversity, the ability of a single leader to exert influence on the team successfully diminishes. Therefore, shared leadership, where multiple team members participate in the leadership of the team, has been suggested as a more powerful way to lead global virtual teams. Unfortunately, we know little about the antecedent conditions for shared leadership in global virtual teams and, in fact, research points towards the unlikeliness of shared leadership in a global work environment. In addition, there are conflicting results about the relationship between shared leadership and global virtual team effectiveness.

This dissertation offers a qualitative multi-case study of 16 global virtual teams to gain a deeper understanding of how members and their teams enact shared leadership over global boundaries, and how shared leadership influences global virtual team effectiveness. The interview data (N = 129 team leaders and members) was analyzed qualitatively at team and individual levels through single case and cross-case analyses.

The results reveal multiple antecedent conditions for shared leadership in global virtual teams. First, a high amount of task and expertise interdependencies, evenly distributed across locations, are linked to a higher degree of shared leadership. Second, the way individual members' levels of autonomy (provided by local and global leadership sources combined) are brought together to form an autonomy profile configuration, is important for the development of shared leadership. Third, empowering supports from both interpersonal supports (leaders and members) and structural supports (technology and work process) may encourage members to take a leap of faith towards shared leadership. The results also reveal boundary conditions, such as implicit and behavioral leadership coordination, for shared leadership to lead to global virtual team effectiveness.

This dissertation brings unique aspects of the global virtual team context - including team members' local and global contexts, as well as team configurational aspects - to the foreground, as a means to moving theory forward on shared leadership in global virtual teams. It also offers practical implications, including work design aspects that organizations need to pay attention to, in order to build improved conditions for shared leadership and global virtual team effectiveness.

Keywords Shared Leadership, Global Virtual Teams, Team Effectiveness

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Shared Leadership in Global Virtual Teams: Building Conditions for its Emergence and Team Effectiveness

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Acknowledgements

When I started my dissertation work in 2012, I had no clue of what I was getting into. I just knew that academia was going to be my home. And I am very happy that I submitted that first conference paper, because I could not wish for a better place to work. While research commonly includes a lot of independent work, to me it is the wonderful people around me that makes it all worthwhile. Therefore, I am more than happy to write this section to acknowledge these people, who have all contributed to the success of my dissertation.

First, I would like to thank the research team "vmwork", who were there to kick off my research journey in 2011. In 2011, I conducted my master's thesis in vmwork, the virtual and mobile work research group, at the Department of Industrial Engineering and Management of Aalto University School of Science. At that time, I was searching for a meaning and purposeful connection to my technical major in user centered telecommunications with my social-oriented minor in work psychology. I felt that this study combination would surely be valuable for something. And that was how I found the topic of virtual teams – which bridges people and technology in a beautiful way. All researchers of vmwork at that time, Niina Nurmi, Satu Koivisto, Anu Sivunen, Johanna Koroma, Marko Hakonen, Eero Palomäki, Teemu Surakka, Pekka Alahuhta, and Matti Vartiainen deserve their own special thanks for providing me with a first driving license into the world of research, and into the topic of virtual teams. Also, vmwork showed me what a true collaborative research community can be like, which demonstrated that research does not have to be a lonely road but may be filled with great team work. I was fortunate to get involved in projects funded by Business Finland (former TEKES), and to learn about how to conduct academic research, whilst simultaneously contributing to companies and the business world.

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In 2014, I ventured forth into the world and was a visiting researcher at the American University in Washington DC. At that time, I experienced something that one might call a dissertation honeymoon, with everything being new and exciting findings emerging. It was a stage filled with discoveries, minimal stress about deadlines, yet one of the most productive times of my dissertation journey. It was such a treat to work with my local host, Professor Alberto Espinosa,

and to get to know his wife Delphine. Beyond challenging theoretical discussions, their hospitality left me with unforgettable memories (including encounters with wonderful Peruvian food and the legendary “potato head cake”). I am also very happy about all the valuable insights and feedback that Professor Mark Clark provided me with during and after my stay, and the friendly and inspiring atmosphere I encountered at Kogod School of Business.

Being in Washington DC, disconnected me from my Finnish research community such that I became very close to my wonderful advisor Niina Nurmi, who at that point was a visiting scholar at Stanford University. Although not formally named as my advisor at that time, we had numerous calls where she offered valuable guidance. We were literally living the virtual practices that we were researching, and, in the spirit of my dissertation topic, we designed our next research project, then sold the project to companies in Finland in a shared leadership fashion, from a distance. Niina always provides the sharpest comments, accepting only the best output, but remaining a warm heart. She has always been there for me; she is my rock, and I am thrilled that our journey will continue after my dissertation at the International Design and Business Management program at Aalto University School of Business.

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Being curious about all things related to virtual teams and the future of work in general, got me engaged in several research projects during my dissertation project. My co-authors of these additional working papers have been very helpful – not only in delaying my dissertation process – but in so doing, teaching me a critical set of skills and giving me knowledge which I know will be highly valuable as I continue my work as a post-doctoral researcher. To Karen Myers, Robert McPhee, Terri Griffith, John Sawyer, Ron Rice, Jennifer Gibbs, Maggie Boyraz, Travis Maynard, Lisa van der Werff, Ann-Marie Nienaber, Mark Clark, Alberto Espinosa, Tuukka Toivonen, Ville Takala, Minna Logemann, Pekka Pälli, Ari Kuismin – you are all truly inspiring to me and keep me busy and curious towards the scholarly world outside of my dissertation.

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schedule in those playdates, afterworks, and trips with me because your company truly fills my life with happy memories and gives me the energy I need to recharge. Second, my parents and siblings, you are always there for me, making sure I am happy and that we all get together as a family despite living apart in different cities. I am so happy to be the little sister in this crew, and I will continue to always look up to you. I am also deeply grateful for my dear husband Mathias, not only for the endless IT support along the way, but for always being so supportive and making sure I do not work too much. Last, my dissertation journey has involved becoming a mother to my daughter Nellie in 2016. Nellie has been the best for work life balance, and I would never wish to spend my spare time doing anything else other than running around parks in Helsinki or watching Frozen (even though I swore I would never watch it). Being away from Nellie, late evenings or weekends at work has not been an easy road, and I hope that later Nellie will look back on this little project and understand that she can do anything in life. Ironically, motherhood and my husband has also strengthened me as a researcher in one important way: I know my worth. And if I started out as a little girl, well, today I feel like a queen, ready to make the world a better place to live and work in, and I know that there is value in what I do.

Helsinki, 30 August 2018
Emma Sofie Nordbäck

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Definitions of Key Constructs

Global virtual team	Teams that comprise geographically distributed and culturally diverse members who are collaborating for a common goal, at least partly through technology (Martins, Gilson, & Maynard, 2004; Horwitz, & Santillan, 2012).
Shared leadership	"An emergent team property of mutual influence and shared responsibility among team members, whereby they lead each other toward goal achievement" (Wang, Waldman, & Zhang 2014, p. 181).
Task interdependence	The extent to which people need to rely on each other to accomplish their tasks (Van de Ven & Ferry, 1980).
Expertise interdependence	The extent to which people need to rely on others for their knowledge or expertise (Barton & Bunderson, 2014).
Autonomy profile configuration	An autonomy profile describes the level of autonomy a global virtual team member receives from global and local leadership sources combined. The composition of these autonomy profiles in the team forms an autonomy profile configuration.

Empowering support	A form of empowering leadership behaviors, which involves sharing power with subordinates and creating a supportive environment for members to leverage this power, as well as raising members' level of intrinsic motivation and expressing confidence in high performance (Arnold, Arad, Rhoades, & Drasgow, 2000; Srivastava, Bartol, & Locke, 2006; Zhang & Bartol, 2010). Empowering support may come from interpersonal sources, i.e. members and leaders, or from structural sources, including work processes and technology.
Power distance	The extent to which "a community accepts and endorses authority, power differences, and status privileges" (Carl, Gupta, & Javidan, 2004, p. 513).
Shared leadership coordination	The management of dependencies among leadership activities.
Implicit leadership coordination	Members sharing the same perceptions or cognitive schemas about who has leadership over what.
Behavioral leadership coordination	The explicit actions aimed at coordinating the leadership activities taking place in the team towards a coherent whole.
Team effectiveness	A team outcome measure defined as both high performance and employee quality of work life; thus commonly constituting a composite measure including team performance (e.g. quality, quantity and productivity) and affective outcomes (e.g. satisfaction and commitment) (Mathieu, Maynard, Rapp, & Gilson, 2008)

List of Publications

This doctoral dissertation consists of a summary and of the following publications which are referred to in the text by their numerals.

1. Nordbäck, E; Sivunen, A. 2013. Leadership behaviors in virtual team meetings taking place in a 3D virtual world. Proceedings of the 46th Hawaii International Conference on System Sciences, Wailea, HI, USA, January 7-10, pp. 863-872.

2. Nordbäck, E; Small, E.; Nurmi, N. Freeing the global worker to share leadership in the global virtual team. Unpublished essay.

> Publication 2 is based on: Nordbäck, E., Small, E. 2015. Shared Leadership Emergence in Global Virtual Teams: Role of Task and Team Design. Paper presented at the annual meeting of the Academy of Management, Vancouver, Canada.

3. Nordbäck, E; Espinosa, A. Pulling in the same direction - The importance of shared leadership coordination in global virtual teams. Under second round review at Journal of Management Information Systems in the year 2018.

> Publication 3 is based on: Nordbäck, E., Espinosa, A. 2015. Cognitive and Behavioral Leadership Coordination – Linking Shared Leadership to High Performance in Global Teams. Proceedings of the 48th Hawaii International Conference on System Sciences, Kauai, HI, USA. (Best paper nomination)

4. Nordbäck, E. Antecedents of shared leadership in global virtual teams: The role of task and expertise dependencies and empowering supports. Unpublished essay.

Author's Contribution

Publication 1: Nordbäck, E; Sivunen, A. 2013. Leadership behaviors in virtual team meetings taking place in a 3D virtual world. Proceedings of the 46th Hawaii International Conference on System Sciences, Wailea, HI, USA, January 7-10, pp. 863-872.

I was the primary author of this conference proceeding paper and was solely responsible for the research design and data analysis. Dr. Sivunen participated in the editing and in joint discussions on the contents of this publication.

Publication 2: Nordbäck, E; Small, E.; Nurmi, N. Freeing the global worker to share leadership in the global virtual team. Unpublished essay.

I was responsible for the research design, data collection and analysis, and write-up of this article. In light of the results, I invited Small and Nurmi to contribute to the write-up of this article. Small contributed particularly with her knowledge on shared leadership, and Nurmi with her knowledge on global virtual teams. Nurmi also interviewed and added three additional teams to the empirical data of this paper. All authors contributed to the final write-up of the paper. However, I retained the main responsibility for the writing and analysis within the paper.

Publication 3: Nordbäck, E; Espinosa, A. Pulling in the same direction - The importance of shared leadership coordination in global virtual teams. Under second round review at Journal of Management Information Systems in the year 2018.

This article is based on a previous conference proceeding paper, which received a best paper nomination at the 48th Hawaii International Conference on System Sciences, Kauai, HI, USA in 2015. I was solely responsible for the research design, data gathering, and data analysis. In the light of the results, I invited Espinosa to comment on the analysis and contribute to the write-up of this article with his knowledge on coordination in global virtual teams. I retained, however, the main responsibility for the writing and analysis.

Publication 4: Nordbäck, E. Antecedents of shared leadership in global virtual teams: The role of task and expertise dependencies and empowering supports. Unpublished essay.

This article came out as a side piece from Publication 2, when the paper was substantially reworked over a time period of several years. In the process, I reviewed previous theoretical work on shared leadership in global virtual teams

and, to my surprise, could not confirm everything I had read in the existing literature in my own empirical data. Therefore, I conducted a substantial number of additional interviews, which resulted in accumulated evidence for new theorizing. As a result, I developed a propositional paper based on robust evidence from the field which I connected with existing theory. I was solely responsible for the design of this study, data gathering, data analysis and the write-up of this article.

1. Introduction

1.1 Background

Global virtual teams as the new normal

Work performed in teams has become a fact of organizational life and recently, so have globally distributed teams (Zander, Mockaitis, & Butler, 2012; Zander et al., 2015). These so-called *global virtual teams (GVTs)* differ from conventional co-located teams in that they are assembled of geographically distributed and culturally diverse members who are collaborating for a common goal, at least partly through technology (Martins, Gilson, & Maynard, 2004; Horwitz, & Santillan, 2012). Along with digitalization and rapid advances in technology, organizations are increasingly relying on these GVTs to perform their core work activities (Goldman & Shapiro, 2012).

Expectations on GVTs to bring competitive advantage to organizations are commonly based on the possibility to quickly create GVTs comprised of members from near and far, of having the best expertise and knowledge for a certain task, and the best understanding of local needs and demands (Martins et al., 2004; Zander et al., 2015). In addition, GVTs may respond to agile market changes without the need for expensive and time-consuming business trips (McDonough, Kahn, & Barczak, 2001). Despite these promises, however, operating in a GVT is not a straightforward process. The reality is that the majority of global and virtual collaborations fall short of their expectations and are considered to be unsuccessful (Ferrazzi, 2014). This is problematic given the increasing prevalence of these teams. It has been reported that up to 70 % of multinational organizations rely on virtual teams (VTs) (SHRM survey 2013), and that up to 80 % of knowledge workers are frequently or always working in VTs (Ferrazzi, 2014). Currently, no less than 1.3 billion workers are estimated to work virtually (Johns & Gratton, 2013). Inherent to this virtual explosion is that multinational organizations are facing substantial roadblocks in coping with and leading their distributed work force. Not surprisingly, leading GVTs successfully across boundaries is one of the most challenging tasks, yet one of the most important ones in order to achieve GVT effectiveness (Hambley, O'Neill, & Kline, 2007; Hertel, Geister, & Konradt, 2005). Understanding how to lead GVTs for successful outcomes is, hence, an important topic for researchers and practitioners alike. Therefore, this dissertation continues to rethink leadership in GVTs to find out how to lead GVTs towards success.

GVTs are riddled by complexity, which not surprisingly causes challenges for collaboration and for leaders. Previous research has identified boundaries such

as time zones, geography, functional, organizational, and national boundaries that have to be crossed by the workers collaborating over distance (Hinds, Liu, & Lyon, 2011). As a result of these boundaries, some of the most severe challenges of GVTs include coordination (e.g. Espinosa, Slaughter, Kraut, & Herbsleb, 2007), establishing relationships and trust (e.g. Jarvenpaa, Knoll, & Leidner, 1998; Jarvenpaa & Leidner, 1999), creating a shared understanding (e.g. Hinds & Weisband, 2003), as well as managing conflicts (Kirkman, Rosen, Gibson, Tesluk, & Mcpherson, 2002; Montoya-Weiss, Massey, & Song, 2001). In coping with all these challenges, leadership has been identified as the second most important enabler of GVT success, after communication (Anantatmula & Thomas, 2010). But the high fail rate of GVTs (Ferrazzi, 2014) raises the question of whether the traditional notion of a single leader elected by hierarchy is adequate for leading GVTs towards high performance.

The changing nature of leadership in GVTs

Leaders of GVTs face numerous obstacles in leading their teams towards success. Firstly, leaders need to rely on technology for communication, which makes it harder for them to transmit their leadership influence (Davis & Bryant, 2003). Electronic means for communication are prone to misunderstandings (Hinds & Weisband, 2003), lack of social presence (Short, Williams, & Christine, 1976; Sivunen & Nordbäck, 2015), and reduced awareness of members' knowledge (Cramton, 2002), to mention only a few of the challenges that virtual leaders face. Along with increased virtuality, the opportunities for a leader to exert direct influence on the team diminishes (Avolio, Kahai, & Dodge, 2001), and so does their ability to foster conditions for social relationships, including trust, that enable VT members to work together successfully (Breuer, Hüffmeier, & Hertel, 2016). In addition, leaders face severe challenges with maintaining communication and with managing conflict over distance (Jonsen, Maznevski, & Canney Davison, 2012). When the team is multicultural in composition, a challenge also arises in that members may have different leadership preferences (Zander, 1997). Lastly, members commonly resist reaching out to their distant site colleagues, despite the fact that the best expertise may be found there (Bos et al., 2006), which put demands on leaders to ensure effective integration of expertise in the team. How leaders lead GVTs across boundaries and technology is, hence, an important question that does not have any clear answers, despite extensive research on leadership (Steers, Sanchez-Runde, & Nardon, 2012).

Previous research has identified the need for leaders of GVTs to perform a broad set of leadership roles and tasks simultaneously to cope with the global complexity (Kayworth & Leidner, 2002). Therefore, it is particularly problematic that a single appointed leader is unlikely to possess all the relevant knowledge – information, competencies and resources – to perform the necessary leadership functions alone (Conger & Pearce, 2003; Davis & Bryant, 2003; Pearce & Manz, 2005). For instance, the leader might have left the office, or may even be sleeping when a team member is seeking guidance and support, particularly if the GVT is distributed over multiple time zones. In addition, when

relying on virtual means for communication, the threshold for initiating communication is higher than when being co-located (Reid, Malinek, Stott, Evans, 1996), and as a result, both leaders and members may forget or hesitate to communicate. Finally, research has shown that there might not be a single form of leadership suitable for all of employees (Steers et al., 2012; Zander, 1997), and hence, leaders face barriers in carrying out their leadership strategy successfully across a diverse set of members in GVTs. On top of this complexity, since GVTs are commonly composed of knowledge workers who are experts in their specialized tasks, GVT members commonly expect to receive a vast amount of autonomy from their team leader (Davenport, 2005). Therefore, both the challenges that arise from members being dispersed over the globe, and the expectations towards autonomy among knowledge workers, inevitably require us to rethink traditional management and leadership practices for leading GVTs successfully. Traditional, hierarchical organizational structures may be too rigid for allowing members the flexibility they need to complete their knowledge-intensive work successfully across boundaries.

Shared leadership in GVTs

As a response to the identified leadership challenges in GVTs, researchers have recognized that there is a need for leadership to be shared among multiple individuals who possess knowledge and expertise most relevant to the team task (Denis, Langley & Sergi, 2012; Pearce, 2004). This enables a larger window of leadership opportunities and more relevant expertise for leadership to thrive in a global knowledge-intensive work environment. This so-called *shared leadership* can be defined as "a dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals" (Pearce & Conger, 2003, p. 1). While other definitions exist (e.g. Carson, Tesluk, & Marrone, 2007; D'Innocenzo, Mathieu, & Kukenberger, 2016), what is common across them all is the notion that leadership responsibilities are distributed over more than one person in the team. Despite the identified need for shared leadership in GVTs, however, previous research on leadership in GVTs has mainly focused on the influence of a single leader on the team (Yammarino, Salas, Serban, Shirreffs, & Shuffler, 2012; Yukl, 2013), leaving much room for speculation about the applicability and usefulness of shared leadership in GVTs. While some studies continue to underscore the importance of vertical leadership in GVTs (Joshi, Lazarova, & Liao, 2009; Saarinen, 2016), there is an increasing wave of studies advocating shared leadership over traditional vertical leadership (D'Innocenzo et al., 2016; Nicolaides et al., 2014; Wang, Waldman, & Zhang, 2014), particularly in the context of GVTs (e.g. Hoch & Kozlowski, 2014; Hoegl & Muethel, 2016).

This dissertation continues this line of work and investigates shared leadership in GVTs, and its impact on team effectiveness, which broadly speaking includes team performance (e.g. quality, quantity and productivity) and affective outcomes (e.g. satisfaction and commitment) (Mathieu, Maynard, Rapp, & Gilson, 2008). In order for shared leadership to have an impact on the team and its effectiveness, however, it first needs to emerge either naturally or formally by being implemented in the team. In line with Mayo et al. who note the

following: “The usefulness of shared leadership, however, may not necessarily lead to the existence of it. It is possible that shared leadership may be more useful in cases in which it is also more difficult to develop” (Mayo, Meindl, & Pastor, 2003, p. 209). Following this argument further, the limited research on shared leadership in GVTs does not reveal how shared leadership may emerge in GVTs, but rather points towards its unlikeliness. Existing research on the antecedent conditions of shared leadership in co-located teams have proposed that variables related to the task itself (e.g. task complexity, interdependence), and factors related to team composition (e.g. geographic proximity, skill heterogeneity, demographic homogeneity) (Conger & Pearce, 2003; Pearce, Perry, & Sims, 2001; Fausing, Joensson, Lewandowski, & Bligh, 2015) can all increase the likelihood of shared leadership in teams. However, GVTs collaborate over geographic dispersion, and constitute diverse memberships with heterogeneity on multiple cultural dimensions which create an environment that is counter to what has been theorized to facilitate shared leadership (Pearce et al., 2001). While previous research has begun to offer theoretical propositions on the antecedent conditions of shared leadership in GVTs (e.g. Hoch & Dulebohn, 2017; Liao, 2016; Muethel & Hoegl, 2010; 2011), there is a lack of empirical evidence to back up several of these claims. Therefore, empirical research is needed to solve the paradox of shared leadership in GVTs, a paradox that includes competing arguments that, on one hand, implies a strong need for shard leadership, and on the other hand, states the unlikeliness of shared leadership to emerge in GVTs (Pearce et al., 2001). **This dissertation answers this call, by investigating the antecedent conditions of shared leadership in GVTs.**

Prior research on shared leadership and GVT effectiveness has produced mixed results. First, some have found that shared leadership leads to improved team effectiveness, beyond vertical leadership (e.g. Hoch & Kozlowski, 2014; Muethel & Hoegl, 2016). At the same time, however, studies have also found opposite effects (e.g. Mehra, Smith, Dixon, & Robertson, 2006; Robert, 2013). Together, these contradicting findings suggest that there might be some interaction effects at play, which may explain the inconsistent link between shared leadership and GVT effectiveness in previous research. Our understanding of what these intervening factors might be is, however, limited, and we know little about the conditions under which shared leadership leads to team effectiveness in globally distributed work environments. Therefore, **a second goal of this dissertation is to investigate the link between shared leadership and GVT effectiveness and to identify which intervening factors influence this relationship.**

1.2 Objectives and research strategy

The aim of this dissertation is to discover **the conditions under which shared leadership arises and contributes to GVT effectiveness.** This objective is inspired by the theoretical and practical dilemma brought forward by Pearce and his colleagues stating that: “Although the emergence of shared leadership is less likely as dispersion increases, it is precisely these situations in

which the need for shared leadership may be the greatest" (Pearce et al., 2001, p. 629). In other words, while shared leadership may be critical for GVT effectiveness (Hoch & Kozlowski, 2014), GVTs face boundary conditions that are counter to the conditions proposed to facilitate shared leadership emergence, such as e.g. geographical and demographic proximity. Previous research does not solve this paradox, and hence, this dissertation offers an inducive empirical study with the aim of discovering triggers to shared leadership in GVTs, that previous theorizing attempts have not identified. In addition, previous research does not solve under what conditions shared leadership lead to GVT effectiveness, but rather provide conflicting evidence. Therefore, I set out to inductively study how shared leadership may arise in GVTs whereby shared leadership is more difficult to develop. Secondly, I study not only how shared leadership influences GVT effectiveness, but in particular, which intervening factors influence this relationship.

Contextualizing shared leadership in GVTs

Most previous theorizing efforts on shared leadership in the context of GVTs have either projected theories established from the co-located work context to the global context (for instance in research on how culture impacts shared leadership emergence (e.g. Muethel & Hoegl, 2010)) or investigated intra-team variables aggregated to the team level (e.g. Conger & Pearce, 2003; Paunova & Lee, 2016; Pearce et al., 2001). Although this research has provided us with valuable insights, it may have missed the mark in just how powerfully internal and external contextual factors come together in GVTs. In GVTs, members are embedded in different local contexts which may include different organizational structures, policies and national cultures – to mention a few (Hinds, Liu & Lyon, 2011). Despite this, research on shared leadership in GVTs neglects the duality of the local and global context surrounding the GVT member, leading to a somewhat biased understanding of leadership in GVTs.

A notable exception is the work of Reiche and colleagues (Reiche, Bird, Mendenhall, & Osland, 2017), who contextualize global leadership into a typology of four different global leadership roles with differing task and relational complexity. But most research on GVTs continues to treat GVTs as though they exist in a vacuum, not considering the contextual factors in leadership. As a consequence, we know little about how local and global conditions interplay to have an impact on GVT members and their collaboration in their GVTs (Maloney, Bresman, Zellmer-Bruhn, & Beaver, 2016), and further, their co-enactment of shared leadership. As a response to this, I continue the line of thought initiated by Reiche et al. (2017) and pay particular attention to contextual and configurational factors that might help to unlock important knowledge about shared leadership in GVTs. Therein, I put a stronger focus on context, and study shared leadership in GVTs not only through the perspective of the team, but from the bottom up, starting at the individual level – to find out about team members' unique experiences of shared leadership as they navigate their local and global contexts in parallel. In addition, I move beyond aggregate approaches, and pay attention to how configurational aspects, such as how members are locationally

placed in relation to each other and their leader (O'Leary & Cummings, 2007), may influence shared leadership in their GVT.

1.2.1 Methodological choice in brief

In this dissertation, I applied inductive multi-case research methods to 16 GVTs, to gain a deeper understanding of how members and their teams enact shared leadership over global boundaries, and how shared leadership impacts GVT effectiveness. The goal of inductive research is to generate new theory emerging from the data, by moving from raw data towards concepts, themes and ultimately a theoretical model (Miles & Huberman, 1994; Thomas, 2006).

In line with an interpretive approach, I study shared leadership through a relational lens (Uhl-Bien, 2006), and focus on how shared leadership manifests as "an emergent team property of mutual influence and shared responsibility among team members, whereby they lead each other toward goal achievement" (Wang et al., 2014, p. 181). When leadership is shared among team members, the focus of leadership is shifted from the standpoint of the single leader perspective towards a relational perspective, with leadership being socially constructed among individuals through a social influence process (see Figure 1) (Uhl-Bien, 2006; DeRue & Ashford, 2010; Yukl, 2013). This relational perspective entails studying leadership from the perspective of behaviors and actions jointly produced by individuals instead of a property inherent in one individual, such as in reference to personal characteristics, skills or traits. Hence, in this dissertation, I adopt *a relational view of leadership*, and study how shared leadership is socially constructed through a mutual influence process among team members. More specifically, I study shared leadership by assessing team members' perceptions and the experiences of those who engage in the leadership of the team, as well as how they perceive this to impact their team effectiveness.

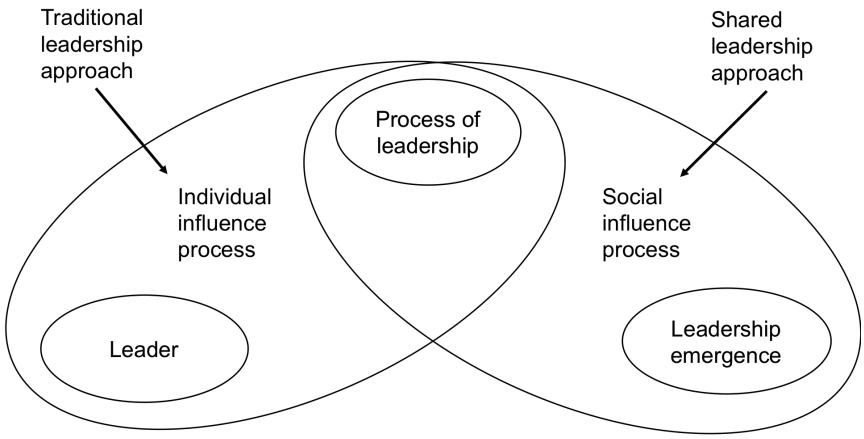

Figure 1. Traditional and shared leadership approaches (Mielonen, 2011, p. 16).

Specifically, this dissertation moves toward a theory of antecedent conditions of shared leadership and its impact on effectiveness in GVTs by relying on a

multi-case study design using inductive qualitative analysis. A multi-case study design is useful for finding out through comparison why some GVTs and not others engage in shared leadership, and why some GVTs seem to be more effective than others when doing so. Building theory from case studies is a research strategy that involves using multiple cases to create theoretical constructs and propositions from case-based empirical evidence (Eisenhardt, 1989). As my goal was to extend underdeveloped theory on shared leadership in GVTs, I treated the 16 GVTs participating in this dissertation study as 16 cases ranging from high to low levels of shared leadership as a series of "natural experiments", each case serving to confirm or disconfirm the inferences drawn from the others (Yin, 2009). Yet, the study was designed to be open-ended and to allow new themes to emerge, given the underdeveloped state of current research on shared leadership in GVTs. Therefore, I applied inductive qualitative methods in this dissertation study.

1.2.2 Research questions in brief

The four studies presented in the appendices are designed to contribute to my overall goal of furthering the limited theorizing on shared leadership in GVTs. While Chapter 3 provides a detailed description of each research question and how they are addressed in each paper, I present my research questions in brief below, in text and in Figure 2:

RQ1: What antecedent conditions enable shared leadership in GVTs?

RQ2: How does shared leadership influence GVT effectiveness?

RQ3: What factors influence the relationship between shared leadership and GVT effectiveness?

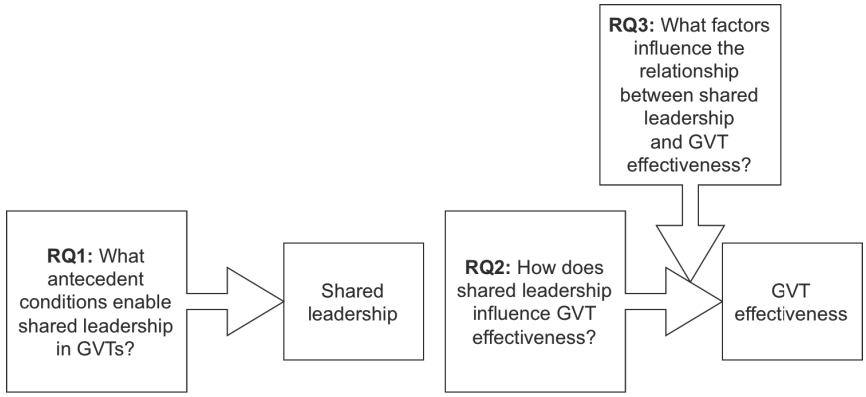

Figure 2. Research questions of this dissertation.

1.3 Structure of this dissertation

This dissertation is structured as follows. After the introduction in Chapter 1, Chapter 2 provides an overview to the background literature and key concepts of this dissertation. First, I briefly discuss the historical development of leadership theories, particularly those that lead up to the tradition of shared leadership. Then, I describe the specifics of leadership in teams and leadership in GVTs, paying attention to the various streams of previous research. Last, I move into the topic of shared leadership specifically, starting with a definition of it, and a presentation of previous research on antecedents to shared leadership, as well as its relationship to team effectiveness, in co-located teams as well as in GVTs. Building on this theoretical foundation presented in Chapter 2, I articulate three research questions in Chapter 3, and briefly present how each of them is addressed in each sub-study of this dissertation.

Chapter 4 presents the empirical study of this dissertation. I begin by presenting the adopted research paradigm, which guides the adopted research strategy and research design that is presented next. After a general introduction, I move into presenting every stage of the process from selecting cases and collecting data, towards data analysis, which is divided into a single-case analysis part and a cross-case analysis part. Finally, I provide a detailed walk through of all the analytical steps taken in the case analysis, moving from initial coding towards focused coding and drawing of conclusions.

Chapter 5 summarizes the key findings of this dissertation by listing the key results of each sub-study. In Chapter 6, I situate my dissertation within existing literature and articulate theoretical contributions and this is followed by the practical implications. Lastly, I evaluate the quality of this dissertation study, including a discussion of its limitations as well as recommendations for future research.

2. Theoretical background

Ever since studies on leadership first emerged, leadership scholars have struggled with reaching consistent definitions of their focal construct of interest. As Day and Antonakis (2012) state: "Leadership is often easy to identify in practice, but it is difficult to define precisely. Given the complex nature of leadership, a specific and widely accepted definition of leadership does not exist and might never be found" (p. 5). In other words, research on leadership is a fragmented field, with almost as many definitions as leadership theories. Therefore, it is beyond the scope of this dissertation to provide a comprehensive review of the field of leadership. Instead, I have chosen to portray leadership through lenses that are pivotal to the focal topic of this dissertation, that is shared leadership in GVTs. In this chapter, I will first briefly present the historical development of leadership in teams, leading on to the social process perspective that is central to shared leadership. In addition, since shared leadership in GVTs stands at the crossroads of three literature streams – global leadership (commonly investigated in the International Business discipline), collective, shared leadership (commonly investigated in the Management discipline), and VTs (commonly investigated in the Information Systems discipline) – this section will furthermore bridge these three streams.

2.1 Historical development of leadership

Despite a wealth of different conceptualizations of leadership, most leadership scholars agree that leadership entails "a process whereby intentional influence is exerted over other people to guide, structure and facilitate activities and relationships in a group or organization" (Yukl, 2013, p. 2) The source of this influence has traditionally been viewed as originating from a single leader, oftentimes elected by hierarchy (Yammarino et al., 2012; Yukl, 2013). This is evident in that many leadership theories focus on traits or behaviors of a single "leader", rather than focusing on what the process of leadership entails (Dinh et al., 2014; Uhl-Bien, Riggio, Lowe, & Carsten, 2014). Prior research has thus commonly set out to find out what type of leaders are successful. The focus has consequently largely been on leader traits (innate characteristics of leaders), actual behaviors of leaders, and the effectiveness of those behaviors as being contingent of situational variables (House & Aditya, 1997; Kayworth & Leidner, 2002; Yukl, 2013).

While the first wave of leadership research, largely between 1930 and 1950, focused on identifying characteristics of successful leaders in the trait approach, after 1950, the next 30 years of research primarily focused on leadership behaviors (House & Aditya, 1997). In 1970, research began to acknowledge that situational variables interacted with leader personality and behaviors, followed by several additional leadership theories including, for example, leader-member exchange, charismatic and transformational leadership (House & Aditya, 1997).

Recently, however, scholars have begun to question the notion that leadership flows through the organization in a top-down, hierarchical fashion, as well as being equivalent to supervisory roles (Ancona & Backman, 2008; Bedeian & Hunt, 2006). This is not only due to theoretical underpinnings, but also due to the shifting working landscape characterized by digitalized and global work, which demands more dynamic leadership structures and practices that include self-management as opposed to a hierarchy-based structure (Snow, Fjeldstad, & Langer, 2017). Following this shift in thinking, increasingly more researchers acknowledge the possibility for leadership to be shared among team members (e.g. Pearce & Conger, 2003; Carson et al., 2007; Small & Rentsch, 2010, to mention a few), by viewing leadership through a relational lens (Uhl-Bien, 2006).

The relational view of leadership puts followers into a more active role than what has been done in leader-centric approaches that view followers as "subordinates" – as recipients, who dutifully act upon orders and directives from the leader without further questioning or resistance (Shamir, 2007; Taylor, 1947; Uhl-Bien et al., 2014). However, the level of active incorporation of followers into the leadership process varies from one theory to another within relational approaches. In the simplest form, followers are treated as "situational factors" that leaders need to manipulate in order to achieve certain outcomes (Hersey & Blanchard, 1977; Uhl-Bien et al., 2014). At the other end of the spectrum, which is more in line with today's autonomous digital workplace (Snow et al., 2017), followers are actively co-producing leadership by stepping into leader roles when necessary to exert more influence than others on the team and its processes (Aime, Humphrey, DeRue, & Paul, 2014; DeRue & Ashford, 2010; Shamir, 2012; Uhl-Bien et al., 2014). The latter example is representable of the case of shared leadership and acknowledges the dynamic aspects of shifting sources of influence in teams over multiple individuals in the team. Given my focus on the team-based organization of work in the form of GVTs, the next section will specify the underpinnings of leadership in the context of teams and GVTs and lay the foundation for more discussion about shared leadership in GVTs.

2.2 Leadership in teams

Researchers investigating leadership in teams have commonly situated it within the well-known input-process-output (IPO) model (Hackman, 1987) or within the slightly revised input-mediator-output-input (IMOI) model (Ilgen, Hollenbeck, Johnson, & Jundt, 2005). According to the IPO model, team inputs are converted into team output through interaction processes (Hackman, 1987). In

the IMOI model process variables are extended to include a broader set of mediators (e.g. emergent states) and include the notion of output to provide a cyclical causal feedback on the team (Ilgen et al., 2005). Within both models, leadership in teams can be situated as an input – if it for example is viewed as coming from the formal leader of the team – or as a process – if it is viewed as a collaborative effort including the team members.

Early research on leadership in teams has commonly applied individual or organizational level theories to the context of teams (Burke et al., 2006). As Zaccaro, Heinen and Shuffler (2009) note, traditional leadership approaches tend "not to make the distinction between leader–subordinate interactions and leader–team interactions." (p. 84) This has resulted in considerable gaps in our understanding of how leadership and team processes interact (Kozlowski & Ilgen, 2006; Zaccaro, Rittman, & Marks, 2001). More recently, team-specific leadership theories have been developed as a response (e.g. Morgeson, DeRue, & Karam, 2010; Zaccaro et al., 2009). Inherent in all of these theories is the focus on team need satisfaction. Team leadership can therein be conceptualized as the process of satisfying team needs, which may entail motivating and monitoring team processes with the ultimate goal of enhancing team effectiveness (Bell & Kozlowski, 2002; Hoch & Kozlowski, 2014; Morgeson et al., 2010).

In order to satisfy team needs for team effectiveness, the focus in team leadership research has commonly been on the functions that leadership needs to fulfil, the behaviors used to carry out those functions, or on the conditions that leaders need to create to facilitate team effectiveness (such as establishing an enabling structure and supportive organizational context) (Burke et al., 2006; Hackman, 2002). In the functional approach, "[the leader's] main job is to do, or get done, whatever is not being adequately handled for group needs" (McGrath, 1962, as cited in Hackman & Walton, 1986, p. 5). The leader is viewed effective if s/he manages to carry out all functions needed to lead the team towards task completion and team maintenance (Burke et al., 2006). While the leader is responsible for making sure these functions are accomplished, team members might also provide help in carrying out the various leadership functions. In fact, it is common for team leadership approaches to be deliberately inclusive of team members – in addition to formal leaders – when it comes to the source of leadership influences and the satisfaction of team needs (Morgeson et al., 2010), and thereby viewing leadership more as a process than an input to the team. Therein, team leadership calls for attention on *leadership*, rather than focusing narrowly on *leaders*.

Adapting this focus, team leadership can be viewed as a multifaceted construct, conceptualized in relation to the **strength** of leadership influence (i.e. its quality or effectiveness), the **source** of influence (i.e. single versus multiple team members) (Carson et al., 2007) or the **content** of the influence (i.e. specific leadership behaviors) (Yukl, 2012). In relation to leadership sources, previous research has acknowledged that the sources of leadership can be conceptualized in terms of both the locus of leadership and the formality of leadership, which generate the four dimensions presented in Figure 3 (Morgeson et al., 2010). In other words, team leadership may originate from within the team or

be provided through external sources to the team. In addition, leadership may be formally assigned to a specific person(s) in charge of the team's performance, or emerge informally, with this person(s) having no formal responsibility over the leadership or the team's performance. Leadership from a team leader or project manager commonly falls into the quadrat of formal, internal leadership, and is commonly viewed as an input to the team. Similarly, formal, external leadership, such as leadership provided by a sponsor or a coach, is commonly viewed as an input to the team. Thirdly, a team may have external mentors who informally take on a mentor role, which can also be viewed as an input to the team. Last, and importantly for the focus of this dissertation, shared leadership commonly situates into the quadrat of informal and internal leadership and is commonly viewed as a team process that emerges within the team. But importantly, shared leadership does not exclude the possibility of the team having a formal team leader.

		Formality of Leadership	
		Formal	Informal
Locus of Leadership	Internal	Team leader	Shared
		Project manager	Emergent
	External	Sponsor	Mentor
		Coach	Champion
		Team advisor	Executive coordinator

Figure 3. Sources of leadership in teams (Morgeson et al., 2010, p. 5).

In regard to the content of leadership, leadership functions are carried out through various behaviors, which have an impact on team effectiveness (Burke et al., 2006). The behavioral approach is in itself a large leadership stream with more than 65 classification systems of leader behavior proposed between 1940 and 1986 (Fleishman et al., 1991). Within a behavioral approach, leadership has been conceptualized using a wide variety of actions aimed at satisfying team needs with the goal of enhancing team effectiveness (Yukl, Gordon, & Taber, 2002; Yukl, 2012, 2013). For example, Yukl and colleagues (2002) classified leadership behaviors into three categories: task-oriented (e.g. providing directions and monitoring performance), relations-oriented (e.g. providing support and encouragement), and change-oriented (e.g. proposing a new strategy or vision). All of these behaviors have been found to predict GVT success (e.g. Konradt & Hoch, 2007; Pauleen, 2003). Consequently, this behavioral approach may provide a useful theoretical lens to investigate how leadership is shared in GVTs. The functional and behavioral approaches have thus directly been applied to the GVT context, but in addition, other leadership theories have also been developed specifically for the context of leading across global boundaries. These approaches will be presented next.

2.3 Leadership in GVTs

There is a general consensus in the literature that leading GVTs successfully across boundaries is a challenging task, yet a vital one, for team effectiveness (Hambley, O'Neill, & Kline, 2007; Hertel, Geister, & Konradt, 2005, Hill & Bartol, 2016; Joshi, Lazarova, & Liao, 2009). Along with increased virtuality, the opportunities for a leader to exert direct influence on the team diminishes (Avolio et al., 2001), and so does their ability to foster conditions for social relationships such as trust, which enables VT members to work together successfully (Breuer et al., 2016). Moreover, as a consequence of geographical dispersion, including the lack of face-to-face interaction and common reliance on asynchronous communication, it is more difficult for leaders to engage in traditional, hierarchical leadership behaviors such as motivating members and managing team dynamics (Bell & Kozlowski, 2002; Hoch & Kozlowski, 2014; Purvanova & Bono, 2009). Drawing on technology deterministic theories (Daft & Lengel, 1984; Short, Williams, & Christie, 1976; Sproull & Kiesler, 1986), it is, for instance, difficult for leaders to convey social and emotional-related behaviors through technology. These important behaviors of transformational leadership, and its sub-dimension of inspirational leadership, are both significant leadership types in order for VTs to be effective (Joshi et al., 2009; Purvanova & Bono, 2009). Therein, leadership in GVTs is riddled with complexity, and unfortunately, we know little about the kind of leadership that may tackle this complexity.

Leadership in VTs has been studied through several approaches, including predominantly the trait approach, the functional or behavioral, or contingency approach (Gilson, Maynard, Young, Vartiainen, & Hakonen, 2015; Kayworth & Leidner, 2002). In the literature on VTs, little attention has been payed to cultural diversity, while in the literature on cultural diversity, in turn, little attention has been payed to VTs, with conclusions primarily being based on research on face-to-face teams (Gibson, Huang, Kirkman, & Shapiro, 2014). Therefore, conclusions drawn from these may have questionable applicability to GVTs (Gibson et al., 2014). When it comes to research on GVTs, it stands at the crossroads of multicultural team research and VT research (Steers, Sanchez-Runde, & Nardon, 2010), and very little research has payed attention to how these two streams cross in GVT leadership (See Paunova & Lee, 2016, and Reiche et al., 2017, for two exceptions). Research acknowledging global aspects in leadership is commonly named global leadership and may include leading individuals or teams across global boundaries. Within this global leadership tradition, research has identified three different leadership streams being applied in the global work context: the universal approach, the normative approach and the contingency approach (Steers et al., 2012). While the majority of this research does not theorize around GVTs, it is still useful to open up these different global leadership streams (Figure 4) to situate prior research on leadership in GVTs, and the approach taken in this dissertation. Therefore, I will present the approaches applied to study global leadership next, and finally situate my approach to leadership in GVTs in this dissertation.

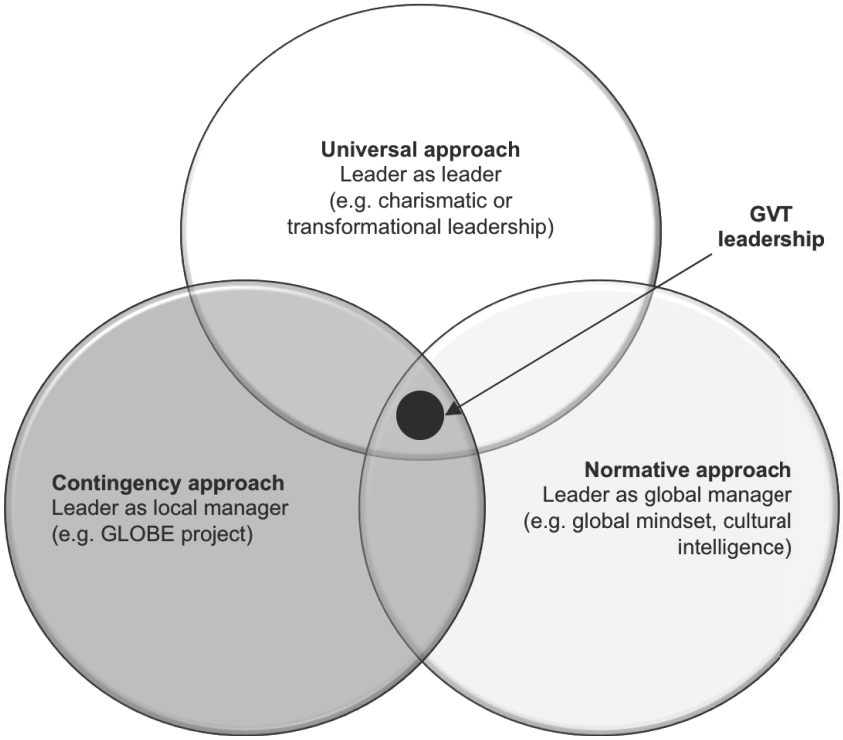

Figure 4. Approaches to global leadership (based on Steers et al., 2012, p. 480, but with GVT leadership added to the picture).

The Universal approach focuses on testing and extending general leadership theories to other contexts, including GVTs. The universal approach, including examples such as transactional and transformational leadership (Bass & Avioli, 1994), consider leadership to be a generalizable behavior that is universal to all of us, regardless of geographical location from which it is executed. In other words, according to universal leadership approaches, leaders of GVTs should be able to effectively influence all team members residing in different locations by simply applying a general leadership style to everyone. Applying a universal approach to studying leadership, research on leadership in VTs has taught us much about the behaviors and functions that may be effective for leaders influencing their VTs over distance (e.g. Hill & Bartol, 2016; Joshi et al., 2009). The problem with this universal approach, however, is that most VT samples used in prior studies constitute Western populations, and research has found that some universal leadership theories (e.g. transformational and transactive leadership in Ishikawa, 2012) may not be effective for some cultures (Steers et al., 2012). Therein, the universal approach might not be suitable for GVTs, with members from various cultures and countries coming together to work in the same GVT, while operating from differing local contexts.

The Normative approach represents another stream of global leadership research, concentrating on finding specific competences best suited for global leaders, including leaders of GVTs (e.g. Kayworth & Leidner, 2002; Davis &

Bryant, 2003; Joshi & Lazarova, 2005; Zander, Mockaitis, & Butler, 2012). Here, the person in the role of the leader is being positioned as a global manager showing awareness of potential global differences among team members (Steers et al., 2012). From this viewpoint, it is assumed that certain sets of leader traits and abilities are needed to lead across cultures, such as cultural intelligence and a global mindset (Earley & Ang, 2003; Javidan, Steers, & Hitt, 2007), and that these competences are universal. Interestingly, there has been conflicting findings here as well and team members of GVTs may vary in their expectations on leaders (Zander et al., 2012). For example, in an empirical study comparing employee expectations on managers, Russians considered cultural empathy and an interest in intercultural interaction as the most important competences of managers, while Americans considered a clear understanding and communication of the team's goals, norms and roles as the most important competences of their managers (Matveev & Nelson, 2004). In other words, there may not be intercultural competences that would be generalizable to all global leaders.

The Contingency approach, therefore, adopts a viewpoint that assumes that there are no universal traits or behaviors that describe effective global leadership. Instead, the contingency approach looks at leadership as a culturally embedded process, focusing on the leader as a local manager. Inherent in this approach is that the characteristics and competences of successful leaders will vary depending on the situation at hand and the country. That is, great leaders in Finland might fail in China, unless they are able to modify their leadership behaviors to the local context (Steers, Sanchez-Runde, & Nardon, 2012). The GLOBE study (House, Hanges, Javidan, Dorfman, & Gupta, 2004) investigated culture and leadership in 62 countries, and found that leadership to a large degree is contingent on national culture[1], and that effective leaders systematically differ across cultures. In other words, different cultures may prefer different leadership styles. For instance, team members from low power distance cultures are likely to experience positive job attitudes, including increased job satisfaction, when engaging in self-management. However, the opposite has been found among members from high power distance cultures, who are more likely to resist self-management practices (Kirkman & Shapiro, 2001). But while these studies have contributed significantly to our understanding of cultural differences in leadership values, preferences and practices, the aim has not been to understand leadership in contexts where workers collaborate across national boundaries (Hinds et al., 2011), such as in GVTs. Therefore, prior approaches to global leadership leave us with very little knowledge on leadership in GVTs.

Moving research on GVT leadership forward

A remarkable gap, therefore, remains in literature in that the previous approaches to global leadership "all miss the mark in sufficiently explicating the leadership construct as it relates to global diversity" (Steers et al., 2012, p. 481),

[1] While national culture is a central theme of my analysis, personality differences are not covered in this dissertation, although I acknowledge their potential role in influencing an individual's inclination to enact shared leadership. Instead, I explore factors related to the global work environment, rather than focusing on individual level traits which are well-documented in the literature focusing on co-located teams.

and contextual diversity (Hinds et al., 2011; Reiche et al., 2017). GVTs are multicultural in composition and virtual in action (Steers, Sanchez-Runde, & Nardon, 2010), and are built up by members that operate in local and global contexts in parallel (Hinds et al., 2011; Maloney et al., 2016). Hence, attention towards how multiple cultures and contexts come together in the same GVT is needed in research about leadership in GVTs. Although it might seem surprising due to the proliferation of GVTs, the literature, and in particular empirical research, on leadership in multicultural GVTs is rather thin (Cordery, Soo, Kirkman, Rosen, & Mathieu, 2009; Hinds et al., 2011; Joshi & Lazarova, 2005; Jonsen et al., 2012; Malhotra et al., 2007; Paunova & Lee, 2016; Zander & Butler, 2010; Zander et al., 2012), leaving much room for speculation. Even less of this previous work pays attention to global contextual factors (e.g. House, Javidan, Hanges, & Dorfman, 2002; Reiche et al., 2017). Therein, previous research on leadership in GVTs insufficiently connects the local context with the global context - that come together to form the GVT, exemplified in Figure 5.

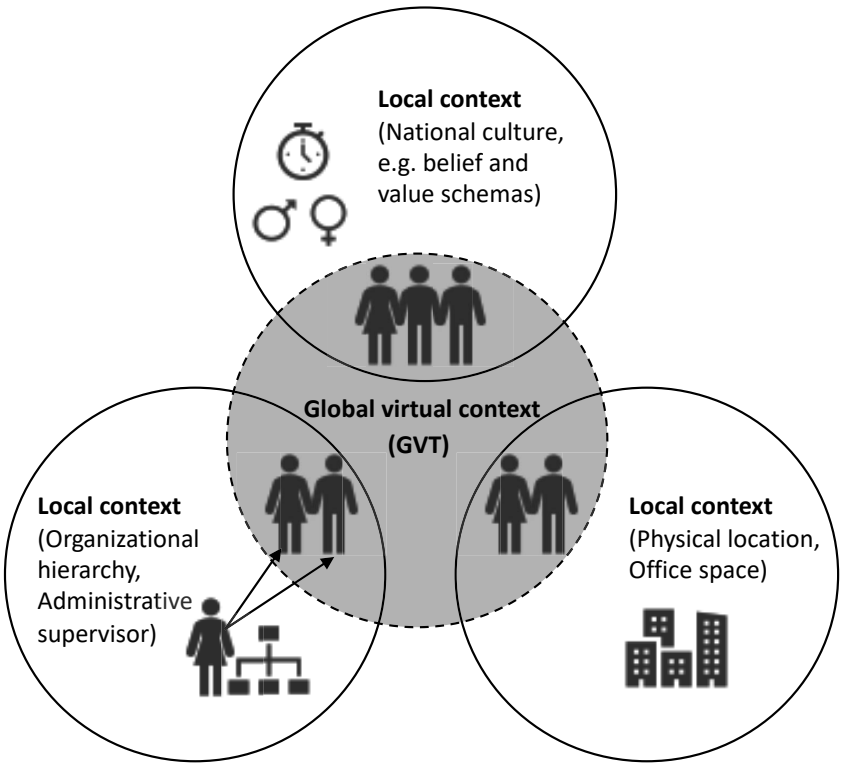

Figure 5. Local and global context in GVTs.

As can be seen in Figure 5, GVTs include multiple contexts, in that their members are *embedded* in external ***local contexts*** whilst simultaneously the GVT is *embedding* members in an internal ***global virtual context.*** Team members' external contexts include, for instance, a physical location, an organizational hierarchy, with potentially a local administrative supervisor, and a national culture such as values and beliefs which influence each team member's

behaviors (Hinds et al., 2011; Maloney et al., 2016)[2]. Some have included these contextual factors into the concept of a "system view of culture" (e.g. Kitayama, 2002). Nevertheless, the broader context from where team members operate has an impactful effect on their behaviors (Hinds et al., 2011). At the same time, team members are brought together as part of a single GVT where they collaborate across different contexts, which might converge or diverge, or lead to adaptation towards mutual practices (Cramton & Hinds, 2014; Hinds et al., 2011). Therein, as GVTs are multicultural and multi-contextual in composition, and virtual in action (Hinds et al., 2011; Steers, Sanchez-Runde, & Nardon, 2010), they may function differently than solely VTs (lacking cultural diversity) or multicultural teams (lacking virtuality and differing contextual factors). The combination of these two streams has been rather overlooked. Instead, most research on VT leadership has been done on single country VTs and the studies rarely distinguish between single-country (VT) and multi-country (GVT) types of virtual teams (Zander et al., 2012). For instance, studies acknowledging virtuality (intra-team variable) have taught us much about how communication over increasing distance and reliance on technology have an impact on team processes and outcomes, but less is known about the role of team members' local culture in the multidimensional construct of virtuality (Gibson et al., 2014; Gilson et al., 2015). Furthermore, the external context in which team members of GVTs are embedded, which oftentimes differs from one member to another, is commonly neglected (Maloney et al., 2016) and this is particularly so in leadership studies (Reiche et al., 2017).

Thatcher & Patel provide an example of how external context might have an impact in GVTs: "Contextual situations that are understood in one location (e.g. lengthy business lunches) may be misunderstood by group members in other locations (e.g. attributions of laziness because of a lack of understanding about traditional work structures)" (Thatcher & Patel, 2012, p. 997). In other words, the way team members are nested into their local contexts, being external contexts to their GVT, may have a substantial impact on their GVT collaboration and leadership, and yet, research has only begun to acknowledge this (Maloney et al., 2016; Reiche et al., 2017). At the same time, different external contextual factors may converge in the team and lead to intercultural adaption (Cramton & Hinds, 2014), suggesting that it is possible that members of GVTs can accommodate to behave according to norms other than those of their own national culture and local context.

Therefore, this dissertation moves beyond universal and normative approaches in that I do not automatically assume there is one leadership approach that would fit all. In addition, this dissertation moves beyond previous contingency approaches to leadership in GVTs in that I pay attention to local and external contexts combined, due to the fact that these cannot be escaped by the members of GVTs. Therefore, I have placed GVT leadership in the middle of Figure 5, mixing different global leadership approaches, and suggest that future research on GVT leadership should navigate the intersection in the middle. I

[2] Please note that although different local contextual factors are drawn into each local circle, each local context constitutes a combination.

anticipate that leadership in GVTs may, on one hand, have aspects that are universal to all members in the team as they adapt towards their common GVT practices, while having aspects that may differ over the different locations and members in the team. It is likely that the GVT leaders may lean on their intercultural intelligence, to modify their leadership influences to match both local and global virtual circumstances of their GVT and its members.

As a result of this complexity, however, GVTs comprise a work context which necessitate leaders to perform multiple leadership roles and tasks simultaneously in order to be effective (Kayworth & Leidner, 2002). In a multicultural global virtual work environment, a single appointed person is therefore unlikely to possess all the relevant knowledge – information, competencies and resources – to perform all the necessary leadership functions (Conger & Pearce, 2003; Pearce & Manz, 2005; Yammarino et al., 2012). This raises the question as to whether a single leader – elected by hierarchy – is the best approach to carry out leadership in GVTs. In addition, since GVTs commonly are composed of knowledge workers bearing expertise towards their particular tasks, GVT members commonly expect to receive a vast amount of autonomy from their team leader (Davenport, 2005). Accordingly, researchers have recognized that leadership may be shared among multiple individuals who possess knowledge and expertise most relevant to the team task (Denis, Langley & Sergi, 2012; Pearce, 2004), and have found initial support for the relationship of shared leadership to increased performance in GVTs (e.g. Hoch & Kozlowski, 2014). This dissertation follows this trend, with the aim of accumulating more knowledge about shared leadership in GVTs. The following two sections describes shared leadership, its antecedent conditions and associated outcomes.

2.4 Shared leadership defined

Similar to leadership in general, there is no single definition of shared leadership in the literature. What leadership content is being shared, how and to what extent it is being shared, and when it is being shared, may vary from one team to another, and shared leadership may come in different forms in different organizations and work contexts (Dust & Ziegert, 2015). This has been projected onto research on shared leadership, in that the manner in which shared leadership is conceptualized differs from one study to another and oftentimes is somewhat unclear. However, common to the various shared leadership conceptualizations is the notion that leadership is carried out by more than one person in the team. Therein, shared leadership can be viewed as "a 'we' or collectivistic phenomena that involves multiple individuals assuming (and perhaps divesting themselves) of leadership roles over time in both formal and informal relationships" (Yammarino et al., 2012, p. 382).

Although the interest in shared leadership has received heightened interest in the past decade, the notion of shared leadership is not new. As early as in 1954, Gibb stated that "leadership is probably best conceived as a group quality, as a set of functions which must be carried out by the group" (p. 884). Gibb was hence among the first to introduce the concept of shared leadership. Later,

Pearce and Conger (2003) defined shared leadership as how most have come to understand it today: "A dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals" (p. 1). Recently, Wang et al (2014) defined shared leadership in terms of "an emergent team property of mutual influence and shared responsibility among team members, whereby they lead each other toward goal achievement" (p. 181). While this definition is seemingly similar to Pearce and Conger (2003), this definition further portrays shared leadership as an emergent team property, i.e. something that naturally occurs in the team without designating multiple leader roles. Shared leadership is also commonly viewed as a shared responsibility among members, who take on leadership both formally and informally (Yammarino et al., 2012) or as a set of role functions divided over multiple individuals (Gronn, 2002).

2.4.1 Shared leadership conceptualizations

Shared leadership is a multifaced construct which has been conceptualized along multiple dimensions. Zander and Butler (2010) categorized shared leadership into paired leadership (two formal leaders dividing leadership activities between themselves), rotated leadership (team members participating in leadership, but only one member having leadership authority at one point in time) and shared leadership (team members jointly leading the team with shared leadership authority). Based on their work and others (e.g. Carson et al., 2007; Contractor, DeChurch, Carson, Carter, & Keegan, 2012), I conceptualize shared leadership in terms of the following:

1) sources - i.e. who carries out leadership
2) behaviors - i.e. leadership behaviors through which shared leadership influence is enacted
3) distribution - i.e. how large portion of the team co-enact shared leadership
4) temporality - i.e. shifting in sources, behaviors and amounts over time

Sources of shared leadership
As with team leadership in general, the locus and formality of leadership may vary (Morgeson et al., 2010), such that shared leadership may come from internal and external sources and be either formal or informal. Oftentimes, shared leadership may be a combination of these different sources. Although most research recognizes shared leadership as originating from within the team informally, some shared leadership designs may be formally designated (D'Innocenzo et al., 2016). In fact, most researchers acknowledge that shared leadership may supplement rather than replace vertical leadership (Cox, Pearce, & Perry, 2003; Houghton, Neck, & Manz, 2003). A formalized shared leadership structure was, for instance, exemplified in Erez, LePine and Elms' (2002) study where they urged their student teams to assign leader roles to different team members who would step up and lead various assignments at different times. In their study, they found that teams with higher levels of formally rotated shared

leadership displayed higher levels of voice, cooperation and performance. In other words, shared leadership does not necessarily need to naturally emerge, but there might be work design elements to formally support shared leadership endeavors. In the real business world, formalized shared leadership may, for example, come in the form of introducing sub-leaders to various sub-locations of the GVT.

Distribution of shared leadership

In addition to the formality of shared leadership, another important aspect which is at the core of the concept of shared leadership is the extent to which team members participate in shared leadership. Previous research has commonly treated shared leadership as either a "team as a whole" phenomenon, or by considering the unique influences of individual members. Dust and Ziegert (2015) proposed that shared leadership may come in the form of 1) all members being leaders (i.e. team as a whole); 2) three or more, but fewer than all members being leaders; or 3) two members being leaders. Considered through a social network approach (i.e. dyadic exchange and network centralization), the unique contributions of team members are important and should be inherent in the construct definition (D'Innocenzo et al., 2016). Several studies have measured shared leadership through a network approach, and hence acknowledged that shared leadership involves unique influences from individual team members. Mayo, Meindl and Pastor (2003) were the first to apply a social network approach to conceptualize and measure shared leadership. They captured shared leadership through decentralization and density, with decentralization tapping into the distributed aspects of leadership and density into the amount of leadership being shared. The more decentralized the team's leadership, the more evenly leadership influence is distributed across the team members, while the opposite of a more centralized leadership structure portrays leadership as more centralized and concentrated in a few individuals (i.e. as being more vertical). In this dissertation, I acknowledge the individual contributions of team members in the team's shared leadership and acknowledge that shared leadership may involve different proportions of team members sharing the lead. With all members co-enacting the team's leadership, the team display a highly shared leadership structure, whereas with only a few members co-enacting the team's leadership, the team's leadership is less shared.

Behaviors of shared leadership

This leads to the question of what it is being shared in shared leadership. Previous theorizing has acknowledged that shared leadership may entail the sharing of different leadership roles, functions or leadership behaviors (Contractor et al., 2012; D'Innocenzo et al., 2016). Therein, shared leadership is not a unidimensional construct, but instead a multidimensional, whose content may vary from one study to another, just as in research on leadership and team leadership in general. Most studies on shared leadership have adopted traditional, vertical leadership themes, including transformational, transactional, aversive, directive, and/or empowering leadership behaviors (Ensley, Hmieleski, & Pearce, 2006; Mayo et al., 2003; Pearce & Sims, 2002; Pearce, Yoo, & Alavi, 2004;

Sivasubramaniam, Murry, Avolio, & Jung, 2002) to describe the type of leadership behaviors being shared among team members. Others have adopted more of a functional approach to leadership (Morgeson et al., 2010) and measured shared leadership in terms of the different sorts of leadership functions members engage in. For instance, Hiller and colleagues measured shared leadership as it operates among members engaging in the following leadership functions: planning and organizing, problem-solving, support and consideration, as well as developing and mentoring (Hiller, Day, & Vance, 2006). As a third approach, Contractor and colleagues suggested four leadership roles that could be shared, namely the navigator, engineer, social integrator, and liaison. The navigator role facilitates and maintains a clear purpose and direction in the team. The engineer role structures and coordinates the team and its task. The social integrator maintains good social interactions and relational processes within the team. Lastly, the liaison role fosters and maintains productive relationships with external stakeholders. (Contractor et al., 2012) Hence, the approach chosen to make up the content of shared leadership may vary from one study to another and needs to be driven by theoretical reasons.

Temporality of shared leadership

Lastly, theorizing around the construct of shared leadership has also acknowledged temporal or dynamic aspects of the construct (Contractor et al., 2012; D'Innocenzo et al., 2016). It is highly unlikely, and perhaps inefficient, for all members of the team to co-enact the team's leadership at the same time. Instead, as Pearce and Conger (2003) note, team members may "rise to the occasion to exhibit leadership and then step back at other times to allow others to lead" (p. 2). This idea ties well into the context of knowledge intensive work teams, composed of experts who may step up to lead the team when their areas of expertise are needed and step down into follower roles at other times. Friedrich and colleagues, for instance, argued that "collective leadership is not static. As different problems emerge, different skills and expertise will be more appropriate" (Friedrich, Vessey, Schuelke, Ruark, & Mumford, 2009, p. 935). Related to the temporal aspects of shared leadership, previous research has acknowledged that shared leadership roles may be enacted by different team members either at the same time (Kukenberger, 2012) or at different points in time (Erez et al., 2002). Zander and Butler (2010) specifically named the latter as rotated leadership, with leadership authority shifting from one member to another, but with only one single leader remaining in charge at any given point in time.

2.4.2 Relationships with similar constructs

Having defined and opened up the various aspects of the multi-dimensional construct of shared leadership, it may be helpful to open up a few like-minded constructs such as self-managed teams, team empowerment, emergent leadership and substitutes for leadership. Thus, this section clarifies these concepts and briefly opens up how shared leadership builds on or exceeds these seemingly similar team-level constructs.

Self-managed teams

Self-managed teams are highly autonomous in deciding how to carry out their work. More specifically, Hackman has suggested that self-managed teams include "a relatively whole task; members who each possess a variety of skills relevant to the group task; workers' discretion over such decisions as methods of work, task schedules, and assignment of members to different tasks; and compensation and feedback about performance for the group as a whole" (Hackman quoted in Cummings, 1978, p. 625). Although the team's goals might be predefined to some degree, members of self-managed teams also usually have a greater responsibility for setting their own goals, monitoring their own progress and making their own decisions than members of manager-led teams do (Hackman, 1987).

However, although these underlying principles of self-managed teams are generally true, the design of self-managed teams may differ, which in turn has an impact on their functioning and effectiveness (Mohrman, Cohen, & Mohrman, 1995). For instance, a common self-managed team design applied to software development teams is the work process scrum, which can be described as a development process for team tasks consisting of short developmental iterative rounds where the team is given significant autonomy to carry out their tasks in whatever way they find necessary (Schwaber & Beedle, 2001). At the same time, these scrum teams have two assigned roles: product owner (PO) and scrum master (SM). The SM's role is to facilitate teamwork by removing obstacles, keeping the team focused on the task, and ensuring the team adheres to the team's rules. The PO represents the voice of the customer and is ultimately responsible for the project's success or failure. In other words, although being referred to as self-managed teams, scrum teams generally include a lot of structure and two types of predefined leader roles, situating them in the middle ground of completely self-managed and manager-led teams.

In summary, self-managed teams do not automatically equate with shared leadership, but instead, the team may have autonomy to decide how the team is led, either through more vertical or shared leadership approaches.

Team empowerment

Team empowerment is a "motivational state" and can be defined as a level of increased task motivation in the team that is due to team members' collective, positive assessments of their organizational tasks (Kirkman & Rosen, 2000). Team empowerment is a multi-dimensional construct with team members experiences of empowerment on four dimensions: potency, meaningfulness, autonomy, and impact (Kirkman & Rosen, 1997). Team empowerment is considered an emergent state, meaning that it either precedes or follows other team processes. More specifically emergent states are "properties of the team that are typically dynamic in nature and vary as a function of team context, inputs, processes, and outcomes" (Marks, Mathieu, & Zaccaro, 2001, p. 357) Therein, team empowerment could act as much as a precursor to shared leadership in teams, as well as result from it (Carson et al., 2007).

Emergent leadership

Emergent leadership is an informal type of leadership, in which group members exerts influence over other team members without formal authority to do so (Schneier & Goktepe, 1983). As such, emergent leadership is similar to shared leadership in that it typically views leadership as something emerging informally within the team, but different from shared leadership in that it usually focuses on a single emergent leader or a maximum of two. In other words, although emergent leadership and shared leadership commonly share the informality assumption of leadership, shared leadership may additionally originate from formally assigned leader roles (e.g. Wheelan & Johnston, 1996), and is inherently a team-level phenomenon in which multiple members share the lead as opposed to only one or a few "emergent leaders".

Substitutes for leadership

Kerr and Jermier's (1978) model of substitutes for leadership questions the need for interpersonal leadership in certain situations. They proposed that characteristics of the subordinate (e.g. ability), the task (e.g. feedback), and organization (e.g. cohesive work groups) can substitute for some basic leadership behaviors (e.g. initiating structure and consideration). Thus, inherent in their approach is the idea that certain situations negate "the hierarchical superior's ability to exert either positive or negative influence over subordinate attitudes and effectiveness" (Kerr & Jermier, 1978, p. 375). Jermier and Kerr (1997) later noted that "[F]ormal leaders do attempt to control the organization, but they do so by making decisions that minimize the need for the face-to-face exercise of power" (pp. 98-99). While both substitutes for leadership and shared leadership share the view of hierarchical leadership as being unnecessary or inefficient in certain situations, there is a clear distinction between substitutes for leadership and shared leadership. The former considers job design elements which may neutralize or reduce the need for interpersonal leadership, while the latter is highly focused towards inter-personal leadership among team members in which members co-enact leadership behaviors in the team.

2.5 Antecedents of shared leadership in GVTs

Despite the promise of shared leadership to improve performance of GVTs (Hoch & Kozlowski, 2014; Pearce, Yoo, & Alavi, 2004), we know little about the conditions under which members are likely to engage in shared leadership in GVTs, nor how formal and emergent leadership might co-exist within the same team (Wheelan & Johnston, 1996) as a result. Despite existing studies on shared leadership, we possess little knowledge of how shared leadership is constructed in a social process between people (DeRue & Ashford, 2010), and what leads to shared leadership (Fausing et al., 2015). In this section, previous research on the antecedents of shared leadership in co-located teams is introduced, followed by research and discussion about the applicability of these antecedents to the GVT context. In general, there is little empirical research on the antecedents of shared leadership, even in co-located teams, with most previous work being

theoretical in nature (see Carson et al., 2007 and Fausing et al., 2015, for notable exceptions).

Early theories on the construct of shared leadership proposed that variables related to the task itself (e.g. task complexity, interdependence; Conger & Pearce, 2003; Pearce & Sims, 2000), the characteristics of team members (e.g. leadership competence, task competence, self-efficacy, shared mental models of the task and team; Conger & Pearce, 2003; Pearce & Sims, 2000), and factors related to team composition (e.g. geographic proximity, skill heterogeneity, demographic homogeneity, team maturity and familiarity; Conger & Pearce, 2003; Pearce et al., 2001; Pearce & Sims, 2000) would all increase the likelihood of shared leadership emergence. In addition, variables such as a large team size, high member turnover, narrow and rigid perspectives on what constitutes leadership, and a need for personalized power, are all thought to reduce the likelihood of shared leadership (Conger & Pearce, 2003).

More recently, research has begun to empirically examine some of these antecedents. For example, Carson and his colleagues (2007) have found precursors for shared leadership to be factors related to the team's internal environment and the support and coaching provided by an external leader. They found that shared leadership is likely to occur in teams characterized by a strong internal environment consisting of the following: a socially supportive climate where members appreciate and encourage each other; a shared purpose and understanding among members of the team's objectives; and an opportunity for members to have voice, meaning that members feel able to speak up and proactively help the team carry out its objectives. These teams are able to create a leadership network where members share leadership responsibilities and influence each other. Similarly, Small (2007) showed that intra-team trust is an important antecedent to shared leadership. On the other hand, for shared leadership to emerge in teams lacking a strong internal environment, Carson and colleagues (2007) found that external coaching (e.g. encouraging and rewarding shared leadership behavior, fostering member confidence, and giving suggestions for improving team processes) was an important predictor of shared leadership emergence. In line with this finding, Fausing et al. (2015) and Hoch (2013) found that empowering leadership from a vertical leader is an important antecedent condition to shared leadership in co-located teams.

In the context of knowledge intensive work teams, the team is likely to rely on different persons' influences depending on the situation and task at hand. Not surprisingly, the aggregated amount of task interdependence has been found to predict shared leadership in knowledge intensive teams (Fausing et al., 2015). The basic reasoning behind this relational link is that task interdependence increases both the opportunity and need for shared leadership to take place through more interaction within the team.

Moving on to the context of GVTs, theory suggests that the nature of GVTs (e.g. geographic dispersion, demographic heterogeneity) introduces boundary conditions that make it more difficult for teams to communicate and collaborate (Hinds & Kiesler, 1995), and therefore, it is less likely that these types of teams will engage in shared leadership (e.g. Conger & Pearce, 2003; Pearce et al.,

2001; Pearce & Sims, 2000). The global boundaries often create an environment that is counter to what has been theorized to facilitate shared leadership. First, when relying on virtual means for communication, the threshold for initiating communication is higher than when being co-located (Reid, Malinek, Stott, & Evans, 1996), and as a result, both leaders and members may forget or hesitate to communicate, therefore, lowering the likelihood for shared leadership. When communication then actually occurs, leaders have to rely on electronic means for communication which are prone to misunderstandings (Hinds & Weisband, 2003) and reduced awareness of members' knowledge (Cramton, 2002). In addition to this, relations-building activities are more difficult to achieve in the virtual context (Warkentin, Sayeed, & Hightower, 1997), making shared leadership, which is a highly relational process, less likely.

In addition, demographic diversity is often high in GVTs. Due to demographic differences negatively affecting team interaction and communication, shared leadership is less likely to occur in more heterogeneous teams (Pfeffer, 1985). Demographic differences are compounded by potential differences in national culture among GVT members, which may also make shared leadership more challenging. Among other normative cultural values, power distance has been particularly highlighted as an important antecedent to shared leadership (Carson, 2005; Conger & Pearce, 2003; Hiller et al., 2006; Muethel & Hoegl, 2010), and might differ across members in GVTs. Power distance can be explained as the extent to which "a community accepts and endorses authority, power differences, and status privileges" (Carl, Gupta, & Javidan, 2004, p. 513). Team members in high power distance cultures are more likely to accept unequal distribution of power in organizations (Hofstede, 1980) and accept their social status as followers (Bochner & Hesketh, 1994), making them less equipped and less likely to participate in the team's leadership (Carson, 2005; Conger & Pearce, 2003; Hiller et al., 2006; Muethel & Hoegl, 2010). On the other hand, team members from low power distance cultures are more likely to attempt to minimize inequalities and favor less centralized leadership approaches (Carson, 2005; Conger & Pearce, 2003), and are hence more likely to engage in shared leadership. Hiller and colleagues conducted an empirical study and actually failed to find empirical evidence of high power distance being a barrier to shared leadership in co-located teams (e.g. Hiller et al., 2006). They explained this finding, however, to likely be a result of the potential measurement flaws of their own study.

But while the assumptions about the effect of national culture on leadership have been prevalent in previous leadership research, the majority of this and other research on cultural diversity has been conducted in face-to-face teams (Gibson et al., 2014), and might not be applicable to GVTs. Since previous research on the role of culture as an antecedent to shared leadership in GVTs has been theoretical instead of empirical, previous theories have been projected to the GVT realm without accounting for the unique characteristics of GVTs. Since GVT members operate their local and global contexts in tandem, prior theorizing attempts have insufficiently addressed the multi-contextual aspect of GVTs when considering the role of culture or other antecedents for shared leadership in GVTs. Members of GVTs differ from members of face-to-face teams in one

important aspect: they interact with people from different places and cultural backgrounds and, therefore, may create a global identity, i.e. a feeling of belongingness to a global community, in addition to holding identities at the culture specific level such as their local or distant sites (Erez & Gati, 2004; Lee, Masuda, Fu, & Reiche, 2018). In other words, members may accommodate and adapt to hold several identities in GVTs, leading to several work practices. For instance, in the context of GVTs, Cramton and Hinds (2014) have found evidence that intercultural adaptation may occur due to exposure to local and global context, suggesting that it is possible that members of GVTs can accommodate to behave according to norms other than those of their own national culture. Drawing on this, members and leaders of GVTs might adapt to other leadership conditions than those preferred in their own national culture as they navigate both local and global leadership contexts in parallel. However, this remains to be studied in the context of shared leadership in GVTs.

2.6 Shared leadership and GVT effectiveness

Before moving on to describe previous research about shared leadership and team effectiveness, it is important to clarify what team effectiveness entails.

2.6.1 Team effectiveness defined

Team effectiveness has commonly been divided into two parts in the management literature: performance (e.g. quality, quantity and productivity) and members' affective reactions (e.g. satisfaction and commitment) (Mathieu et al., 2008). Therein, studies commonly include blended or composite measures of team outcomes to measure team effectiveness. As Mathieu and colleagues state, since "teams perform multiple functions, these blended composite measures may well be excellent indicators of overall team effectiveness as compared to those that only assess one aspect of performance" (Mathieu et al., 2008, p. 417). A similar perspective has been adopted in research on shared leadership and team effectiveness, with several studies conceptualizing team effectiveness both in terms of attitudinal and performance outcomes (Wang et al., 2014). In addition, research has begun to pay attention to team processes and emergent states, which has been argued to influence team effectiveness directly (Ilgen et al., 2005). Previous studies on shared leadership and team effectiveness have found a stronger relationship between shared leadership and proximal outcomes, including attitudinal outcomes, team processes and emergent states, and a weaker relationship for more distal outcomes such as objective team performance (Wang et al., 2014). The next section opens up previous research and arguments surrounding the relationship between shared leadership and GVT effectiveness.

2.6.2 Research on shared leadership and GVT effectiveness

Shared leadership brings forth unique internal team mechanisms in the team, which may lead to a set of benefits and costs for the team. Previous research on shared leadership has focused primarily on its relationship to team effectiveness

and several studies have found a positive association (see D'Innocenzo et al., 2016; Nicolaides et al., 2014; & Wang et al., 2014, for recent meta-analyses). Some studies have, however, shown negative effects as well (e.g. Boies, Lvina, & Martens, 2010; Bowers & Seashore, 1966; Mehra, Smith, Dixon, & Robertson, 2006; Robert, 2013). Therefore, another recent literature review (Dust & Ziegert, 2015) suggests that we should view shared leadership through a contingency perspective, and search for those leader configurations which are most suitable in a given context.

Previous research on shared leadership has drawn on two different lines of thought to explain the suggested positive link between shared leadership and team effectiveness. First, studies have proposed that a positive outcome from shared leadership may arise from a "synergistic effect", i.e. the combination of multiple leaders being greater than the sum of its parts (found in studies such as e.g. Carson et al., 2007; Ensley et al., 2006; Hiller et al., 2006; Mehra et al., 2006). Drawing on an information-processing perspective (van Knippenberg, De Dreu, & Homan, 2004; van Knippenberg & Schippers, 2007; Williams & O'Reilly, 1998), it is reasoned that multiple leaders may foster "diversity of thought" in the team which allows the team to capitalize on a diverse set of task-relevant knowledge, skills, and abilities for more ideas and perspectives than through a single leader (Dust & Ziegert, 2015). The second perspective, in turn, suggests that shared leadership may lead to high levels or role co-enactment in the team serving as a leadership backup (Friedrich et al., 2009; Gronn, 2002; Klein, Ziegert, Knight, & Xiao, 2006), in that team members may step in to take the lead when another member enacting a leader role is unable to continue it. This perspective may be particularly useful in GVTs, where team members may step up into leader roles while other leaders are not available, e.g. due to little overlap in working hours. In sum, studies commonly motivate the connection between shared leadership and team effectiveness through mediators such as enhanced participation and information sharing among team members, increased team cohesion and team consensus, and better team functioning (D'Innocenzo et al., 2016; Wang et al., 2014).

A vast amount of empirical research on shared leadership in co-located teams has found a positive relationship between shared leadership and team effectiveness (see D'Innocenzo et al., 2016; Nicolaides et al., 2014; Wang et al., 2014, for recent meta-analyses). While a similar relationship has been reported in studies focusing on GVTs, these studies only constitute a small number (e.g. Hoch & Kozlowski, 2014; Muethel, Gehrlein, & Hoegl, 2012).

In addition to positive outcomes, however, studies have also shown negative effects of shared leadership, both in the context of co-located and distributed teams (e.g. Boies et al., 2010; Bowers & Seashore, 1966; Mehra et al., 2006; Robert, 2013), indicating that shared leadership may not inclusively lead to positive outcomes. Together, these contradicting findings suggest that there might be some interaction effects at play, which may explain the inconsistent link between shared leadership and team effectiveness in previous research. Therefore, there are strong reasons to open up the black box between shared leadership

and GVT effectiveness in order to uncover boundary conditions for shared leadership that may lead to GVT effectiveness.

Boundary conditions for shared leadership to lead to team effectiveness
Research has just begun to look into boundary conditions that influence the relationship between shared leadership and team effectiveness and has primarily focused on a limited set of variables. These include characteristics of the team and its tasks (D'Innocenzo et al., 2016), as well as the type of leadership that is being shared, with some leadership behaviors being more appropriate to share than others (Wang et al., 2014).

Team and task type. First, a vast amount of studies have argued that some team types benefit more from sharing the lead than others. Shared leadership has shown promise for self-managed teams and executive teams, as well as for teams operating in democratic organizations (Yammarino et al., 2012). Prior theorizing has furthermore suggested that shared leadership is particularly useful in knowledge intensive, complex, and dynamic teams (Klein et al., 2006; Pearce & Manz, 2005). In addition, prior theorizing argues that shared leadership should lead to successful outcomes particularly in multicultural teams with weak faultlines (i.e. teams with high heterogeneity) combined with inconsistent status expectations (e.g. teams with a female doctor and a male nurse). Indeed, because these teams are more egalitarian, members are more likely to contribute with their unique perspectives and knowledge (Zander & Butler, 2010). In addition, it has been argued that shared leadership should be particularly appropriate for the effective functioning of GVTs (Muethel & Hoegl, 2011) working in tasks of high complexity and uncertainty (Griffith, Sawyer, & Neale, 2003). Extended to the context of co-located teams, research has consistently found that teams working on complex and highly interdependent tasks benefit more from shared leadership than teams working on more simple and routine tasks (D'Innocenzo et al., 2016; Nicolaides et al., 2014; Wang et al., 2014).

Type of leadership behavior. Second, the type of leadership behavior may serve as an important contingency factor. Through their meta-analysis of 42 empirical studies, Wang et al. (2014) found that traditional forms of leadership (e.g. initiating structure and consideration) show a lower relationship to team effectiveness than do either shared leadership through new-genre leadership (e.g. charismatic and transformational leadership) or through a cumulative, overall shared leadership in terms of shared influence. In addition, in the context of VTs, leadership behaviors such as keeping track of group work (s.k. monitoring behaviors) were found to result in higher team performance when this leadership behavior was shared (Carte, Chidambaram, & Becker, 2006). Muethel & Hoegl (2011) furthermore proposed a model of four leadership functions that are specific to the VT context, and when being shared among members of VTs should lead to team performance. These functions constitute the following: (1) *the dispersed screening function* (i.e. members building internal relations focused on understanding information needs and environmental changes, and interpreting coordination and adaptation needs for themselves and their team); (2) *the self-directed interrelation function (i.e.* members inviting other team members to contribute to their own decision making); (3) *the*

other-directed interrelation function (i.e. members approaching other members to offer advice and input outside their own area); and (4) *the team-directed interrelation* (i.e. an open discussion and decision making process between all members, after collective action needs have been identified). While this model shows promise, it has not – to my knowledge – been tested through empirical research.

Viewing each other as leaders. Alternatively, Mehra and colleagues (2006) identified the importance of formal and emergent leaders to perceive each other as leaders, for shared leadership to increase performance. In other words, the persons co-enacting leadership need to acknowledge each other as leaders in order for shared leadership to lead to team performance.

For the most part, empirical studies on shared leadership in GVTs have so far been theoretical, offering propositions and predictions (Hoch & Dulebohn, 2017; Liao, 2017; Muethel, & Hoegl, 2010, 2011; Shuffler, Wiese, Salas, & Burke, 2010). These studies have suggested that shared leadership increases GVT effectiveness. A few recent empirical studies (Hoch & Kozlowski, 2014; Hoegl & Muethel, 2016) also found that shared leadership leads to increased team performance in GVTs, while a few other studies showed the opposite effect (Robert, 2013), especially with some leadership behaviors (Carte et al., 2006). Robert (2013) found shared leadership to decrease team performance in GVTs, and Carte et al (2006) found that leadership behaviors such as producer behaviors – i.e. motivation of behaviors that will result in completion of the group's task – led to poorer team performance when the leadership was shared in VTs. Robert (2013) offers several reasons for this: having multiple members in charge resulting in no one being in charge; too much focus on trying to accommodate everyone; and potential coordination problems. In contrast, Muethel and Hoegl (2011) theorized that shared leadership leads to increased task coordination and improved communication practices in teams, which in turn affects team performance positively. Hoch and Kozlowski (2014) reasoned further that shared leadership creates a number of benefits: stronger bonds among team members; the facilitation of trust, cohesion, and commitment; and mitigating the disadvantages of GVTs such as helping members to overcome communication challenges (Bell & Kozlowski, 2002; Pearce & Conger, 2003), leading to team performance. Based on these conflicting accounts, it is difficult to draw a unified conclusion on the effect of shared leadership on GVT effectiveness. Therefore, more research is needed that looks at boundary conditions for shared leadership to lead to GVT effectiveness.

2.7 Synthesis of theoretical background

Along with digitalization and rapid advances in technology, organizations are increasingly relying on GVTs, composed of culturally diverse members who collaborate across geographical distance and technology to perform their core work activities. These GVTs are riddled by complexity and leaders are struggling with managing them towards success. Along with increased distance and cultural diversity, the ability of a single leader to exert influence on the team successfully

diminishes. Therefore, shared leadership, where multiple team members participate in the leadership of the team, has been suggested as a more powerful way to lead these teams. Unfortunately, we know little about the antecedent conditions for shared leadership in GVTs and in fact research point towards the unlikeliness of shared leadership in a global work environment (Pearce et al., 2001).

Existing research on the antecedent conditions of shared leadership in co-located teams have proposed that variables related, for example, to the task itself (e.g. task complexity, interdependence), and factors related to team composition (e.g. geographic proximity, skill heterogeneity, demographic homogeneity) (Conger & Pearce, 2003; Pearce et al., 2001; Fausing et al., 2015) would all increase the likelihood of shared leadership in teams. However, GVTs collaborate over geographic dispersion, and constitute diverse memberships with heterogeneity on multiple cultural dimensions which creates an environment that is counter to what has been theorized to facilitate shared leadership (Pearce et al., 2001). Therefore, and due to a lack of empirical evidence, this dissertation will study which antecedent conditions facilitates shared leadership in GVTs.

Prior research on shared leadership and GVT effectiveness has furthermore produced mixed results. First, some have found that shared leadership leads to improved team effectiveness, beyond vertical leadership (e.g. Hoch & Kozlowski, 2014; Muethel & Hoegl, 2016). At the same time, however, studies have also found opposite effects (e.g. Mehra et al., 2006; Robert, 2013). Together, these contradicting findings suggest that there might be some interaction effects at play, which may explain the inconsistent link between shared leadership and GVT effectiveness in previous research. Our understanding of what these intervening factors might be is, however, limited and we know little about the conditions under which shared leadership leads to team effectiveness in globally distributed work environments. Therefore, a second goal of this dissertation is to investigate the link between shared leadership and GVT effectiveness and to identify those intervening factors influencing this relationship.

On top of a weak understanding of the antecedent conditions for shared leadership and its relationship with GVT effectiveness, previous theorizing efforts on shared leadership in the context of GVTs have either projected theories established from the co-located work context to the global context (e.g. in research on how culture impact shared leadership emergence such as in Muethel & Hoegl, 2010) or investigated intra-team variables aggregated to the team level (e.g. Conger & Pearce, 2003; Paunova & Lee, 2016; Pearce et al., 2001). Although this research has provided us with valuable insights, it may have missed the mark in just how powerfully internal and external contextual factors come together in GVTs. In GVTs, members are embedded in different local contexts which may include different organizational structure, policies and national cultures to mention but a few (Hinds et al., 2011). Despite this, research on shared leadership in GVTs commonly neglects the duality of the local and global context surrounding the global team member, leading to a somewhat biased understanding of leadership in GVTs. Therein, most research on GVTs treats them as

though they exist in a vacuum, not considering how contextual factors may affect the leadership of these teams (Reiche et al., 2017).

As a response to this, I continue the line of thought initiated by (1) Zander & Butler (2010) in the context of multi-cultural co-located teams, as well as by (2) Reiche et al. (2017) in the context of globally distributed work and GVTs, and pay particular attention to contextual and configurational factors that might help to unlock important knowledge about shared leadership in GVTs. Therein, I put a stronger focus on context, and study shared leadership in GVTs not only through the perspective of the team, but from the bottom up, starting at the individual level to find out about team members' unique experiences of shared leadership as they navigate their local and global contexts in parallel. This includes factors of the external environment in which members were embedded in outside of their GVT (Maloney et al., 2016), such as having a local administrative supervisor. In addition, I move beyond aggregate approaches and pay attention to how configurational aspects, such as how members are placed in relation to each other and their leader over locations (O'Leary, & Cummings, 2007), may influence shared leadership in their GVT. To achieve this, I adopt a relational lens of leadership (Uhl-Bien, 2006; DeRue & Ashford, 2010) and study how shared leadership is socially constructed through a mutual influence process among team members, by adopting the definition of Wang et al. (2014), defining shared leadership as "an emergent team property of mutual influence and shared responsibility among team members, whereby they lead each other toward goal achievement" (p. 181).

3. Research questions

This dissertation is based on four articles that contributes to our understanding of which conditions facilitate shared leadership and its relationship to GVT effectiveness. In order to achieve this, I developed three focused research questions. These research questions are presented together in Figure 6, and separately below, including descriptions of how they are linked to the four essays included in this dissertation.

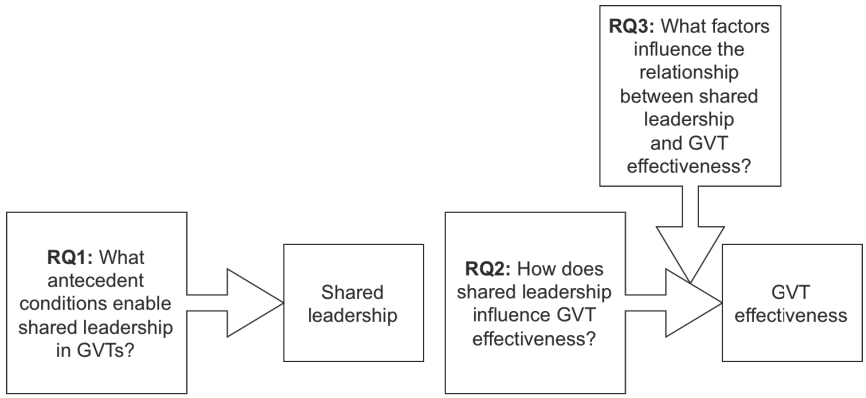

Figure 6. Research questions of this dissertation.

RQ1: What antecedent conditions enable shared leadership in GVTs? (Study 1, 2, 4)

The first research question addresses what factors give rise to shared leadership in GVTs. As highlighted in the theoretical background section, GVTs constitute a highly different work context than co-located teams, and there are strong reasons to believe that the underlying premises for shared leadership to occur might differ. Therefore, this research question aims to uncover specific enabling conditions of shared leadership in GVTs. The first, second and fourth study are related to this research question. Study 1 focuses on how multi-channel technology influences the enactment of leadership behaviors by formal and emergent leaders in a GVT. The study represents a case where shared leadership did not develop to its full potential due to predefined role-expectations among team

members that were not aligned with shared leadership expectations. The results offer, however, insights into how multi-channel technology may facilitate shared leadership to some extent. Study 2 focuses on antecedent conditions at the individual and team level within GVTs and highlights how the duality of local and global leadership contexts for team members have an important impact on their ability to enact shared leadership across boundaries in their GVT, while their power distance culture values mattered less. Study 4 offers propositions based on empirical data and theory combined and focuses on how the configuration of task and expertise interdependence as well as empowering supports coming from interpersonal and structural sources facilitate shared leadership across locations in GVTs.

RQ2: How does shared leadership influence GVT effectiveness? (Study 1, 3)

This second research question addresses the effect of shared leadership on GVT effectiveness, both in terms of affective and performance outcomes (Mathieu et al., 2008). Study 1 highlights how members' different preferences for leadership styles may impact both their satisfaction as well as the efficiency of team meetings. Study 3 focuses on shared leadership and team effectiveness, including both affective and performance outcomes (such as achieving outcomes on-time, in line with team goals, and with overall efficiency), and presents potential benefits and losses of shared leadership for GVT effectiveness. Study 1 and 3 confirms that shared leadership may well have a positive and negative impact on GVT effectiveness. Several of the additional cases of this dissertation (included in Study 2 and 4), contribute with confirming evidence to this research finding – although not being within the scope of these papers.

RQ3: What factors influence the relationship between shared leadership and GVT effectiveness? (Study 1, 2, 3)

Assuming that shared leadership does not always have a positive impact on team effectiveness, the third research question addresses the black box between shared leadership and GVT effectiveness. Research question 3 hence attends to the possible dark side of shared leadership in GVTs and seeks boundary conditions for positive or negative impacts of shared leadership on GVT effectiveness. Although not the main focus of Study 1, it contributes to this research question by showing how members' expectations need to match with executed leader behaviors for shared leadership to lead to GVT effectiveness. Similarly, although Study 2 primarily contributes to the front-end of shared leadership, i.e. what leads to it in GVTs, it also highlights interesting findings related to how competing lines of authority may hinder members enacting shared leadership to experience heightened levels of satisfaction. Study 3, in turn, investigates how GVTs coordinate their shared leadership and highlights the importance of shared leadership to be coordinated both through implicit and behavioral leadership coordination in order for it to increase team effectiveness. In sum, papers 1, 2

and 3 thus all broaden our understanding of boundary conditions regarding the relationship between shared leadership and GVT effectiveness.

4. Research design and methods

This dissertation is based on four empirical articles that all contribute to the overarching goal of understanding how shared leadership may arise and contribute to GVT effectiveness. Altogether 129 members of 16 teams from six organizations as well as one university setting participated in this research. In the following section, I describe the chosen research design and methods of this dissertation in detail. I begin with introducing the research paradigm that guides my research approach and sets the premises for my analytical thinking. Then, I discuss the research design and methods, including the data collection process, and the analytical steps in the data analysis for reaching the findings reported in this dissertation.

4.1 Research paradigm

Besides choosing an interesting and important topic for the empirical study, it is important to decide how to go about studying the chosen topic. This empirical research process depends on how the researcher understands the social reality and the truth **(ontology)**, how an understanding of knowledge and the truth is to be acquired **(epistemology)**, as well as how the researchers own values and ethics guides this process **(axiology)** (Denzin & Lincoln, 2011; Patton, 2002). These underlying assumptions together create a research paradigm that underpins the researcher's chosen scientific approach and methodologies (Chilisa & Kawulich, 2012).

In this dissertation, I apply a constructionist-interpretive research paradigm to study how shared leadership is constructed in a social process among multiple team members. Therein, this dissertation is guided by the ontology of **interpretivism**, in which reality is thought of as something that is socially constructed and mind-dependent, and by the epistemology of **constructionism**, in which knowledge is treated as a subjective entity that is socially constructed rather than being objectively determined (Bryman & Belll, 2007; Creswell, 2003; Denzin & Lincoln, 2011). This chosen approach calls for the study of shared leadership through a relational lens, in which leadership is socially constructed among individuals through a social process (Uhl-Bien, 2006; DeRue & Ashford, 2010).

Inherent in the interpretivistic assumption is the existence of multiple socially constructed realities. The reality is, therefore, mind-dependent and a personal or social construct (Chilisa & Kawulich, 2012). The purpose of the interpretative research approach is therefore to understand a phenomenon through people's

lived experiences in a natural setting. For studying shared leadership in teams, it is thus important to study it through the experiences lived by the subjects under study. Hence, I focused on team members lived experiences of shared leadership in their everyday work settings.

In line with constructionism, an understanding of the truth is furthermore created through human interactions with the world. Hence, as the knowledge gained is socially constructed, it is inherently subject to passing through a lens of subjective understanding of the world. This highlights the role of the researcher and brings me to consider axiological inferences. In line with the constructionist-interpretive paradigm, the construction of knowledge is influenced by the researcher's own values and worldview (Chilisa & Kawulich, 2012). Everything – from the topic being chosen for study, to data collection and analysis, including the interpretation of one's data and findings, and even how one reports the findings – are subject to personal values and biases. Therefore, there is always a certain level of subjectivity that interferes with neutrality in a constructionist-interpretive paradigm. Hence, I acknowledge that my own experiences and worldview might have an impact on the way I collected data and interpreted others' experiences and stories, which I will acknowledge in the following sections where I explain my chosen research strategy and data analysis steps in detail.

4.2 Research strategy and study design

The chosen constructionist-interpretive research paradigm consequently influences methodological choices. As my goal was to extend underdeveloped theory on shared leadership in GVTs, I applied inductive, qualitative research methods in this dissertation. The goal of inductive research is to generate new theory that emerges from the data by moving from raw data towards concepts, themes and ultimately a theoretical model (Miles & Huberman, 1994; Thomas, 2006). This inductive approach has been regarded as particularly suitable for the study of social influence processes such as leadership (Glaser, 1992; Parry, 1998), as it enables us to theorize about the nature of leadership processes. The study was, hence, designed to be open-ended and to allow new themes to emerge in order to map into the dynamics of how shared leadership is co-constructed among members in GVTs. In addition, I entered the field with an open mind to learn as much as I could about the subject of shared leadership in my studied teams.

4.2.1 Multi-case study

I conducted an inductive multi-case study to gain a deeper understanding of why some teams engage in shared leadership in GVTs, while others do not, and why some teams and not others seem to show signs of improved team effectiveness as a result. Building theory from case studies is a research strategy that involves using multiple cases to create theoretical constructs and propositions from case-based empirical evidence (Eisenhardt, 1989). At the heart of case study research is "to use cases as the basis from which to develop theory inductively. The theory is emergent in the sense that it is situated in and developed by

recognizing patterns of relationships among constructs within and across cases and their underlying logical arguments" (Eisenhardt & Graebner, 2007, p. 25). As my goal was to extend underdeveloped theory on shared leadership in GVTs, the inductive case study approach is an appropriate strategy for theory building as the existing research does not provide answers to my research questions (Eisenhardt & Graebner, 2007). In line with an inductive approach, I entered the field with an open-minded approach to learn as much as possible about how shared leadership functions in the context of GVTs and moved towards a more theoretical precision along with the lessons learned. Based on my analysis of the amount of shared leadership in each team (i.e. case), I treated the sixteen cases ranging from high to low levels of shared leadership as a series of "natural experiments", each case serving to confirm, disconfirm or extend the inferences drawn from the others (Yin, 2009). In other words, multiple cases enable comparisons that reveal whether a finding is peculiar to a specific case or is consistently replicated by multiple cases (Eisenhardt, 1991).

In the following sections, the empirical setting including case selection strategy, case descriptions, data collection process and analytical steps is explained.

4.2.2 Selecting cases

Cases were selected based on principles of theoretical sampling (Glaser & Strauss, 1967) along the following dimensions that seemed important for the experience of shared leadership in GVTs. First, the members or subsets of the teams worked in a globally dispersed manner (i.e. they were located in different countries and communicated mainly via information and communication technologies in the whole GVT). Second, all GVTs were expert knowledge teams collaborating toward a common goal in an interdependent manner, though differing in task type (software development, technical support, service design and energy and process management), and level of interdependence. The team members had worked exclusively for the focal GVTs (i.e. not for multiple teams) for more than one year[3]. While the fourth case, StudentPD, represented a student team, the rest of the cases were organizational teams in order to enable better theorizing around the potential influence of contextual factors on the GVTs (i.e. the team's external environment in which it is embedded) in real organizational settings. The headquarters (HQs) of the organizational teams were located in Finland, which is low on the national cultural dimension of power distance (Hofstede, 1980). This would indicate that the studied teams might have been exposed to shared leadership practices based on previous theorizing around power distance and shared leadership emergence (Conger & Pearce, 2003; Hiller et al., 2006; Muethel & Hoegl, 2010). All teams were built into matrix organizations and members at sites distant to the HQs had separate local administrative supervisors and separate global functional team leaders. In

[3] Teams SustainTech and SustainApp constitute exceptions in that their team members commonly worked for two projects at the same time. However, all participating members were primarily allocated to the project teams under study. StudentPD began working together at the beginning of the data collection and worked together for the duration of a nine-month long project.

contrast, members at the HQs had only one person serving as both functional team lead and administrative supervisor. This created a situation where members potentially would receive parallel leadership influences from local and global sources, which potentially would impact the pursuit of shared leadership – and bring contextual factors to the foreground when theorizing about shared leadership in GVTs.

Prior to the data collection, I engaged in initial pilot interviews with senior team leaders and HR-personnel from the selected companies to make sure that the teams being chosen were satisfying the selection criteria described above. Through these discussions, I generated an initial awareness of the leadership practices in each team and made sure that I interviewed a variety of GVTs that created a spectrum of different levels of shared leadership. In addition, I created an initial understanding of the contexts in which each team operated. In total, 16 cases (i.e. 16 GVTs), including 129 team members[4] were selected for analysis in this dissertation. This sample created a robust set of multiple cases chosen based on theoretical considerations which allowed me to make comparisons and contrasts between cases to sharpen the emerging theory and to eliminate alternative explanations (Yin, 1994).

4.2.3 Case descriptions

The 16 cases include 129 in-depth interviews conducted with members and leaders of 16 GVTs in six organizations and one university setting (including four different universities from the USA, Finland and India). All participating organizations develop software and provide support to their customers worldwide, but they operate in different markets. Organizations 1-3 employ 170-600 workers worldwide, Organization 4 has 70.000 employees, and Organizations 5-6 have around 4500-4700 employees. While each organization develops software, the core focus in Organization 6 is on energy and process-related products and services. HQs of the organizations are located in Finland, and they have area offices in Europe, Asia and the U.S. The description of each of these focal teams is presented in Table 1 and in the following section.

[4] In two of the teams, only 9 out of 11 (TechDelivery) and 4 out of 7 (TechIntercon) team members were interviewed. Hence, the total number of interviews was 129, while the actual number of team members in the 16 teams was 134 in total.

Table 1. Description of the teams studied.

Case	Teams	Organization	Team function	Team member location	Cultural backgrounds	Team size	Task Interdependence	Communication medium
Case 1	GlobeSoft	ORG 3	Software development	Finland (5), US (3)	American, Finnish, Belgian, Swedish	8	High	Teleconferences, telephone, email, document sharing system, discussion forum, SMS, FTF meetings twice a year
Case 2	GlobeEle	ORG 4	Software development	Finland (2), US (3), Japan (2)	American, Chinese, Finnish, Japanese, Iranian	7	High	Video and teleconferences, email, telephone, SMS, FTF meetings ones to twice a year
Case 3	GlobeTech	ORG 4	Support	Finland (5), Denmark (1), Japan (1)	Danish, Finnish, Japanese	7	Moderate	Teleconferences, email, telephone, SMS, FTF meetings twice a year
Case 4	StudentPD	University	New service development	India (3), Finland (5), US (3)	Finnish, American, Korean, Indian, German	11	High	Emails, chat, online project management tool, weekly meetings over a 3D virtual environment, two FTF meetings
Case 5	CustSup	ORG 1	Technical customer support	Finland (7), India (2), China (1), Korea (2), Japan (1)	Finnish, Indian, Chinese, Korean, Japanese	13	Moderate	Teleconferences, email, discussion forum, SMS, customer cases tool
Case 6	Tech-Delivery	ORG 1	Delivery & technical support	Finland (3), Italy (1), US (1), China (1), Korea (2), Japan (1)	Finnish, Italian, American, Chinese, Korean, Japanese	11	Moderate	Teleconferences, email, discussion forum, SMS, customer cases tool
Case 7	Cyber-Security	ORG 1	Software development	Finland (8), India (4)	Finnish, Indian	12	High	Video and teleconferences, discussion forum, email, SMS, issue tracking management tool
Case 8	Tech-Intercon	ORG 1	Software development	Finland (3), India (1)	Finnish, Indian	7	High	Video and teleconferences, discussion forum, email, SMS, issue tracking management tool
Case 9	Tech-Platform	ORG 1	Software development	Finland (6), Romania (3), India (1)	Finnish, Romanian, Indian	10	High	Video and teleconferences, discussion forum, email, SMS, issue tracking management tool
Case 10	TechEng	ORG 2	Support & development	Finland (5), UK (2)	Finnish, British, Australian	7	High	Teleconferences, email, chat, FTF meetings ones per month
Case 11	TechMetal	ORG 2	Support & development	Finland (3), UK (2), Japan (1)	Finnish, British, Japanese	6	Moderate	Teleconferences, email, chat, FTF meetings four times a year
Case 12	SoftTele	ORG 5	Software development	Finland (4), India (3)	Finnish, Indian	7	High	Video and teleconferences, discussion forum, email, SMS, issue tracking management tool

Table 1 continued. Description of the teams studied.

Case	Teams	Organization	Team function	Team member location	Cultural backgrounds	Team size	Task Interdependence	Communication medium
Case 13	SoftWeb	ORG 5	Software development	Finland (5), India (2)	Finnish, Indian	7	High	Video and teleconferences, discussion forum, email, SMS, issue tracking management tool
Case 14	TechStructure	ORG 2	Software development	Finland (3), UK (5)	Finnish, British	8	Moderate	Teleconferences, email, chat, FTF meetings ones per year
Case 15	SustainTech	ORG 6	Research & development	Finland (3), US (3)	Finnish, American	7	Low	Email, meetings over teleconferencing system
Case 16	SustainApp	ORG 6	Research & development	Finland (2), Sweden (1), Austria (2), China (2)	Finnish, Swedish, Austrian, Chinese	6	Low	Email, meetings over teleconferencing system

Case 1: GlobeSoft worked together in a highly interdependent manner during the duration of one specific project. The team's task was to develop new software to bring a new product to the company's offerings. Altogether 36 team members from five different national offices (Finland, Sweden, England, Belgium, and USA) contributed to the project, but only the core team members were interviewed. The delivery phase of the project took four months and maintenance continued for two years. The project was led from Finland, Helsinki headquarters. At the HQs, a fast-paced working culture existed, and the leadership style was highly vertical. For instance, team members had to report to their team leader on a daily basis, and the amount of control exercised by the team leader was high. The team followed company level operational and delivery processes in its work, although these were light due to the relative newness of the company. Three members were female, all located at different sites.

The team relied on various means for communication. The whole team met face-to-face twice a year. The rest of the team meetings were held through teleconferences on a weekly basis. Email was the most extensively used medium for communication. In addition, the team used a version control system where everyone could trace decisions and share information. Company policies encouraged employees to rely on the material available in the version control system to avoid out-of-date information or duplicated work.

Case 2: GlobeEle worked together during the duration of one specific telecommunications R&D project in Organization 4. While task interdependence in the team was high, collaboration across locations remained low due to the time zone separation between members, which made it difficult for the whole team to work together. GlobeEle involved members from Japan, Finland, and the United States, covering five different ethnic backgrounds. The team leader was Iranian and located in Helsinki with one Finnish team member. Team members working in Tokyo were Japanese, while two team members working in Dallas were Chinese and the third was American. The time difference between Tokyo

and Dallas was 14 hours and, as a consequence, these sites did not share any overlapping working hours. As a result, the team leader in Finland acted as a boundary spanner between the different sites, driving the communication and information flow across locations. All team members were male.

The team relied on various means for communication. The team commonly used email, mobile phone, teleconferencing, videoconferencing, and documentation by using the MS Office package. The team gathered for their first face-to-face meeting eighteen months into a project that came to last four years. After this, they gathered for a handful of face-to-face meetings. The leader coordinated the technology development, the use of resources, and scheduled meetings.

Case 3, 10 and 11 were similar in several aspects, and are, hence, described together next. **Case 3: GlobeTech** of Organization 4**, Case 10: TechEng** and **Case 11: TechMetal** of Organization 2 provided support and input to teams such as software development teams and sales teams. Therein, they functioned as a bridge between product development teams, customer support teams and sales persons. Their team members provided material and guidelines to the customer support area offices, development requirements to the product development division, as well as technical support to sales. GlobeTech had one female member, while TechEng and TechMetal consisted of all males.

The teams relied on various means for communication, including teleconferencing and email, as well as chat (TechEng and TechMetal) or text messaging (GlobeTech). TechEng had monthly face-to-face meetings, and sporadic virtual meetings on an as-needed basis. TechMetal met face-to-face four times a year and communicated beyond that primarily in one-to-one online discussions. GlobeTech met face-to-face twice a year and through teleconferencing ones per month. While both GlobeTech's and TechMetal's tasks were moderately interdependent, TechEng's tasks were highly interdependent.

Case 4: StudentPD consisted of 11 graduate students from four different universities from the United States, Finland and India, collaborating together in a highly interdependent fashion as a GVT for a nine-month period. The students' backgrounds were diverse both culturally and educationally, and they represented five different nationalities and eight different educational backgrounds. Five team members were female. The virtual student team participated in a nine-month long university course where the goal was to design and implement complete prototypes of a product or service for a global company. Despite the university course setting, time pressure along with corporate funding and the requirement to develop well-functioning and innovative prototypes were good incentives to motivate the students to nearly full-time work during the nine-month period. Furthermore, students received credits based on their coursework from their home universities.

The team was divided into local sub-groups and each member had a specific responsibility regarding the project. Each member had a title (e.g. industrial design manager, software manager, market study manager), which described their area of responsibility in the project. The local sub-groups also had local leaders, indicating a somewhat formal shared leadership structure including at least part

of the team. At least some of the members of the local group met typically every week face-to-face. Together, the GVT had weekly meetings on an island in a 3D virtual environment, Second Life, which was specifically designed for their use. It had a meeting place with two screens for slideshows and it was the place where the team gathered for the meetings. The team leader had a prepared agenda for every meeting. If the leader could not participate in a meeting, another team member was given the task to prepare and run the meeting. This happened in the third meeting being analyzed and the meeting was run by a team member, who I will refer to as the temporary leader in the results. Each meeting started with a quick round of questions on how everyone was doing and ended with tasks to do for the next week. In between, different topics related to the project execution were discussed. Typically, the meetings served as a basis for updating each member on the current situation of the project. Larger decisions were initially made in local sub-groups and then presented to the whole team during the meetings.

For daily interaction, the group used both asynchronous and synchronous tools such as emails, an instant messaging system, as well as an online project management tool. In addition, the company sponsor of the team provided extra money for the members for travelling to two face-to-face team meetings during the coursework. Furthermore, the sponsor provided a budget for international field trips for certain members of the team for user studies.

Cases 5 and 6 were similar in several aspects and are, hence, described together next. **Case 5: CustSup** focused on delivering products and supporting customers during the initial usage period of the product, whereas **Case 6: TechDelivery**'s task was to provide technology support and on-site training to customers. Both cases were from Organization 1. The sub-locations in CustSup and TechDelivery operated quite independently within their specific geographical areas providing services to local customers in their native languages, but the team members frequently interchanged resources and provided support to each other and were, hence, moderately interdependent. Both teams used a common information and customer management tool, which brought transparency to their work – both in terms of providing information about customer cases as well as information on who was working on what. In addition, the teams followed a series of work processes that guided them in performing their work. TechDelivery had weekly meetings, while CustSup lacked meeting routines and rarely gathered for meetings. Both teams had between 11 to 13 members in total, located in in Finland, China, Korea and Japan. CustSup was additionally located in India, and TechDelivery was additionally located in Italy and the United States. Both teams consisted of primarily male members, with one to two female members.

Case 7, 8, 9, 12, and 13 were similar in several aspects and are, hence, described together next. **Case 7: CyberSecurity, Case 8: TechIntercon,** and **Case 9: TechPlatform** were all software development teams in Organization 1, while **Case 12: SoftTele** and **Case 13: SoftWeb** were software development teams of Organization 5. All these teams worked together in a highly interdependent manner. They followed the work process scrum, which consists of

a series of meetings such as daily status updates, planning and retrospective meetings, which Cases 7-9 and 12-13 all adhered to. In addition, the studied teams used an issue tracking management tool (commonly used in scrum), listing all the team's tasks and each member's current task in order to enable task sequencing and delegation. In line with scrum, the teams had two assigned roles: product owner (PO) and scrum master (SM). The SM's role is to facilitate teamwork by removing obstacles, keeping the team focused on the task, and ensuring the team adheres to the team's rules. The PO represents the voice of the customer and is ultimately responsible for the project's success or failure. In our sample, the PO also functioned as a supervisor to the Finnish team members. All five teams had team members in Finland and India, and TechPlatform additionally had members in Romania. While TechPlatform consisted of all males, the other teams had two to three female members.

Besides their issue tracking management tool, all teams used a chat board (Slack) for asynchronous communication, and videoconferencing for their meetings. Due to the scrum process, they communicated frequently over these tools several times a day. For instance, members usually raised questions to the whole team over Slack, to which team members responded within a few hours, if not immediately. The teams also met face-to-face once a year, but due to their frequent interaction over technology, they did not feel a need for more frequent site visits.

Case 14: TechStructrure of Organization 2 similarly followed the scrum work process, but apart from the other software development teams, the two locations, Finland and UK, worked more independently with only moderate task interdependence across the two locations. The team leader in Finland primarily coordinated tasks through a sub-leader at the UK site, and hence, the whole team rarely gathered for meetings. Instead, the planning and retrospective meetings were held among the Finns as well as the sub-leader but did not involve the software developers in UK due to their wish to just focus on their coding work. Instead, daily standups were held only at the UK site between the UK members. The whole team communicated using email and an issue tracking management tool and met face-to-face once a year. The team consisted of all males.

Cases 15 and 16 were similar in several aspects and are, hence, described together next. **Cases 15: SustainTech** and **Case 16: SustainApp** of Organization 6 represented two research and development project teams within energy and process-related products and services. SustainTech was distributed across Finland and the United States, while SustainApp was distributed across Finland, Sweden, Austria and China. Both teams had four female members. The project teams had worked together for more than a year on a long term project. All locations operated rather independently on their tasks, including research, development and testing tasks, and thus, the interdependence among tasks remained only low at the GVT level. The project managers (PMs) of both teams explained that since their goals were to develop global products and services, they needed to rely on GVTs to have more expertise about the local markets and to be close to the customers. Also, testing procedures differed between the

various locations and, therefore, some tasks were performed separately in both locations. The teams gathered for bi-weekly team meetings held as teleconferences. Beside the meetings, the team members rarely communicated with the whole team across locations, and communication mainly took place within each sub-group at a distance such as between the PM and team members, or between the PM and a sub-PM at the distant site. The team used email for communication between members or communication with the whole team. Beyond this, the different sites remained separated and to achieve cost savings no site visits were made.

4.2.4 Data collection process

After gaining access to each participating company, I coordinated and conducted the majority (96/129) of the interviews. The rest of the interviews have been collected in collaboration with researchers Niina Nurmi, Anu Sivunen, and Tuuli Hakkarainen[5]. The majority of the team members in each of the chosen cases agreed to being interviewed, with only a handful of team members opting out due to busy schedules. This was important and a desirable result, as I needed to discuss with the majority or all members of a team to get an accurate understanding of the team's shared leadership. I ensured that interview confidentiality was protected and informed every interviewee that individual responses would remain anonymous and not be traceable in company reports or in any other publications.

Before entering the field, I developed a semi-structured interview protocol together with my advisor Niina Nurmi and based on pilot interviews in the participating companies. A semi-structured interview protocol includes a set of predefined themes to ensure that some aspects are discussed with every interviewee, while allowing flexibility for new themes to emerge in the discussion (Cohen & Crabtree, 2006). Some themes were more relevant and important for some participants and, therefore, a semi-structured interview protocol gave leeway for participants to discuss some aspects more thoroughly than other aspects. As a result, the specific interview questions differed from one interview to another, although the main themes were kept similar (except for Study 1 and Cases 1-3[6]). I continued to collect data until theoretical saturation was reached, i.e. when subsequent data did not provide any new information in terms of refining the properties of the coding categories or its relationship to the categories (O'Reilly, Paper, & Marx, 2012).

[5] Out of the 96 interviews I conducted, 20 were conducted together with Tuuli Hakkarainen. In addition, Niina Nurmi conducted 22 interviews and Anu Sivunen 11 interviews.

[6] An exception regards to the interview protocol is Study 1 (Case 4), for which the data had already been collected when I entered the research project and decided to pursue a study where I would map leadership behaviors in team interactions. Hence, the interview questions applied in this study were somewhat different, and also played a much smaller role in the data analysis. Interview questions were related to team collaboration and team dynamics, leadership in the team and reflections on the team's performance. In addition, Cases 1-3 used in Study 2 were collected with a different interview protocol, but with rather similar questions related to leadership.

Interview protocol

The interviews were collected by using the semi-structured interview protocol developed for this dissertation, including a set of open-ended questions. As the interviews progressed, some additional questions were added along with gained lessons learned. The order of questions and emphasis on particular themes differed from one interview to another to allow the interviewee to portray his or her own experiences in depth. The interviews were conducted in meeting rooms, mostly face-to-face, but approximately a third of the interviews were conducted over a videoconferencing tool. The interviews lasted between 37 to 130 minutes and were 68 minutes long on average. During the data collection phase, all interviews were recorded and transcribed verbatim. This resulted in a total of 165 hours of interviews, 2.930 pages with 1.198.500 words of single-spaced interview data.

The interview questions were designed to allow new themes and insights to emerge through the natural language of participants. The common interview themes included questions related to the participants' experiences with their team's work routines, composition (including expertise distribution), coordination and communication in the team, challenges and benefits of a global virtual work environment, team roles and team dynamics, including leadership (both internal and external to the team). In relation to leadership, team members were asked to talk about how and to what extent they and their team members were influential and engaged in leadership, and to explain the underlying reasons. I also asked how they shared specific leadership responsibilities and behaviors in the team, and how they themselves reasoned around people in higher positions, related to status differences and decision-making power. Lastly, team members reported how satisfied and engaged they were in their work, explained the reasons behind this, and talked about how well the team performed its tasks (e.g. on time, in line with team goals, and with overall efficiency) and the underlying reasons. Furthermore, questions differed between team members and formal leaders as team members were asked to evaluate and comment on the formal leader's leadership, while formal leaders were asked to comment on their own role as well as team members' participation in leadership. The complete interview guide is presented in Appendix 1.

Observational data and interviews in Study 1

Study 1 relies primarily on observational data. The second author of the paper and another researcher participated in ten of the team meetings in the virtual world island and recorded them on video files. The sessions were recorded in order to enable transcription and thus further analysis and coding. Four meetings were chosen for analysis in this study. The meetings lasted from 60 to 150 minutes and were on average 122 minutes long. Furthermore, all team members were interviewed after the course face-to-face. These interviews lasted from 35 minutes to 80 minutes and were on average 49 minutes long. Questions were related to team dynamics, including team leadership, challenges and benefits of VT work and their multi-channel technology, as well as member satisfaction and performance (primarily effectiveness and on-time completion).

4.3 Data analysis

In line with a cross-case analysis strategy (Eisenhardt, 1989), I analyzed each case (i.e. team) in context, starting inductively after collecting the data from the members of the team. This single case-analysis generated an understanding of the dynamics present within each individual team. After the single case analysis, I performed comparative thematic analysis across the cases to search for patterns across cases. I describe each step of this analysis in detail next.

4.3.1 Single case analysis

To cope with the enormous amount of data and cases, I began by analyzing each individual case separately to generate an understanding of each case in context (Eisenhardt, 1989). Each case study had its own "story" to tell, and so I immersed myself into each team separately to tease out the unique aspects of each team. Through this process, I became familiar with each case as a separate stand-alone entity.

The first step, in crafting these stories, was to describe the different practices of shared leadership in each team. First, I categorized the level of shared leadership in each team. Initially, I analyzed the level of each individual team member's participation in shared leadership, by examining how influential each member was as reported by other members of the team. Then, a team level shared leadership score was based on whether the majority (high), half (moderate), or only a few (low) of team members participated in the shared leadership of the team. In addition, I looked at how much shared leadership was enacted equally across locations. If shared leadership was isolated in one location but did not include members of other locations, shared leadership remained lower in the GVT. If shared leadership was, however, evenly shared across locations and involved the majority of team members, the team's leadership was categorized as highly shared. The teams engaged in shared leadership to varying degrees and, thus, created a spectrum from low to moderate to high levels of shared leadership (presented in Table 2)[7].

Table 2 indicates that leadership was most shared in GlobeTech, TechPlatform, TechEng, and SoftWeb. Teams StudentPD, TechDelivery, CyberSecurity, TechIntercon, TechMetal, and SoftTele exhibited moderate levels of shared leadership. Lastly, teams CustSup, TechStructure, SustainTech, SustainApp, GlobeSoft and GlobeEle, demonstrated the lowest levels of shared leadership of the teams. I validated this analysis through discussions with the participating researchers and through presentations to the participating teams.

[7] In Study 3, I took a slightly different approach by conducting a network analysis which resulted in a normalized centralization score in each team, which represents the degree to which leadership is concentrated in one member (i.e. a centralization score of 1 represents a "star" network with one "vertical" leader and everyone else as a follower) or is widely distributed (i.e. a centralization score of 0 represents a fully connected network with everyone as a leader). Yet this more nuanced analysis resulted in the same results as have been reached through the more qualitative approach to categorizing each team's shared leadership as high, moderate, and low. A similar network analysis was, however, not possible to be conducted for each team, and hence, not performed for all the teams of this dissertation.

Table 2. Level of shared leadership in the studied teams.

Case	Teams	Level of shared leadership
Case 3	GlobeTech	High
Case 9	TechPlatform	High
Case 10	TechEng	High
Case 13	SoftWeb	High
Case 4	StudentPD	Moderate
Case 6	TechDelivery	Moderate
Case 7	CyberSecurity	Moderate
Case 8	TechIntercon	Moderate
Case 11	TechMetal	Moderate
Case 12	SoftTele	Moderate
Case 5	CustSup	Low
Case 14	TechStructure	Low
Case 15	SustainTech	Low
Case 16	SustainApp	Low
Case 1	GlobeSoft	Low
Case 2	GlobeEle	Low

The second step in this strategy was to describe potential antecedent conditions to shared leadership in each team through the experiences of the participating team members. At this stage, I immersed myself into each team to inductively analyze everything I observed in the interview data relating to shared leadership and generated an understanding of the team member's perspectives on the team's leadership, their own leadership preferences and potential leadership behaviors, as well as the underlying reasons behind engaging or not in shared leadership. In addition, I focused on generating an understanding of the unique effects that shared leadership (or lack of it) had on the team's effectiveness, including how well the team performed as well as how satisfied members were with their team and own work. Combining the interviews of members from different team sites allowed me to draft comprehensive descriptions of the mechanisms of shared leadership and its effects in each team.

After generating a unique understanding of each team, I prepared presentations to each one, and arranged result dissemination sessions for 12 out of 16 teams[8] from which I had collected the data myself. When reporting my findings to each of these teams, I tested my interpretations by enabling the informants to review my analysis and results (Eisenhardt, 1989; Miles & Huberman, 1994; Ragin, 1997). This review process enhanced the accuracy of the case studies, hence, increasing their validity. The teams confirmed my own interpretations and brought forward additional evidence. Informants are likely to detect false interpretations as they are the ones living through and experiencing the results I presented. Keeping in mind my choice of a constructionist-interpretive research paradigm, no objective truth was viewed to exist – but this procedure helped me to interpret in what respects the teams seemed to share a socially constructed view of the team's leadership practices and in what aspects the point of views seemed to differ among various members. These different perspectives and nuances among members' perspectives were then further analyzed in the cross-case analysis in order to see whether there were systematic differences and explanations for members' differing perspectives. For example, when

[8] I did not present my results to Teams GlobeSoft, GlobeEle, GLobeTech, or StudentPD due to the fact that the data had been collected before I entered the academic world and began my doctoral dissertation work.

comparing the underlying reasons as to why some members and not others participated in shared leadership in the teams, the cross-case analysis in Study 2 revealed differing local and global leadership conditions among these members (e.g. the existence of a local supervisor external to the team), which consequently had a powerful impact on their pre-conditions to participate in shared leadership in their GVT. This comparative case analysis was the final step of my analysis and was conducted and related to all identified relevant themes in the single case analysis. This analytical step will be reported next.

4.3.2 Cross-case analysis

Depending on the theme under investigation, different cases were selected for the different comparative case analyses. Some cases primarily informed about the pre-conditions underlying shared leadership while other cases informed about the effects of shared leadership on team effectiveness and the boundary conditions for successful shared leadership. For answering research question 1, which focused on the antecedent conditions of shared leadership in GVTs, I focused on all 16 cases. For the study of the relationship between shared leadership and GVT effectiveness, i.e. research questions 2 and 3, I focused primarily on cases 4-11, and 14 (StudentPD, TechPlatform, TechEng, TechDelivery, CyberSecurity, TechIntercon, TechMetal, CustSup, and TechStructure), albeit the rest of the teams brought some confirming evidence, too. General to all the cases was that each case served to confirm or disconfirm the initial insights generated from previous cases (Yin, 1994). Multiple cases thus allowed for (1) the prediction of similar results over the cases (literal replication), or (2) produced contrasting results, but for predictable reasons (theoretical replication) (Yin, 2009).

After I had selected cases for each thematic analysis, I read through each case report and went back to re-read the interview transcripts. At this stage, I wrote focused memos to summarize the most relevant, interesting, and significant aspects in my data related to my research questions. In other words, the memos kept me thinking about the bigger picture and were used to direct and focus my analysis further. Therein, they served as an interface between the data, my interpretations and theory. I moved between my memos and data in an iterative process, constantly re-iterating both my memos and analysis. In this iterative process, I identified the next steps and moved the analysis towards more abstract levels in the thematic analyses. For instance, it was not until several rounds of analysis and memo writings that I realized how important coordination of shared leadership is for shared leadership to lead to team effectiveness. Hence, it was not until several iterations that I was able to systematically analyze this theme in the data (Study 3). In addition to this analytical path, the memos helped me to identify additional paths in the analysis, leading to the results of Studies 2 and 4. All these analytical steps are presented in detail in the next chapter (4.3.3. Data reduction).

The single cases had shown that various individual and team level factors seemed to have an impact on both the enactment of shared leadership in GVTs, as well as the success of shared leadership to increase GVT effectiveness. For instance, I was not able to find a direct link between team members' national

culture and their participation in shared leadership. But instead I found that global and local leadership sources giving low or high autonomy to individual team members combined seemed to play a more central role. Therefore, I continued to investigate these and other systematic differences among team members and across teams in my cross-case analysis. Other themes identified at this stage were shared leadership coordination, expertise and task interdependencies, as well as empowering supports through both interpersonal and structural sources. These became the themes of my comparative cross-case analysis.

In the cross-case analysis, in Study 2, I then analyzed how contextual factors were commonly unique for each individual and had an impact on their participation in shared leadership through the comparison of 11 GVTs. Then in Study 3, I conducted a comparative case study of eight GVTs, focusing on how shared leadership was coordinated in each team and the impact of this on GVT effectiveness. Finally, in Study 4, I again turned my focus back to antecedent conditions of shared leadership – this time at the team level of analysis (but paying attention to team member configurational aspects), and conducted a thematic analysis on 12 cases focusing on task and expertise interdependencies in the team, as well as empowering supports though interpersonal and structural sources. Study 1 is a single case study, focusing on mapping shared leadership behaviors in GVT meetings held over a multi-channel technology.

I used the same inductive analysis method in all four studies of this dissertation, although in Study 1, quantitative content analysis of observational data served as the primary method. The next section depicts the steps taken in my single and cross-case analysis process, starting from **data reduction** (inductive and focused coding iterated with memos), **data display** (organizing emerging themes into lists and tables), and **drawing conclusions** (drawing meanings and explanations from displayed and reduced data) (Miles & Huberman, 1984). In the data reduction phase, I coded and analyzed the data using the content analysis software Atlas.ti. This hermeneutic method enables an organized analysis of a large amount of data. In the second and third phases, i.e. the data display and drawing conclusions, I relied on Excel spreadsheets which took the analysis to a more abstract level, including relational analysis among concepts. In line with Miles and Huberman (1984), the three phases occurred continuously throughout my dissertation project and reached more precision towards the end of the project. In addition to the three analytical steps suggested by Miles and Huberman (1984), my analysis was guided by the Gioia Methodology (Gioia, Corley & Hamilton, 2013), which represents a systematic approach to analyzing and presenting inductive research through a data structure arranged in first order, second order and aggregate dimensions. My analysis is presented in detail next.

4.3.3 Data reduction

In the data reduction phase, I begun with analyzing the data inductively, first applying open coding by initial concepts and grouping them into categories to uncover the dominant themes. This conceptual in-vivo coding (Strauss & Corbin, 1990) consisted of terms, concepts, and categories originating from the

language of the participants. As a result of this, a long list of initial, first order codes were generated, which was iterated along with lessons learned. When new codes were added, previously coded interviews were recoded related to the added codes. Hence, coding was an iterative phase stretching through the whole analysis process and was divided into *initial (first order) coding,* and *focused coding,* divided into *axial (second order)* coding and aggregate dimensions, as prescribed by grounded theory techniques (Charmaz, 2006; Gioia et al., 2013).

Initial - first order coding

The first stage of the initial coding, served primarily to generate focus on subsequent interviews in order to enable high quality data. Therefore, I conducted a preliminary analysis of the initial interviews to evaluate if the interview guides needed adjustments based on what I had learned, and for subsequent interviews to suit the emerging theoretical framework (Charmaz, 2006). Hence, early results from one team influenced the focus of subsequent interviews with the other teams. After I had conducted all interviews, I re-analysed all the interview data as prescribed by empirical grounded theory procedures (Charmaz, 2006; Strauss & Corbin, 1990). I began with immersing myself into the data and applied open, first order coding to the data by identifying initial concepts in all interview data and grouping them into categories to uncover the dominant themes. In this first order coding, I used codes consisting of terms, concepts, and categories originating from the language of the participant, i.e. informant-centric terms and codes (Gioia et al., 2013). Therefore, I did not apply any predefined coding scheme, but allowed the coding scheme to emerge (Charmaz, 2006; Parry, 1998). For example, in Study 2, I initially coded everything related to team members' and leaders' experiences of leadership in their GVTs and slowly, after several rounds of analysis, found that each team member had unique experiences of the team's leadership due to being embedded in different local contexts. As a result, the dynamic between local and global sources of leadership became central themes of the analysis, which later became the premise of a more focused coding (including second order codes and aggregate dimensions).

In this iterative coding, I arrived at a set of first order codes presented in Table 3[9]. Codes differed based on the study in question. For example, in Study 2, I concentrated mainly on those parts of the data where the interviewees described how factors of their local and global leadership contexts related to their own participation in shared leadership. My interviewees, for instance, talked about situations in which they were influenced by local, external, leaders, giving low autonomy to them. I coded these instances as "The head of their office exercises considerable power over them and will not change" and "The distant offices are highly hierarchical, allowing little autonomy to members". In Study 3, I coded excerpts related to the coordination of shared leadership, for example, including

[9] Please note that my final list of first order codes is much longer than those presented in Table 3. Initially, I coded all content from the interviews before narrowing down the focus for each study. Hence, in line with Gioia (2004) I thought that it is important to explore the topic broadly before deciding the final focus, and so from the outset I coded everything with an open mind.

codes such as “Continuous improvement is built in our process”, “Everyone brings forward their insights in meetings”, “They don’t take directives from me”, and “I can influence anyone in the team if I have a reason”, to mention a few. In Study 4, first order codes were related to how tasks and expertise were distributed in the team and received codes such as “The other site is on average less experienced and knowledgeable” and “Our subtasks relate closely to one another”, as well as factors that urged members towards shared leadership, including codes such as “We have daily meetings to bring forward our voices” and “They encourages us to be proactive”.

In Studies 2-4, I additionally coded excerpts which were related to power distance (a cultural dimension identified by, for example, Hofstede, 1980; and the GLOBE study by Carl et al., 2004) of team members. First order codes, related to power distance, included such as “Here, we are all on the same level” and “It’s not possible for a member to participate in leadership”. Hence, I did not automatically assign a value of low or high due to members’ country of origin, but recognized that effects of cultural norms may be stronger when measured at the individual level (Taras, Kirkman, & Steel, 2010). Therefore, I assessed power distance values through interview questions directly with the team members.

Lastly, I coded excerpts related to team effectiveness. Team effectiveness in turn received codes such as “The team performs its work on time” and “The team performs its work aligned with its goals” related to performance, and codes such as “I am satisfied with my team and our work” and “I am more motivated when no one tells me what to do all the time” related to affective outcomes.

Table 3. First order, second order and aggregate dimensions used in analysis.

First order - initial codes	Second order – focused codes	Aggregate dimensions
Imbalance in how experience is divided across locations The other site is on average less experienced and knowledgeable There is a big expertise gap in our team We all have the same level of expertise Expertise is used as a source of influence	Expertise interdependence configuration	Dependency configuration in the team
We must collaborate frequently across locations to reach our goals Our subtasks relate closely to one another We manage without them in our task We don't have much to collaborate on	Task interdependence configuration	
Our work process facilitates input from all members We have daily meetings to bring forward our voices Continuous change management is built in our process Based on that, we take initiative, the process is followed	Structural support (technology and work process)	Empowering support
This is how our leader urged us to act They encourage us to be proactive We've encouraged everyone carry their voice through	Interpersonal support	
Since he is my boss, I should follow all his directives It's not possible that a member leads other members The leader should tell us what to do We expected leadership to be vertical We should all be on the same level	Power distance culture	National culture
We let workers operate freely in their global teams My administrative supervisor is not influencing my work	Local leader giving high autonomy	Globally attached worker
We always follow directives from our formal leader Distant members are too far away to influence	Global leader giving low autonomy	
Since he sits close, I follow his directives all the time The head of their office exercises considerable power over them and will not change We have noticed that a member acts as an informal leader to them	Local leader giving low autonomy	Locally attached worker
Although I give them autonomy it is not enough I have tried to tell them they are allowed to influence whoever in the team	Global leader giving high autonomy	
The distant offices are highly hierarchical, making it hard for them Local supervisors have enacted unwanted leadership	Local leader giving low autonomy	Conflicted worker
The formal leader keeps a tight grip on the team Local leadership going against the formal leader's empowering style	Global leader giving low autonomy	
No external leader influences us Our administrative supervisor doesn't interfere in our work	Local leader giving high autonomy	Detached worker
Leadership is distributed between us members The formal leader is quite invisible to us We influence each other freely across sites	Global leader giving high autonomy	

Table 3 continued. First order, second order and aggregate dimensions used in analysis.

First order - initial codes	Second order - focused codes	Aggregate dimensions
We use a tool for work allocation Our work processes force people to bring forth problems Continuous improvement is built into our process Processes brings transparency to task management Duplicated work is not possible due to task management tools We see each other's progress We lack predefined work structure and tools	Mechanistic leadership coordination	Behavioral leadership coordination
During meetings we make decisions together Meetings brings transparency into what everyone is doing Everyone brings forward their insights in meetings We manage without meetings in our task	Organic leadership coordination	
They don't take directives from me They are unsure about who the leader is Everyone can voice their opinion and influence You can influence in the team no matter your role or title	Perceived legitimacy of emergent leaders	Implicit leadership coordination
Although she is my supervisor I can still go and ask, hey could you do this for me t's not possible for a member to participate in leadership I can influence anyone in the team if I have a reason	Own perceived legitimacy	
The team performs its work on time We often have to backtrack and start over The team performs its work aligned with its goals The teams is efficient overall	Performance	Team effectiveness
I am satisfied with my team and our work I enjoy that I am able to have a say in my team I am more motivated when no one tells me what to do all the time	Affective outcomes	

In the coding process, the researcher inevitably plays an important role. In line with my chosen constructionist-interpretive research paradigm, I do not argue that my coding and interpretations represent objective reality, but instead a reality that is socially constructed in interaction with my informants. Therein, my findings may contain some biases as they represent my view of reality, which has been interpreted through the lens of my own experiences and worldview. In line with Gioia et al. (2013), I do, however, argue that in addition to informants being knowledgeable agents, we as researchers "are pretty knowledgeable people too—that we can figure out patterns in the data, enabling us to surface concepts and relationships that might escape the awareness of the informants, and that we can formulate these concepts in theoretically relevant terms" (p. 17). In other words, I trust that in collaboration with informants, I am able to portray an accurate understanding of the informants' lived experiences.

I took some specific steps to decrease potential biases in the coding work. First, I kept an open mind and coded all the content of each interview without predefined assumptions or theoretical lenses in mind. At this stage, I presented small excerpts of the data and codes to my co-authors and other colleagues in order to add another layer of interpretation. In addition, I presented excerpts of

the data as quotes to the reviewers and readers of the four papers, on which this dissertation builds on (Appendices 3-6), so that they could evaluate whether the data matched my interpretation or not. This evaluation strengthened the validity of my own interpretations. In sum, during the whole research process, I tried to stay aware of my prior perspectives to avoid prejudging what was happening in the data. Instead, I aimed to understand the informants' experiences and worldviews first, before judging their expressions and making own assumptions (Charmaz, 2006).

Focused coding through axial (2nd order) coding and aggregate dimensions
Next, I engaged in focused coding, which I performed through axial coding, and finally, arriving at my final aggregate dimensions (Strauss & Corbin, 1998; Gioia et al., 2013), where I related categories to one another, seeking similarities and differences among them and formed "second order" categories and aggregate dimensions. This coding took place at a more abstract level, and represents themes and dimensions derived from my theoretically-based interpretations of the participants' language. Therein, it is representative of s.k. "focused coding" lifted forward by Charmaz (2006). At this phase, I followed Gioia et al.'s (2013) method of data display (including first and second level concepts and aggregate dimensions in Table 3), which helped me to move from raw data towards more abstract constructs in a systematic way, as well as providing transparency for external readers. For instance, in Study 2, I included first level excerpts such as "The head of their office exercises considerable power over them and will not change" and "The distant offices are highly hierarchical, allowing little autonomy to members" under the second order category "Local leader giving low autonomy", and the first level excerpts such as "The formal leader is quite invisible to us" and "We influence each other freely across sites" under the second order category "Global leader giving high autonomy". After that, I described how each team member engaged (or not) in shared leadership in the team, and how they navigated global and local leadership influences in parallel. For instance, some members clearly received high autonomy from their formal global team leader, while they received low autonomy from local leadership sources. In this analysis, I looked at each member and how they received low or/and high autonomy from local and global leadership sources combined, and arrived at my final aggregate dimensions, presented in Table 3. Along with first and second order codes these aggregate dimensions make up a s.k. data structure (Gioia et al., 2013). As can be seen in Table 3, I arrived at the following four aggregate dimensions, or global worker "autonomy profiles": *the Globally attached worker* (member given low autonomy from global leader & high autonomy from local leader(s)); *the Locally attached worker* (member given high autonomy from global leader & low autonomy from local leader(s)); *the Detached worker* (member given high autonomy from both global & local leader(s)); and *the Conflicted worker* (member given low autonomy from both global & local leader(s)). These members differed in their level of autonomy, which influences the degree to which members are "free" to enact shared leadership in their GVT.

Similar focused coding, including second order coding and the formation of aggregate dimensions, was conducted in Study 3 and 4 as well. In Study 3, where

I focused on how GVTs coordinate their shared leadership, I coded first level excerpts such as "We monitor everyone's progress over technology" and "We use a tool for work allocation" and grouped them into the second order category "Mechanistic leadership coordination". In addition, first level excerpts such as "We collectively shape our vision by discussing in the team" and "Everyone brings forward their insights in meetings" were grouped into the second order category "Organic leadership coordination". Finally, I searched for relationships amongst these second order categories and arrived at the final aggregate dimensions, "Behavioral leadership coordination" and "Implicit leadership coordination", which represented different coordination processes of how the team coordinated (or failed to do so) their shared leadership. Again, it was not until several rounds of initial and focused coding that I was able to generate these final concepts from the data. Through reaching consensus with my co-author, we assigned a score of low, moderate, or high level of shared leadership coordination, depending on how much each type of coordination process was used in the team. In addition, for organic leadership coordination, I distinguished between whether the team used it primarily in a proactive fashion to build awareness and a rhythm for the less routine aspects of leadership to take place, or whether the team used it primarily in a reactive fashion to correct leadership coordination issues after having encountered them. The final coding structure is illustrated in Table 3.

In Study 4, where I focused on antecedent conditions to shared leadership, I arrived at second order codes such as "Task interdependence configuration", "Expertise interdependence configuration", "Structural support" and "Interpersonal support". For instance, I included first-level excerpts such as "Imbalance in how experience is divided across locations" and "We all have the same level of expertise" under the second order category "Expertise interdependence configuration". In addition, first level excerpts such as "Our subtasks relate closely to one another", and "We manage without them in our task", were included under the second order category "Task interdependence configuration". While task interdependence is concerned with the extent to which people need to rely on each other to accomplish their tasks (Van de Ven & Ferry, 1980), expertise interdependence is related to the reliance on others for their knowledge or expertise specifically (Barton & Bunderson, 2014), and takes into account the relational aspects related to expertise such as whether or not a team member depends on another member's expertise in his or her work. I categorized these configurations as either balanced or imbalanced in each team under study, depending on how evenly each location depended on each other. If, for instance, all locations were dependent on each other evenly due to the way their tasks were divided, they were coded as balanced task interdependence. Together, the task and expertise interdependence configuration codes were grouped under the aggregate dimension "Dependency configuration".

In addition, I assigned a value of low, moderate or high to task and expertise interdependence in each team, depending on how much team members needed to rely on each other due to their tasks, or due to their own and others' expertise. A team may, for instance, have a balanced expertise interdependence in the

team, in that members rely on members for their expertise evenly across locations, but in general, there is still a low need to rely on each other for their expertise. Second, structural support included work processes and technology that gave structural support for members to enact shared leadership, while interpersonal support came from members and leaders encouraging others towards shared leadership. Together, the second order codes of "Structural supports" and "Interpersonal supports" were grouped under the aggregate dimension of "Empowering supports" since they both contributed with empowering behaviors or structure which encouraged members towards shared leadership. This aggregate represents a form of empowering leadership behaviors, which involves sharing power with subordinates and creating a supportive environment for members to leverage this power (e.g. through participative decision-making and giving members autonomy), as well as raising members' level of intrinsic motivation (e.g. by showing concern) and expressing confidence in high performance (Arnold, Arad, Rhoades, & Drasgow, 2000; Srivastava, Bartol, & Locke, 2006; Zhang & Bartol, 2010). In sum, empowering supports and the dependency configuration in the team, build up from task and expertise interdependencies, were all identified as important antecedents to shared leadership in Study 4. Again, the final coding structure to Study 4 is presented in Table 3.

Combining the interviews of members from different team sites, allowed me to draft comprehensive descriptions of each team's collaboration and leadership practices and how these practices varied between different team members as a result of differing internal and external conditions to the GVT. I tested my interpretations by presenting the results and ideas to the informants, enabling them to review the analysis (Eisenhardt, 1989; Miles & Huberman, 1994; Ragin, 1997). This review process enhanced the accuracy of the case studies, hence, increasing their validity. My reasoning here was that due to my view of the organizational world being socially constructed, I assumed in line with Gioia et al. (2013) that the informants are "knowledgeable agents," and can explain their thoughts, intentions, and actions. In other words, I wanted to make sure that my own interpretations corresponded to the informants' experiences as heard through their voices. In addition, I constantly discussed my interpretations and the insights I received from informants together with the other participating researchers of my studies.

Finally, before moving into the cross-case analysis, I analyzed the level of team effectiveness of the teams in Study 1 and 3 (StudentPD, TechPlatform, TechEng, TechDelivery, CyberSecurity, TechIntercon, TechMetal, CustSup, and TechStructure). As highlighted before, I asked questions related to team effectiveness in line with previous management and information systems research (Cooprider & Henderson, 1990; Mathieu et al., 2008), and grouped first level codes into a performance part and an affective outcome part[10]. In the analysis, I grouped first level concepts such as "The team performs its work on time" and

[10] Please note that in the Information Systems (IS) literature, performance and affective outcomes have generally been called "process performance" (Cooprider & Henderson, 1990; Hirscheim & Smithson, 1987; Nidumolu, 1995), and hence, in Paper 3, targeted for an IS journal, I talk about process performance instead of team effectiveness.

"The team performs its work aligned with its goals" under the second level code "Performance", and concepts such as "I am satisfied with my team and our work" and "I am more motivated when no one tells me what to do all the time" under the second level code "Affective outcomes". These two second level codes together formed the aggregate dimension "Team effectiveness". In the analysis, both aspects (performance and affective outcomes) of team effectiveness were also ranked as low, moderate or high, by consensus from the participating researchers. A score of low in terms of performance was given if the team had substantial problems with staying on track, had big delays, and overall worked inefficiently, while a score of high in terms of performance, was given if the team worked in alignment with their goals, with no delays, and with high efficiency. A score of moderate was given to teams falling somewhere in between. Similarly, for affective outcomes a score of high, moderate or low was based on how satisfied and motivated the team members were in the team. Again, I further validated my interpretations by presenting the results and ideas to the study participants and getting their feedback on the analysis (Eisenhardt, 1989; Miles & Huberman, 1994), and for team effectiveness, I specifically asked the formal team leaders for their evaluation.

While StudentPD originally was not part of this analysis, I analyzed this team last in accordance with the procedure described above to enable cross-case analysis for research questions 2 and 3 of this dissertation.

4.3.4 Drawing conclusions

After the single-case analyses, I performed comparative cross-case analysis across the 16 cases. It should be noted that the teams used in the cross-case analysis depended on the research question in focus, and on the specific antecedent conditions in focus. For instance, related to research question 1, the identified antecedent condition (i.e. global worker profile) and its configuration in the GVT, was systematically compared only with the teams of Study 2. The focus of the other cases was different, and hence, not comparable in this aspect. Similarly, a subset of all 16 teams was included for drawing conclusions to research questions 2 and 3.

As recommended by Eisenhardt (1989), I looked for patterns of within-case similarities and cross-case differences in particular. In Study 2, the single cases had shown for instance that team members' level of autonomy to contribute to shared leadership in their GVT differed, depending on local and global leadership influences combined. The compositions of these differing "autonomy profiles" became the themes of further analysis in the comparative multi-case studies. In this analysis, I compared the combinations of the differing profiles in the GVTs, and examined how this "autonomy profile configuration" explained the level of shared leadership enacted in each GVT. I found that the greater the proportion of *Detached* members in a GVT, the higher its level of shared leadership was (see Table 4). In contrast, GVTs with a greater proportion of *Locally attached, Globally attached*, or *Conflicted* members, had lower levels of shared leadership (see Table 4).

Table 4. Global worker profiles in the studied teams.

Team	Shared leader-ship	Team Member Attributes	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13
Tech-Eng	high	Profile* Role** Location***	HA L UK	D M Fi	D M UK	D M Fi	D M Fi	D M Fi	D M Fi						
Tech-Platform	high	Profile* Role** Location***	HA L Fi	D M Fi	D SL Fi	D M Fi	D M Fi	D M Fi	D M In	D M Ro	D M Ro	D M Ro			
Globe-Tech	high	Profile* Role** Location***	HA L De	D SL Ja	D M Fi	D M Fi	D M Fi	D M Fi	D M Fi						
Tech-Metal	moder-ate	Profile* Role** Location***	HA L Fi	D M Fi	D M Ja	D M UK	D M UK	D M Fi	D M Fr						
Tech-Delivery	moder-ate	Profile* Role** Location***	HA L Fi	D SL Fi	D M Fi	D M Fi	D M Fi	D M Fi	LA M US	D SL US	LA M It	LA M Ko	LA SL Ko	LA SL Ch	
Cyber Security	moder-ate	Profile* Role** Location***	HA L Fi	Fl SL Fi	D M Fi	D M Fi	D M Fi	D M Fi	D M Fi	D M Fi	D M Fi	D SL In	Fl M In	Fl M In	Fl M In
Tech Intercon	moder-ate	Profile* Role** Location***	HA L Fi	D SL Fi	D M Fi	D M Fi	Fl M In	Fl M In	D SL In						
CustSup	low	Profile* Role** Location***	HA L Fi	D M Fi	D M Fi	D M Fi	D SL Fi	D M Fi	D M Fi	LA M Ja	LA M Ko	LA M Ko	LA M Ch	Fl M In	Fl M In
Tech-Struc-ture	low	Profile* Role** Location***	HA L Fi	D M Fi	D SL Fi	GA SL UK	LA M UK	LA M UK	LA M UK	LA M UK	LA M UK	LA M UK			
Globe-Soft	low	Profile* Role** Location***	LoA L Fi	GA SL Fi	GA SL US	GA SL US	GA SL Fi	Co SL Fi	Co M Fi						
Globe-Ele	low	Profile* Role** Location***	LoA L Fi	Co SL US	Co SL Ja	GA M Ja	GA M US	GA M US	GA M Fi						

Note. *Profile refers to the global worker profile of the member; LA = Locally attached, GA = Globally attached, D = Detached, Co = Conflicted, and Fl = Fluid. Formal leaders, in turn, were classified according to whether they provided their members with high autonomy, HA = Leader giving high autonomy, or low autonomy, LoA = Leader giving low autonomy.
**Role: M = member; L = appointed leader or product owner; SL = appointed sub-leader or scrum master.
***Location: Ch = China; De = Denmark; Fi = Finland; Fr = France; In = India; It = Italy; Ja = Japan; Ko = Korea; Ro = Romania; UK = United Kingdom; US = United States.
Team members M2 and M8 in TechDelivery, as well as M4, M6 and M7 in TechIntercon were not interviewed due to team member attrition and limited access to the full team at the time of the interviews. They are listed in the table since the interviewed team members rated their leadership.

In Study 3, the single cases revealed the unique team patterns and amounts of shared leadership coordination in each team and in all cases shared leadership had an impact on team effectiveness. However, this impact varied depending on how well the team coordinated its shared leadership activities. I used these differences in my comparative analysis, where I compared the leadership coordination mechanisms in each team and how they subsequently related to team effectiveness. For data display, I relied on the following structure presented in Table 5, which enabled me to see clear connections over the different cells and connect these with my qualitative interpretations. These comparisons enabled me to reconcile why shared leadership had differing effects on team

effectiveness in different teams, and the explanation always centered around how shared leadership was coordinated within each team. I was, for instance, able to trace different impacts on team effectiveness of organic leadership coordination, depending on the underlying reasons for and how teams used organic leadership coordination. Some teams used it in a proactive fashion to build awareness and a rhythm for leadership to take place, while others used it in a more reactive fashion to correct issues due to lack of mechanistic coordination in the team. The effect on team effectiveness differed in these respects. In addition, I was able to see clearly that in teams with a low degree of shared leadership, leadership coordination mattered less for team effectiveness, while in teams with a high degree of shared leadership, leadership coordination mattered more for team effectiveness.

Table 5. Shared leadership, shared leadership coordination and team effectiveness levels.

Studied teams	Shared leadership	Implicit leadership coordination	Behavioral leadership coordination		Team effectiveness	
			Mechanistic	Organic	Performance	Affective Outcomes
TechPlatform	High	High	High	Moderate	High	High
TechEng	High	High	Low	High*	Low	Moderate
TechDelivery	Moderate	Low	Moderate	Moderate	Moderate	Moderate
CyberSecurity	Moderate	Moderate	Low	High*	Low	Moderate
TechIntercon	Moderate	Low	Low	High*	Low	Low
TechMetal	Moderate	High	Low	Moderate*	Moderate	Moderate
StudentPD	Moderate	Low	Low	Moderate	Moderate	Low
CustSup	Low	Low	Moderate	Low	High	Low
TechStructure	Low	High	Low	Moderate	High	High

*These teams used organic leadership coordination primarily to correct issues due to lack of mechanistic coordination in the team. The other teams used organic leadership coordination primarily in a preventive fashion, to hinder uncoordinated shared leadership.

Altough StudentPD originally was not part of this analysis, I analyzed this team in accordance with Study 3, and included it in Table 5. In StudentPD, both implicit and behavioral leadership coordination was low to moderate, leading to moderate team effectiveness. Altogether, nine GVTs were part of this cross-case analysis.

In Study 4, the single case analysis revealed unique antecedent conditions for shared leadership in GVTs, including the amount and configuration of task and expertise interdependence, as well as empowering supports divided into a structural support and an interpersonal support part. For data display, I relied on the structure presented in Table 6, which enabled me to see clear connections across the different cells and connect these with my qualitative interpretations. In this cross-case analysis, 12 of the participating GVTs were included. As recommended by Eisenhardt (1989), I looked for patterns of within-case similarities and cross-case differences by comparing the categories in Table 6, and how they related to the level of shared leadership shown in the various teams. The identified antecedent conditions substantially impacted the level to which the GVT enacted shared leadership. For instance, the teams with a high amount and a balanced task and expertise interdependence (e.g. TechPlatform and TechEng) displayed the highest level of shared leadership. In contrast, teams with a lower

and more imbalanced task- and expertise interdependence (e.g. SustainApp and TechStructure), displayed lower levels of shared leadership. These factors seemed to play a foundational role in the observed levels of shared leadership in each team. On top of this, however, empowering supports from structural and interpersonal sources were found to moderate this relationship. In teams with either an imbalanced task or expertise interdependence, empowering supports encouraged them to engage in shared leadership (e.g. TechDelivery, CyberSecurity and TechIntercon). For instance, in TechDelivery, although locations did not depend on each other equally in their task and dependencies remained only moderate, the team leaned on empowering supports to still engage in shared leadership to a moderate degree. Furthermore, in some cases (TechMetal), the lack of empowering supports held several members back from enacting shared leadership. Table 6 helped me to realize these connections, which were furthermore strengthened by my qualitative interpretations and discussions with other researchers.

Table 6. Antecedents to shared leadership.

Teams	Task interdependence		Expertise interdependence		Empowering supports		Shared leadership
	Amount	Configuration	Amount	Configuration	Structural supports	Interpersonal supports	
SustainTech	Low	Balanced	Low	Balanced	Low; some work process	No	Low
SustainApp	Low	Balanced	Low	Balanced	Low; some work process	No	Low
CustSup	Moderate	Imbalanced	Moderate	Imbalanced	Low; some work process	Yes - L&Ms	Low
TechStructure	Moderate	Imbalanced	High	Imbalanced	Moderate; scrum to some degree	No	Low
TechDelivery	Moderate	Imbalanced	Moderate	Balanced	High; structured work process &, weekly meetings	Yes - L&Ms	Moderate
Tech Metal	Moderate	Balanced	High	Balanced	Low; quarterly meetings	No - L	Moderate
CyberSecurity	High	Balanced	High	Imbalanced	High; scrum, mgt technology	Yes - L&Ms	Moderate
Tech Intercon	High	Balanced	High	Imbalanced	High; scrum, mgt technology	Yes - L&Ms	Moderate
SoftTele	High	Balanced	Moderate	Imbalanced	High; scrum, mgt technology	Yes - L	Moderate
Tech Platform	High	Balanced	High	Balanced	High; scrum, mgt technology	Yes - L&Ms	High
TechEng	High	Balanced	High	Balanced	Low; monthly meetings	Yes - L	High
SoftWeb	High	Balanced	High	Balanced	High; scrum, mgt technology	Yes - L	High

4.3.5 Quantitative content analysis

The last part of my analysis differed from the rest of the analysis presented above, since I analyzed actual leader behaviors (which transmit leadership functions) in team meetings. A coding scheme was developed based on TEMPO (Futoran, Kelly, & McGrath, 1989), which is a time-based system for analyzing group interaction processes, on Yukl et al.'s (2002) hierarchical taxonomy of leader behavior, and on the interaction process analysis (IPA) scheme (Bales, 1950) which consists of 12 different communicative acts that can be tracked in group interaction. A criterion for each of the codes in the coding scheme was

that they had to correspond to observable communication behavior from the meeting transcriptions. However, only the codes related to leadership were analyzed in this study.

An important part of a quantitative content analysis is identifying the unit of analysis (Garrison, Anderson, & Archer, 2001). I chose to take the approach of a thematic unit, which constitutes a "theme" or "idea" within a message (Henri, 1992) due to the multi-thematic nature of the messages of the participants. For example, a message could contain both encouraging feedback on a participant's achievements and direction for future tasks for the group and in this study it is important to distinguish between these different types of communication behavior. This unit of analysis is hereafter referred to as an utterance.

In order to achieve inter-rater agreement and improve the validity of findings, I initially coded one meeting and discussed the coding scheme together with the second author of this study. To reach consensus, some of the sequences were re-coded and codes were renamed. Then I re-analyzed all of the meetings from the beginning once more and re-coded some of the previous codes.

The codes used in the analysis were grouped into a hierarchical system with four categories. Each utterance is coded at two to four levels:

Level 1: Task Function (T), Socio-emotional Function (S) and Non-production Function (N) categories. This follows partly the division of TEMPO, but I have divided the original non-production category into two categories. All utterances were coded at this level.

Level 2: Initiation vs. Response. This division follows partly the division of TEMPO, which divides production functions into either propositions or evaluations. Furthermore, some codes were specifically coded as starting an action, which refers to a person either initiating a new task or a person starting to carry out a delegated task. Simple answers to questions do not belong into this special case but are coded under responses. All utterances, except from the non-production functions, were coded at this level.

Level 3: Content vs. Process. The third level in the hierarchical coding system was divided into content and process, as adapted from the TEMPO structure. The utterances coded as belonging to the task function were coded at this level.

Level 4: Last, the most fine-grained level of coding breaks down the coding into specific communication and leadership functions that describes the specifics of the interaction. These were all adapted from TEMPO, the hierarchical taxonomy of leader behavior, and IPA. All utterances were coded at this level.

The final coding scheme is presented in Appendix 2. For the results of this dissertation, only codes that were related to leadership were analyzed and grouped into tables.

5. Overview of results

In this section, I summarize the key findings of this dissertation by presenting the relevant results from each study. Table 7 shows the research questions that each study contributes to, but a more detailed discussion on each research question is saved for the discussion in Chapter 6.

Table 7. Addressing the research questions in the dissertation studies.

	RQ1	RQ2	RQ3
Study 1	x	x	x
Study 2	x		x
Study 3		x	x
Study 4	x		

5.1 Study 1: Multi-channel media and leadership behaviors

Study 1 focuses on how multi-channel technology influences the enactment of leadership behaviors by formal and emergent leaders in a GVT, and the impact on GVT effectiveness. Study 1 reports on an in-depth case study from a global virtual student team with 11 members, working on a real-business product development project over the duration of nine months. Four technology-mediated meetings (in the beginning, midpoint, and in the end of the team life-cycle), lasting on average two hours, were analyzed through a quantitative content analysis (Berelson, 1952). In addition, interviews with the team members conducted in the end of the project were analyzed, as prescribed by grounded theory methods (Strauss & Corbin, 1990), in order to study how technology may facilitate shared leadership behaviors and GVT performance – offering evidence in respect of research questions 1 and 2 of this dissertation.

Table 8 reports the distribution of leadership behaviors across team members during the four meetings analyzed. The results reveal that shared leadership emerged to a moderate degree in the studied GVT, in that members participated in leadership to some degree. The formally assigned leader dominated the discussions and was the person that carried out most of the task-related leadership behaviors as well as most of the relations-related leadership behaviors within the team. While the team started off by displaying lots of shared leadership in their first team meeting, over time the role of the formal leader was strengthened, while the role of team members moved towards being followers (see Table 8).

Table 8. Leadership behaviors divided over the leader and the group.

Meeting	Meeting 1		Meeting 2		Meeting 3		Meeting 4		
Leader (L) vs. Rest of the group (G)	**L**	**G**	**L**	**G**	**L**	**G**	**L**	**G**	**Total**
Initiation: production task	4	0	3	1	7	0	5	0	20
Initiation: task delegation	5	2	9	4	10	3	16	0	49
Initiation: speak turn delegation	8	2	11	2	24	4	10	2	63
Initiation: act that keep task moving	12	1	18	8	23	2	11	0	75
Initiation: goal specification	4	1	7	4	0	1	3	0	20
Initiation: procedural strategy	12	4	33	15	25	8	23	6	126
Initiation: spatial direction	2	1	0	0	4	0	0	0	7
Initiation: action on own initiative	6	4	3	3	3	3	4	7	33
Initiation: consulting strategy	3	3	4	2	3	0	6	2	23
Initiation: consulting opinion	9	14	36	8	8	2	7	2	86
Initiate question: monitoring process	2	7	6	0	10	0	3	1	29
Initiation: motivation	4	1	20	1	1	0	3	0	30
Initiation: social support	17	34	13	12	16	6	23	10	131
Initiation: recognizing encouragement	9	7	8	3	18	6	19	0	70
Total	97	81	171	63	152	35	133	30	762

As the team leader reinforced her leadership influence, team members took a step back and only engaged in shared leadership to a limited extent due to a preference for vertical leadership. However, the leader maintained an empowering leadership style, motivating the team members and actively consulting them for opinions. Interestingly, the majority of team members wished for more structure, rules, and stricter leadership style from the team leader, which is contrary to the leadership behaviors she engaged in. Team members considered it to be "very time consuming, and almost unnecessary for everybody to have a say in every single part during the meetings". This portrays a situation where formal leader behaviors do not match the expectations of team members who have different implicit models of leadership and what constitutes effective leadership (Lord, Foti, & Phillips, 1982). Hence, while the team leader wanted to promote shared leadership in the team through empowering behaviors, the team members considered the team leader to be inefficient as a consequence. In addition to overall dissatisfaction among members, meeting productivity suffered from the leader's empowering leadership style.

Regarding the role of technology in the team's leadership, and despite the fact that the GVT communicated in a highly rich 3D virtual environment with multiple channels for communication (including voice, text and 3D spatial movements), the team relied on traditional means for communication, including voice and text chat. Indeed, Table 9 reports how leadership behaviors were transmitted over voice and text chat. As can be seen, most leadership behaviors were transmitted by voice. However, the importance of multiple communication channels (voice and text chat) for performing leadership behaviors was clearly evident in the data of this paper – a capacity that 3D virtual environments well support. Overall, relations-oriented behaviors were mostly communicated through voice chat, implying that the technology itself has some influence on the content being delivered through it. Some members tend to feel more comfortable with using text chat than voice chat, which seem to be prominent in

multicultural GVTs. This was confirmed by the team members in the interviews expressing their individual difference in channel preferences.

Table 9. Division of leadership behaviors over text chat and voice.

	Formal leader		Temporal leader		Group		All	
Leadership behavior	**Chat**	**Voice**	**Chat**	**Voice**	**Chat**	**Voice**	**Chat in total**	**Voice in total**
Initiation: production task	4	8	0	7	0	1	4	16
Initiation: task delegation	6	25	0	11	5	2	10	38
Initiation: speak turn delegation	8	21	1	25	3	6	12	51
Initiation: keep task moving	15	27	0	25	0	9	19	57
Initiation: goal specification	4	10	0	3	1	2	5	15
Initiation: procedural strategy	15	53	1	32	10	15	26	100
Initiation: spatial direction	2	0	0	3	1	1	3	4
Initiation: action on own initiative	0	4	3	0	16	10	19	14
Initiation: consulting strategy	4	9	0	3	5	2	9	14
Initiation: consulting opinion	10	42	1	9	16	6	27	57
Initiate question: monitoring process	2	9	1	10	7	0	10	19
Initiation: motivation	3	16	0	1	1	1	4	19
Initiation: social support	20	33	5	18	48	7	73	58
Initiation: recognizing encouragement	9	27	0	18	15	2	24	47

This study provided an initial look at how shared leadership behaviors may be transmitted over rich technology in a GVT, but more research that combines different research methods and real-business samples is needed. The limited sample of this study and focus on a student team, challenged the reliability and validity of the conclusions of this study. However, though the results of this study may not be generalizable, they served as an important springboard for the rest of this dissertation. This study made me curious about digging deeper into the topic of shared leadership in real business teams in order to generate more knowledge around the clearly underdeveloped topic of shared leadership in GVTs. I was intrigued by the fact that the leadership was not shared to a higher degree in this student GVT which lacked formalized roles from the start. I wanted to investigate further into what it takes for shared leadership to arise in GVTs, where the context in which members operate is oftentimes more complex than in student teams who, for instance, lack supervisors.

5.2 Study 2: Freeing the global worker to share leadership

Study 2 takes a step into the real business world and reports findings from a qualitative multi-case study of 11 GVTs from four companies which aimed at unraveling antecedent conditions of shared leadership in GVTs. More specifically, this study explored how 93 team members navigated local and global leadership conditions in parallel, and how this ultimately impacted their ability to exercise shared leadership across all locations of the GVT. The underlying premise of this study is that GVT members commonly receive leadership from both local and global sources due to their duality of local (physical) and global (virtual) work contexts. Hence, team members' pre-conditions for enacting shared leadership may dramatically differ depending on their local and global leadership conditions combined. This has not been acknowledged sufficiently in previous research, and too often team members are seen as equal pieces of the

puzzle in the operation of a GVT. As a result, there is a need to examine shared leadership dynamics at the individual and team level in real organizational teams to generate more nuanced shared leadership theory.

In this study, I discovered that members of GVTs indeed may receive rather different leadership due to local and global conditions combined, and that this has a substantial impact on their and the team's ability to enact shared leadership. More specifically, team members in the same GVT commonly received rather different leadership influences, with either high autonomy or low autonomy given to them by their leader(s). This in turn had a substantial impact on their abilities to collaborate and contribute to the leadership of their GVT. Based on these differences, four global worker profiles were identified: *the Globally attached worker*, *the Locally attached worker*, *the Detached worker*, and *the Conflicted worker*. These profiles are presented in Figure 7 below.

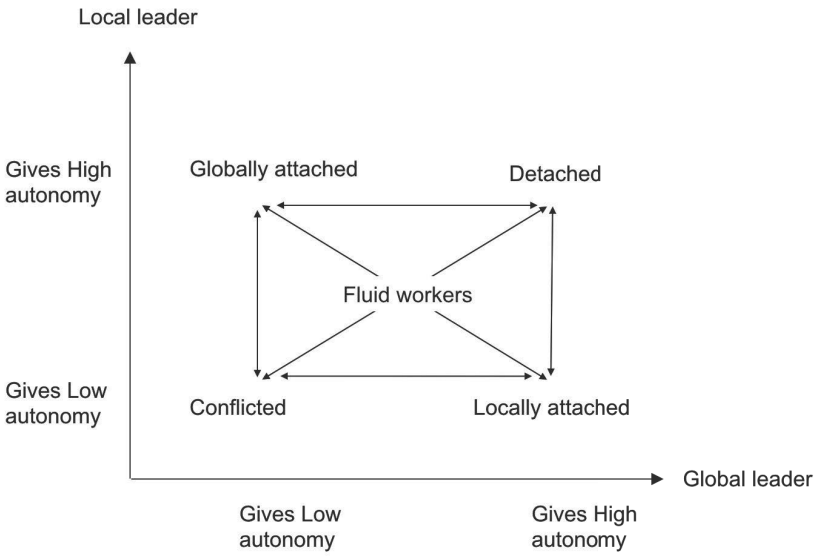

Figure 7. Worker autonomy profiles in GVTs.

The *Locally attached worker* is a worker who strongly adheres to the local leadership practices of the office site in which the worker resides, even when those practices are different from the formal leadership practices of the GVT. This is due to low autonomy provided by a local leader (external to the team), simultaneously as high autonomy provided by their global leader (formal GVT leader). The *Globally attached worker* is a worker who adheres to the leadership of the GVT, due to low autonomy provided by their global leader, simultaneously as high autonomy provided by local leader(s). The *Detached worker* is a worker who receives high autonomy from both local and global leadership sources, and thus, feels free to enact shared leadership in their GVT if they see fit. The *Conflicted worker* is a worker who is pulled in different directions due to strong competing local and global leadership expectations, both giving low autonomy to the member. Thus, this worker operates according to local and global expectations in parallel, and as they struggle to manage both

simultaneously, they feel a sense of disharmony. Last, I also found that some workers changed autonomy profiles when their global and local leaders changed their own leadership styles. These workers are called "*Fluid workers*".

In other words, these autonomy profiles differed to the extent to which members were given autonomy to lead each other freely within their GVTs versus being bound to their local and global leader(s). The more autonomy the members received from both local and global leadership sources, the more detached members were and free to participate in the leadership of their GVTs. This crossed over to the team level as teams with mostly detached workers were characterized by higher levels of shared leadership, while teams with mostly locally detached and limbo workers were characterized by lower levels of shared leadership. Therein, the way individual members' levels of autonomy, provided by local and global leadership sources combined, come together in the GVT to form an autonomy profile configuration was important for the development of shared leadership in GVTs.

Contrary to previous research, this study showed that team members from both low and high power distance cultures engaged in informal, shared leadership. Instead, it was members' given autonomy from their leader(s) that was significant. These results have important theoretical implications and extend previous research on GVTs, global leadership and shared leadership by examining the interplay of local and global leadership influences on GVT leadership. By examining local and global leadership contexts, at the individual level first, I found that these conditions substantially affected team members' opportunities to contribute to their team and its leadership, and consequently the team's ability to enact shared leadership across boundaries in the GVT.

5.3 Study 3: Shared leadership coordination

While the second study was concerned with the antecedent conditions of shared leadership in GVTs, Study 3 takes a step towards uncovering the black box between shared leadership and team effectiveness by empirically studying how GVTs coordinate their shared leadership. In other words, Study 3 introduces the concept of *shared leadership coordination*, and demonstrates how this coordination relates to GVT effectiveness. In line with the well-established definition of coordination as the management of dependencies among activities (Malone & Crowston, 1994), I define *shared leadership coordination as the management of dependencies among leadership activities.* The need for studying leadership coordination when the leadership is shared corresponds to the following logic. When a single leader exerts influence on the whole team (vertical leadership), only task-dependencies needs to be coordinated, and hence, the single leader can independently carry out leadership actions without coordinating with others (see Figure 8). But when multiple leaders exert influence on the team, potentially at the same time (shared leadership), the leadership structure is configured away from the single individual towards multiple individuals (see Figure 8). This creates dependencies between the multiple leaders' actions which need to be coordinated.

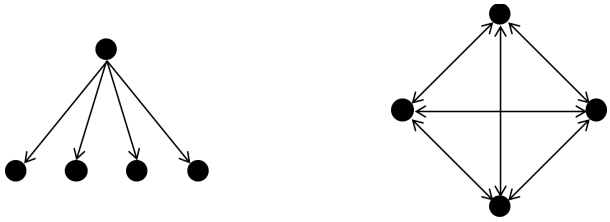

Figure 8. Vertical leadership (left) and shared leadership (right).

This multi-case study is based on 71 interviews with team members and leaders from eight GVTs from two global software development companies. The main conclusion of this study is that shared leadership has a more positive effect on GVT effectiveness when shared leadership is coordinated both implicitly and behaviorally. The concepts of implicit and behavioral leadership coordination emerged from this study as two distinct, complementary dimensions of shared leadership coordination. Implicit leadership coordination is about members sharing the same perceptions or cognitive schemas about who has leadership over what, and influences whether leadership actions are acted upon, and whether members perceive other members (including themselves) as legitimate leadership sources in the team. Behavioral leadership coordination, in turn, is associated with the explicit actions aimed at coordinating the leadership activities taking place in the team towards a coherent whole. Behavioral leadership coordination can be achieved both through mechanistic as well as organic coordination and is often achieved through a combination of both.

The results of this study showed that both implicit and behavioral leadership coordination were needed for shared leadership to lead to GVT effectiveness, especially in GVTs operating with high amounts of shared leadership. In particular, behavioral coordination increases in importance along with a higher degree of shared leadership, i.e. as leadership behaviors are distributed across a larger number of individuals. This type of leadership coordination can be achieved through mechanistic as well as organic coordination and, again, is often achieved through a combination of both. Mechanistic leadership coordination takes place through plans, programs and artefacts provided through a defined process and technology, which helps teams carry out leadership coordination with few or no coordination costs. This was exemplified in teams using task-management, enabling the delegation and scheduling of work with little to no risk that team members would simultaneously assign the same task to different persons or start working on any other tasks than those agreed upon in the team to be in line with the team's goals. Mechanistic leadership coordination was thus highly effective for more routine aspects of leadership, such as task-related leadership. On the other hand, in cases lacking or with low mechanistic leadership coordination, team effectiveness suffered as there was commonly a lack of transparency of leadership actions in the team. As a result, the team often displayed redundant leadership that sometimes was misaligned with the team's goals, which, in turn, delayed the team's other important work.

The second way of carrying out behavioral leadership coordination was through organic leadership coordination. Organic leadership coordination took place primarily through formal or ad-hoc meetings, where team members discussed their work and aligned their intended (or corrected for their past) leadership actions. Teams that relied on mechanistic leadership coordination, used organic leadership coordination primarily in a proactive fashion to build awareness and a rhythm for the less routine aspects of leadership to take place. In contrast, teams lacking mechanistic leadership coordination used organic leadership coordination in a more reactive fashion to correct issues caused by the lack of mechanistic coordination (see * in Table 5 on page 60). The effect on team effectiveness differed among proactive and reactive uses of organic leadership coordination. When teams relied on organic leadership coordination in a proactive way, they fostered awareness of and inclusion in the team's shared leadership through mutual decision-making and aligned leadership actions, therefore, increasing the likelihood for the team to move forward in the same direction towards high performance. Team members were additionally more satisfied with their work and their team. Proactive organic leadership coordination thus resulted in both higher performance and affective outcomes, i.e. higher team effectiveness. However, when the team failed to coordinate its shared leadership through mechanistic leadership coordination, the team had to compensate for the uncoordinated nature of their shared leadership by costly organic leadership coordination in order to compensate for such a deficiency. Team members were less satisfied, and the team suffered performance losses, hence, reducing team effectiveness.

Lastly, higher levels of implicit leadership coordination were consistently linked with higher levels of team effectiveness both in terms of performance and affective outcomes, independent of the amount of leadership shared in the team. We found that in teams where shared leadership was coordinated implicitly through shared cognition, leadership actions were more likely to be understood, agreed upon and followed. Lack of implicit coordination, in turn, caused process losses in the team's performance, as well as dissatisfaction among leaders and members alike. These teams commonly engaged in long chains of leadership communication, slowing the team down. Thus, a lack of implicit leadership coordination led to lowered team effectiveness. With a mix of national cultures (in terms of power distance) in the GVT, members were less likely to share the same leadership expectations. Therefore, the importance of implicit coordination is heightened in multi-cultural GVTs.

The outcome of this study is that if leadership is highly shared in the team and uncoordinated, it may actually lead to detrimental effects in terms of lower team effectiveness. If coordinated, in turn, shared leadership may reap its potential benefits. Therein, leadership coordination is an important contingency factor in the relationship between shared leadership and GVT effectiveness.

5.4 Study 4: Dependency structure and empowering supports

Study 4 aimed at identifying and proposing antecedent conditions of shared leadership in GVTs. In this multi-case study, a large amount of data consisting of 96 interviews in 12 GVTs (Cases 5-16) served as a basis for inductively arriving at key constructs, which were used together with prior theory to offer propositions. The findings of this study were, in part, in contrast with previous literature. For instance, I did not find high power distance culture to hinder shared leadership, which has been proposed in the past (Conger & Pearce, 2003; Hiller et al., 2006; Muethel & Hoegl, 2010). Instead, this study offers six propositions on antecedent conditions of shared leadership in GVTs (see Figure 9). I will next, highlight the underlying premises of each of these propositions.

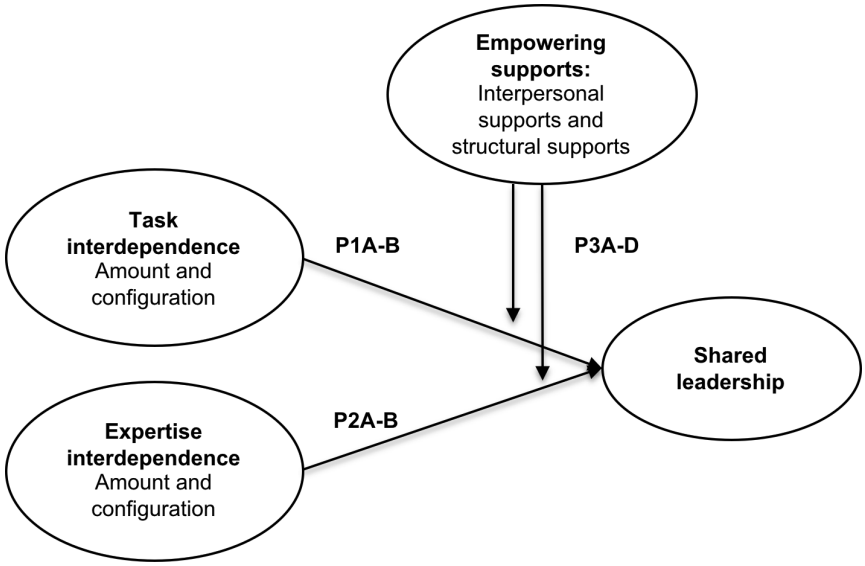

Figure 9. Antecedents to share leadership in GVTs.

Based on this inductive multi-case study of 12 GVTs, I found that shared leadership emerged in GVTs to varying degrees as a result of the amount and configuration of task and expertise interdependencies, as well as empowering supports from interpersonal and structural supports.

First, I posit that an evenly distributed task interdependence across locations in GVTs (i.e. a balanced configuration), will be linked to a higher degree of shared leadership across locations in GVTs. Without task interdependence, there is little need for collaboration and, as a consequence, it is also unlikely that shared leadership would develop. Therefore, I argue that the aggregate amount of task interdependence matters too.

Second, and similarly, the more evenly expertise is distributed across locations in the GVT (i.e. a balanced configuration), the more likely the GVT is to share its lead across locations. If team members do not need to rely on each other for their expertise, however, they are also unlikely to share the lead, particularly in the context of knowledge intensive work. Therefore, I argue that the

aggregate amount of expertise interdependence matters too. These formed propositions 1A-B and 2A-B:

Proposition 1A: The higher the aggregate level of task interdependence is in the GVT, the more GVT members will enact shared leadership across locations.

Proposition 1B: The more evenly task interdependence is distributed across locations in the GVT, the more GVT members will enact shared leadership across locations.

Proposition 2A: The higher the aggregate level of expertise interdependence is in the GVT, the more GVT members will enact shared leadership across locations.

Proposition 2B: The more evenly expertise interdependence is distributed across locations in the GVT, the more GVT members will enact shared leadership across locations.

Third, I argue that empowering supports from both interpersonal supports (leaders and members) and structural supports (technology and work process), will strengthen the relationship between task and expertise dependencies to shared leadership by providing team members with the courage to take a leap of faith towards shared leadership. These formed propositions 3A-3D:

Proposition 3A: Empowering support from interpersonal sources (members and leaders) moderates the relationship between task interdependence and shared leadership such that the relationship is stronger when interpersonal supports are at high level rather than at a low level.

Proposition 3B: Empowering support from interpersonal sources (members and leaders) moderates the relationship between expertise interdependence and shared leadership such that the relationship is stronger when interpersonal supports are at high level rather than at a low level.

Proposition 3C: Empowering support from structural supports (technology and work processes) moderates the relationship between task interdependence and shared leadership such that the relationship is stronger when structural support is high rather than low.

Proposition 3D: Empowering support from structural supports (technology and work processes) moderates the relationship between expertise interdependence and shared leadership such that the relationship is stronger when structural support is high rather than low.

With these propositions, this study contributes to theory on antecedent conditions of shared leadership. In particular, it relates to the context of GVTs where configurational aspects, such as how tasks and expertise are divided across locations, play a more foundational role than in co-located teams with all members centralized in one location.

6. Discussion

Shared leadership in GVTs is somewhat of a paradox. On one hand, these types of teams are particularly likely to benefit from shared leadership, but on the other hand, their characteristics make it unlikely that it will emerge (Pearce et al., 2001). While previous research on shared leadership in GVTs has been primarily theoretical, this dissertation provides several empirical studies that together contribute new and important knowledge to shared leadership theory, particularly in the context of GVTs. More specifically, this dissertation offers several antecedent conditions of shared leadership in GVTs, as well as boundary conditions for shared leadership to lead to GVT effectiveness. In this section, I will summarize the key findings of this dissertation by responding to each research question and by connecting my results with prior theory. In so doing, I introduce an emergent model (Figure 10) of antecedents to shared leadership in GVTs and boundary conditions for shared leadership leading to GVT effectiveness.

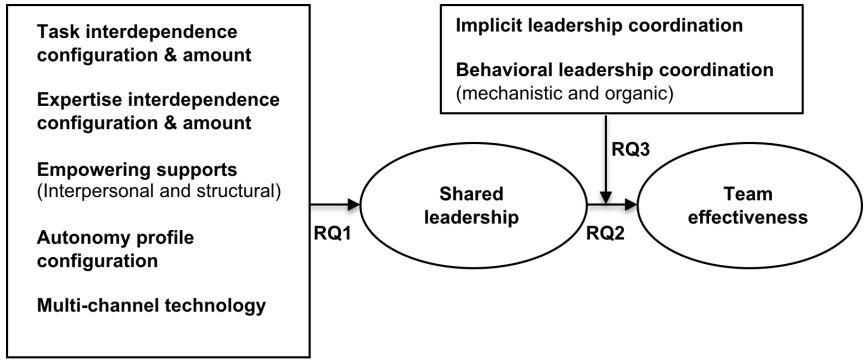

Figure 10. Antecedents to shared leadership and its boundary conditions for GVT effectiveness.

Antecedents conditions for shared leadership in GVTs

The first research question of this dissertation asked: "*What antecedent conditions enable shared leadership in GVTs?"* Together, Study 1, 2 and 4 brought insights to this research question and resulted in five antecedent conditions proposed in Figure 10. In respect of the first and second antecedents, both a balanced task and expertise interdependence configuration across locations will be linked to a higher degree of shared leadership across locations in GVTs. In other words, it is important that all locations depend equally on each other due to the way their tasks are structured and the way expertise is distributed across

locations, in order for shared leadership to develop across sites in the GVT. In addition, the aggregate amount of task and expertise interdependence play a role since members are unlikely to share the lead when they do not need to depend on each other.

Third, empowering supports from both interpersonal supports (leaders and members) and structural supports (technology and work process) are important pre-conditions for shared leadership in GVTs. More specifically, empowering supports may strengthen the relationship between task and expertise interdependencies to shared leadership by providing team members with courage to take a leap of faith towards shared leadership.

Fourth, the way individual members' levels of autonomy, provided by local and global leadership sources combined, come together in the GVT to form an autonomy profile configuration is important for the development of shared leadership. When team members across all GVT sites are *Detached* (given high autonomy by both local and global leadership sources), the team is likely to demonstrate high levels of shared leadership. But when the autonomy configuration includes *Locally attached workers* (members given low autonomy by local leadership source(s)), *Globally attached workers* (members given low autonomy by their global leader), or *Conflicted workers* (members given low autonomy by both local and global leadership source(s)), the GVT experiences a pull from sites including these autonomy profiles which reduces the ability for detached workers to co-enact shared leadership with these sites. Hence, the GVT's leadership remains only moderately or somewhat shared.

Last, multi-channel technology (including text and voice chat), used in virtual team meetings gives members a choice to select the way they transmit leadership behaviors. In multicultural GVTs, chat seems to facilitate the transmission of relations-oriented behaviors among team members, while voice is pivotal for more task-related and change-related leadership behaviors.

Shared leadership and GVT effectiveness

The second research questions asked: *"How does shared leadership influence GVT effectiveness?"* Studies 1 and 3 responded to this research question and accumulatively showed that solely positive outcomes are not to be expected from shared leadership in GVTs. First, team members may experience differing levels of affective outcomes as a result of shared leadership. While some members reported that shared leadership is absolutely necessary for their work motivation and satisfaction, other members reported that they felt more satisfied with vertical leadership. For instance, in Study 1, team members had wished for more vertical leadership and felt dissatisfied with their leader's empowering leadership style requiring them to have a say in everything.

Second, my results showed that performance may suffer as a result of shared leadership by, for instance, pulling the team in different directions that are often misaligned with the team's goals, or slowing the team down due to duplicated leadership. At the same time, shared leadership may improve performance as members can overcome time zone lags by engaging in leadership themselves, leading to faster decisions that commonly are based on a stronger awareness of

local conditions. Therefore, in sum, this dissertation reported conflicting findings about whether shared leadership leads to GVT effectiveness (or not).

These conflicting results, led me to dive deeper into the last research question: "*What factors influence the relationship between shared leadership and GVT effectiveness?*". Study 3, in particular, added boundary conditions to the equation by showing that when leadership is shared, it creates leadership dependencies among leadership actions which need to be coordinated for shared leadership to leverage its benefits for GVT effectiveness. More specifically, shared leadership has a more positive effect on team effectiveness when shared leadership is coordinated both implicitly and behaviorally. Implicit leadership is important since members may not follow other member's directives if they do not have an implicit view of leadership to be shared. Behavioral leadership coordination can be achieved through mechanistic and organic ways, both increasing in importance along with a higher degree of shared leadership in the GVT. Though not the focus at the time of Study 1, in retrospect, the GVT under study represented a team with a lack of implicit leadership coordination, with the members and the leader having different expectations concerning who should exercise leadership, at what moments, and in which situations. As a result, the team suffered from team effectiveness losses.

6.1 Theoretical contributions

This dissertation brings unique knowledge to shared leadership theory in a GVT context, building on rich empirical evidence from 16 GVTs, of which 15 are organizational GVTs, and one a student GVT. The emergent model presented in Figure 10 is a result of this work, consisting of many years of iteration between data, informants, researchers, as well as prior theory – which eventually resulted in the suggested relationships in Figure 10. While my findings partly add support to the foundation that has been built in previous shared leadership research, this study primarily bring unique aspects of the GVT context to the foreground for understanding shared leadership in GVTs in a more nuanced light than before.

First, prior research on antecedents to shared leadership in GVTs has been primarily theoretical (e.g. Hoch & Dulebohn, 2017; Liao, 2017; Muethel & Hoegl, 2010, 2011), leaving very little empirical evidence to build on when theorizing about shared leadership in a GVT context. In addition, preliminary empirical research (Muethel et al., 2012; Paunova & Lee, 2016) has remained focused on aggregate amounts of intra-team variables. Although these theoretical and empirical studies have provided us with valuable insights, particularly on the role of intra-team dynamics for shared leadership emergence (and I continue to underscore their value through some of my own findings), aggregate approaches to intra-team variables do not take into account that real organizational GVTs are influenced by the duality of internal and external contexts (see Figure 5 on page 16). This duality of contexts stems from the fact that GVT's members are embedded in external local contexts, whilst the GVT simultaneously embeds members in an internal, global virtual context. For instance, while

many researchers have suggested that vertical leaders may facilitate the development of shared leadership in their GVT (e.g. Liao, 2017) and have found empirical support for this in co-located teams (Fausing et al., 2015; Hoch, 2013), this dissertation shows that in reality this may not solely be in the hands of the formal GVT leader. Instead, members of GVTs commonly receive parallel leadership influence from local and global sources, which may lead to differing preconditions among different members of the same GVT to enact shared leadership in their GVT. Oftentimes, local leadership sources (including formal subleaders, local administrative supervisors and external leaders) may "take away" the autonomy given by the formal, vertical leader of the GVT. Hence, although prior research on co-located teams has found that empowerment from external leaders may facilitate shared leadership (Carson et al., 2007), this study shows that leadership sources that are external to the formal GVT leader commonly are far from empowering. On top of this, recent research on shared leadership in VTs specifically, has found that two thirds of formal leaders of such teams, actually provide insufficient autonomy to their team members to engage in shared leadership (Hoegl & Muethel, 2016). Although my study showed a more positive rate of empowering formal GVT leaders, it also showed that additional leadership sources may spoil the pot.

Therein, this dissertation offers a unique contribution to shared leadership theory in GVTs by bringing the local context of each team member to the mix. Up to this time, little focus has been put on the local context within which global team members reside – a research gap which recently has been put forward as important and in need of more attention (Maloney et al., 2016; Reiche et al., 2017). Hence, a primary contribution of this dissertation is that it empirically shows how local and global contexts in tandem powerfully influence the GVT's ability to enact shared leadership, and that GVTs should no longer be viewed as an instance operating in isolation somewhere "virtually". Moreover, this work demonstrates that team members of a GVT may experience the team's leadership rather differently and, as a consequence, have vastly different preconditions to engage in shared leadership. Therefore, I argue in line with Gibson and colleagues (Gibson, Gibbs, Stanko, Tesluk, & Cohen, 2011) that "Including the "I" in Virtuality" might be vital for understanding GVT functioning, instead of solely focusing on aggregate dimensions of the constructs of interest.

As a complement to empowering leadership from vertical leadership sources, this dissertation contributes to theory by showing that empowering supports may well, and most likely do, come from other sources such as team members or structural supports, including technology and work processes. Therein, team members may lean on a much broader array of empowering supports than has been identified in the past in order to take a leap of faith into shared leadership. This is important for GVTs, where there will be less opportunity for the application of traditional vertical leadership (Avolio, Sosik, Kahai, & Baker, 2014; Hoch & Kozlowski, 2014). While structural supports (including work process and technology) have long been considered to substitute some aspects of leadership (Kerr & Jermier, 1978), this dissertation suggests that while these may act as substitutes for vertical leadership, they may also facilitate other leadership

forms such as shared leadership. This is an important finding, given the more digitalized workplace and global dispersion, which means that employees may be working more closely with technology and their fellow team members, than being in close proximity to their leader. In fact, I believe this is just the beginning of what is to be seen in an age of digitalization with a growing use of machine learning, which will likely alter work and organizations in impactful ways – including taking on a more performative role in the future (Faraj, Pachidi, & Sayegh, 2018).

Second, this dissertation contributes to shared leadership theory in GVTs, by introducing task and expertise interdependence configurations as important antecedents to shared leadership. Interestingly, while previous research has stated that shared leadership should be particularly important and useful for knowledge intensive work teams (Fausing et al., 2013) and GVTs (Hoch & Kozlowski, 2014) – characterized by tasks requiring members to collaborate and combine various skill sets and expertise to perform tasks that could not be accomplished by a single person (Cohen & Bailey, 1997; Jackson, Hitt, & DeNisi, 2003) – prior research has not studied how the informational environment is related to the functioning of shared leadership. Therein, this is the first study to show how task and expertise interdependencies in fact serve as important antecedents to shared leadership in GVTs. While previous research has found that aggregate amounts of task dependencies in teams may support basic conditions for the development of shared leadership in co-located teams (Fausing et al., 2015), this work contributes to these few prior studies in three important ways. First, this dissertation shows that task interdependence may have an even more foundational role for shared leadership in GVTs than in co-located teams, as team members commonly need stronger reasons to collaborate when not bumping into each other in the office. Second, this study is the first to introduce the concept of expertise interdependence, embodying that when members need to rely on each other's expertise, they are more likely to share the lead. Third, this study shows that both task and expertise interdependence need to be viewed in a more nuanced light than simply looking at the aggregate amount of it in GVTs. As important, or possibly an even more important aspect of dependencies in GVTs, is how they are distributed across locations in the team, which this study is the first to demonstrate. Again, it is astonishing to note how often the configurational aspects of GVTs, such as how members are placed in relation to each other and their leader across locations (O'Leary & Cummings, 2007), have been rather overlooked in previous research on leadership in GVTs.

What is lacking from Figure 10, is also intriguing and important to take up in the discussion of antecedents to shared leadership in GVTs. While there has been heightened interest in theorizing about the role of national diversity in shared leadership (e.g. Carson, 2005; Conger & Pearce, 2003; Muethel & Hoegl, 2010; Ramthun & Matkin, 2012), empirical research is glaringly lacking in this respect, with one exception (Hiller et al., 2006). While previous work (e.g. Carson, 2005; Conger & Pearce, 2003; Hiller et al., 2006; Muethel & Hoegl, 2010) has stated that national culture could act as a barrier to shared leadership in GVTs, such that members from high power distance cultures expect more

vertical leadership and are less likely to participate in shared leadership than members residing in low power distance cultures, Hiller and colleagues (2006) failed to find support for this argument. Similarly, this dissertation did not find that members' power distance values were related to their enactment of shared leadership, but instead, when given high autonomy to enact shared leadership in their GVT, high and low power distance members alike commonly engaged in shared leadership. What I believe is happening here goes back once again to the notion of GVTs operating local and global contexts in parallel, implying that individual team members are exposed to multiple national contexts. Cramton and Hinds (2014), for instance, found evidence that intercultural adaptation may occur due to exposure to both local and global contexts and this is supported by additional research. Furthermore, members exposed to global team settings may even create a global identity (i.e. a feeling of belongingness to a global community), in addition to holding identities specific to their local cultures (Erez & Gati, 2004; Lee et al., 2018). This all suggests that it is possible that members of GVTs can accommodate their behaviors to norms other than those of their own national culture. Therefore, based on the results of this dissertation, I agree with Gibson and colleagues (Gibson et al., 2014) that it may be problematic to theorize about national culture in GVTs based on empirical research conducted in co-located teams, as these insights may not apply to GVTs.

Previous research on shared leadership has focused primarily on its relationship to team effectiveness and several studies have found a positive association (see D'Innocenzo et al., 2016; Nicolaides et al., 2014; Wang et al., 2014, for recent meta-analyses). Research conducted on VTs or GVTs is much thinner and offers conflicting results. On one hand, few empirical studies have found shared leadership to lead to improved performance in GVTs (Muethel et al., 2012; Hoch & Kozlowski, 2014). On the other hand, other studies have found opposite effects (e.g. Carte et al., 2006; Robert, 2013; Mehra et al., 2006), indicating that shared leadership may not inclusively lead to positive outcomes. This dissertation helps to explain some of these inconsistencies by introducing to the equation the concept of shared leadership coordination, conceptualized into implicit and behavioral components. Doing so, this work also contributes to management information systems and organizational research in general by providing a more nuanced understanding of the relationship between shared leadership and GVT effectiveness.

In relation to implicit leadership coordination, prior research has acknowledged the importance of leaders to view others as leaders for shared leadership to be effective (McIntyre & Foti, 2013; Mehra et al., 2006). But there has been little attention to the role of followers who, along with emergent and designated leaders, are an integral part of the shared leadership structure in a team. This work extends these endeavours by showing the importance of followers and leaders having aligned perceptions of who the leaders are in the GVT in order for shared leadership to reap its potential benefits. Again, this finding underscores the perspective of shared leadership being socially constructed, and the importance of looking at the role of individual team members for GVT functioning. If shared leadership is coordinated implicitly through shared cognition,

leadership actions are more likely to be understood, agreed upon, and followed. Implicit leadership coordination is particularly important in GVTs, where national cultural faultlines may splinter the team into different subgroups (Lau & Murnighan, 1998) with differing leadership expectations. In order for implicit leadership coordination to emerge, however, it may require team leaders to invest substantial effort in bridge making activities that foster understanding, dialogue and cohesion among team members (Abreu & Peloquin, 2004).

This study also extends previous research by showing that having an implicitly coordinated shared leadership structure is not enough for improving GVT effectiveness. Leadership actions also need to be coordinated behaviorally, which is a dimension that has not been effectively acknowledged before. In particular, I showed how behavioral leadership coordination facilitates task leadership functions effectively when the team is able to rely on mechanistic leadership coordination as much as possible, e.g. through the use of technology and predefined work processes. Consistent with prior research (e.g. Espinosa, Cummings, & Pickering, 2012), this study showed that coordination is cost effective when the team can rely on mechanistic coordination to manage the respective dependencies among leadership behaviors, including, for example, organizing and delegating. In addition, GVTs may use mechanistic leadership coordination to enhance proactive organic leadership coordination, improving GVT effectiveness more than organic leadership coordination that is used in a reactive way. In sum, these findings show how mechanistic artefacts like technology and work processes, which has been viewed as substitutes for vertical leadership in the past (Kerr & Jermier, 1978), may in fact, also facilitate shared leadership.

6.2 Practical implications

This dissertation has important implications for leaders and organizations utilizing GVTs. In today's global and complex work environment, leaders face unique challenges exerting influence over geographical, cultural, and temporal distances. But to the global team leaders' good fortune, this dissertation demonstrates that members may step up to share the lead based on their expertise to ease the complexity for the leader, and to lead the team towards high performance. Since previous research has suggested that shared leadership shows promise in influencing the effectiveness of GVTs (e.g. Hoch & Kozlowski, 2014), this is good news, and brings hope to the previously suggested unlikeliness of shared leadership to arise in GVTs. But this dissertation also shows that it might not be a simple process to introduce shared leadership practices to GVTs. Indeed, it may not be up to the formal global leader to decide upon the form of leadership the team members operate, given their simultaneous embeddedness in local settings.

As members of GVTs have to navigate their local and global leadership contexts in parallel, they might not have equal bases for participating in leadership, or even for collaborating with their colleagues at distant sites. This should be recognized by management, as members often find it difficult (or do not see any need) to break free from local leadership practices that seem to work for them,

or may feel discomfort from the fact that they have to operate according to differing, competing leadership influences. Therefore, if the aim is shared leadership, it would be ideal if, firstly, all team members are formally introduced to the same leadership expectations, secondly, are exposed to the same leadership influences, and thirdly, are given high autonomy to enact shared leadership as they see it fit. This means creating awareness throughout the organization, including getting the support from distant team members' local external leaders such that they understand the importance of allowing their workers autonomy, and let them "break free" to engage in the GVT.

When organizations have managed to recognize the importance of these aspects, this being perhaps the most difficult part, there are fairly easy steps in task and team design that can be taken towards shared leadership. First, GVTs need to be designed such that members are evenly dependent on each other across locations in their tasks and expertise. Obviously, there are practical challenges such as time separation, when attempting highly interdependent work across locations with a large time zone separation, but allowing members to be mutually dependent upon one another across locations is important for their enactment of shared leadership.

In addition, organizational leaders can facilitate shared leadership in GVTs by utilizing empowering supports that give voice and courage to team members to take a leap of faith into shared leadership. Empowering behaviors by members and leaders alike, as well as structural supports, can help members adapt to a leadership structure that may not be in line with their national cultural norms. Thus, in GVTs with members from a variety of cultures, some of whom may support vertical leadership norms, it is important to structure work and interaction processes such that these team members are encouraged and expected to take part in the leadership of the team. In addition, by allowing members to communicate over multiple channels in meetings, this may foster more participation in leadership due to differing preferences for communication modes.

Despite the seemingly consistent positive promises of shared leadership in previous research in co-located settings, the empirical evidence is mixed, particularly in the context of GVTs. Managers need to be aware that sharing leadership responsibilities can cause the team to become uncoordinated and ineffective (Cummings, Espinosa, & Pickering, 2009; Espinosa et al., 2012) if the actions of leaders are not synchronized. This can result in issues such as frustration, duplication of work, delays and the need for rework. But with the right mix of leadership coordination mechanisms, the team can synchronize their leadership actions and act as a cohesive whole, leading to superior team effectiveness. This is good news for practitioners who have seen a proliferation of self-managed teams which emphasize leadership originating from within a team.

6.3 Evaluation of this study

This dissertation is based on an inductive multi-case study of 16 GVTs, of which 15 are real organizational teams, including 129 in-depth interviews, and

observational data of 4 GVT meetings. Since qualitative research is prone to be subjective, interpretive and contextual (Maxwell, 1992; Strauss, & Corbin, 1990) it is important to assess the extent to which my results are trustworthy. This section evaluates the quality of the whole empirical research process conducted in this dissertation, particularly in terms of reliability and internal validity, external validity and construct validity, these all being common quality assessment criteria used in case-based research (Kidder & Judd, 1986; Yin, 2009). Broadly speaking, in qualitative research, aspects of validity refers to "the degree to which the finding is interpreted in a correct way" (Kirk & Miller, 1986, p. 20) and thus is representable of the real world, while reliability refers to "the degree to which the finding is independent of accidental circumstances of the research" (Kirk & Miller, 1986, p. 20).

6.3.1 Construct validity

Construct validity is concerned with identifying correct operational measures for the concepts being studied (Kidder & Judd, 1986). This means, making sure that the "claimed" meaning of the constructs represents their "actual" meaning. Qualitative case studies are commonly criticized for being too subjective when relying on subjective judgements for collecting the data and arriving at conclusions. Critical readers may, for instance, argue that my identified antecedent conditions of shared leadership in GVTs do not reflect the object reality of GVTs, but instead my own impressions. While it is true that my own experiences and worldview might have an impact on the way I collected data and interpreted others' experiences and stories, the chosen method provided a valuable approach to the subject under study. When studying shared leadership as a socially constructed process, it is important to address the subjective experiences of team members and, therefore, I argue that the applied semi-structured interview method performs excellently in capturing this.

For establishing construct validity, I took several steps in the data collection and the data analysis phase. First, I paid specific attention to the design of my interview protocol. When drafting my interview questions, I made sure that they were focused around my research questions but open enough to allow broad evidence, without "leading-the-witness" such as "Wouldn't you agree that…?" (Gioia et al., 2013, p. 19). This increases the likelihood that informants forward their own voice and experiences instead of responding to questions in ways just to please the researcher. In addition, I followed the recommendation by Gioia and colleagues to remain open to adjust the focus on the fly depending on where the informants led me. Hence, I changed the interview questions, even the research questions, along with lessons learned through preliminary analysis, which enabled me to discover new unique insights. For the more established constructs under study, which I aimed to explain, such as shared leadership and team effectiveness, I relied on prior validated conceptualizations for drafting the interview questions related to each. After the data had been collected, exact verbatim transcription of the recordings ensured that the data being analyzed represented accurately what the participants had said (in interviews) or done (meetings in Study 1). While I transcribed 20 interviews myself, external

professional transcription offices transcribed the other 109 interviews verbatim. I validated each transcript for their accuracy and revisited the audio recordings whenever I found instances with missing or unclear words.

Second, as recommended by Yin (2009), I established a chain of evidence and allowed informants and external readers to review my conclusions. First, establishing a chain of evidence by careful data management throughout the research process is needed to enable an external reader to either back-track (move from conclusions back to interview questions) or to derive results bottom up (move from interview questions to conclusions). Hence, I stored all collected data in its original form, in transcribed form, and in analyzed form including the assigned codes. All stored data was anonymized. Additionally, I saved all memos, working papers and final case reports. I invited my co-authors to back-track and to derive evidence from the data, which added another interpretive layer. After generating a unique understanding of each team, I prepared presentations for each team, and arranged result dissemination sessions for 12 out of 16 teams[11] from whom I had collected the data myself. When reporting my findings to each of these teams, I tested my interpretations by enabling the informants to review my analysis and results (Eisenhardt, 1989; Miles & Huberman, 1994; Ragin, 1997). This review process enhanced the accuracy of the case studies, hence increasing construct validity, and other aspects of validity that will be discussed next.

One notable limitation is, however, worthwhile discussing in relation to construct validity, and internal validity - which is discussed in the next section. The quality of my interview data may be affected by the fact that I, as a non-native English speaker, interviewed other non-native English speakers, leading to difficulties with creating a shared understanding, less depth in responses, and potentially containing biases due to a difficulty to formulate authentic responses (Welch & Piekkari, 2006). In addition, the ability to follow up and ask well formulated questions during the interview, as well as transcribing interviews accurately is made more difficult by not being a native English user (Welch & Piekkari, 2006). However, I took several steps to increase the quality of language in my interviews. Whenever possible, I conducted the interviews in the native languages of the informants (including Swedish, Finnish and English), and in which I possess a level of language skill excellence. In addition, I followed the guidelines offered by Welch and Piekkari (2006) to increase the quality of interviews conducted in the interviewee's non-native language. These involved asking frequent clarifying questions during the interview, conducting the interview at a slower pace, and using an "international" English avoiding idioms, dialect and colloquialisms. In addition, due to my focus on GVTs, my informants had, according to the organizations, demonstrated high levels of English proficiency. In those cases where I was told that the informant had less experience of speaking in English, I sent the interview questions to them beforehand so that they could familiarize and orient themselves towards the interview discussion.

[11] I did not present my results to Teams GlobeSoft, GlobeEle, GLobeTech and StudentPD, due to the fact that the data had been collected before I entered the academic world and began my doctoral dissertation work.

Therefore, I would argue that most of the language barriers were dealt with in a manner that enhanced the validity of my interview data.

6.3.2 Internal and external validity

Internal validity deals with the question of whether a variable X actually has an effect on another variable Y, or whether there are alternative explanations (s.k. spurious effects) of the relationship between X and Y. External validity relates to the establishment of a domain to which the results extends. (Kidder & Judd, 1986) Given that qualitative field research has a high vulnerability in terms of internal and external validity (Singleton, & Straits, 2009), I took several steps throughout the research process to ensure both internal and external validity. This included starting from a carefully drafted interview protocol to the validation of my interpretations.

Internal validity

First, it is important to ensure internal validity and that the conclusions drawn closely mirror the real world. While the data collection process was primarily concerned with construct validity for capturing the world experienced by my informants as accurately as possible, internal validity was primarily ensured during the data analysis phase. As recommended by Yin (2009), I engaged in explanation building and pattern-matching, including rival explanation seeking. Related to my question about antecedent conditions of shared leadership, I first gradually built up explanations as to why or why not a specific team enacted shared leadership in the single case analysis through a series of iterations. This involved moving between data, preliminary theoretical propositions and reviewers (including my informants) – to gradually revise my initial conclusions and form stronger theoretical statements. In this process, I engaged in pattern-matching including comparisons of one team with other teams through cross-case analysis.

The single case analysis had revealed several threats to internal validity. For instance, after conducting Study 1, I proposed that shared leadership is highly unlikely to develop in GVTs. However, after adding additional cases, I later began to find strong evidence going against this statement, and several GVTs showed high levels of shared leadership. So, instead of stating that shared leadership is unlikely to emerge in GVTs, I was able to offer more nuanced insights about both barrier and enabling conditions for shared leadership to develop in GVTs. For instance, when comparing the GVT of Study 1 with other GVTs in this dissertation, the team members in Study 1 seemed to have implicit models on leadership with a preference for vertical leadership which hold them back from engaging in shared leadership. But it was not until I had conducted Study 3 that I was able to revisit Study 1 and conclude this. Hence, the addition of multiple additional cases increased the internal validity of my initial theoretical statements.

In addition, the use of multiple cases enabled me to rule out several rival explanations. For instance, in an early write up of Study 2, I concluded that team members' power distance values had an impact on team members' participation

in shared leadership. But after several iterations between the data, my interpretations and additional cases, I realized that team members' power distance per se, did not influence whether GVTs enacted shared leadership or not. Instead, another rival explanation, i.e. the team's autonomy configuration which resulted from team members' autonomy provided by local and global leadership sources combined, mattered the most. This conclusion emerged after several rounds of iterations and comparison over multiple cases. Given that the patterns coincided across all teams in Study 2, the internal validity of my conclusions are strong (Yin, 2009). A similar replication logic was also applied in Study 3 and Study 4, increasing their internal validity. In Study 3, for instance, the comparisons over the different cases enabled me to reconcile why shared leadership had differing effects on team effectiveness in different teams. The explanation consistently centered around how shared leadership was coordinated within each team.

In sum, the internal validity of my theoretical propositions was strengthened through 1) several rounds of iterations, 2) validity checks with informants, participating researchers and external reviewers, 3) cross-case analysis over multiple cases, and 4) connecting conclusions to existing literature. First, due to the fact that I worked on my dissertation over for six years, my conclusions slowly matured and were strengthened through a series of iterations. In the process, I tested my interpretations by enabling the informants to review my analysis and results (Eisenhardt, 1989; Miles & Huberman, 1994; Ragin, 1997). This review process confirmed my own interpretations which enhanced the accuracy of the case studies. The teams confirmed my own interpretations and brought forward additional evidence. Informants are likely to detect false interpretations as they are the ones living through and experiencing the results I presented. In addition, I invited my co-authors to review my analysis and engaged in several discussions where we together interpreted the data and composed theoretical propositions. External reviewers also contributed to the establishment of internal validity by offering competing theoretical explanations and by asking for additional analytical steps to ensure internal validity. Third, cross-case analysis enabled me to clarify whether a finding was idiosyncratic to a single case or whether it was consistently replicated by other cases (Eisenhardt, 1991), i.e. perform literal replication, and to detect contrasting patterns in the data due to predictable circumstances, i.e. perform theoretical replication (Yin, 2009). Through this comparative analysis I was able to draw stronger inferences concerning which variables explained the differing levels of shared leadership, and the differing or levels of team effectiveness in the studied GVTs. Last, as recommended by Eisenhardt (1989), the internal validity of my case-studies was furthermore enhanced by tying the emergent theory to the existing literature.

External validity

The external validity of qualitative field-based case studies has furthermore been questioned (Singleton, & Straits, 2009). The qualitative methodology used in this research enabled me to examine individuals' and GVT's enactment of shared leadership, but since the data is interview-based and limited to a relative small sample of teams, the generalizability of our findings may be limited.

Although case studies do not provide statistical generalization, case studies rely on analytic generalization, such as replication logic, to create a theory (Yin, 2009). Therein, the aim of case studies is not to generalize findings to a larger universe, but to some broader theory. The replication over multiple cases performed in this dissertation, including teams from differing industries and functions, as well as teams with differing degrees of distance and cultural diversity, increased the external validity of the findings of this dissertation. Another factor strengthening the external validity of my study, is the fact that both internal and external team contextual factors were considered in my theorizing. In fact, contextualizing has been stated as vital for generating more valid theory and understanding the limits or range of that theory in team research (Johns, 2006; Rousseau & Fried, 2001).

The findings, however, contain some limitations in external validity, which should be made explicit. The participating teams are composed of knowledge workers – and hence, my results should not be generalized to all global virtual workers such as those in manufacturing settings where the work scene is different, including more directives and regulations. Likewise, the chosen teams are all part of organizations with headquarters in Finland and hence the Finnish working culture may have had an impact on the observed relationships. In Finland, the hierarchy is commonly very flat, which may facilitate the development of shared leadership. Different relationships may have been observed if the headquarters would have been in different countries with more hierarchical structures. However, some of my cases were representable of more hierarchical structures and hence some variation to the hierarchical structure added more confidence to the external validity of my results.

6.3.3 Reliability

In qualitative research, reliability refers to "the degree to which the finding is independent of accidental circumstances of the research" (Kirk & Miller, 1986, p. 20). In other words, a study should be repeatable and yield consistent results at different times. Another researcher should hence be able to arrive at the same results later if following the same procedures as I described in the methods section with the same case(s). To enable this, as recommended by Yin (2009), I followed a case-study protocol as well as establishing a case study database. By following a case-study protocol, I not only enabled replication for others, but also for myself. This enabled me to replicate the same procedures from one case to another, which is also an inherent part of establishing reliability (Yin, 2009)

First, I documented each step of the design of my study, data collection and data analysis in detail. For the data display of my analysis, I relied on the data structure format put forward by Gioia et al (2013), which allowed me to "to configure our data into a sensible visual aid, [and] it also provides a graphic representation of how we progressed from raw data to terms and themes in conducting the analyses" (p.20). This increased the transparency of the process in moving from raw concepts to the final theoretical constructs. Not only did I revisit the data structure several times, but so did also my co-authors and external reviewers.

Second, as recommended by Yin (2009), I maintained a case study database where I stored all collected data in both its original form and transcribed form. I also stored all analysis files, all memos, preliminary case reports and subsequent article versions. Therein, it would be possible for another researcher to replicate my study.

6.4 Conclusions and future research

The shifting working landscape is characterized by digitalized and global work, which demands more dynamic leadership structures and practices that includes self-management as opposed to a hierarchy-based structure (Snow et al., 2017). This dissertation continues to underscore this need and brings concrete evidence to how shared leadership may be achieved in GVTs, and under which circumstances it may lead to superior outcomes. While my study is not without limitations, it offers several contributions to move research on shared leadership in GVTs forward. In particular, this dissertation brings unique aspects of the GVT context - including team members' local and global contexts, as well as team configurational aspects - to the foreground as a means to moving theory on antecedents to shared leadership in GVTs beyond its current standing. In addition, it offers shared leadership coordination as a powerful contingency factor in the relationship between shared leadership and GVT effectiveness. In sum, the findings of this dissertation offer important theoretical and practical implications, including work design aspects that organizations need to pay attention to for building better conditions for shared leadership and effectiveness in GVTs.

Yet, this dissertation is only the beginning of what I believe is to follow in future research around shared leadership in GVTs. For moving forward, I offer several recommendations. First, I underscore the identified need to contextualize and undertake context theorizing in global leadership (Reiche et al., 2017) and team research in general (Maloney et al., 2016). My findings show that contextual factors are crucial for understanding the functioning of shared leadership and other group processes, particularly in the context of GVTs – including local and global contexts. Second, and relatedly, I continue to underscore the need for future research to pay more attention to the individual team members in VT functioning (such as in Gibson et al., 2011) for understanding shared leadership and other group processes in GVTs. This should also lead to increased attention on team configurational aspects (highlighted in e.g. O'Leary & Cummings, 2007) which to my surprise have received astonishingly little attention. In addition, this also relates to the very concept of shared leadership, in that future research should continue to view shared leadership through a contingency perspective and search for those leader configurations which are most suitable in particular contexts (Dust & Ziegert, 2015). This dissertation only touched on this issue, and in fact took a rather static view of shared leadership, except for study 1 which showed that a team's level of shared leadership may in fact fluctuate and, as in the case of the GVT of study 1, move from high levels of shared leadership towards more vertical leadership. In line with Kozlowski

(2015), I hence emphasize the value of devoting further attention to study team process dynamics through temporal lenses, even though it means studying a smaller sample.

In addition, while I focused on team members working for one team at a time in this dissertation, people commonly work for more than one team simultaneously (Mortensen & Haas, 2018), making it likely for team members to move between differing levels of autonomy as they shift their focus between different teams and leaders at various points in time. In other words, the *Fluid workers* identified in Study 2 should receive more attention in the future. In addition, VTs are today increasingly established for a specific purpose and for a short term only and hence it is unlikely that members are able to remain in static autonomy profiles. Future research has therein an opportunity to reconsider autonomy as a stable job design characteristic (Oldham & Hackman, 2010), and instead view it as a constantly shifting work design element that moves between states of low to high, e.g. as a result of differing leadership influences.

Therein, I conclude this dissertation with a hope that future research will continue to pay attention to the micro-level details and dynamics surrounding shared leadership in GVTs – operating in a duality of local and global contexts. Perhaps, despite the stated unlikeliness of shared leadership in GVTs, this dissertation proves that the future of GVTs may well be one where leadership is shared.

References

Abreu, B., & Peloquin, S. (2004). The issue is: Embracing diversity in our profession. *The American Journal of Occupational Therapy, 58*(3), 353–359. doi:10.5014/ajot.58.3.353

Aime, F., Humphrey, S., DeRue, D. S., & Paul, J. B. (2014). The Riddle of Heterarchy: Power Transitions in Cross-Functional Teams. *Academy of Management Journal, 57*(2), 327–352. doi:10.5465/amj.2011.0756

Anantatmula, V. & Thomas, M. (2010). Managing global projects: A structured approach for better performance. *Project Management Journal, 41*(2), 60–72. doi: 10.1002/pmj.20168

Ancona, D., & Backman, E. V. (2008). *Distributed, shared or collective leadership: A new leadership model for the collaborative era?* Paper presented at the annual meeting of the Academy of Management, Anaheim, CA.

Arnold, J.A., Arad S., Rhoades, J.A., & Drasgow F. (2000). The empowering leadership questionnaire: The construction and validation of a new scale for measuring leader behaviors. Journal of Organizational Behavior, 21(3), 249–269. doi: 10.1002/(SICI)1099- 1379(200005)21:3<249:AID-JOB10>3.0.CO;2-#

Avolio, B. J., Kahai, S. S., & Dodge, G. E. (2001). E-Leadership: Implications for theory, research, and practice. *The Leadership Quarterly, 11*(4), 615–668.

Avolio, B. J., Sosik, J. J., Kahai, S. S., & Baker, B. (2014). E-leadership: Re-examining transformations in leadership source and transmission. *The Leadership Quarterly, 25*(1), 105–131. doi:10.1016/j.leaqua.2013.11.003

Bales, R. F. (1950). A Set of Categories for the Analysis of Small Group Inter-action. *American Sociological Review, 15*(2), 257. doi:10.2307/2086790

Barton, M. A., & Bunderson, J. S. (2014). Assessing member expertise in groups: An expertise dependence perspective. *Organizational Psychology Review, 4*(3), 228 –257.

Bass, B. M. & Avolio, B. J. (1994). *Improving Organizational Effectiveness through Transformational Leadership*. Thousand Oaks, CA: Sage Publications.

Bedeian, A. G., & Hunt, J. G. (2006). Academic amnesia and vestigial assumptions of our forefathers. *The Leadership Quarterly, 17*(2), 190–205. doi:10.1016/j.leaqua.2005.12.006

Bell, B. S., & Kozlowski, S. W. J. (2002). A Typology of Virtual Teams. *Group & Organization Management, 27*(1), 14–49. doi:10.1177/1059601102027001003

Berelson, B. (1952). *Content analysis in communicational research*. Illinois: Free Press.

Bochner, S., & Hesketh, B. (1994). Power Distance, Individualism/Collectivism, and Job-Related Attitudes in a Culturally Diverse Work Group. *Journal of Cross-Cultural Psychology, 25*(2), 233–257. doi:10.1177/0022022194252005

Boies, K., Lvina, E., & Martens, M. L. (2010). Shared Leadership and Team Performance in a Business Strategy Simulation. *Journal of Personnel Psychology, 9*(4), 195–202. doi:10.1027/1866-5888/a000021

Bos, N., Olson, J., Nan, N., Shami, N. S., Hoch, S., & Johnston, E. (2006). *Collocation blindness in partially distributed groups: is there a downside to being collocated?* Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, Montréal, Québec, Canada. ACM Press (pp. 1313–1321). doi.org/10.1145/1124772.1124969

Bowers, D. G., & Seashore, S. E. (1966). Predicting Organizational Effectiveness with a Four-Factor Theory of Leadership. *Administrative Science Quarterly, 11*(2), 238-263. doi:10.2307/2391247

Breuer, C., Hüffmeier, J., & Hertel, G. (2016). Does trust matter more in virtual teams? A meta-analysis of trust and team effectiveness considering virtuality and documentation as moderators. *Journal of Applied Psychology, 101*(8), 1151–1177. doi:10.1037/apl0000113

Bryman, A. & Bell, E. (2011). Business research methods, *3rd ed*. Oxford: Oxford University Press.

Burke, C. S., Stagl, K. C., Klein, C., Goodwin, G. F., Salas, E., & Halpin, S. M. (2006). What type of leadership behaviors are functional in teams? A meta-analysis. *The Leadership Quarterly, 17*(3), 288–307. doi:10.1016/j.leaqua.2006.02.007

Carl, D., Gupta, V., & Javidan, M. (2004). Power distance. In R. House, P. Hanges, M. Javidan, P. W. Dorfman & V. Gupta (Eds.), *Culture, Leadership, and Organizations: The GLOBE Study of 62 Societies* (pp. 513–563). Sage Publications: Thousand Oaks.

Carson, J. (2005). Shared leadership and culture: Potential emergence and global application. In N. S. Huber & M. C. Walker (Eds.), *Emergent models of global leadership: A volume in building leadership bridges* (pp. 1–16). College Park, MD: The James MacGregor Burns Academy of Leadership.

Carson, J. B., Tesluk, P. E., & Marrone, J. A. (2007). Shared Leadership in Teams: An Investigation of Antecedent Conditions and Performance. *Academy of Management Journal, 50*(5), 1217–1234. doi:10.5465/amj.2007.20159921

Carte, T. A., Chidambaram, L., & Becker, A. (2006). Emergent leadership in self-managed virtual teams: A longitudinal study of concentrated and shared leadership behaviors. *Group Decision and Negotiation, 15*(4), 323-343. doi:10.1007/s10726-006-9045-7

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. London: Sage Publications.

Chilisa, B., & Kawulich, B. B. (2012). Selecting a research approach: paradigm, methodology and methods. In C. Wagner, B. Kawulich & M. Garner (Eds.), *Doing Social Research: A global context*. London: McGraw-Hill Education.

Cohen, D., & Crabtree, B. (2006). *Qualitative Research Guidelines Project*. Retrieved from http://www.qualres.org/

Conger, J. A., & C. L. Pearce. (2003). A Landscape of Opportunities: Future Research on Shared Leadership. In C. L. Pearce & J. A. Conger (Eds.), *Shared Leadership: Reframing the Hows and Whys of Leadership* (pp. 285-303). Thousand Oaks, CA: Sage Publications.

Contractor, N. S., DeChurch, L. A., Carson, J., Carter, D. R., & Keegan, B. (2012). The topology of collective leadership. *The Leadership Quarterly, 23*(6), 994–1011. doi:10.1016/j.leaqua.2012.10.010

Cooprider, J. G., & Henderson, J. C. (1990). Technology–Process Fit: Perspectives on Achieving Prototyping Effectiveness. *Journal of Management Information Systems, 7*(3), 67–87. doi:10.1080/07421222.1990.11517897

Cordery, J., Soo, C., Kirkman, B., Rosen, B., & Mathieu, J. (2009). Leading parallel global virtual teams: Lessons from Alcoa. *Organizational Dynamics, 38*(3), 204–216. doi:10.1016/j.orgdyn.2009.04.002

Cox, J. F., Pearce, C. L., & Perry, M. L. (2003). Toward a Model of Shared Leadership and Distributed Influence in the Innovation Process: How Shared Leadership Can Enhance New Product Development Team Dynamics and Effectiveness. In C. L. Pearce & J. A. Conger (Eds.), *Shared Leadership: Reframing the Hows and Whys of Leadership* (pp. 48-76). Thousand Oaks, CA: Sage Publications.

Cramton, C. D. (2002). Finding Common Ground in Dispersed Collaboration. *Organizational Dynamics, 30*(4), 356–367. doi:10.1016/s0090-2616(02)00063-3

Cramton, C. D., & Hinds, P. J. (2014). An Embedded Model of Cultural Adaptation in Global Teams. *Organization Science, 25*(4), 1056–1081. doi:10.1287/orsc.2013.0885

Creswell, J. W. (2003). *Research design. Qualitative, quantitative and mixed methods approaches.* Thousand Oaks, CA: Sage Publications.

Cummings, T. G. (1978). Self-Regulating Work Groups: A Socio-Technical Synthesis. *The Academy of Management Review, 3*(3), 625-634. doi:10.2307/257551

Cummings, J. N., Espinosa, J. A., & Pickering, C. K. (2009). Crossing Spatial and Temporal Boundaries in Globally Distributed Projects: A Relational Model of Coordination Delay. *Information Systems Research, 20*(3), 420–439. doi:10.1287/isre.1090.0239

D'Innocenzo, L., Mathieu, J. E., & Kukenberger, M. R. (2016). A Meta-Analysis of Different Forms of Shared Leadership–Team Performance Relations. *Journal of Management, 42*(7), 1964–1991. doi:10.1177/0149206314525205

Daft, R. L., & Lengel, R. H. (1984). Information richness: A new approach to managerial behavior and organizational design. *Research in Organizational Behavior, 6*, 191–233.

Davenport, T. H. (2005). *Thinking for a living: How to get better performances and results from knowledge workers.* Cambridge, MA: Harvard Business School.

Davis, D. D., & Bryant, J. L. (2003). Influence at a distance: Leadership in global virtual teams. In W. H. Mobley & P. W. Dorfman (Eds.), *Advances in global leadership, vol. 3* (pp. 303-340). Amsterdam: Elsevier Science Ltd.

Day, D. V., & Antonakis, J. (2012). Leadership: Past, present, and future. In D. V. Day & J. Antonakis (Eds.), *The nature of leadership, 2nd ed.* (pp. 3-25). Thousand Oaks, CA: Sage Publications.

Denis, J. L., Langley, A., & Sergi, V. (2012). Leadership in the Plural. *Academy of Management Annals, 6*(1), 211–283. doi:10.5465/19416520.2012.667612

DeNisi, A. S., Hitt, M. A., & Jackson, S. E. (2003). The knowledge-based approach to sustainable competitive advantage. In S. E. Jackson, M. A. Hitt, & A. S. DeNisi (Eds.), *Managing knowledge for sustained competitive advantage* (pp. 3–33). San Francisco, CA: Jossey-Bass.

Denzin, N. K., & Lincoln, Y. S. (2011). Introduction: The Discipline and Practice of Qualitative Research. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage Handbook of Qualitative Research, 4th ed.* (pp. 1–20). Los Angeles, CA: Sage Publications.

DeRue, D. S., & Ashford, S. J. (2010). Who Will Lead and Who Will Follow? A Social Process of Leadership Identity Construction in Organizations. *Academy of Management Review, 35*(4), 627–647. doi:10.5465/amr.2010.53503267

Dinh, J. E., Lord, R. G., Gardner, W. L., Meuser, J. D., Liden, R. C., & Hu, J. (2014). Leadership theory and research in the new millennium: Current theoretical

trends and changing perspectives. *The Leadership Quarterly, 25*(1), 36–62. doi:10.1016/j.leaqua.2013.11.005

Dust, S. B., & Ziegert, J. C. (2015). Multi-Leader Teams in Review: A Contingent-Configuration Perspective of Effectiveness. *International Journal of Management Reviews, 18*(4), 518–541. doi:10.1111/ijmr.12073

Earley, P., & Ang, S. (2003). *Cultural intelligence: Individual interactions across cultures*. Palo Alto: Stanford University Press.

Eisenhardt, K. M. (1989). Building Theories from Case Study Research. *The Academy of Management Review, 14*(4), 532-550. doi:10.2307/258557

Eisenhardt, K. M. (1991). Better Stories and Better Constructs: The Case for Rigor and Comparative Logic. *The Academy of Management Review, 16*(3), 620-627. doi:10.2307/258921

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory Building From Cases: Opportunities And Challenges. *Academy of Management Journal, 50*(1), 25–32. doi:10.5465/amj.2007.24160888

Ensley, M. D., Hmieleski, K. M., & Pearce, C. L. (2006). The importance of vertical and shared leadership within new venture top management teams: Implications for the performance of startups. *The Leadership Quarterly, 17*(3), 217–231. doi:10.1016/j.leaqua.2006.02.002

Erez, A., Lepine, J. A., & Elms, H. (2002). Effects of Rotated Leadership and Peer Evaluation on The Functioning and Effectiveness of Self-Managed Teams: A Quasi-Experiment. *Personnel Psychology, 55*(4), 929–948. doi:10.1111/j.1744-6570.2002.tb00135.x

Erez, M., & Gati, E. (2004). A Dynamic, Multi-Level Model of Culture: From the Micro Level of the Individual to the Macro Level of a Global Culture. *Applied Psychology, 53*(4), 583–598. doi:10.1111/j.1464-0597.2004.00190.x

Espinosa, J. A., Cummings, J. N., & Pickering, C. (2012). Time Separation, Coordination, and Performance in Technical Teams. *IEEE Transactions on Engineering Management, 59*(1), 91–103. doi:10.1109/tem.2011.2126579

Espinosa, J., Slaughter, S., Kraut, R., & Herbsleb, J. (2007). Team Knowledge and Coordination in Geographically Distributed Software Development. *Journal of Management Information Systems, 24*(1), 135–169. doi:10.2753/mis0742-1222240104

Faraj, S., Pachidi, S., & Sayegh, K. (2018). Working and organizing in the age of the learning algorithm. *Information and Organization, 28*(1), 62–70. doi:10.1016/j.infoandorg.2018.02.005

Fausing, M. S., Joensson, T. S., Lewandowski, J., & Bligh, M. (2015). Antecedents of shared leadership: empowering leadership and interdependence. *Leadership & Organization Development Journal, 36*(3), 271–291. doi:10.1108/lodj-06-2013-0075

Ferrazzi, K. (2014). Getting Virtual Teams Right. *Harvard Business Review*, December 2014.

Fleishman, E. A., Mumford, M. D., Zaccaro, S. J., Levin, K. Y., Korotkin, A. L., & Hein, M. B. (1991). Taxonomic efforts in the description of leader behavior: A synthesis and functional interpretation. *The Leadership Quarterly, 2*(4), 245–287. doi:10.1016/1048-9843(91)90016-u

French, J. & Raven, B. H. (1959). The bases of social power. In D. Cartwright (Ed.), *Studies of Social Power* (pp. 150-167). Ann Arbor, MI: Institute for Social Research.

Friedrich, T. L., Vessey, W. B., Schuelke, M. J., Ruark, G. A., & Mumford, M. D. (2009). A framework for understanding collective leadership: The selective

utilization of leader and team expertise within networks. *The Leadership Quarterly, 20*(6), 933–958. doi:10.1016/j.leaqua.2009.09.008
Futoran, G. C., Kelly, J. R., & McGrath, J. E. (1989). TEMPO: A Time-based Sys-tem for Analysis of Group Interaction Process. *Basic and Applied Social Psychology, 10*(3), 211–232. doi:10.1207/s15324834basp1003_2
Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of Distance Education, 15*(1), 7–23. doi:10.1080/08923640109527071
Gibb, C. A. (1954). Leadership. In G. Lindzey (Ed.), *Handbook of social psychology, Vol. 2* (pp. 877-920). Cambridge, MA: ddison-Wesley.
Gibson, C. B., Gibbs, J. L., Stanko, T. L., Tesluk, P., & Cohen, S. G. (2011). Including the "I" in Virtuality and Modern Job Design: Extending the Job Characteristics Model to Include the Moderating Effect of Individual Experiences of Electronic Dependence and Copresence.s*Organization Science, 22*(6), 1481–1499. doi:10.1287/orsc.1100.0586
Gibson, C. B., Huang, L., Kirkman, B. L., & Shapiro, D. L. (2014). Where Global and Virtual Meet: The Value of Examining the Intersection of These Elements in Twenty-First-Century Teams. *Annual Review of Organizational Psychology and Organizational Behavior, 1*(1), 217–244. doi:10.1146/annurev-orgpsych-031413-091240
Gilson, L. L., Maynard, M. T., Young, N. C. J., Vartiainen, M., & Hakonen, M. (2015). Virtual teams research: 10 years, 10 themes, and 10 opportunities. *Journal of Management, 41*(5), 1313–1337. doi:10.1177/0149206314559946
Gioia, D. A. (2004). A renaissance self: Prompting personal and professional revitalization. In P. J. Frost & R. E. Stablein (Eds.), *Renewing research practice: Scholars' journeys* (pp. 97-114). Stanford, CA: Stanford University Press.
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. doi:10.1177/1094428112452151
Glaser, B., & Strauss, A. (1967). *The Discovery of Grounded Theory*. Chicago, IL: Aldine.
Glaser, B. G. (1992). *Emergence vs. forcing: Basics of grounded theory analysis*. Mill Valley, CA: Sociology Press.
Goldman, B. M., & Shapiro, D. L. (Eds.). (2012). *The Psychology of Negotiations in the 21st Century Workplace: New Challenges and New Solutions***.** New York, NY: Routledge.
Griffith, T. L., Sawyer, J. E., & Neale, M. A. (2003). Virtualness and Knowledge in Teams: Managing the Love Triangle of Organizations, Individuals, and Information Technology. *MIS Quarterly, 27*(2), 265. doi:10.2307/30036531
Gronn, P. (2002). Distributed leadership as a unit of analysis. *The Leadership Quarterly, 13*(4), 423–451. doi:10.1016/s1048-9843(02)00120-0
Hackman, J. R., & Waton, R. E. (1986). Leading groups in organizations. In P. S. Goodman, & Associates (Eds.), *Designing effective work groups* (pp. 72–119). San Francisco, CA: Jossey-Bass.
Hackman, J. R. (1987). The design of work teams. In J. W. Lorsch (Ed.), *Handbook of organizational behavior* (pp. 315–342). Englewood Cliffs, NJ: Prentice Hall.
Hackman, J. R. (2002). *Leading teams*. Cambridge, MA: Harvard Business School Press.
Hambley, L. A., O'Neill, T. A., & Kline, T. J. B. (2007). Virtual team leadership: Perspectives from the field. *International Journal of e-collaboration, 3*, 40–64.

Henri, F. (1992). Computer Conferencing and Content Analysis. Collaborative Learning Through Computer Conferencing, 117–136. doi:10.1007/978-3-642-77684-7_8

Hersey, P., & Blanchard, K. H. (1977). *Management of organizational behavior: Utilizing human resources*. Englewood Cliffs, NJ: Prentice-Hall.

Hertel, G., Geister, S., & Konradt, U. (2005). Managing virtual teams: A review of current empirical research. *Human Resource Management Review, 15*(1), 69–95. doi:10.1016/j.hrmr.2005.01.002

Hill, N. S., & Bartol, K. M. (2015). Empowering Leadership and Effective Collaboration in Geographically Dispersed Teams. *Personnel Psychology, 69*(1), 159–198. doi:10.1111/peps.12108

Hiller, N. J., Day, D. V., & Vance, R. J. (2006). Collective enactment of leadership roles and team effectiveness: A field study. *The Leadership Quarterly, 17*(4), 387–397. doi:10.1016/j.leaqua.2006.04.004

Hinds, P., & Kiesler, S. (1995). Communication across Boundaries: Work, Structure, and Use of Communication Technologies in a Large Organization. *Organization Science, 6*(4), 373–393. doi:10.1287/orsc.6.4.373

Hinds, P. J., & Weisband, S. P. (2003). Knowledge sharing and shared understanding. In C. B. Gibson & S. G. Cohen (Eds.), *Virtual teams that work* (pp. 21-36). San Francisco, CA: Jossey-Bass.

Hinds, P., Liu, L., & Lyon, J. (2011). Putting the Global in Global Work: An Intercultural Lens on the Practice of Cross-National Collaboration. *Academy of Management Annals, 5*(1), 135–188. doi:10.5465/19416520.2011.586108

Hirschheim, R., & Smithson, S. (1987). Information Systems Evaluation: Myth and Reality. In R. Galliers (Ed.), *Information Analysis, Selected Readings*. Sydney: Addison-Wesley.

Hoch, J. E. (2013). Shared Leadership and Innovation: The Role of Vertical Leadership and Employee Integrity. *Journal of Business and Psychology, 28*(2), 159–174. doi:10.1007/s10869-012-9273-6

Hoch, J. E., & Kozlowski, S. W. J. (2014). Leading virtual teams: Hierarchical leadership, structural supports, and shared team leadership. *Journal of Applied Psychology, 99*(3), 390–403. doi:10.1037/a0030264

Hoch, J. E., & Dulebohn, J. H. (2017). Team personality composition, emergent leadership and shared leadership in virtual teams: A theoretical framework. *Human Resource Management Review, 27*(4), 678–693. doi:10.1016/j.hrmr.2016.12.012

Hoegl, M., & Muethel, M. (2016). Enabling shared leadership in virtual project teams: A practitioners' guide. *Project Management Journal, 47*(1), 7– 12.

Hofstede, G. (1980). *Culture's consequences: International differences in work related values*. Beverly Hills, CA: Sage Publications.

Horwitz, S. K., & Santillan, C. (2012). Knowledge sharing in global virtual team collaboration: applications of CE and thinkLets. *Knowledge Management Research & Practice, 10*(4), 342–353. doi:10.1057/kmrp.2012.39

Houghton, J. D., Neck, C. P., & Manz, C. C. (2003). Self-leadership and SuperLeadership: The heart and art of creating shared leadership in teams. In C. L. Pearce & J. A. Conger (Eds.), *Shared Leadership: Reframing the Hows and Whys of Leadership* (pp. 123-140). Thousand Oaks, CA: Sage Publications.

House, R. J., & Aditya, R. N. (1997). The Social Scientific Study of Leadership: Quo Vadis? *Journal of Management, 23*(3), 409–473. doi:10.1177/014920639702300306

House, R., Javidan, M., Hanges, P., & Dorfman, P. (2002). Understanding cultures and implicit leadership theories across the globe: an introduction to project GLOBE. *Journal of World Business, 37*(1), 3–10. doi:10.1016/s1090-9516(01)00069-4

House, R. J., Hanges, P. J., Javidan, M., Dorfman, P., & Gupta, V. (2004). *Culture, leadership and organizations: The GLOBE study of 62 societies*. Thousand Oaks, CA: Sage Publications.

Ilgen, D. R., Hollenbeck, J. R., Johnson, M., & Jundt, D. (2005). Teams in Organizations: From Input-Process-Output Models to IMOI Models. *Annual Review of Psychology, 56*(1), 517–543. doi:10.1146/annurev.psych.56.091103.070250

Ishikawa, J. (2012). Transformational leadership and gatekeeping leadership: The roles of norm for maintaining consensus and shared leadership in team performance. *Asia Pacific Journal of Management, 29*(2), 265–283. doi:10.1007/s10490-012-9282-z

Jarvenpaa, S. L., Knoll, K., & Leidner, D. E. (1998). Is Anybody out There? Antecedents of Trust in Global Virtual Teams. *Journal of Management Information Systems, 14*(4), 29–64. doi:10.1080/07421222.1998.11518185

Jarvenpaa, S. L., & Leidner, D. E. (1999). Communication and Trust in Global Virtual Teams. *Organization Science, 10*(6), 791–815. doi:10.1287/orsc.10.6.791

Javidan, M., Steers, R., & Hitt, M. (2007). *The global mindset*. Amsterdam: Elsevier Science Ltd.

Jermier, J. M., & Kerr, S. (1997). "Substitutes for leadership: Their meaning and measurement" — Contextual recollections and current observations. *The Leadership Quarterly, 8*(2), 95–101. doi:10.1016/s1048-9843(97)90008-4

Johns, G. (2006). The Essential Impact of Context on Organizational Behavior. *Academy of Management Review, 31*(2), 386–408. doi:10.5465/amr.2006.20208687

Johns, T., & Gratton, L. (2013). The third wave of virtual work. *Harvard Business Review, 91*(1), 66-73.

Jonsen, K., Maznevski, M. L., & Canney Davison, S. (2012). Global virtual team dynamics and effectiveness. In G. Stahl, I. Bjorkman, & S. Morris (Eds.), *Handbook of research in international human resource management*. London: Edward Elgar Publishing.

Joshi, A., Lazarova, M. B., & Liao, H. (2009). Getting Everyone on Board: The Role of Inspirational Leadership in Geographically Dispersed Teams. *Organization Science, 20*(1), 240–252. doi:10.1287/orsc.1080.0383

Kayworth, T. R., & Leidner, D. E. (2002). Leadership Effectiveness in Global Virtual Teams. *Journal of Management Information Systems, 18*(3), 7–40. doi:10.1080/07421222.2002.11045697

Kerr, S., & Jermier, J. M. (1978). Substitutes for leadership: Their meaning and measurement. *Organizational Behavior and Human Performance, 22*(3), 375–403. doi:10.1016/0030-5073(78)90023-5

Kidder, L. & Judd, C. M. (1986). *Research methods in social relations (5th ed.)*. New York: Holt, Rinehart & Winston.

Kirk, J., & Miller, M. L. (1986). *Reliability and Validity in Qualitative Research*. London: Sage.

Kirkman, B. L., & Rosen, B. (1997). A model of work team empowerment. In R. W. Woodman & W. A. Pasmore (Eds.), *Research in organizational change and development, vol. 10* (pp. 131–167). Greenwich, CT: JAI Press.

Kirkman, B. L., & Rosen, B. (2000). Powering up teams. *Organizational Dynamics, 28*(3), 48–66. doi:10.1016/s0090-2616(00)88449-1

Kirkman, B. L., Rosen, B., Gibson, C. B., Tesluk, P. E., & McPherson, S. O. (2002). Five challenges to virtual team success: Lessons from Sabre, Inc. *The Academy of Management Executive, 16*(3), 67–79. doi:10.5465/ame.2002.8540322

Kirkman, B. L., & Shapiro, D. L. (2001). The Impact of Cultural Values on Job Satisfaction and Organizational Commitment in Self-Managing Work Teams: The Mediating Role of Employee Resistance. *Academy of Management Journal, 44*(3), 557–569. doi:10.2307/3069370

Klein, K. J., Ziegert, J. C., Knight, A. P., & Xiao, Y. (2006). Dynamic Delegation: Shared, Hierarchical, and Deindividualized Leadership in Extreme Action Teams. *Administrative Science Quarterly, 51*(4), 590–621. doi:10.2189/asqu.51.4.590

Konradt, U., & Hoch, J. E. (2007). A Work Roles and Leadership Functions of Managers in Virtual Teams. *International Journal of e-Collaboration, 3*(2), 16–35. doi:10.4018/jec.2007040102

Konst, D., & Van Breukelen, W. (2005). Effects of hierarchical positions of target persons on social inference: Schema use and schema content in perceiving leaders and subordinates. In B. Schyns & J. R. Meindl (Eds.), *Implicit leadership theories: Essays and explorations* (pp. 305–332). Greenwich, CT: Information Age Publishing.

Kozlowski, S. W. J., & Ilgen, D. R. (2006). Enhancing the Effectiveness of Work Groups and Teams. *Psychological Science, 7*(3), 77–124. doi:10.1111/j.1529-1006.2006.00030.x

Kozlowski, S. W. J. (2015). Advancing research on team process dynamics. *Organizational Psychology Review, 5*(4), 270–299. doi:10.1177/2041386614533586

Kukenberger, M. (2012). *A shared leadership classification and multi-level exploration of compositional antecedents and team and individual outcomes*. Unpublished doctoral dissertation, University of Connecticut, Storrs.

Lau, D., & Murnighan, J. (1998). Demographic diversity and faultlines: The compositional dynamics of organizational groups. *Academy of Management Review, 23*, 325–340.

Lee, Y. T., Masuda, A., Fu, X., & Reiche, B. S. (2018). Navigating between Home, Host, and Global: Consequences of Multicultural Team Members' Identity Configurations. *Academy of Management Discoveries*, 4(2), 180-201. doi:10.5465/amd.2016.0063

Liao, C. (2017). Leadership in virtual teams: A multilevel perspective. *Human Resource Management Review, 27*(4), 648–659. doi:10.1016/j.hrmr.2016.12.010

Lord, R.G., Foti, R.J., & Phillips, J. S. (1982). A theory of leadership categorization. In J. G. Hunt, U. Sekaran, & C. A. Schriesheim (Eds.), *Leadership: Beyond establishment views*. Carbondale: Southern Illinois University Press.

Malhotra, A., Majchrzak, A., & Rosen, B. (2007). Leading Virtual Teams. *Academy of Management Perspectives, 21*(1), 60–70. doi:10.5465/amp.2007.24286164

Malone, T. W. (1987). Modeling Coordination in Organizations and Markets. *Management Science, 33*(10), 1317–1332. doi:10.1287/mnsc.33.10.1317

Malone, T. W., & Crowston, K. (1994). The interdisciplinary study of coordination. *ACM Computing Surveys, 26*(1), 87–119. doi:10.1145/174666.174668

Maloney, M. M., Bresman, H., Zellmer-Bruhn, M. E., & Beaver, G. R. (2016). Contextualization and Context Theorizing in Teams Research: A Look Back and a Path Forward. *The Academy of Management Annals, 10*(1), 891–942. doi:10.1080/19416520.2016.1161964

Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A Temporally Based Framework and Taxonomy of Team Processes. *The Academy of Management Review, 26*(3), 356. doi:10.2307/259182

Martins, L. L., Gilson, L. L., & Maynard, M. T. (2004). Virtual Teams: What Do We Know and Where Do We Go From Here? *Journal of Management, 30*(6), 805–835. doi:10.1016/j.jm.2004.05.002

Mathieu, J., Maynard, M. T., Rapp, T., & Gilson, L. (2008). Team Effectiveness 1997-2007: A Review of Recent Advancements and a Glimpse Into the Future. *Journal of Management, 34*(3), 410–476. doi:10.1177/0149206308316061

Matveev, A. V., & Nelson, P. E. (2004). Cross Cultural Communication Competence and Multicultural Team Performance. *International Journal of Cross Cultural Management, 4*(2), 253–270. doi:10.1177/1470595804044752

Mayo, M., Meindl, J. R., & Pastor, J. (2003). Shared leadership in work teams. A social network approach. In C. L. Pearce & J. A. Conger (Eds.), *Shared Leadership: Reframing the Hows and Whys of Leadership* (pp. 193-214). Thousand Oaks, CA: Sage Publications.

McDonough, E. F., Kahnb, K. B., & Barczaka, G. (2001). An investigation of the use of global, virtual, and colocated new product development teams. *Journal of Product Innovation Management, 18*(2), 110–120. doi:10.1111/1540-5885.1820110

McGrath, J. E. (1962). *Leadership behavior: Requirements for leadership training*. Prepared for U.S. Civil Service Commission Office of Career Development, Washington, D.C.

McIntyre, H.H.; and Foti R.J. (2013) The impact of shared leadership on teamwork mental models and performance in self-directed teams. *Group Processes & Intergroup Relations, 16*(1), 46–57. doi:10.1177/1368430211422923

Mehra, A., Smith, B. R., Dixon, A. L., & Robertson, B. (2006). Distributed leadership in teams: The network of leadership perceptions and team performance. *The Leadership Quarterly, 17*(3), 232–245. doi:10.1016/j.leaqua.2006.02.003

Mielonen, J. (2011) *Making sense of shared leadership. A case study of leadership processes and practices without formal leadership structure in the team context*. Acta Universitatis Lappeenrantaensis 451.

Miles, M. B., & Huberman, A. M. (1984). Drawing Valid Meaning from Qualitative Data: Toward a Shared Craft. *Educational Researcher, 13*(5), 20-30. doi:10.2307/1174243

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis (2nd ed.)*. London: Sage Publications.

Mohrman, S. A., Cohen, S. G., & Mohrman, A. M. Jr. (1995). *Designing team-based organizations: New forms for knowledge work*. San Francisco, CA: Jossey-Bass.

Montoya-Weiss, M. M., Massey, A. P., & Song, M. (2001). Getting It Together: Temporal Coordination and Conflict Management in Global Virtual Teams. *Academy of Management Journal, 44*(6), 1251–1262. doi:10.2307/3069399

Morgeson, F. P., DeRue, D. S., & Karam, E. P. (2010). Leadership in Teams: A Functional Approach to Understanding Leadership Structures and Processes. *Journal of Management, 36*(1), 5–39. doi:10.1177/0149206309347376

Mortensen, M., & Haas, M. R. (2018) Perspective—Rethinking Teams: From Bounded Membership to Dynamic Participation. *Organization Science, 29*(2), 341-355. doi:10.1287/orsc.2017.1198

Muethel, M., Gehrlein, S., & Hoegl, M. (2012). Socio-demographic factors and shared leadership behaviors in dispersed teams: Implications for human resource

management. *Human Resource Management, 51*(4), 525–548. doi:10.1002/hrm.21488

Muethel, M., & Hoegl, M. (2010). Cultural and societal influences on shared leadership in globally dispersed teams. *Journal of International Management, 16*(3), 234–246. doi:10.1016/j.intman.2010.06.003

Nidumolu, S. (1995). The Effect of Coordination and Uncertainty on Software Project Performance: Residual Performance Risk as an Intervening Variable. *Information Systems Research, 6*(3), 191–219. doi:10.1287/isre.6.3.191

O'Leary, M. B., & Cummings, J. N. (2007). The Spatial, Temporal, and Configurational Characteristics of Geographic Dispersion in Teams. *MIS Quarterly, 31*(3), 433-452. doi:10.2307/25148802

O'Reilly, K., Paper, D., & Marx, S. (2012). Demystifying Grounded Theory for Business Research. *Organizational Research Methods, 15*(2), 247–262. doi:10.1177/1094428111434559

Oldham, G. R., & Hackman, J. R. (2010). Not what it was and not what it will be: The future of job design research. *Journal of Organizational Behavior, 31*(2-3), 463–479. doi:10.1002/job.678

Parry, K. W. (1998). Grounded theory and social process: A new direction for leadership research. *The Leadership Quarterly, 9*(1), 85–105. doi:10.1016/s1048-9843(98)90043-1

Patton, M. Q. (2002). Two Decades of Developments in Qualitative Inquiry. *Qualitative Social Work, 1*(3), 261–283. doi:10.1177/1473325002001003636

Pauleen, D. J. (2003). An Inductively Derived Model of Leader-Initiated Relationship Building with Virtual Team Members. *Journal of Management Information Systems, 20*(3), 227–256. doi:10.1080/07421222.2003.11045771

Paunova, M. & Lee, Y-t. (2016). Collective global leadership in self-managed multicultural teams: The role of team goal orientation. In M. Mendenhall, J. Osland, & L. Li (Eds.), *Advances in Global Leadership*, volume 9. (pp. 185-208). Emerald Group Publishing Limited.

Pearce, C. L. (2004). The future of leadership: Combining vertical and shared leadership to transform knowledge work. *The Academy of Management Executive, 18*(1), 47–57. doi:10.5465/ame.2004.12690298

Pearce, C. L., & Conger, J. A. (2003). All those years ago: The historical underpinnings of shared leadership. In C. L. Pearce & J. A. Conger (Eds.), *Shared Leadership: Reframing the Hows and Whys of Leadership* (pp. 1-18). Thousand Oaks, CA: Sage Publications.

Pearce, C. L., & Manz, C. C. (2005). The new silver bullets of leadership: The importance of self-and shared leadership in knowledge work. *Organizational Dynamics, 34*(2), 130-140. doi:10.1016/j.orgdyn.2005.03.003

Pearce, C. L., Perry, M. L., & Sims, H. P. (2001). Shared leadership: Relationship management to improve nonprofit organization effectiveness. In T. D. Connors (Ed.), *The Nonprofit Handbook: Management* (pp. 624-641). New York, NY: Wiley

Pearce, C. L., & Sims, H. P. (2002). Vertical versus shared leadership as predictors of the effectiveness of change management teams: An examination of aversive, directive, transactional, transformational, and empowering leader behaviors. *Group Dynamics: Theory, Research, and Practice, 6*(2), 172–197. doi:10.1037/1089-2699.6.2.172

Pearce, C. L., Yoo, Y., & Alavi, M. (2004). Leadership, social work, and virtual teams: The relative influence of vertical vs. shared leadership in the nonprofit section.

In R. E. Riggio & S. Smith Orr (Eds.), *Improving leadership in nonprofit organizations* (pp. 180–203). San Francisco, CA: Jossey-Bass.
Pfeffer, J. (1985). Organizational Demography: Implications for Management. *California Management Review, 28*(1), 67–81. doi:10.2307/41165170
Purvanova, R. K., & Bono, J. E. (2009). Transformational leadership in context: Face-to-face and virtual teams. *The Leadership Quarterly, 20*(3), 343–357. doi:10.1016/j.leaqua.2009.03.004
Ragin C. C. (1997). Turning the Tables: How Case-Oriented Research Challenges Variable-Oriented Research. *Comparative Social Research, 16*, 27-42.
Ramthun, A. J., & Matkin, G. S. (2012). Multicultural Shared Leadership. *Journal of Leadership & Organizational Studies, 19*(3), 303–314. doi:10.1177/1548051812444129
Reiche, B. S., Bird, A., Mendenhall, M. E., & Osland, J. S. (2017). Contextualizing leadership: a typology of global leadership roles. *Journal of International Business Studies, 48*(5), 552–572. doi:10.1057/s41267-016-0030-3
Reid, F. J. M., Malinek, V., Stott, C. J. T., & Evans, J. S. B. T. (1996). The messaging threshold in computer-mediated communication. *Ergonomics, 39*(8), 1017–1037. doi:10.1080/00140139608964525
Robert, L. P. (2013). *A multi-level analysis of the impact of shared leadership in diverse virtual teams*. Proceedings of the 2013 Conference on Computer Supported Cooperative Work, ACM 2013, 363-374. doi:10.1145/2441776.2441818
Rousseau, D. M., & Fried, Y. (2001). Location, location, location: contextualizing organizational research. *Journal of Organizational Behavior, 22*(1), 1–13. doi:10.1002/job.78
Saarinen, J. (2016). *Managing global virtual teams*. Doctoral dissertations 184/2016, Aalto University publication series, Espoo.
Schneier, C. E., & Goktepe, J. R. (1983). Issues in emergent leadership: The contingency model of leadership, leader sex, leader behavior. In H. H. Blumberg, A. P. Hare, V. Kent, & M. F. Davies (Eds.), *Small groups and social interactions, vol. 1* (pp. 413– 421). Chichester: Wiley.
Schwaber, K., & Beedle, M. (2001). *Agile Software Development with Scrum*. Upper Saddle River: Prentice Hall.
Shamir, B. (2007). From passive recipients to active co-producers: Followers' roles in the leadership process. In B. Shamir, R. Pillai, M. Bligh, & M. Uhl-Bien (Eds.), *Follower-centered perspectives on leadership: A tribute to the memory of James R. Meindl*. Charlotte, NC: Information Age Publishers.
Short, J., Williams, E., & Christie, B. (1976). *The Social Psychology of Telecommunications*. London: Wiley.
SHRM, Society of Human Resource Management (2013). *Workplace forecast, The Top Workplace Trends According to HR Professionals. Annual survey 2013.* Retrieved from: https://www.shrm.org/Research/FutureWorkplaceTrends/Documents
Shuffler, M. L., Wiese, C., Salas, E., & Burke, C. S. (2010). Leading One Another Across Time and Space: Exploring Shared Leadership Functions in Virtual Teams. *Revista de Psicología Del Trabajo y de Las Organizaciones, 26*(1), 3–17. doi:10.5093/tr2010v26n1a1
Singleton, R. A. J., & Straits, B. C. (2009). *Approaches to social research (5th ed.)*. New York, NY: Oxford University Press. (Hard copy at library, PDFs at course Zotero library)
Sivasubramaniam N., Murry, W. D., Avolio, B. J., Jung, D. I. (2002). A Longitudinal Model of the Effects of Team Leadership and Group Potency on Group

Performance. *Group & Organization Management, 27*(1), 66–96. doi:10.1177/1059601102027001005
Sivunen, A., & Nordbäck, E. (2015). Social Presence as a Multi-Dimensional Group Construct in 3D Virtual Environments. *Journal of Computer-Mediated Communication, 20*(1), 19–36. doi:10.1111/jcc4.12090
Small, E. E. (2007). *Shared leadership: A social network analysis*. Unpublished doctoral dissertation, The University of Tennessee, Knoxville, TN.
Small, E. E. & Rentsch, J. R. (2010). Shared Leadership in Teams. *Journal of Personnel Psychology, 9*(4), 203–211. doi:10.1027/1866-5888/a000017
Snow, C. C., Fjeldstad, Ø. D., & Langer, A. M. (2017). Designing the digital organization. *Journal of Organization Design, 6*(1). doi:10.1186/s41469-017-0017-y
Sproull, L., & Kiesler, S. (1986). Reducing Social Context Cues: Electronic Mail in Organizational Communication. *Management Science, 32*(11), 1492–1512. doi:10.1287/mnsc.32.11.1492
Srivastava A, Bartol, K. M., & Locke, E. A. (2006). Empowering leadership in management teams: Effects on knowledge sharing, efficacy, and performance. Academy of Management Journal, 49(6), 1239–1251. doi:10.5465/AMJ.2006.23478718
Steers, R. M., Sanchez-Runde, C. J., & Nardon, L. (2010). *Management across cultures: Challenges and strategies*. Cambridge: Cambridge University Press.
Steers, R. M., Sanchez-Runde, C., & Nardon, L. (2012). Leadership in a global context: New directions in research and theory development. *Journal of World Business, 47*(4), 479–482. doi:10.1016/j.jwb.2012.01.001
Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage Publications.
Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory (2nd ed.)*. Thousand Oaks, CA: Sage Publications.
Taras, V., Kirkman, B. L., & Steel, P. (2010). Examining the impact of Culture's Consequences: A three-decade, multilevel, meta-analytic review of Hofstede's cultural value dimensions. Journal of Applied Psychology, 95(3): 405-439. doi:10.1037/a0018938
Taylor, F. W. (1947). *The principles of scientific management*. New York, NY: Harper & Brothers.
Thatcher, S., & Patel, P. (2012). Group faultlines: A review, integration, and guide to future research. *Journal of Management, 38*(4), 969–1009. doi:10.1177/0149206311426187
Thomas, D. R. (2006). A General Inductive Approach for Analyzing Qualitative Evaluation Data. *American Journal of Evaluation, 27*(2), 237–246. doi:10.1177/1098214005283748
Uhl-Bien, M. (2006). Relational Leadership Theory: Exploring the social processes of leadership and organizing. *The Leadership Quarterly, 17*(6), 654–676. doi:10.1016/j.leaqua.2006.10.007
Uhl-Bien, M., Riggio, R. E., Lowe, K. B., & Carsten, M. K. (2014). Followership theory: A review and research agenda. *The Leadership Quarterly, 25*(1), 83–104. doi:10.1016/j.leaqua.2013.11.007
Van Knippenberg, D., De Dreu, C. K. W., & Homan, A. C. (2004). Work Group Diversity and Group Performance: An Integrative Model and Research Agenda. *Journal of Applied Psychology, 89*(6), 1008–1022. doi:10.1037/0021-9010.89.6.1008

Van Knippenberg, D., & Schippers, M. C. (2007). Work Group Diversity. *Annual Review of Psychology, 58*(1), 515–541. doi:10.1146/annurev.psych.58.110405.085546

Wang, D., Waldman, D., & Zhang, Z. (2014). A Meta-analysis of shared leadership and team effectiveness. *Journal of Applied Psychology, 99*, 181-198.

Warkentin, M. E., Sayeed, L., & Hightower, R. (1997). Virtual Teams versus Face-to-Face Teams: An Exploratory Study of a Web-based Conference System. *Decision Sciences, 28*(4), 975–996. doi:10.1111/j.1540-5915.1997.tb01338.x

Welch, C., & Piekkari, R. (2006). Crossing language boundaries: Qualitative interviewing in international business. *Management International Review, 46*(4), 417–437. doi:10.1007/s11575-006-0099-1

Wheelan, S. A., & Johnston, F. (1996). The Role of Informal Member Leaders in a System Containing Formal Leaders. *Small Group Research, 27*(1), 33–55. doi:10.1177/1046496496271002

Williams, K. Y., & O'Reilly, C. A. (1998). Demography and diversity in organizations: a review of 40 years of research. In B. Staw & L. Cummings (Eds.), *Research in Organizational Behavior, Vol. 20*. Greenwich, CT: JAI Press.

Yammarino, F. J. (1996). Group leadership: A levels-of-analysis perspective. In M. A. West (Ed.), *Handbook of 724 work group psychology*. New York, NY: Wiley.

Yammarino, F. J., Salas, E., Serban, A., Shirreffs, K., & Shuffler, M. L. (2012). Collectivistic Leadership Approaches: Putting the "We" in Leadership Science and Practice. *Industrial and Organizational Psychology, 5*(04), 382–402. doi:10.1111/j.1754-9434.2012.01467.x

Yin, R. K. (1994). *Case study research: Design and methods, 2nd ed.* Newbury Park, CA: Sage Publications.

Yin R. K. (2009). *Case study research: Design and methods, 4th ed.* London: Sage Publications.

Yukl, G., Gordon, A., & Taber, T. (2002). A Hierarchical Taxonomy of Leadership Behavior: Integrating a Half Century of Behavior Research. *Journal of Leadership & Organizational Studies, 9*(1), 15–32. doi:10.1177/107179190200900102

Yukl, G. (2012). Effective Leadership Behavior: What We Know and What Questions Need More Attention. *Academy of Management Perspectives, 26*(4), 66–85. doi:10.5465/amp.2012.0088

Yukl, G. (2013). *Leadership in organizations, 8th ed.* Harlow: Pearson Education.

Zaccaro, S. J., Rittman, A. L., & Marks, M. A. (2001). Team leadership. *The Leadership Quarterly, 12*(4), 451–483. doi:10.1016/s1048-9843(01)00093-5

Zaccaro, S. J., Heinen, B., & Shuffler, M. (2009). Team leadership and team effectiveness. In E. Salas, G. F. Goodwin, & C. S. Burke (Eds.), *Team effectiveness in complex organizations: Cross-disciplinary perspectives and approaches* (pp. 83-111). New York, NY: Routledge.

Zander, L. (1997). *Licence to lead: An 18 country study of the relationship between Employees' preferences regarding inter- personal leadership and national culture*. Published doctoral dissertation, Institute of International Business, Stockholm School of Economics, Stockholm.

Zander, L., & Butler, C. L. (2010). Leadership modes: Success strategies for multicultural teams. *Scandinavian Journal of Management, 26*(3), 258–267. doi:10.1016/j.scaman.2010.06.002

Zander, L., Mockaitis, A. I., & Butler, C. L. (2012). Leading global teams. *Journal of World Business, 47*(4), 592–603. doi:10.1016/j.jwb.2012.01.012

Zander L., Butler, C. L., Mockaitis, A. I., Herbert, K., Lauring, J., Mäkelä, K., Paunova, M., Umans, T., & Zettinig, P. (2015). Team-based global organizations: The

future of global organizing. *Progress in International Business Research, 10*, 227–243. doi:10.1108/s1745-886220150000010008

Zhang X, & Bartol, K.M. (2010). Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. Academy of Management Journal, 53(1), 107–128. doi:10.5465/AMJ.2010.48037118

Appendix 1: Interview Guide

Team description

1. Describe the team that you are working in, and your own role in your team.
2. How about other team members roles in your team – do you have different complementary roles and expertise or similar?
3. How much does your work tasks depend on the work of others in your team?
    a. Who do you mostly depend on? Why?

Work routines and coordination

1. Describe the work routines in your team
    a. Do you have any ground rules and work routines in this team
        i. How have you developed these? (Team involved?)
    b. Meetings
        i. Aim, agenda?
        ii. How often, place & time, how are these negotiated?
        iii. Challenges due to the global work environment?
    c. Appointed work practices for people collaborating over distance in space and time?
        i. Scheduling
        ii. Technology use
        iii. How to be in contact
        iv. Transparency of work?
2. Who in your project team do you need to communicate or exchange information with to do your work? How do you communicate, how often and over what tools with them? Why these choices? (distinguish between local and distant colleagues)
3. What problems do you encounter when trying to communicate, coordinate or ß information with them?
    a. How are these problems addressed, or how could they be addressed effectively?
    b. If not mentioned: Have you encountered other problems such as
        i. Response delay? Frequent clarification? Double work? Conflicting priorities?

Shared leadership

4. Name the persons you think are influential persons in your team
    a. How are person X influential? (ask for each person)
        i. Could you think about a concrete example how they have been influential
    b. Why are person X influential? (ask for each person)
5. The team members you not mentioned to be influential, what make them less influential? Think about one person at a time.

6. Do you consider yourself to be an influential person in the team?
    a. If so, how do you influence others in the team?
    b. If not, why not?
7. Specific leadership functions: In the following questions, I will dig deeper into some specific functions related to your teamwork. I want you to think about who do you rely on for the carrying out the following functions, and why. (Based on Yukl (2002) taxonomy of leadership behaviors)
    c. Task related leadership functions: If you think about task-related work, who takes care of the following functions and how?
        i. Planning of new tasks, what should be done(next week/month) *
        ii. Define goals *
        iii. Delegate tasks*
        iv. Planning of schedule*
        v. Monitor operations and performance*
    d. Social related leadership functions: If you think about social relations, who put emphasis on the following functions and how?
        i. Provide support and encouragement*
        ii. Provide recognition for achievements and contributions*
        iii. Consult with team members when making decisions*
        iv. Encourage members to take initiative in problem solving*
    e. If you think about change behavior, who put emphasis on these tasks and how?
        i. Propose a new strategy or vision*
        ii. Encourage innovative thinking*
        iii. Take risks to promote necessary changes*

    *If they mention one or several persons, ask about what the meaning of that is, how does it influence that several persons put emphasis this, or that only one person is in charge?

8. How would you describe team leadership, what does that mean for you?
    f. What functions are to be performed by the formal leader? Why?
    g. How is status visible in your team, in your organization, and in your country?
        i. Do you feel that people in a higher position than you should have more power due to their position in the hierarchy or do you feel that people in different rank should be viewed as being more on the same level? Do you feel that people in a higher position should make most decisions or that you should make them together?
    h. What functions can as well be performed by the team members? Why? (May pick up things from earlier discussion)
        i. Have the formal leader in any way supported this direction?
9. Can you mention any concrete leadership challenges in your team
    i. Related to coordination of team work? related to shared leadership?
        i. E.g. planning of schedule, delegating tasks, keeping up with time table, transparency
        ii. Have you developed any mechanisms for overcoming these challenges?

iii. How does sharing of responsibilities in the team influence team coordination? (+ engagement of team members)

Team effectiveness

10. How well does your team accomplish work on time? What cause work delays?
11. How efficiently do you consider your team to work together? What hinders you to work together efficiently/what enable you to work together efficiently?
12. Do you have clear goals that you accomplish as a team in your team? Why/why not?
13. Describe your typical feelings about your work and your team. Why makes you feel that way? (Satisfied with work and your team?)
    a. work task, colleagues, global work environment

Appendix 2: Coding Scheme Study 1

Level 1	Level 2	Level 3	Level 4
Task Function Categories	Initiation	Content	a) Give vs b) ask for new information
			a) Give vs b) ask for solution suggestion
			a) Give vs b) ask for assistance with content
			Monitoring the content of the group
			Question for a) clarification or b) repetition
			Question for confirmation
		Process	Goal specification
			Procedural strategy
			Task delegation
			Speakturn delegation
			Spatial direction
			Pushing act that keep task moving forward
			a) Give vs b) ask for new process information
			Providing assistance with process
			Monitoring the process of the group
			Question for a) clarification or b) repeation
			Question for confirmation
			Question for procedural help
			Consulting with member/group for strategy
			Consulting with member/group for decision
			Consulting with member/group for opinion
	Res-pons	Content	Agree with/accept proposed content
			Confirm proposed content
			Clarify proposed content
			Elaborating proposed content
			Responding with content information
			Repeat previously proposed content
			Disagree with proposed content
		Process	Agree with/accept proposed process
			Confirmation
			Clarify proposed content
			Elaborate propose content
			Respond with process information
			Repeat previously proposed process
			Disagree with proposed process
Socio-emotional Function Categories	Initiation		Supporting
			Motivation
			Recognizing group encouragement
			Recognizing member encouragement
			Personal comment
			Phatics
			Positive emotion
	Res-pons		Supporting
			Motivation
			Recognizing group encouragement
			Recognizing member encouragement
			Personal comment
			Phatics
			Positive emotion
Non-production Function Categories	Task Digression		Task digression
			Summing up
	Uniterpretable		
	Digression		

Appendix 3: Study 1

Nordbäck, E; Sivunen, A. 2013. Leadership behaviors in virtual team meetings taking place in a 3D virtual world. Proceedings of the 46th Hawaii International Conference on System Sciences, Wailea, HI, USA, January 7-10, pp. 863-872.

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