Key Elements that Enable Leaders to Foster Creativity in Virtual Work
IRIS HUMALA

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ACADEMIC DISSERTATION
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UNIVERSITY OF TAMPERE
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The originality of this thesis has been checked using the Turnitin OriginalityCheck service in accordance with the quality management system of the University of Tampere.
Writing this doctoral thesis in the field of vocational education has offered an interesting learning experience to me throughout several years. Especially writing scientific articles has taught me a lot how the research community operates. Several kinds of individual, collegial and organizational contributions have enabled this research initiative to come to an end. First of all, I would like to express my very best thanks to my encouraging supervisors University Lecturer, PhD Reijo Kupiainen and Professor Petri Nokelainen. Petri Nokelainen supervised the early phases of my work offering his broad scientific expertise to me to solve especially the deadlocks in the early phases. Reijo Kupiainen has been my primary supervisor during the last phases of the thesis and has given precise and constructive comments to me for finalizing especially the latest articles. It has been my honor to have Professor Niki Panteli from Royal Holloway University of London, School of Management, UK, and Professor Riitta Viitala from University of Vaasa, Finland, as the examiners of my thesis. I would like to express my warmest gratitude to their feedback which contributed positively to my manuscript. I also wish to express my best thanks to Professor Susanne Weber from Ludwig-Maximilians-Universität München, Germany, for kindly agreeing to act as an opponent at my doctoral defense.

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Rajamäki, July 2018

Iris Humala
In this dissertation, I explore the key elements that enable leaders to foster creativity in a virtual work environment; I thus contribute to the scientific discussion that increases our understanding of the links between leadership and creativity in virtual work. The research topic was investigated in four separate studies (1–4). The dissertation features a conceptual part and an empirical part, each of which consists of two studies. I used a qualitative research approach as the primary research methodology and combined several methods and the theoretical perspectives of both business-oriented and pedagogical research to understand the research topic more deeply and achieve more productive and reliable results.

In Study 1, I executed a descriptive, interpretative concept analysis that clarified the fundamental concepts of the research—virtual work, creativity, and leadership—and determined how they are connected to one another in the research literature. Study 1 provides a map of the central concepts and defines leadership that fosters creativity in virtual work. The results show that leaders who efficiently foster creativity in virtual work understand the complex, multidimensional, and multilevel essence of virtuality at work and the role of both virtual and face-to-face interaction in mutual collaboration in organizations and networks. This kind of leadership utilizes both leadership approaches to support inspiring interaction and collective creativity at work and understands the significance of interpersonal interaction in the virtual work context and ways to exploit it.

In Study 2, I applied myself to the philosophical underpinning of the study and explored the applicability of heterarchy as an ontological commitment to leadership for encouraging creativity in virtual work. The results show that a heterarchical ontological commitment is appropriate to leadership regarding creativity in virtual work. Heterarchy can help leaders comprehensively understand their roles in virtual networked work, develop supportive orchestration abilities, nurture co-workers’ creativity, and develop the most appropriate organizational culture possible. The results of Study 2 indicate that the three focal leadership challenges around creativity—understanding virtuality as a networked context, developing a virtual leadership mindset, and leading meaningful work for progress—and the two heterarchical leadership attributes of distributed
authority to orchestrate work and supportive interdependent interaction are very strongly linked to one another.

In Study 3, I investigated (a) the experiences of the key people in a case start-up regarding the learning challenges in leadership and collaboration toward creativity in virtual work and the meanings attributed to those experiences and (b) the measures they see as necessary to meet those challenges. The study was a single in-depth case study in the early development phase of a start-up operating in a global sustainable engineering sector. Study 3 reveals that co-creative and assertive coaching leadership in a start-up advance the stimulation of creativity and improve business forecasting and decision making that can contribute to superior credibility among customers.

In Study 4, I developed a descriptive typology based on empirical data from a multiple-case study to identify and describe how leadership occurs in virtual work in various types of companies. Study 4 supports the conception of the present trend in leadership toward type B (the “collective mind”), especially in today’s realities of globally operating networks and more technologically advanced contexts. The collective mind operates via a virtual mindset. Its characteristics include shared values, meaningful work, collective intelligence, conscious reflection, transparency, coaching, empowering leadership by example, effective multichannel interaction, and assertiveness.

Based on the research findings, I argue for a coaching and distributed leadership culture to help leaders inspire creativity in a virtual workforce. This culture means coaching people to flourish, supporting their professional growth, adopting distributed leadership by example, and encouraging collective creation. The main factors contributing to coaching and distributed leadership in virtual work are (a) adopting a virtual leadership mindset to support diverse knowledge management, (b) respecting collective intelligence to provide a seedbed for critical reflection and testing, and (c) developing social bonding skills, tools, and spaces to offer opportunities for learning and growth. A leader with a virtual mindset understands virtuality as a networked context realizes that leadership and the work setting are linked and that it is necessary to integrate the use of technology with the mindset for creativity, collaboration, and multimedia productivity. Respect for collective intelligence incorporates shared power and shared responsibility, paying attention to knowledge management, skillful recruitment and orientation, critical reflection and testing, focusing on people, and a climate of microinteraction. Moreover, leaders who care for their people and communicate with them actively and transparently through multiple channels while being visible in their cooperation with both employees and partners can better develop social bonds within the virtual work context and thus enhance creativity.
This dissertation strengthens the benefits from integral theoretical pluralism in the future development of leadership theory toward creativity in virtual work. The findings indicate that leaders who advocate humanistic values and so care for and empower people support their meaningfulness at work and professional growth and that leaders who foster collective creativity can contribute to the common good of society.

Keywords: leadership, virtual work, collective creativity, heterarchy, coaching and distributed leadership, virtual leadership mindset, collective intelligence, skills, tools, and spaces for social bonding
TIIVISTELMÄ

Tämä väitöskirjatutkimus tarkastelee keskeisiä elementtejä, jotka antavat johtajille mahdollisuksia edistää luovuutta virtuaalisissa työympäristöissä. Tutkimus tuottaa kontribuutiota tieteelliseen keskusteluun lisäämällä ymmärrystä johtamisen ja luovuuden välisistä yhteyksistä virtuaalisessa työssä. Artikkeliväitöskirja koostuu neljästä osajulkaisusta (tutkimukset 1-4). Väitöskirja käsittelee käsitteellisen ja empirisen osan, joista kumpaankin kuuluu kaksi tutkimusta. Tutkimuksessa on sovellettu pääasiassa laadullisen tutkimuksen lähestymistapaa. Tutkimuksessa on lisäksi yhdistetty liiketoimintaan ja kasvatustieteelliseen tutkimukseen liittyviä teoreettisia näkökulmia tutkimusaiheen ymmärryksen sekä tulosten laadun ja luotettavuuden lisäämiseksi.

Tutkimuksen pohjalta toteutettu tutkimus 1 on kuiva, tulkitsena käsiteanalyysi, joka selkeytti väitöstutkimuksen keskeisiä käsitteitä—virtuaalista työtä, luovuutta ja johtajuutta—ja määritti niiden välisiä yhteyksiä. Tutkimus 1 tuotti keskeistä käsitteistä koostuvan käsitekartan ja määrittelivat luovuutta edistävän johtamisen virtuaalisessa työssä. Sen tulokset osoittavat, että virtuaalisessa työssä tehokkaasti luovuutta edistävät johtajat ymmärtävät virtuaalisuuden monitahoinen, moniulotteinen ja monitasoinen olemus sekä virtuaalisen ja kasvokkaisen vuorovaikutuksen roolit organisaatioiden sisäisessä ja ulkoisessa yhteistyössä. Tämäntyyppinen johtajuus ammentaa tietämystä vuorovaikutuksesta ja yhteisöllistää luovuutta tukevista johtajuuden lähestymistavoista, ymmärtää ihmisten välisen vuorovaikutuksen merkityksen virtuaalisessa työssä ja tiedostaa keinoja vuorovaikutuksen hyödyntämiseen.

Tutkimus 2 paneutui väitöstutkimuksen filosofisiin perusteisiin ja tarkasti, miten heterarkia ontologisena sitoumuksena soveltuu luovuutta edistävän johtamiseen virtuaalisessa työssä. Tulosten mukaan heterarkin ontologinen sitoumus sopii luovuuteen liittyvän virtuaaliseen työhön. Heterarkia voi auttaa johtajia ymmärtämään paremmin ja kokonaisvaltaisesti oman roolinsa virtuaalisessa verkottuneessa työssä, kehittämään kannustavan orkestroinnin kykyjään, tukemaan työntekijöiden luovuutta sekä kehittämään toimivaa organisaatiokulttuuria. Kolme keskeistä luovuutta edistää johtamisen haastetta—virtuaalisuuden ymmärtämisen verkottuneena kontekstina, virtuaalisen ajattelutavan kehittämisen ja kehittymistä korostavan merkityksellisen työn johtaminen—sekä kaksi heterarkiaan liittyvää johtamisen ominaisuutta—hajautettu
valta työn orkeistroinnissa ja toisiaan tukeva keskinäinen vuorovaikutus ovat tulosten mukaan hyvin vahvasti yhteydessä toisiinsa.

Tutkimus 3 tarkasteli startup-yrityksessä (a) avainhenkilöiden kokemuksia virtuaalisen työn johtamisen haasteista, jotka liittyivät luovuutta edistävään johtamiseen ja yhteistyöhön sekä näihin kokemuksiin liittyneitä merkityksiä ja (b) tarpeellisia keinoja, joilla haastateltavien mielestä näihin haasteisiin vastataan. Tämä tapaustutkimus kohdistui yhteen kansainvälisellä kestävän kehityksen teknologia-alalla toimivaan alkuvaiheen startup-yritykseen. Tulosten perusteella startup-yrityksessä kollektiivista luovuutta tukea, jämmäkkää ja valmentava johtaminen luo mahdollisuuksia edistää luovuutta sekä parantaa liiketoiminnan ennakointia ja päätöksentekoa kohti yhä parempaa asiakasuskollisuutta.


Tutkimustulosten pohjalta tutkijana väitän valmentavan, hajautetun johtamiskulttuurin auttavan johtaja edistämään virtuaalista työtä tekevien ihmisten luovuutta. Tällaisessa johtamiskulttuurissa ihmisiä valmennetaan edistämään, heidän ammatillista kasvuaan tuetaan, johdetaan hajautetusti esimerkkejä antaen sekä rohkaistaan yhteisölliselle luovuuteen. Valmentava ja hajautettuun johtamiseen vaikuttavat keskeiset tekijät virtuaalisessa työssä ovat: (a) virtuaalisen ajattelutavan sisäistäminen tukemaan monimuotoista tiedolla johtamista, (b) kollektiivisen älykkyyden arvostaminen, kriittisten pohdintojen ja julkaisujen kasvualustana, ja (c) sosiaalisia siteitä vahvistavien taitojen, työkalujen ja tilojen kehittäminen oppimista ja kasvua varten. Virtuaalisen ajattelutavan sisäistävät johtaja käsittää virtuaalisuuden verkottuneena toimintaympäristöinä. Hän ymmärtää johtamisen ja kontekstin välisen kytökksen sekä tiedostaa, että teknologian soveltaminen sekä luovuutta, yhteistyötä ja tuottavuutta multimediaan hyödynnämiseen korostava näkemys on välttämätöntä yhdistää toisiinsa. Kollektiivisen älykkyyden arvostaminen kiinnittyy jaettuun valtaan ja vastuuseen sekä kiinnittää huomiota tiedolla johtamiseen, taitavaan rekrytointiin ja perehdytykseen, kriittiseen pohdintaan ja kokeilemiseen sekä keskittyä ihmisiin ja ihmisten keskinäisen
mikrovuorovaikutuksen ilmapiiriin. Johtajat, jotka pitävät huolta työntekijöistään, viestivät heidän kanssaan aktiivisesti ja monikanavaisesti ja tulevat näkyviksi työntekijöilleen ja yhteistyökumppaneilleen, ovat kyvykkämpiä kehittämään sosiaalisia siteitä ja siten edistämään luovuutta virtuaalisessa työssä.

Tämä väitöstutkimus vahvistaa käsitystä teoreettisen pluralismin hyödyistä kehitettäessä tulevaisuudessa johtamisen teoriaa, joka edistää luovuutta virtuaalisessa työssä. Tutkimustulosten perusteella johtajat, jotka kannattavat humanistisia arvoja pitämällä huolta ihmisistä ja tarjoamalla heille uusia mahdollisuuksia, edistävät työnteen merkityksellisyyttä ja ammatillista kasvua, ja jotka vaalivat kollektiivista luovutta, voivat edistää yhteistä hyvää koko yhteiskunnassa.

Avainsanat: johtajuus, virtuaalinen työ, yhteisöllinen luovuus, heterarkia, valmentava ja hajautettu johtaminen, virtuaalinen ajattelutapa, kollektiivinen älykyys, sosiaalisten siteiden kehittämiseen liittyvät taidot, työkalut ja tilat
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LIST OF ORIGINAL PUBLICATIONS

This thesis is based on the following original publications, which are referred to in the text by the numerals 1–4.


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1 INTRODUCTION

1.1 Background and research environment

Flexible work and the changing nature of work in general are now reality for a growing number of employees. The Future of Jobs report published by the World Economic Forum (2016, p. 7) listed drivers of change such as mobile internet and cloud technology, advances in computing power and Big Data, new energy supplies and technologies, the Internet of Things, and crowdsourcing. In the coming years, advanced robotics, artificial intelligence, and advanced manufacturing and materials will evolve to change daily life and work (World Economic Forum, 2016, p. 7). Technological development creates challenges for employees and their leaders in ensuring that work is a channel through which people recognize their full potential and in recruiting, training, and managing talent. (World Economic Forum, 2016, p. 26).

“Virtual work” and “virtual workforces” refer to people working in dynamic multimedia, massive, and multiplayer social networks (Panteli, 2009) in different geographical locations, communicating both face-to-face and using information and communication technology (ICT) to manage business processes. “Virtuality” refers to a context in which companies work together in networks with customers, users of products and services, and interest groups. Besides the importance of ICT, virtuality, and mobility, today’s business leaders face rapid change, complexity, and the need to enhance innovative solutions and productivity. They are confronted with continually emerging dynamics that involve relationships between people and open communities, ethics, and managing the work-life balance and leaders’ human capital (Lane & Down, 2010).

Simultaneously, a strategic challenge is posed for a growing number of organizations to obtain creative insights for suitable solutions and enhance novel approaches. In virtual work in particular, it is crucial to find ways to use ICT effectively in leadership, organizational learning, collaboration, and how to combine individuals’ creativity with the collective creativity of the group. This knowledge offers a broader ability to see things in new ways and energizes the maximum potential for change (e.g., Sawyer & DeZutter, 2009) and helps reveal the possible effects of ICT on leadership dynamics (Avolio, Sosik, Kahai, & Baker, 2014; Guo, Dilley, & Gonzales, 2016; Nemiro, 2004).
The speed of digital development makes this even more important, because new areas are becoming subject to automation, with machines complementing and augmenting human capabilities, and people need to adapt to use their creativity in new environments (Brynjolfsson & McAfee, 2014, p. 92).

Leadership is a social interaction process (e.g., Lord & Smith, 1999). Leadership actively encourages people to find new possibilities, achieve their potential, and reach targets (Searle & Hanrahan, 2011). Leadership also balances continuous change, strategic goals, renewal, and people’s emotional and motivational processes. Facilitating communicative processes between people can be especially important in creative collaboration and empowering people (Poutanen, 2016, pp. 64–65). Empowerment has been defined as a psychological state manifested in the meaning of one’s work, competence (in the sense of self-efficacy), self-determination (indicating perceptions of freedom to choose how to initiate and carry out tasks), and the impact of one’s work (Spreitzer, 1995). Zhang and Bartol (2010) found that leaders’ encouragement of creativity moderated the link between psychological empowerment and creative process engagement. In addition to leadership, management is necessary because it provides the necessary direction to see that tasks are carried out.

In light of the increasing complexity of global and digital working life, the World Economic Forum (2016) suggested the top ten skills required for a successful working life in 2020. Creativity ranks third on the list, after complex problem solving and critical thinking. These skills are followed by collaboration and leadership skills such as people management, emotional intelligence (EI), judgment and decision making, service orientation, negotiation, and cognitive flexibility. The developments identified by the forum challenge business leaders, educators, and governments to be proactive in up-skilling and retraining people (World Economic Forum, 2016).

Leading a virtual workforce creates specific demands for leaders to understand better both the creativity that occurs when technology and human creative processes interact (Gilson, Maynard, Jones Young, Vartiainen, & Hakonen, 2015) and human consciousness and interpersonal interactions (Panteli & Chiasson, 2008). Success reinforces personal and communal professional growth, productivity, and competitiveness. The growing complexity of problems challenges leaders to piggyback the enthusiasm and experience of different people for open interaction and collective creativity inside and outside organizational, geographical, and technological boundaries. Therefore, leadership experienced in collective creativity becomes necessary to maximize the benefits of new and improved ways of working and to produce creative outcomes (Anderson, Potočnik, & Zhou, 2014; Hargadon & Bechky, 2006). Meeting this challenge requires a new kind of leadership toward creativity in virtual work to add
value in value chains, despite the dynamic and complex nature of interactions between leaders and employees (Guo et al., 2016).

The focus of leadership toward creativity in virtual work is on energizing people and enabling their relationships to initiate development processes in organizations in the digital era. Developing collective creativity requires time (Uusikylä, 2012) and reflective commitment from different contributors (Lipman-Blumen & Leavitt, 2009), and virtuality creates a socially constructed context in which leadership fully integrates. In discussing leading toward creativity, scholars have emphasized issues such as focusing on people, the power of direction, motivating and facilitating employees’ creativity, being responsible for decisions, and achieving meaningful progress toward excellence (Amabile & Kramer, 2011; Bass & Avolio, 1993; Derecskei, 2016). Based on research in management and leadership in virtual work, technology, trust, relationship building, diversity, and communication are significant factors in contributing to virtual work effectiveness (Panteli & Tucker, 2009; Quisenberry, 2011, p. 78). The challenges in virtual work are how to use the actors’ collective knowledge and intuition for the common good and to exploit their creativity and learn from their experiences to produce innovative outcomes. In general, as Hatch and Cunliffe (2006, p. 212) note, the ability of leaders to effectively mobilize their influence within organizations depends on their knowledge of and relationship with the culture and their openness to and respect for the interpretive acts of others.

To date, leadership in virtual teams and understanding modern technology and using it in leadership have attracted the most attention from scholars. Research topics include issues such as distances between people, virtual co-presence, empowerment, participation, and supportiveness to bridge the gaps between people (Avolio et al., 2014; Jarvenpaa & Leidner, 1999; Zimmermann, Wit, & Gill, 2008). The combination of leadership and creativity has thus remained unexplored in research on virtual work. Moreover, studies focusing on the real-world applications of leadership toward creativity in virtual work are scarce (Guo et al., 2016). This dissertation concentrates on this research gap and addresses a new perspective: leadership that stimulates creativity in virtual work. The thesis contributes to the scientific discussion regarding better understanding the links between leadership and creativity in virtual work. It takes note of the processes that occur at multiple levels of virtual work and how leaders influence the underlying processes and dynamics that lead to organizational outcomes (Dinh et al., 2014). Appropriate ways to lead a virtual workforce help people to commit themselves to shared targets for creative, meaningful development and organizational learning and growth. Success enhances productivity, competitiveness, and both personal and communal professional growth. In addition, leadership toward creativity in virtual
work does not rest on any particular theoretical framework. This thesis contributes to academic and managerial discussions in leading a virtual workforce toward creativity by bringing forward both theoretical and practical implications to the debates.

Inspiring creativity in virtual collaborative work contexts questions hierarchical, authoritarian leadership (Houglum, 2012) and a task-focused attitude centered on following standard rules and regulations and mistakes and deviations from performance standards (e.g., Derue, Nahrgang, Wellman, & Humphrey, 2011). Traditional views on leadership typically regard organizations as equilibrium-seeking systems with knowable futures and focus on the leader’s role in determining future desired states and directing organizational action to achieve those states (Plowman et al., 2007).

Hierarchical organizations focus on power, authority, and value control, which in practice means that leaders take on the role of planning, instructing their employees on what to do and how to do it, and carefully supervising them. A hierarchy can be effective for routine tasks but encounters difficulties in implementing an innovative, agile strategy and carrying out modernization functions, whereas new knowledge arises in creative collaboration (Adler, 2001). The task-oriented leadership style includes facilitating information acquisition and sharing in virtual communication settings and can enable the speedy development of solutions to problems (Zimmermann et al., 2008; Pinar, Zehir, Kitapçı, & Tanrıverdi, 2014). However, previous research has indicated that leaders who have a fixed mindset and focus on task-based factors are rational, normative, and less conducive of creativity (e.g., Karwowski, 2014).

Numerous scholars have conducted studies to identify the real nature of leadership. For instance, Seijts (2014) interviewed 31 senior leaders from different industries, sectors, and countries and concluded that good leaders follow a challenging and never-ending path of learning that requires keeping an open mind. This finding of good leaders as constantly open-minded learners relates to my values in leadership in general. On the other hand, different people can experience the same leadership style in various ways. Leadership is expressed differently in different cultures, and the history of leadership features several different approaches that have been well regarded in their time. Supported by my own work experience, context influences leadership; in virtual settings, especially in the fostering of creativity in a virtual workforce, some ways of leading people are more useful and relevant than others. For this thesis, changing business environments and contexts necessitates not having an interest in only one specific kind of leadership, but instead openly sensing the situations and circumstances valid at the time and familiarizing oneself with different types of leadership approaches to develop them to better suit each situation.
Especially in today’s digital era, there are similarities in leaders’ and teachers’ work to support businesses and individuals to flourish and grow. Fostering creativity in virtual work constitutes a leadership problem that extends to cover business-oriented and pedagogical thinking. To tackle this issue requires multidisciplinary research that intends to address complex real-world problems and understand them more fully. By integrating my previous knowledge in business and business research with the educational approach to leadership, my aim in this thesis is to gain a broader understanding of leadership and collaboration in virtual work. This multidisciplinary approach aims at promoting the success of organizations in virtual work and the professional growth of a virtual workforce. It supplements Nokelainen and Ruohotie’s (2009) growth-oriented atmosphere model with the factors contributing to professional growth in virtual work.

1.2 Objectives and scope

This dissertation contributes to scientific and managerial discussions seeking to increase our understanding of the links between leadership and creativity in virtual work. The idea for this dissertation originated from my work experiences, which piqued my interest in understanding how leaders could better inspire and utilize creativity in virtual work so that people would feel that their knowledge was appreciated and that they could use their full potential at work. This issue is also related to the question of how leaders can foster professional growth in a virtual workforce.

The dissertation’s research question is, “What are the key elements that enable leaders to foster creativity in a virtual work context based on the research data?” To find the answers to this question, I divided the primary research task into separate studies. The investigation began with a conceptual analysis (Study 1) involving extensive familiarization with the related literature to answer the question, “How does one define leadership that fosters creativity in virtual work?” The concept analysis presented a map of the central concepts in leadership toward creativity in virtual work and a definition of that leadership. This effort revealed the need for empirical evidence to better understand leadership that stimulates creativity in virtual work. Next, I carried out an empirical single-case study at a partnership start-up company (Study 3) to address the question, “How are the learning challenges of leadership toward creativity in virtual work and the measures to meet them experienced in a start-up context?”

Studies 1 and 3 generated the basis for and interest in exploring in more detail the philosophical underpinning of leadership toward creativity in virtual work. Inspiring creativity in virtual work demands a leadership philosophy and a more integrative
ontology that support successful collaboration and positive outcomes (Drath et al., 2008). Therefore, I carried out an exploratory study positioning itself in leadership philosophy and the heterarchical ontological commitment of leadership toward creativity in virtual work (Study 2). I chose the heterarchical perspective rooted in complex adaptive systems (CAS) theory (Holland, 2006), despite its not having been previously applied to virtual work. Virtual work in networks does indeed resemble CAS, which have been characterized as open, evolutionary systems of interacting yet interdependent agents who have a common outlook and who can solve problems creatively (Uhl-Bien, Marion, & McKelvey, 2007). The heterarchical perspective regards an organization as a multi-layered entity with overlapping parts and institutional slack (Spelthann & Haunschild, 2011). Study 2 answered the question, “What is the relationship between leadership toward creativity in virtual work and the heterarchical ontology?”

After Studies 1–3 were completed, additional empirical evidence was necessary to solve the central research question. The next step was to execute a multiple-case study that answered the question, “How is leadership toward creativity made up in different types of companies in virtual work?” This fourth study generated a typology of four different types of businesses that define alternative trajectories in the transition toward leadership creativity in virtual work.

In this dissertation, I have reported the four separate studies published in four articles in the following order: first the two theoretical studies and then the two empirical studies. The theoretical studies mapped the central concepts and the philosophical underpinning of the research, while the empirical studies provided evidence about leading a virtual workforce toward creativity and increased my understanding of the issue under investigation.

1.3 The structure of the dissertation

The introductory chapter offers background information about the research subject and research environment and introduces the gap on which this investigation focuses. It discusses the objectives and scope of the research and presents the structure of the dissertation.

Chapter 2 provides a review of the philosophical basis of the research.

Chapter 3 covers the major theoretical approaches. The theoretical framework lays the foundation for the conceptual and empirical parts regarding leadership toward creativity in virtual work.
Chapter 4 deals with the methodological approach used in this research. It describes the methods of the study, data gathering, and data analysis.

Chapter 5 offers an overview of the four separate studies and introduces the main findings of each study.

Chapter 6 summarizes the findings of the four original studies.

Finally, Chapter 7 evaluates the research undertaken, discusses its theoretical and practical implications, and offers recommendations for future studies.

Extracts from the original interview data have been included as epigraphs to Chapters 2, 3, and 6.
2 PHILOSOPHICAL BASIS FOR THE RESEARCH

The leadership philosophy in a dispersed virtual work context is in its best sense of communality, it is a lot of collaboration. The more people ponder everyday practicalities together, the closer to practical dealings they get and can think how things could be done better. This practice creates prerequisites for easier working. (Study 4, Business Manager, about 30 years old)

Even though virtual work contexts are not tangible, they are very much human realities. In studying human realities, there is no objective truth, which makes it necessary first to analyze the ontological preconceptions of the research and so avoid mechanizing people and positioning them as mere objects of investigation. Ontology aims to find out the nature of reality under investigation—the essential elements of reality and the relationships of those parts to each other—whereas epistemology is the branch of philosophy dedicated to understanding the nature of knowledge (Gray, 2014, p. 19; Siegel, 2014). Following Sandberg (2005), considering knowledge and truth to be relative to ontological and epistemological assumptions can help overcome the problem of mixed discourse and the issue of extreme relativism that can arise from the interpretive rejection of objective truth claims.

2.1 Ontological foundations

Virtual collaborative work contexts question the traditional leadership thinking related to hierarchical, authoritarian leadership. Hierarchical leadership has its roots in objectivist ontology and positivist epistemology, which hold that external reality operates apart from people’s conceptions and beliefs about it (Houglum, 2012). The leadership thinking in this thesis rests on the heterarchical ontological commitment to leadership (Crumley, 2005; Humala, 2016) that is based on a nondualistic, subjectivist, and processual ontology. A nondualistic ontology underlines the interconnection between people’s inner and outer worlds, while a subjectivist and processual ontology regards reality as a social construction and leadership as a continuous social flow (Crevani, Lindgren, & Packendorff, 2010). According to social constructionism as an ontological position, social actors continually construct social phenomena and their meanings (Parjanen, 2012, p. 41). As for the subjectivist point of view, people create
and experience realities in different ways due to the assumptions, beliefs, and perceptions that individuals and groups have (Hatch & Cunliffe, 2006, p. 12). Subjectivism is vital for a leader who stimulates a virtual workforce toward creativity to be subjectively aware of the different state of affairs in the virtual work context and know, understand, and handle them intelligently (Humala, 2016). In addition, leaders need to understand the relevance of a common language, discourse, and texts and place a heavy emphasis on their employees and those workers’ views to inspire creativity among a virtual workforce (Hatch & Cunliffe, 2006, p. 14; Humala, 2016).

This research is based especially on the heterarchical ontological commitment to leadership (Humala, 2016; Spelthann & Haunschild, 2011). An ontological commitment in a knowledge-based system, like leadership in virtual work, is an agreement to use coherently and consistently the shared vocabulary defined by a common ontology (Gruber, 1995). Ontological commitment is a prerequisite for knowledge sharing and reuse, but there is no need to have an equivalent knowledge base term for every term in the ontology (Waterson & Preece, 1999). Hierarchy as an ontological commitment has been found useful in helping leaders deeply understand their role in virtual work and to stimulate interaction that releases the creativity in people (Humala, 2016).

Heterarchy represents an organizational form of distributed intelligence focusing on the collective good (Stark, 2009, pp. 19–27; Stephenson, 2009). In heterarchical organizations, power actively and legitimately fluctuates among team members with conditions to align their capabilities with changing situational demands (Aime, Humphrey, Scott, & Paul, 2014; Crumley, 2005). Aime et al. (2014) suggest that heterarchy offers a theoretical core in which to merge several theoretical discussions focusing on dynamic power relations within groups. Heterarchy offers the potentiality to identify ranked and unranked values, behaviors, and organizations as they shift in time, space, and cognitive frame, as well as in situations when old forms are suspended, but useful elements of them are preserved for creative new solutions (Crumley, 2005). Stephenson (2009) highlights virtual relationships between people that are invisible to a hierarchy but are essential for governing and sustainability. He argues that trusted, virtual strategic connections make partnership work and reveal a heterarchical organizational form. Moreover, heterarchies are CAS that intertwine many organizing principles and involve interdependent relations (Holland, 2006). The leadership thinking in this research reflects a complexity perspective on knowing. With the various social constructivist, interpretive, and post-structuralist approaches, this perspective shares the view that humans construct meaning through their social interactions (Kuhn, 2007). According to Kuhn’s (2007) theory, the ontological explanation of complexity science is that “reality” is interconnected and dynamic, self-organizing, emergent, and
simultaneously singular and multiple. Kuhn (2007) adds that, although reality may be studied from various perspectives, the very act of study will affect the “reality” observed. In line with Spelthann and Haunschild (2011), from a heterarchy perspective the resulting complexity is a robust arrangement for embedded organizational creativity. Stark (2009, pp. 4–5) regards heterarchies as cognitive ecologies that facilitate reflexive cognition.

Leadership in heterarchy is considered to take a distributed, collective form that enables interaction, meaningful work, inspiration, and creativity (Crumley, 2005; Spelthann & Haunschild, 2011). In addition, distributed authority with extended organizational reflexivity and fine-grained coordination are essential for leadership to cope with complex interdependencies (Girard & Stark, 2002; Stark, 1999).

2.2 Epistemological foundations

Epistemology deals with the knowledge about “how” to study a phenomenon. In line with Sandberg (2005), epistemology refers primarily to the following three central questions for the researcher: (1) How can individuals achieve meaning and thereby knowledge about the reality, the actual environment, in which they live? (2) How is this knowledge constituted? (3) Under what conditions can the knowledge achieved be claimed to be true?

This research rests on an interpretivist epistemology which assumes that knowledge can be created and understood by the individuals who live and work in a culture or organization (Hatch & Cunliffe, 2006, pp. 12–15; Newton Suter, 2012, p. 351). Symbolic-interpretivists include in the definition of empirical reality forms of experience that lie outside the reach of the five senses, like emotion and intuition, and they study how people make and communicate meaning in each situation (Hatch & Cunliffe, 2006, pp. 15, 44). As leadership in heterarchy highlights stimulating interaction and facilitating reflexive cognition, it includes characteristics from the symbolic interpretive perspective of organization theory and from symbolic-interpretivist epistemology (Hatch & Cunliffe, 2006, p. 14). According to Hatch and Cunliffe (2006, p. 14), symbolic interpretation maintains that “organizations are continually constructed and reconstructed by their members through symbolically mediated interaction.”

Symbolic-interpretivist epistemology is parallel with the pragmatic, humanistic theory of symbolic interactionism (Plummer, 2000) which originated in the sociological research by George Herbert Mead, Herbert Blumer, and the Chicago School during the first half of the twentieth century (Plummer, 2000). In the view of symbolic
interactionism, reality consists of social, developed interaction with others, knowledge is particular and produced through meaning and interpretation and recognized via coherence, and the model for human relationships is community (Hatch & Cunliffe, 2006, p. 56). According to Plummer (2000), most symbolic-interactionist sociologies focus on four interweaving themes: (1) the world of a human being is not only material and objective but also semiotic and symbolic; (2) lives, situations, and even societies are always and everywhere evolving, adjusting, and becoming; (3) interaction between people; and (4) symbolic-interpretivist sociology’s distinct engagement with the empirical world.

Symbolic-interpretivists understand that meaning and knowledge originate through collective cognition, and they analyze various understandings of phenomena by studying the mutual negotiation of the meanings of symbols, artifacts, and language within the context of a particular culture (Houglum, 2012). In organizational settings, the fundamental reality can be described as a constant and increasingly rapid change that is difficult to deal with favorably (Owen & Dietz, 2012). As reported by Hatch and Cunliffe (2006, pp. 42–43), symbolic-interpretivists believe that organizational realities and the knowledge of how to manage them are socially produced as members interact, negotiate, and make sense of their experience. Frey and Sunwolf (2004), who applied a symbolic-interpretivist perspective to the study of groups, maintain that as group members interact, they engage in symbolic practices that are the specific forms of communication employed, such as humor, metaphors, rituals, and stories. From the symbolic-interpretivist perspective, the creation, exchange, and interpretation of symbols in a group have crucial consequences at the individual, relational, and collective levels (Frey & Sunwolf, 2004).

Because meaning is embedded in human interactions and in symbols and artifacts that people may interpret differently, it is vital to address multiple interpretations to constitute knowledge; in addition, the role of context influences how individuals who experience situations and events understand them (Hatch & Cunliffe, 2006, p. 44).

Symbolic-interpretivists want to commit themselves to be true to their personal experience and to honoring the accounts and explanations offered by others (Hatch & Cunliffe, 2006, p. 15). Because of subjectivity and contextuality, the findings of symbolic-interpretivists are only tentatively applied to other contexts (Frey & Sunwolf, 2004). Symbolic-interpretivist scholars also face other challenges, such as acquiring access to some of the real groups that they wish to study and the amount of time they need to collect enough data to make claims about symbol usage in groups and make sense of the data as a whole (Frey & Sunwolf, 2004). According to Hatch and Cunliffe (2006, p. 15), symbolic-interpretivists may use verisimilitude—the resonance of one’s
own experience with the experiences of others—as the basis for claiming that they have contributed to understanding.

Next, the theoretical foundation of this thesis concerning leadership toward creativity in virtual work is discussed.
3 THEORETICAL FOUNDATION

Eventually, this all is that everyone wants to be in such an environment where you are taken care of. As a leader of a virtual workforce, you must be extremely interested in people. There is an enormous sense of pressure that every one of us leads people, and it goes even deeper than the surface. At the same time, one should enjoy leadership at some level—not only as a position but mainly because one enjoys dealing with people to raise and support them. That dimension should also be assessed in leadership somehow. (Study 4, CEO, about 40 years old)

3.1 Background

The theoretical framework of this dissertation rests on the literature examined during the research process. Because existing studies on leadership in virtual work contexts are not based on any specific theoretical framework, I have chosen the following as my theoretical underpinning: previous research on leadership in virtuality and virtual work, creativity, and collective creativity on the one hand, and central creativity-conducive leadership approaches like transformational leadership, emotional leadership, and complexity leadership on the other. Transformational, emotional, and complexity leadership as creativity-conducive leadership orientations have been regarded as appropriate theoretical approaches to study leadership toward creativity in virtual work (Humala, 2014; Uhl-Bien et al., 2007). All these approaches follow an interpretivist epistemology (Hatch & Cunliffe, 2006, pp. 12–15; Houglum, 2012) and a subjectivist and processual ontology by regarding reality as a social construction and leadership as a continuous social flow (Crevani et al., 2010). In addition, concept analysis (Humala, 2014, p. 39) supports “applying combinations of different leadership approaches” in leading a virtual workforce. The final reason for the chosen theoretical framework is to bring forward humanistic and educational approaches to leading a virtual workforce toward creativity.
3.2 Virtuality and virtual work

The concept of virtuality is related to work settings, which have changed from traditional face-to-face contexts to interaction environments where people use technology tools to share thoughts and information, and execute work (Makarius & Larson, 2017). Virtuality as a multidimensional concept refers to a holistic organizational setup whereby operations are organized and distributed at the level of the whole organization (Parjanen, 2012, pp. 73–74). Dixon and Panteli (2010, 1194) define virtuality as based on “virtual continuities’ that describes the continuities that emerged within the team as face-to-face and technology-mediated interactions worked in conjunction with one another to mitigate the perceived effects of boundaries.” Echoing Gibson and Gibbs (2006) and Panteli and Chiasson (2008), virtual contexts are “unbounded and nonlinear with free movement, enabling flexibility, fluidity, creativity, and opportunities, which lead to improvements in the innovation process” (Humala, 2017, p. 212).

Virtuality is related to the real, the possible, and the actual (Linstead & Thanem, 2007). As Panteli and Chiasson (2008) put it, virtuality is not only about information technology but also part of a social network in which individual choices are believed to widen to numerous and new possibilities, unrestricted by local constraints (Panteli & Chiasson, 2008). Variations of virtuality exist both within organizations (e.g., virtual individual members and virtual teams) and beyond organizations (e.g., inter-organizational and online communities, local and global markets) (Panteli & Chiasson, 2008). Technological and social changes modify how we understand virtuality, its role in organizations, and its effect on future perspectives for businesses. In addition, cultural, geographical, and technical characteristics influence virtuality (Humala, 2014), and, at the micro-level, people of different ages understand virtuality differently.

Virtual work includes dynamic structural arrangements (Gibson & Gibbs, 2006; Zimmermann et al., 2008), and it actualizes in dynamic networks in complex contexts with multilevel patterns and social relations (Weil, 2009). According to Zohar 1997, p. 132), “virtuality as a work context can be described as a continuous dynamic bundle of processes consisting of circles of circles within circles; each circle or network consists of smaller networks or teams of people, and each network works together in a large network” (Humala 2016, 47). Virtual work, as this dissertation reveals, includes permanent, contemporary, intra- and inter-organizational, and nationally and globally dispersed work (Panteli, 2004, p. 28). It also incorporates hybrid work that combines face-to-face and virtual communication (Griffith, Sawyer, & Neale, 2003). In doing so,
“it involves specific remote work contexts and virtual teams, organizations and customers, and users and suppliers in networks” (Humala, 2017, p. 211).

Virtual teams are groups of geographically dispersed individuals who work together on a joint project or common task and primarily communicate with each other electronically (Jarvenpaa & Leidner, 1999). Research has indicated that trust is essential for enabling people to collaborate in virtual work contexts and found that a lack of face-to-face interaction decreases productivity in genuinely virtual teams (Panteli & Chiasson, 2008; Parjanen, 2012, p. 74). Through virtual co-creation it is possible to utilize previously unavailable expertise better and to arrive at innovative solutions (Panteli, 2009; Parjanen, 2012, p. 74).

Recently, “scholars have focused on factors affecting knowledge sharing and outcomes in virtual organizations” (Humala, 2017, p. 212). Chumg, Cooke, Fry, and Hung (2015) found that promoting social values based on mutuality, trust, and shared goals can improve employees’ sense of well-being and knowledge-sharing via ICTs, improving the organization’s competitive advantage as a consequence. As O’Leary, Wilson, and Metiu (2014) and Wilson, O’Leary, Metiu, and Jett (2008) have underlined, perceived proximity—a symbolic representation of geographically distant co-workers—mediates “the effects of communication and identification on relationship quality, reinforcing the hypothesis that critical aspects of distributed work are socially constructed and symbolically laden” (Humala, 2017, p. 212).

Besides diverse business skills, leadership and collaboration in virtual work require multiliteracies or new media literacy expertise that incorporates competencies to manage the mass of knowledge, prioritize essential information, and to adopt a positive mindset regarding exploring and participating in online networks (Guth & Helm, 2010). It also includes recognizing and using multiple discourses and media and understanding, analyzing, and interpreting their content (Blattner & Fiori, 2011). The term “multiliteracies” refers to the increase in the number of communication channels and the salience of cultural and linguistic diversity (The New London Group, 1996).

### 3.3 Creativity and collective creativity

This dissertation focuses on enhancing creativity, especially collective creativity, in organizational contexts and the contribution of leadership to creativity in virtual work. Here, “creativity is considered a joint course of action taken by everyone in an organization” (Humala, 2017, p. 212) and an essential competitive weapon that enables
an organization to create new ideas through the energy and commitment of its people (Amabile, 1998).

Creativity, the process of generating something novel and useful, relates to individuals, groups, organizations, and social networks, and is said to originate from personal predispositions toward creativity and a hospitable social context (Amabile, 1988; Csikszentmihalyi, 1999; Woodman, Sawyer, & Griffin, 1993). Building on Moeran (2015) and Penttilä and Hakala (2016), creativity can also be “understood as divergent thinking—devising alternative solutions to problems—that produces novel and useful outputs and demands discipline, skill, hard work, and patience” (Humala, 2017, p. 212).

Creativity research initially focused on individual creativity (Sawyer & DeZutter, 2009), with Guilford (1950) taking a pioneering role. According to Parjanen (2012, p. 47), an individual’s “creative thinking means that an individual is able to see things from more than one perspective and is able to question the existing working models.” Research on individual determinants of creativity has focused mainly on personality traits, positive affect, and cognitive heuristics (Klijn & Tomic, 2010). In componential theory, one of the most popular theories of creativity, Amabile (1983) emphasizes that individual creativity requires domain-relevant skills and expertise, creativity-related thinking, and task motivation—specifically, the intrinsic motivation to arise. In this dissertation, individual creativity refers to the creativity of the individuals in an organization. By generating creative ideas, employees provide new possibilities and solutions that benefit their organizations (Parjanen, 2012, p. 46).

In addition to individual creativity, studies in the 1980s increasingly stressed sociocultural and collective creativity (Amabile, 1983; Csikszentmihalyi, 1996; Sawyer & DeZutter, 2009), rooted in Vygotsky’s (1978) sociocultural approach to human learning as a social process. Creativity requires the following three components: (1) domain-relevant skills and expertise, (2) creativity-related thinking relating to cognitive and personality processes that are conducive to novel thinking, and (3) task motivation, specifically intrinsic motivation (Amabile, 1983). Csikszentmihalyi (1996, p. 314) suggests that creativity is a social construct because it occurs in the interaction between a person’s thoughts and a sociocultural context (Parjanen, 2012, p. 41). Meanwhile, Csikszentmihalyi (e.g., 1999) uses his “theory of flow and a system model of creativity to explain the creative process and to improve understanding of what leads to creative moments” (Humala, 2014, p. 30).

The second phase of creativity research showed how creativity is embedded in social groups and emerges from the collaboration and contribution of many individuals and how creative products emerge from collaborative networks (Parjanen, 2012, p. 55; Sawyer & DeZutter, 2009). Parjanen (2012, p. 61) summarizes the characteristics of
collective creativity found in the literature as follows: creativity that is shared by two or more people; an outcome is more than a sum of individual efforts; collaboration, dialogue, and common interest are important; and past knowledge, situated practice, and diversity are essential sources. Creativity in social groups refers to team-based work systems and developing group performance and innovative teams to foster creativity (Parjanen, 2012, pp. 48–50). Creativity in groups is influenced by the contributions of individual group members, by group composition, interaction, and processes, and by contextual elements (Klijn & Tomic, 2010; Parjanen, 2012, p. 48).

According to Woodman et al. (1993, p. 293), organizational creativity refers to “the creation of a valuable, useful new product, service, idea, procedure, or process by individuals working together in a complex social system.” Organizational creativity is related to group creativity and the contextual influences on adopting innovative practices, products, and services to improve an organization’s ability to remain competitive (Parjanen, 2012, pp. 42–43; Schepers & van den Berg, 2007). The challenge for organizations is to “design a context and strategy to maximize creative achievement at work while taking individual differences into account” (Klijn & Tomic, 2010, p. 333). As Klijn and Tomic (2010) note, most theories regarding organizational creativity come from social psychology. A relaxing environment, support for the organization’s structural and leadership solutions, resources, skills, and a positive organization culture are all essential for organizational creativity (e.g., Martens, 2011). Amabile (1988) extended her theory to include teams and organizations. Organizational motivation to innovate, financing, time and personnel resources, and managerial practices like enabling challenging work and supervisory encouragement have been found to be essential components of a broader work environment that influences employee creativity (Amabile & Conti, 1999; Anderson et al., 2014). Later, Amabile and Kramer (2011) identified the power of progress as the top motivator of performance.

Recently, the social network perspective on creativity has emphasized that creativity is embedded in dynamic interactional relationships between people and their cultural and material realities (Poutanen, 2016, p. 17). Social network parameters influence creativity through social relationships, creativity-relevant cognitive processes such as the ability to see connections between seemingly different concepts, divergent and flexible thinking, and domain-relevant knowledge, which is an individual’s knowledge of facts, circumstances, and issues surrounding a given problem or area, along with contextual characteristics (Amabile, 1983; Perry-Smith, 2006; Perry-Smith & Shalley, 2003). A moderate number of weak ties enhances creativity, and connections to a more heterogeneous set of direct contacts mediate the relationship between weak ties and
creativity (Perry-Smith, 2006; Perry-Smith & Shalley, 2003). On the other hand, being too central may constrain an individual’s creativity (Perry-Smith & Shalley, 2003).

Virtual work contexts call specifically for sociocultural and collective creativity, and a social network perspective on creativity and various social resources and tools related to collaboration can promote creativity (Hämäläinen & Vähäsantanen, 2011; Sawyer & DeZutter, 2009). Hämäläinen and Vähäsantanen (2011) underline the need to integrate theoretical knowledge about creativity and collaborative learning with orchestration activities and bound to the learning context. The ability of people to transform the outside world and gain a sense of belonging to a community by finding creative solutions to everyday tasks and longer-term goals have been underlined as ways in which creativity is meaningful (Countlett, 2011, p. 240; Zhou & Shalley, 2008).

In generating collective creativity, the role of micro-level, momentary social interactions and processes has been underlined in previous research (Hardagon & Bechky, 2006; Poutanen, 2016, p. 71). According to Hardagon and Bechky (2006), reflective reframing is the key contributor for collectively creative moments because it draws upon participants’ prior experience and combines it in new ways. They see help seeking, giving support, reflective reframing, and reinforcing as ways to activate collective creativity in organizations.

Understanding how collective creativity emerges and how to combine it with individual creativity is crucial for organizations to achieve success in virtual work. According to Amabile (1998) and Drazin et al. (2008), online social interactions involving problem solving, creative cognition, and communication are especially important for achieving creativity. Critical issues for leaders seeking to inspire innovative collaboration online include understanding the creativity that occurs among people in organizations, combining individual creativity with collective creativity, person-job fit, and supporting continuity and trust between employees (Amabile, Conti, Coon, Lazenby, & Herron, 1996; Panteli & Chiasson, 2008; Sawyer & DeZutter, 2009). Hardagon and Bechky (2006, pp. 497–498) have reported that organizations seeking creative outcomes “should select and reward individuals who pursue collective achievements over individual ones” and managers might “even require routine interaction between project teams in order to foster the social interactions.” Perceptions of an organizational work environment can influence the level of creativity in an organization (Amabile et al., 1996), even in virtual work contexts (Cortini & Scaratti, 2011).
3.4 Creativity-conducive leadership approaches

Leadership has been defined as a social interaction process of actively influencing, motivating, and inspiring people to discover new possibilities, achieve their potential, and reach goals (Humala, 2014; Searle & Hanrahan, 2011). The work of Amabile et al. (1996) and Amabile and Khaire (2008) shows that “leaders and managers can enhance their followers’ intrinsic motivation and creativity, for example, by paying attention to work environments, encouraging collaboration, mapping the phases of creative work, and providing paths through bureaucracy and ways for passion at work” (Humala, 2014, 31). Additional ways to support creativity at work are exciting tasks, freedom, permission to fail, sufficient time, rewards, positive affect, minor successes, and constructive debate communities (Amabile, Barsade, Mueller, & Staw, 2005; Amabile & Kramer, 2011; Uusikylä, 2012, pp. 188–189). As to virtual work, “dominance, domain knowledge, downward norm setting, lack of shared understanding, time pressure, and technical difficulties” have been found to inhibit creative performance (Ocker, 2005, p. 22).

This section discusses transformational leadership, emotional leadership, and complexity leadership. These key creativity-conducive leadership approaches have been highlighted in previous research on virtuality and virtual work and theories of creativity and collective creativity (Humala, 2014) and have therefore been chosen as the essential creativity-conducive leadership approaches in this thesis. These approaches are connected: for example, transformational leadership involves elements of both emotional and complexity leadership (Humala, 2014). Creativity-conducive leadership focuses on encouraging people and enabling relationships, aiming to nurture individual and collective creativity inside an organization and outside organizational, geographical, and technological boundaries, despite the dynamic and complex nature of interactions between leaders and employees (Guo et al., 2016; Humala, 2017).

3.4.1 Transformational leadership

Transformational leadership is characterized by a clear vision and mission, inspiration, motivation, intellectual stimulation, and individualized consideration (Avolio & Bass, 1988; Avolio, Waldman, & Yammarino, 1991; Warrick, 2011). This type of leadership has been linked to employee creativity through, for instance, individual creative identity (Hu, Gu, & Chen, 2013). Further, it creates a context for more effective organizational and personal performance (Bass & Avolio, 1993). Wang and Zhu (2011) found that a
group’s creative identity mediates the effect of group-level transformational leadership on individuals’ creative identities. Contributing factors include establishing creative systems and values and an innovative and creative climate and shared creative norms and regulations within the group, as well as developing and training transformational leadership (Wang & Zhu, 2011). Mittal and Dhar (2015), who studied small- and medium-sized enterprises (SMEs) in India’s IT industry, concluded that transformational leadership has a significant and positive relationship with creative self-efficacy (CSE), which is the belief that an individual can produce original outcomes. In addition, CSE mediates the relationship between transformational leadership and employee creativity (Mittal & Dhar, 2015).

Researchers have presented different views about the utility of transformational leadership in virtual work. Ruggieri, Boca, and Garro (2013) found that transformational leadership with a cognitive and metacognitive style is more satisfying than transactional leadership with a more participative style in online teamwork. Schultz (2010), Kahai, Huang, and Jestice (2012), and Eisenbeiß and Boerner (2013) regard transformational leadership as creativity-conducive in virtual work environments despite empirical findings that negatively link transformational leadership to employee creativity because of employee dependency.

However, some researchers have argued that the relationship between transformational leadership and creativity is not completely understood (Wang & Zhu, 2011). A study by Castro, Gomes, and de Sousa (2012) indicates that employees’ creativity relates to transformational leadership and leaders’ emotional intelligence (e.g., Coleman, Boyatzis, & McKee, 2004). Other combinations of leadership styles in virtual work have also been suggested, such as a combination of transformational and transactional leadership (Zayani, 2008) with visionary style (Whitford & Moss, 2009). In addition, a greater understanding of the roles of employees and organizational context in transformational leadership processes has been emphasized (Wang & Rode, 2010).

### 3.4.2 Emotional leadership

Emotions are essential to understanding social relations while leading and working, including in virtual environments. Psychologist and philosopher John Dewey states in his theory of experience that emotion reflects the underlying dynamics of the interaction between people (Alexander, 1987, p. 137). In line with Coleman (2001), emotional intelligence (EI) refers to one’s ability for self-assertion, management of emotions, social awareness, and management of relationships to recognize and regulate emotions.
in oneself and others. Frye, Bennett, and Caldwell (2006) and Quisenberry (2011, p. 9) describe EI as the emotional, affective, and social skill dimension of general intelligence, while Mayer and Salovey (1997) define it as one’s ability to regulate emotions to promote emotional and intellectual growth. In addition, EI is linked to social intelligence (Coleman, 2006) and interpersonal intelligence (Gartner, 1983). According to Lewis (2010), social intelligence connects to the development of trust in leader-member relationships in virtual project teams. This connection indicates strong links between interpersonal relationship skills and developing positive trust relations and interactions in virtual environments.

The notion of emotional leadership has developed from EI (Bar-On, 2004; Coleman, 2001; Mayer & Salovey, 1997). The work of Boyatzis and Sala (2004) and Coleman et al. (2004, p. 6) shows that “in work-related contexts, emotional leadership is defined as one’s EI-based ability to recognize, understand, and use emotional information about oneself and others in a way that leads to efficiency and excellent performance at work” (Humala, 2017, p. 214).

Castro et al. (2012) tied employee creativity to their leaders’ EI. The concept analysis (Humala, 2014, p. 34) indicated that, through EI and emotional leadership, it is possible for leaders of a virtual workforce “to inspire people, which is especially important in situations where people are working in dispersed locations and at least partly via computer-mediated tools.” Setting clear goals, objectives, and processes and allowing the group to execute strategies autonomously are ways for virtual team leaders to motivate team members (Quisenberry, 2011, pp. 169–170). Excellent interpersonal relationship skills enable active trust relations and interactions to develop in virtual work environments (Humala, 2014).

3.4.3 Complexity leadership

The virtual working process represents a self-organizing system with a non-linear organizational structure. Such a complex and dynamic work setting presents a challenge to leaders of virtual workers, who must navigate complicated situations. Owen and Diez (2012) have rightly stated that organizations’ complexity grows and changes as the organizations themselves grow and change through time. Virtual interaction resembles CAS: open, evolutionary networks of communication and interdependent agents with a shared outlook who are capable of creative problem solving (Humala, 2014; Uhl-Bien et al., 2007). These circumstances make complexity leadership (Lichtenstein, Uhl-Bien,
Marion, Seers, & Orton, 2006; Uhl-Bien et al., 2007) one possible type of leadership in virtual work (Humala, 2014).

Complexity leadership is an integrative theoretical framework challenging traditional leadership theories in which the relationships among people are largely hierarchical. It regards mutual interaction as a complex interactive dynamic through which adaptive outcomes can emerge and views leadership as a function of interaction (Uhl-Bien et al., 2007). Complexity leadership considers leadership in CAS to emphasize interactions among heterogeneous agents and across agency networks. It is thus essential that leaders of virtual workforces understand the importance of virtual relationships between people and exploit those relationships to encourage positive outcomes (Zimmermann et al., 2008).

Complexity leadership highlights relationships and complex interactions between people. The complexity perspective offers a more multifaceted view of leadership toward creativity in virtual work than those offered by transformational and emotional leadership. Hazy’s (2009) work shows that “it influences interpersonal interactions, and clarifies the purpose of each member of the organization” (Humala, 2017, p. 215). Leaders adopting a complexity leadership approach need to think through complex problems, engage groups in dynamic adaptive changes, encourage innovation, and manage emotions (Humala, 2017; Plowman et al., 2007). Moreover, scholars have underlined the role of complexity in multiple levels in organizations and networks to promote organizational creativity (Spelthann & Haunschild, 2011) and understanding how temporal complexity influences people and organizations (Plowman et al., 2007). Especially relevant for virtual interaction is Geerlof and Van Beckhoven’s (2016) finding that both the ephemerality and the specificity of the organizational context influence organizations’ potential for self-direction.

However, complexity leadership is neither easy nor rapid (Goldstein, Hazy, & Lichtenstein, 2010, p. 194). Large amounts of interactions between people create challenges for this type of leadership, and creating the conditions for the emergence of a new and undefined solution requires commitment from everyone in the value chain (Goldstein et al., 2010, p. 194). In virtual work contexts, the process may be even more challenging. It is vital for leaders to focus attention on flexible working cultures and environments for creative energy, workgroups, and conditions to handle complexity, diversity, and uncertainty (Houglum, 2012; Johannessen & Skålvik, 2013). It is also essential to understand leadership as a group behavior that contains multiple relationships rather than the actions of one individual (Metcalf & Benn, 2013). Leaders in virtual work contexts may also train other people to assist them and move into leadership positions as required (e.g., Dotlich, Cairo, & Rhinesmith, 2008).
3.5 Theory synthesis

This section sums up the theoretical framework of this dissertation as described above. That framework comprises virtuality as a work context, characteristics of virtual co-creation and creativity, and collective creativity as issues for leadership in virtual work, as well as creativity-conducive leadership approaches, including transformational leadership, emotional leadership, and complexity leadership.

Based on the theoretical framework, virtuality is a novel organizational form that is actualized in dynamic networks in complex contexts with multilevel patterns and social relations. As virtual contexts are unbounded and nonlinear and feature free movement, they offer space for flexibility, creativity, and new opportunities. Creativity is embedded in meaningfulness and especially intrinsic motivation, dynamic interactional relationships between people—where micro-level interaction, such as different moments and events, are also noteworthy for creativity—and reflective reframing. In stimulating creativity, previous research emphasizes that leaders should hire the right people to the right positions, pay attention to the composition of groups, and create a social context and organizational culture that are perceived to be hospitable and encouraging. Further, fostering interaction together with divergent thinking and reflective reframing and meaningful work where people can learn and develop themselves are significant contributors to creativity. On the other hand, financing, time and personnel resources, discipline, hard work, and patience are issues that scholars have stressed as needed for creativity to emerge.

Especially through virtual co-creation, it is possible to utilize previously unavailable expertise better, which makes virtual co-creation notable for innovative solutions. Previous research has indicated that it is essential in virtual work to understand collective creativity as a process and social system providing divergent thinking and combine it with individual creativity. To advance knowledge sharing in virtual work and virtual co-creation, it is essential to nurture social values based on mutuality, trust, and shared goals through employees’ sense of well-being. Moreover, perceived proximity and multiliteracies are significant contributors to virtual collaboration and in leading virtual work. Among the key creativity-conducive leadership approaches, transformational leadership typically incorporates a clear vision and mission, inspirational motivation, intellectual stimulation, and individualized consideration. Transformational leadership links to employee creativity through individual creative identity, CSE, and creative group identity and provides the context for more effective organizational and personal performance. However, there are some limitations; for instance, the roles of the employees and the entire organizational context in the
transformational leadership processes are not yet entirely understood. Emotional leadership uses EI to recognize and understand one’s own and others’ emotions and use them in ways that lead to efficient and high-quality performance at work. As emotions reflect the underlying dynamics of the interaction between people, through emotional leadership it is possible to inspire people, which is vital in leading a virtual workforce. Employees’ creativity links up with leaders’ EI, which is itself related to social and interpersonal intelligence. In virtual work contexts, interpersonal relationship skills enable active trust relations and interactions to develop. As to complexity leadership, it treats leadership as a process and function of interaction. It views leadership through the CAS lens, in which relationships among people are regarded as interactions among heterogeneous agents and across agency networks. In complexity leadership, leaders need to think through complex problems, encourage people to adapt to changes, create innovative solutions, manage emotions, and change leadership positions among the participants as required.

The theoretical foundation introduced above offers a view of distributed leadership based on the heterarchial ontological commitment to foster creativity in virtual work. Figure 1 brings together the theoretical understanding of creativity and co-creation as issues for leaders in virtual work and the major contribution to these issues from the creativity-connected leadership approaches examined in this research.

Figure 1. The theoretical understanding of leading a virtual workforce toward creativity
4 METHODOLOGICAL APPROACH

This chapter describes the methodological approaches, including data collection and data analysis, in the original studies and the dissertation as a whole. Detailed descriptions of the methodology are presented in the original studies.

4.1 Research methods

A heterarchical ontological commitment to leadership and a symbolic-interpretivist epistemology demand a qualitative research approach to better comprehend leadership toward creativity in virtual work. Qualitative research offers the means of capturing the views, perspectives, and social interactions of leaders and employees and the contextual conditions within which they work (Yin, 2011, pp. 7–8). Besides using the qualitative approach as the primary research methodology, this dissertation combined several methods and the perspectives of both business-oriented and pedagogical research to gain a more nuanced insight into the research topic and more reliable results (Patton, 2015, p. 674; Tracy, 2010).

Study 1 explored the connections between the concepts of virtual work, creativity, and leadership in the research literature and defined leadership that fosters creativity in virtual work (Humala, 2014). A descriptive, interpretative concept analysis (Takala & Lämsä, 2001), focusing on the definition of concepts, was applied as a research methodology to describe the concepts and their use and find out how concepts in the field have been deduced (Nuopponen, 2010). Study 2 debated whether heterarchy is applicable as the ontological commitment to leadership for stimulating creativity in virtual work and applied an explorative study as a research methodology to study a problem, explore what was occurring, and ask questions about it (Humala, 2016). The research interest in Study 2 was to interpret existing research and to understand deeply the information within it; this guided the choice of a document-based inquiry (Bowen, 2009) as the primary data-gathering method, using qualitative and quantitative analysis in the interpretative process.

Study 3 focused on a single-case start-up and investigated how its key people experienced the learning challenges arising from leading virtual workforces toward
creativity, the meanings they attributed to those experiences, and the measures they considered to meet those challenges (Humala, 2015). Study 4 focused on empirically exploring how leadership toward creativity occurred in virtual work and developed a descriptive typology to better identify leadership toward creativity in virtual work in different types of companies (Humala, 2017). A case study approach was applied in the empirical studies (3 and 4), because case studies are particularly appropriate for exploring perceptions, justifications, and rationales of social practices and contexts and the strategies that individual and collective actors develop (Haunshild & Eikhof, 2009). Yin (2014, p. 16) defines a case study as “an empirical inquiry that investigates a contemporary phenomenon (the ‘case’) in depth and within its real-world context.” Study 3 was a single in-depth case study in a start-up company, while Study 4 was a multiple-case study that included firms of different sizes.

Finally, this summary approaches the research challenge of leading toward creativity in virtual work by using the results of the four original studies as data, by assessing the effects, and by drawing conclusions regarding the issue under investigation. Table 1 presents a general overview of the research aims, focus, and methodologies, and the data gathering and analysis methods of each original study.
Table 1. A general overview of the methodology of the original studies

<table>
<thead>
<tr>
<th>Number of the study and its aim</th>
<th>Focus</th>
<th>Research methodology</th>
<th>Data gathering methods</th>
<th>Data analysis methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 1: Enhance and understand the concept of leadership toward creativity in virtual work</td>
<td>Interpreting definitions of key and connected concepts and relating the concepts to one another</td>
<td>Descriptive, interpretative concept analysis</td>
<td>Searching definitions of the concepts of virtuality, creativity, and leadership and their associated concepts in the central research texts (journal articles, books, etc.) from recent years; a total 101 sources</td>
<td>Describing, interpreting, and forming a holistic idea of the concepts. The understanding followed the principles of the hermeneutic cycle</td>
</tr>
<tr>
<td>Study 2: Debate the applicability of heterarchy as the ontological commitment to leadership toward creativity in virtual work</td>
<td>A situation or a problem, exploring what is occurring, and asking questions about it</td>
<td>An explorative study</td>
<td>Document-based inquiry of existing research texts on virtuality and virtual work, fostering creativity in virtual work contexts, and heterarchy as an ontological approach to leadership</td>
<td>Qualitative analysis, supported by coding and counting. Finding, selecting, appraising, and synthesizing viewpoints, contexts, and positions in research documents</td>
</tr>
<tr>
<td>Study 3: Understand better how the key people in a start-up experience the learning challenges of leadership that foster creativity in virtual work and the measures to meet them</td>
<td>Experiences and the meanings participants assign to them</td>
<td>A single in-depth case study in a partnership start-up</td>
<td>Interviews with the six key people in the start-up Telephone conversations, a seminar presentation, presentation materials, and news about the case company offered additional data</td>
<td>Qualitative analysis. The complexity leadership approach was used as a supplemental data analysis method to interpret the data; it focused on interaction and collaboration among the principal people</td>
</tr>
<tr>
<td>Study 4: Develop a descriptive typology to identify and describe how leadership in virtual work is made up of different types of companies based on empirical data</td>
<td>Analyzing what, how, and why leadership toward creativity in virtual work occurred in the case companies</td>
<td>A multiple-case study</td>
<td>21 interviews with leaders and employees at 5 companies Presentation materials and news about the case companies supplemented the interview data</td>
<td>Qualitative analysis. An interpretivist approach and abductive analysis were applied</td>
</tr>
</tbody>
</table>
The following subsection provides more detailed information about the data gathering and analysis procedures employed in the original studies.

### 4.2 Data gathering and analysis

Study 1, a descriptive, interpretative concept analysis (Takala & Lämsä, 2001), was carried out from February 2013 through May 2014. The data consisted of definitions of the concepts of virtuality, creativity, and leadership. It was acquired by database searches and the snowball method, which in qualitative research advances in line with references until saturation is reached. The data comprised 101 research texts and was coherent and reliable regarding the research problem. The essential criteria in the choice of research materials were the objective of Study 1—to define leadership that fosters creativity in virtual work—and the way the research topic was outlined. In other words, those research papers were selected for the concept analysis, which included definitions of the critical concepts of virtuality, creativity, and leadership that increased understanding of those concepts and their mutual connections. I critically selected the concepts as subjects of interpretation by the theoretical perspective, the quality of the references used, and the references (Takala & Lämsä, 2001). Table 2 summarizes the information about the data gathering in Study 1.

**Table 2. Summary of the data gathering in Study 1**

<table>
<thead>
<tr>
<th>Study</th>
<th>Data gathered</th>
<th>Search methods</th>
<th>Selection criteria for data</th>
<th>Themes arising during the data gathering</th>
</tr>
</thead>
</table>
| Study 1: A descriptive, interpretative concept analysis | The concepts of virtuality, creativity, and leadership; the definitions and the meanings included in the concepts and the definitions | - Searching through Finnish and international education, business economics, and information sciences databases, e.g., EBSCO, Elektra, SAGE Journals Online, Emerald, Science Direct, and PsycINFO  
- Database searches continued by using snowballing technique that advanced according to references until saturation is reached | - Texts including the definitions of the fundamental concepts outlined in ways that increase understanding of those concepts and their mutual connections  
- The quality of the references in the scientific texts | Complexity occurred in 15%, emotionality in 26%, and transformational leadership in 11% of the 101 documents studied |
The material was analyzed and synthesized using descriptive, interpretative concept analysis as a research method that aimed to find the meanings related to the concepts of virtuality, creativity, and leadership, reveal their multiplicity, and broaden the understanding of those concepts (Takala & Lämsä, 2001). The issues of interpretation were the definitions of the concepts in other writers’ and theorists’ texts. My understanding followed the principles of the hermeneutic cycle and using critical reflection to interpret, describe, and clarify the meanings related to those key concepts. It is contextuality that defines the meaning in descriptive, interpretative concept analysis (Takala & Lämsä, 2001). In my analysis, therefore, it was essential to understand the phenomenon at issue from the history, current practices, and the immediate concepts by comparing them to one another. Exploring new concepts and the development of their meanings requires knowledge about the connections between the concept and institutional practices. According to Takala and Lämsä (2001), the formation of meanings is a process in which the text, the interpretation, and the interpreter are centrally interdependent, with the interpreter’s everyday observations also guiding the analytical process. However, in descriptive, interpretative concept analysis, the significance of the theoretical approach is approximate but not strictly binding; in any case, the interpreter’s observations and the theory are in a continually reciprocal interplay (Takala & Lämsä, 2001). The analysis produced a visual concept map with the connections among concepts. The concept map is an interpretation of meanings to be connected to the scientific discussion of leadership that stimulates creativity in virtual work. Besides the concept analysis, the visualization of the connections between the concepts helped me to understand the whole of the meanings better and formulate the definition for leadership that fosters creativity in virtual work for further elaboration in research and in business. In addition, Takala and Lämsä (2001) underlined that the concepts, the interpretations of their meanings, and the interpretative potential of the interpreters undergo continual change.

Study 2, an explorative document-based inquiry, was conducted from October 2014 through April 2016. The themes of the semi-structured interviews in Study 2 are listed in Appendix 1. My research interest was to interpret the existing research texts on virtuality and virtual work, fostering creativity in virtual work contexts, and heterarchy as an ontological approach to leadership, and to understand the information in those texts. The texts had been recorded without my intervention, in printed, electronic, or other forms, mostly within the last ten years. To bring the perspectives of business actors to the document analysis, I interviewed 5 such leaders in June 2013 and November 2014; they ranged between 30 and 60 years of age. Two were female and three male; three worked in Finland, one in Estonia, and one in both countries. They
represented service and technology fields of networked businesses and had between 5 and 25 years of relevant work experience. I recorded and transcribed the interviews. Table 3 provides additional information about the data gathering in Study 2.

Table 3. Additional information about the data gathering in Study 2

<table>
<thead>
<tr>
<th>Study</th>
<th>Data gathered</th>
<th>Search methods</th>
<th>Selection criteria for data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 2: A document-based inquiry</td>
<td>- Research texts on virtuality and virtual work, fostering creativity in virtual work contexts, and the heterarchical ontological approach to leadership - Face-to-face interviews with six business actors to obtain perspectives from business practices</td>
<td>- Searches of Finnish and international education, business economics, and information sciences databases carried out in Study 1 - Snowballing technique used as a complement to database searches</td>
<td>- Paying attention to the processes that occur at multiple levels of virtual work and how leaders influence the underlying processes and dynamics that lead to organizational outcomes (Dinh et al., 2014) - Finding business actors of different ages, genders, and work experience in service and technology fields of networked business</td>
</tr>
</tbody>
</table>

First, a document-based inquiry was used to identify the focal challenges for leadership toward creativity in virtual work and the central attributes of heterarchy in leadership. The understanding developed through appraising viewpoints, contexts, and positions in the research documents (Lankshear & Knobel, 2004, pp. 54–55). The document-based inquiry focused primarily on content. Other essential subjects included authenticity and usefulness, the original purpose of the documents, the context within which they were produced, and the intended audience (Bowen, 2009; Tracy, 2010). The document-based inquiry treated the research documents as dynamic expert discourses that provide valuable data for the study (Prior, 2011; Wilson, 2013). In addition, six expert interviews, which were analyzed manually, brought empirical evidence to the document analysis to help identify the focal challenges for leadership that inspire creativity among virtual workforces. The central attributes of the heterarchical ontological approach to leadership were developed with the help of data from the documents. Second, the focal leadership challenges and the attributes of heterarchical ontology were contrasted with one another in an interpretative process. A qualitative analysis supported by coding and counting was used to determine the primary groups of relations between the focal challenges (Spelthann & Haunschild, 2011). The characteristics of each challenge for leading a virtual workforce toward creativity and each central attribute of heterarchy in leadership were thoroughly outlined, and the
relationships between the leadership challenges and the attributes of heterarchy in leadership were interrelated, compared, and tagged with color-coded labels. Then, the analysis focused on the strong relations between the leadership challenges and the attributes of heterarchy in leadership. Adding up the number of color-coded ties helped to find the strongest ties between the leadership challenges and the attributes of heterarchy in leadership. The same data was examined from both business-oriented and pedagogical perspectives to reduce distortion during data analysis (Patton, 2015, p. 674).

Study 3, a partnership case study, aimed to understand better how the key people in a start-up experience the learning challenges of leadership toward creativity in virtual work and the measures undertaken to meet those challenges. In start-ups, leadership and collaboration can be especially problematic for the success of the business (Flyvbjerg, 2007). The study was a single in-depth case study in a start-up. The aim was to hear the full stories of the interviewees and maximize the utility of information from a single representative case. The case start-up operates in a global sustainable engineering business and was recommended to the researcher by the Federation of Finnish Technology Industries. It was founded in early 2013 and is owned by five networked partners working in different areas of Finland. Through cooperation with local partners and the global network, the company offers advanced technology solutions for manufacturing, technology, and assembly, all based on customer needs. Its strategy includes providing added value by minimizing process time, reducing working capital for supply chains, and executing projects rapidly. During the data gathering, the start-up was seeking customers and initiating trading.

Semi-structured face-to-face interviews with the six male principals in the start-up—five partners and one strategic legal advisor—provided the data for this study. Appendix 2 presents the themes of the semi-structured interviews from Study 3. The interviews were carried out from September through November 2013, resulting in 144 pages of interview transcripts. All the interviewees had experience in different fields of national and global technology business as managing directors, crew chiefs, and counselors. Telephone conversations, a seminar presentation, presentation materials, and news about the case company offered supplementary data.

Atlas.ti, a software program for qualitative data analysis and research, was exploited in the analysis of Study 3 to carry out the open coding and code family stages. The analysis clustered the code families, both manually and using Atlas.ti, into learning themes. Finally, the qualitative data analysis further refined the learning themes into four main learning challenges in leadership to foster creativity in virtual work in the case start-up and into the primary leadership measures used to meet the four main learning challenges. The complexity leadership approach supplemented the interpretation of the
data by considering the interaction and collaboration among the key players (Lane & Down, 2010).

Study 4 was a multiple-case study that used a descriptive fourfold typology as a framework for analyzing responses to leadership toward creativity in virtual workforces in the case companies (Humala, 2017). The concepts and associated terms located in the four cells or quadrants of a typology constitute the cell types. According to Collier, LaPorte, and Seawright (2012, p. 228), cell types are “in relation to the overarching concept”, and “the categories that establish the row and column variables provide the defining attributes of each cell type.” In a descriptive typology, the dimensions and cell types help identify and describe the phenomenon under analysis. The overarching concept measured by the typology was leadership toward creativity in virtual work (Humala, 2017).

The goal was to find case companies of different sizes operating in part across national borders. Companies operating in the ICT sector were most interested in participating in this study because they regarded leadership that fosters creativity and supports successful collaboration in virtual work as important for their businesses (Humala, 2017). In many ways, the ICT industry has been a pioneer in virtual work by using ICT tools in collaboration and inspiring virtual workforces to achieve creativity. Half of the case companies operated primarily globally, and many participants had previous experience in global business and virtual work. Therefore, “the chosen case companies can be regarded as representative in this study as they align well with the main types of company profiles that exist in virtual contexts,” regardless of the field of industry (Humala, 2017, p. 219).

The data for Study 4 was gathered through 21 semi-structured interviews from April through June 2016: the participants were five female and ten male leaders and four female and two male employees between 20 and 60 years of age working at five companies in Finland. Two case companies were start-ups, the third was an SME, the fourth a large company, and the fifth a one-person business advising enterprise. The following people were interviewed: one key person in the first start-up, the CEO and two employees in the second start-up, the CEO and eight other people in leadership positions at the SME, three people in leadership positions and four employees at the large company, and the owner-manager of the fifth enterprise. The interview instrument used in Study 4 is presented in Appendix 3. One person was interviewed through Skype, while the others were face-to-face interviews, totaling 474 pages of interview transcripts. Presentation materials and news about the case companies supplemented the interview data. A basic qualitative research approach and an interpretivist approach were applied in the data analysis. The data was coded with the help of Atlas.ti. To bring polyphony
to the analysis, the subjective experiences and viewpoints of the interviewed people in leadership and employee positions working in the same case companies were examined in parallel. Therefore, an abductive form of analysis (Brinkmann, 2014) was employed as a supplemental data analysis form that provides a typology to guide practitioners in situations and highlight behavior and practices to avoid in the future (Staw, 2016). Abduction is a mode of inference in which explanations are sought for anomalous or surprising phenomena, which is primarily needed to understand the processes of discovery (Paavola, 2004). Abductive reasoning aims to find an overall pattern into which all evidence and clues fit, and it particularly requires taking into account various clues and constraints relevant to one’s subject area (Paavola, 2004).

In Study 4 (Humala, 2017), the first of the case start-ups was a multinational company founded in 2011 and employing 12 people. With its headquarters in the Netherlands and its research department in Finland, it operates in the global advanced ICT industry, especially in Asia, and uses virtuality in its professional internal and external communications. The other start-up, founded in 2014, employs three to four people; it operates virtually in the software industry in Finland and cooperates with Vietnamese organizations. The third case company, the Finnish SME, was founded over 100 years ago. Its 130 employees work in the ICT service sector at different locations in Finland. It uses virtual tools in various ways to enhance transparency in business. The fourth company was founded over 30 years ago. It offers real-time automated financial management solutions at several locations in Finland and employs more than 300 people. The SME and the large case company operate mainly in Finland. The one-person business advising enterprise uses virtual tools to cooperate with its remote customers and partners in Finland. Its owner has work experience in leadership positions and as an entrepreneur in other fields of business and thus was able to offer different perspectives on the issue under study.

The analysis proceeded in three phases: 1) forming a rough outline of the typology, 2) identifying each of the company types in the typology in more detail, and 3) determining the final typology (Humala, 2017). Two critical theoretical lenses, creativity-conducive leadership and heterarchical leadership, guided the location in which creativity-related and heterarchy-related data were placed in the typology and to generate a typology of four modes of leadership with ontological commitment. The theoretical approaches also served as tools to detect the unnoticeable in everyday life, such as beliefs and hidden power structures (Brinkmann, 2012, p. 18). Two dimensions of the leadership focus were analyzed: leadership inspiring creativity among a virtual workforce and leadership with a task-based mindset. In addition, two dimensions of the ontological commitment to leadership were analyzed: heterarchical integrative leadership and
hierarchical authoritarian leadership. These four dimensions formed the rows and columns of the typology.

First, the typology was outlined with criteria based on the explorative Study 2 (Humala, 2016), which identified focal relations between challenges in leading a virtual workforce toward creativity and a heterarchical ontology to leadership. Next, the creativity- and heterarchy-related themes were chosen from the coded and grouped data and placed at the appropriate corners of the typology. Those themes that did not relate to creativity and heterarchy were selected for the other corners of the typology. The four types of companies were then analyzed and described systematically to offer detailed information about leadership and how it appears to both leaders and employees in each company type (i.e., what, how, and why different characteristics are related to leadership toward creativity in virtual work). An abductive form of analysis helped me to reread the themes and the original data from the interviews and analyze the themes again to ensure that the themes were accurately located in the typology. This stage of analysis also focused on how humans’ experiences, interactions, virtual tools, and material objects are taken into consideration when leading a virtual workforce in different types of companies (Brinkmann, 2012). The final typology was determined by combining the key issues in the identification phase with each of the four company types in the typology. In line with current theoretical understanding, the key issues in each company type are categorized as one of three critical aspects of business: leadership, communication, and learning and growth (Humala, 2017). These aspects uncover key issues that leaders who want to nurture creativity among virtual workforces must consider, reveal how different features are related to one another, and identify the consequences of those features and interrelations (cf. Dewey, 1938, p. 512).

Different interpretations of the case studies were acquired through writing reports to the case start-up (Study 3) and the SME and the bigger case company (Study 4) about the initial study findings immediately after the interviews. The reports enabled reflexive elaboration of the analyses, together with participants in research seminars and conferences and journal paper submissions. Additionally, the researcher’s experience in management praxis and theory, carrying out conversational explorations, and interest in linking education and business knowledge empowered data gathering and analysis in the case studies. The interaction between data interpretation and theoretical analysis influenced the outcomes of both case studies (Diefenbach, 2009).

The next section provides an overview of the four original studies and introduces their main findings.
This dissertation includes two parts: a conceptual part and an empirical part, each consisting of two studies. The detailed results of this dissertation have been published in four journal articles (Studies 1–4) that are presented at the end of the thesis. The four original publications combine to create a continuum to answer the central research question, “What are the key elements that enable leaders to foster creativity in a virtual work context based on the research data?” and to contribute to the scientific discussion that increases our understanding of the links between leadership and creativity in virtual work (Table 4). Studies 1 and 2 specify the theoretical contribution to answering the research problem and lay the foundation for the two empirical articles. Studies 3 and 4 consist of one single-case study in a partnership start-up company (Study 3) and one multiple-case study in five case companies (Study 4). Studies 3 and 4 help address the scarcity of empirical studies on leadership that stimulates a virtual workforce toward creativity in companies of different sizes, increasing our understanding of the issue under research. Next, the results of each study are briefly summarized.

Table 4. The contribution of the four single studies to the central research question

<table>
<thead>
<tr>
<th>Study</th>
<th>Research question</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 1: “Defining leadership that fosters creativity in virtual work: Descriptive interpretative concept analysis.”</td>
<td>How does one define leadership that fosters creativity in virtual work?</td>
<td>Provides a map of the central concepts and defines leadership that fosters creativity in virtual work</td>
</tr>
<tr>
<td>Study 2: “Heterarchial ontological commitment for leaders to stimulate creativity among a virtual workforce.”</td>
<td>What is the relationship between leadership toward creativity in virtual work and a heterarchical ontology?</td>
<td>Provides the philosophical underpinning of the study; reveals the central relations between leadership toward creativity and the heterarchy perspective</td>
</tr>
<tr>
<td>Study 3: “Leadership toward creativity in virtual work in a start-up context.”</td>
<td>How are the learning challenges of leadership toward creativity in virtual work and the measures undertaken to meet them experienced in a start-up context?</td>
<td>Provides empirical evidence in a start-up context about combining leadership and creativity within virtual work research</td>
</tr>
<tr>
<td>Study 4: “Typology on leadership toward creativity in virtual work.”</td>
<td>How is leadership toward creativity made up in different types of companies in virtual work?</td>
<td>Generates a descriptive fourfold typology based on empirical evidence on leadership toward creativity in various kinds of businesses in virtual work.</td>
</tr>
</tbody>
</table>
5.1 Study 1: Defining leadership that fosters creativity in virtual work: Descriptive interpretative concept analysis

This study addresses the first research question: “How does one define leadership that fosters creativity in virtual work?” The purpose of this study was to define leadership that promotes creativity in virtual work through a descriptive interpretative concept analysis (Takala & Lämsä, 2001) and an inductive epistemological approach. From the dissertation perspective, this definition was lacking in the research literature. The descriptive interpretative concept analysis clarified the fundamental concepts of the research—virtual work, creativity, and leadership—revealed how they are connected to one another in the research literature and offered a definition of leadership that fosters creativity in virtual work.

The evidence of this analysis consisted of definitions of key and related concepts, interpretations of the concepts, and construction of the concept map showing the connections and correlations between the concepts (Humala, 2014).

Based on the descriptive concept analysis, effective leadership that fosters creativity in virtual work includes:

- understanding that virtuality at work is complex, multidimensional, and multilevel, and that people work in organizations and networks using both virtual and face-to-face interaction
- utilizing a combination of leadership approaches to support inspiring interaction and collective creativity at work
- understanding the significance of virtual spaces and relations between different people in virtual work and ways to exploit them in interaction (Humala, 2014).

The descriptive, interpretative concept analysis revealed that transformational, emotional, and complexity leadership approaches were found to be particularly appropriate for promoting collaborative creativity in virtual work settings. Transformational leadership mainly presents elements of both emotional and complexity leadership, but studies on leadership in virtual work settings have not yet rested on any theoretical framework. The findings suggested that effective leadership toward creativity in virtual work requires a broad understanding of virtuality, creativity, and interpersonal interactions between people. The results indicated that understanding the complexity of virtual work thoroughly, along with interpersonal interactions, and using them appropriately can produce valuable solutions for co-creative practices and lead to successful innovations and solutions toward sustainable organizations. This finding echoes the complex challenges in leadership for sustainability (Metcalf & Benn, 2013) and managing the microinteraction climate in systemic leadership (Hardagon &
Moreover, Study 1 indicated that “the future development of leadership theory for fostering creativity in virtual work can benefit from integral theoretical pluralism” (Humala, 2014, p. 39).

The concept analysis contributed a conceptual basis to continue the research both theoretically and empirically to verify and complement the connections and correlations and explore the appropriateness of related types of leadership for leading a virtual workforce toward creativity. However, the concept map was based only on accurate data, regardless of the managerial and contextual understanding of the researcher. In addition, the influence of power relations that can affect leading a virtual workforce toward creativity was not analyzed, because its significance did not come up explicitly in the texts chosen for this concept analysis.

5.2 Study 2: Heterarchial ontological commitment for leaders to stimulate creativity among a virtual workforce

Study 2 aimed at debating the applicability of heterarchy as the ontological commitment to leadership for encouraging creativity in virtual work. Heterarchy has its roots in CAS theory, and it relates to the lateral coordination of organizational diversity (Crumley, 1995). It had not previously been applied to virtual work. The focus of attention was on the second research question of the dissertation: “What is the relationship between leadership toward creativity in virtual work and the heterarchical ontology?” With the help of the data from the document-based inquiry and interviews, the study identified the focal relations between the challenges in leading a virtual workforce toward creativity and the heterarchical ontology in leadership.

The findings of Study 2 demonstrated that the heterarchical ontological commitment is appropriate to leadership toward creativity in virtual work. By using the heterarchical ontological commitment, leaders can understand their role in virtual networked work in greater depth, orchestrate collaboration more successfully, foster co-workers’ creativity, and encourage a regenerative organizational culture. The study also indicated that complexity, which develops with more nodes and interpersonal interactions, calls for leadership based on heterarchical ontology. The analysis revealed that it is particularly important for leaders inspiring a virtual workforce toward creativity to perceive virtuality as a networked work setting and to apply distributed authority to orchestrate work. In particular, “the three focal leadership challenges toward creativity—understanding virtuality as a networked context, developing virtual leadership mind-set, and leading meaningful work for progress—and the two attributes of heterarchy in
relation to leadership—distributed authority to orchestrate work and supportive interdependent interaction” are linked together (Humala, 2016, p.58).

Study 2 added to the limited research on leadership toward creativity in virtual work and applied the heterarchy perspective to virtual work. It connected the two different academic streams of leadership of virtual work toward creativity and the hierarchical commitment to leadership. Hence, the study advances the future development of leadership theory toward creativity in virtual work. Further, because this study blended business-oriented and pedagogical leadership perspectives, it can broaden the understanding of empowering people and utilizing their ideas in leading a virtual workforce toward creativity.

The results indicated that further studies of the complexity and the microinteractions in virtual work, i.e. the roles of events, moments, and leadership behaviors and invisible aspects of leaders’ work like sensitivity and the ability to listen, could help in understanding how to better inspire creativity in virtual settings and foster reflectivity and critical thinking. These findings support Hardagon and Bechky’s (2006) notion of reflective reframing as the core of the creatively collective moment. This study also highlighted the deeper future notion of tagging to help label important themes in virtual work and to encourage people to join in those themes. The findings raised the challenge of exploring the significance of power and different power positions in leading a virtual workforce toward creativity and making those areas visible when leading people remotely while suggesting the use of various methodologies to find answers to those questions.

5.3 Study 3: Leadership toward creativity in virtual work in a start-up context

This case study in a start-up addressed the third research question, “How are the learning challenges of leadership toward creativity in virtual work, and the measures to meet them, experienced in a start-up?” The qualitative single in-depth study provided empirical evidence in a partnership start-up setting about combining leadership and creativity within virtual work research. In a partnership start-up company, two or more partners form a corporate alliance to create common value (Osborn & Marion, 2009). The Finnish case start-up was in an early development phase operating in a global sustainable engineering business. However, the key people in this start-up had broad previous experience in business life. The data was gathered through interviews with key people that captured their perspectives and experiences.
Study 3 first construed ten learning themes in leadership and then refined them into four main learning challenges in leadership. Based on the analysis, the most significant learning challenges for a partnership start-up are (1) collaboration in a business team, (2) orchestration and leadership, (3) collaboration with customers, and (4) project management. The data analysis also revealed the critical leadership actions needed to meet the primary learning challenges. The primary measure for leaders to meet the first challenge was encouraging collective creation, critical reflection, and assertiveness. Assertiveness, efficient and flexible interaction, and multiliteracies are essential for leaders to address the problems of orchestration and leadership, create shared values with clients, and have a consistent course of action to help them collaborate with customers. Finally, excellent management skills and systems are necessary for managing projects successfully.

Study 3 demonstrated that leadership that encourages using virtuality and ICT creatively from a company’s early stages and takes advantage of multiliteracies and critical reflection could help both people and businesses flourish in the digital economy. Virtuality and ICT provide a seedbed to critical thought and testing, which are both essential for collective creativity to proceed. These issues help create new shared values for start-ups that are coping with complex challenges and for all partners to learn how to run a start-up. The findings of Study 3 “suggested the importance of a co-creative and assertive coaching leadership style and working culture utilizing critical reflection” in a start-up (Humala, 2015, p. 436). Additionally, this kind of leadership can improve business forecasting and decision making and bring about superior credibility among customers. The results indicated that coaching supports the learning of people and entire organizations, strategic and commercial development, and the best ways of doing business with interest groups (Humala, 2015).

Study 3 highlighted the significance of a shared vision, leadership as a function of interaction, and listening to people and respecting them in stimulating creativity in a start-up context. Based on the findings, multiliteracies and lobbying are effective methods for key people to manage social and physical distances in virtual work. This output added to the scholarly debate by offering views on how ICT influences the adoption of virtual leadership tools and processes (Avolio et al., 2014). In addition, the study showed that the integration of business and pedagogical knowledge could help in perceiving leadership and collaboration in virtual work more broadly.
5.4 Study 4: Typology on leadership toward creativity in virtual work

The fourth study sought to answer the research question, “How is leadership toward creativity made up in different types of companies in virtual work?” The multiple-case study aimed to develop a descriptive typology based on empirical data to identify and describe how leadership occurs in virtual work in various types of companies. The study helped alleviate the scarcity of empirical studies on leadership that stimulates a virtual workforce toward creativity (Guo et al., 2016). It provided empirical evidence for applying the heterarchic perspective on virtual work and understanding the connections between stimulating creativity and heterarchy in better leading a virtual workforce. This study empirically explored how leadership toward creativity occurred in virtual work in various companies and used the primary theoretical lenses of creativity-conducive leadership and heterarchical leadership as the basis to generate a typology.

A multiple qualitative case study was designed, and an interpretivist approach was applied in the data analysis, supplemented by an abductive form of analysis. The data was collected by interviewing 21 people who were leaders and employees in four companies in the ICT sector and one business advisory company. Based on the interview data, the study produced a descriptive typology of different company types. The typology was outlined by analyzing the common aspects of what, how, and why leadership toward creativity occurred in virtual work in the case companies. Four different types of companies were analyzed in detail to identify the composition of and name each company type: type A (“nascent launch pad”), type B (“collective mind”), type C (“command center”), and type D (“leaky boat”). On the vertical axis of the typology, leadership nurturing creativity in a virtual workforce increases upward, and leadership with a task-based attitude increases downward. On the horizontal axis, heterarchical integrative leadership increases to the right, while hierarchical leadership increases to the left.

The descriptive typology strengthens the view that in the global networked business environment and with advancements in technology, the trend in leadership is toward type B, the collective mind. Type B operates via a virtual mindset. Its characteristics include shared values, meaningful work, collective intelligence, conscious reflection, transparency, coaching, empowering leadership by example, effective multichannel interaction, and assertiveness. The findings make clear that “leaders who are genuinely interested both in people, and their development, and collaboration with individuals, as well as in the technologies, can inspire collective creativity and promote the common good in society” (Humala, 2017, p. 234). Further, both functional virtual and physical
spaces are crucial for genuine mutual interaction and collective creativity to evolve in virtual work. To improve the quality of virtual communication, leaders must communicate and interact with people. This demand, which is also suggested by the heterarchical perspective, requires leaders to develop the horizontal capability of people so as to consciously develop their thinking. This kind of leadership reinforces sustainability for both people and business.

The typology enriches the theoretical understanding of leadership inspiring creativity in virtual work by specifying different courses in the transition toward that kind of leadership. It helps scholars analyze “dimensions that influence leadership toward creativity in virtual work and better understand and conceptualize the conditions and relationships in leadership that are related to each other” (Humala, 2017, p. 234). It can also be helpful for the classification of companies and leaders. The findings empirically support applying the heterarchy perspective to inspire creativity among a virtual workforce. With the help of the typology, practitioners can better realize how leadership, communication and interaction, and learning and growth are closely tied in virtual contexts. They all also need to be developed to support creative interaction and improve productivity and competitiveness. The typology can also assist leaders and managers evaluate their job performance and establish appropriate performance assessment indicators for leaders and employees in virtual work.

The study suggested that future scholars focus on other fields, industries, networks, the role(s) of material objects and employees in fostering creativity, on theory development, and on conducting longitudinal studies.

The following chapter summarizes the findings of the four studies.
6 SYNTHESIS OF THE FINDINGS OF THE STUDIES

When a leader of a virtual workforce truly believes in an organization’s vision and perceives her work to be meaningful, she can act in her own way, value others’ contribution, and let them work in their way. The better the staff knows about the business, the easier it is to act. Decisions without reason don’t work in virtual work by any means. You need mechanisms for pressing the gas pedal and every so often to brake and stop. Those include checkpoints and lessons learned and a sufficiency of communication and documentation to understand and write down the targets, to learn from the successes and failures, and to decrease personnel risks. (Study 4, Leader, about 40 years old)

6.1 Synthesis of the results

This thesis has explored the key elements that enable leaders to foster creativity in a virtual work context based on the research data and contributes to the scientific discussion that increases our understanding of the links between leadership and creativity in virtual work. Based on the original Studies 1–4, I summarize the findings of this dissertation in Figure 2.
A critically and reflectively retrospective view of the conclusions of the four studies brings out the comprehension that to inspire collective creativity among a virtual workforce for business and societies, leaders should adopt a coaching and distributed leadership approach in virtual work (Figure 2). That means coaching people to flourish and supporting their professional growth, distributing leadership and responsibilities by example and encouraging co-creation, and managing the microinteraction climate. The findings demonstrate that promoting creativity in virtual work requires entire companies and organizations to shift toward a coaching and distributed leadership culture. The results highlight the following key elements in the leadership culture that most efficiently foster creativity in virtual work and contribute to the professional growth of leaders in virtual work:

- adopting a virtual leadership mindset to support diverse knowledge management
- showing respect for collective intelligence to provide a seedbed for critical reflection and testing
• developing skills, tools, and spaces for social bonding to offer chances for learning and growth

The next paragraphs discuss the leadership culture and the roles of each essential element in detail.

6.2 A coaching and distributed leadership culture in virtual work

Based on the empirical evidence from the case studies (Studies 3 and 4), I argue that it would be far-sighted for organizational leaders to update their leadership approaches toward a coaching and distributed leadership culture so as to foster a virtual workforce toward creativity. The introductory section made clear that leadership and creativity have so far remained separate in virtual work research, and empirical knowledge about leadership toward creativity in virtual work is scarce. This dissertation contributes to filling this research gap by highlighting coaching and distributed leadership to foster a virtual workforce toward creativity.

Leaders encourage co-creation when they can coach people to flourish, create mutual trust, support individuals’ professional growth, apply distributed authority to orchestrate work, manage the microinteraction climate among human beings, and lead by example. The results support the previously highlighted demands for future leaders to develop the potential and promote the best in every individual (e.g., Rodriguez & Rodriguez, 2015). In addition, the findings of this dissertation are in line with the views of Stein, Wanstreet, Slagle, Trinko, and Lutz (2013) that continual coaching and feedback in an online community reinforce the power of learner-led discussions and foster problem solving and collaborative learning.

Coaching and empowering leadership with sharing experiences and participatory learning across role boundaries can also enhance mutual coaching, in which each participant acts as both coach and trainee, and generate a leadership culture that values listening and learning. This kind of coaching culture can be extended to cover primary partners, customers, and other players. It is vital to understand that organizations work in virtual networked environments together with their customers and user communities (Studies 1, 2, and 4), linking both customers and customers’ customers to business development (Study 3). The findings also support earlier research on leadership for growth that highlights the importance of the coaching skills of leaders to develop a team capable of operating at the same high level that ideally does not directly involve day-to-day business operations (Freeman & Siegfried, 2015). Because this kind of leadership enables power, responsibility, and commitment to arise from the community, it
resembles emergent (Chamakiotis, 2014, p. 296) or ad hoc leadership (Hara, Shachaf, & Stoerger, 2009). Both emergent and ad hoc leadership enable temporary leadership opportunities for people, which is also suggested by the complexity leadership approach (Dotlich et al., 2008). It is also critical for leaders to know their people and their expertise, skills, passions, and interests over their role limits and to support their people to utilize those traits for empowerment in the digital era. The leaders interviewed in the case studies indicated that coaching and assertive leadership toward collective creation generates opportunities to improve the well-being and effectiveness of employees, enhances customer service and stability, and reflects better business forecasting, decision making, and profitability.

The essential elements that were found to have the most influence over coaching and a distributed leadership culture and to contribute to the professional growth of leaders in virtual work are adopting a virtual mindset, showing respect for collective intelligence, and developing skills, tools, and spaces for virtual communication.

6.2.1 Adopting a virtual leadership mindset

Study 2 revealed that developing a virtual leadership mindset is one of the focal challenges for leading a virtual workforce toward creativity to support knowledge management in diverse virtual work settings. This finding was supported by Studies 1, 3, and 4. Mindsets are implicit theories or assumptions that people hold about the plasticity of their abilities (Keating & Heslin, 2015). In this research, a virtual mindset means understanding virtuality as part of a social and conceptual network that allows collaborative interaction between people based on mutual trust and responsibility, and uncovering what is unseen and unheard and understanding its nature. A virtual leadership mindset means that leaders can sense, experience, and share the virtual context with other people. These requirements demand EI, sensitivity, and transparency from leaders, skills that help them understand the interlinear hints from their people, encounter bad business news constructively, and better orchestrate collaborative work. These results support the significance of the latent mind (Perry, 2011) for collective creativity to develop: to uncover what is unseen and understand its nature so as not to hinder creative problem solving.

Leaders who adopt a virtual leadership mindset understand virtuality and creativity comprehensively as a networked context to support collaborative work toward new solutions and deal with overarching problems and changing circumstances. A leader who has a virtual mindset realizes that leadership and context are intertwined (Osborn,
Uhl-Bien, & Milosevic, 2014). Therefore, it is necessary to integrate the use of technology with the mindset for creativity, collaboration, and multimedia productivity with a sharp ear and actively and assertively. A virtual leadership mindset relates to a growth-based mindset and environment, where human development is valued and people can thrive (Dweck, 2012, p. 141).

The findings show that assertiveness—clear, shared targets and rules; a consistent and fair course of action and processes; and consistent leadership profiles toward different players—is a fundamental attribute in a virtual leadership mindset. Supported by heterarchy, combining different organizing principles can help to achieve both structural support and performance to foster creativity in virtual work.

6.2.2 Respect for collective intelligence

Promoting creativity in leading a virtual workforce is related to leaders’ respect for people, valuing interaction with and collaboration of individuals, and enhancing collective intelligence in a trusted environment. In a sense, virtual contexts enable leaders to work with their collaborators to create courses of action that suit the prevailing circumstances and let collective intelligence lead the organization toward success. In addition, developing cultures of collective intelligence generates broader social foresight and reflexivity so that organizations can match science and technology and respond to the near-term future context (Jakonen & Kamppinen, 2015). This interpretation signifies shared power and shared responsibility in virtual work, echoing the notion of shared leadership “as a dynamic, interactive influence process among individuals in groups” (Pearce & Conger, 2003). Collective intelligence requires horizontal interaction among people, which challenges leaders to pay attention to knowledge management, such as by encouraging their people to bring forward multiple perspectives and developing and revising their integrative thinking (Kallio, 2011). The findings of this dissertation have augmented existing knowledge and underlined skillful recruiting and orientation of suitable new leaders and employees to enhance creativity and make virtual work successful.

Respect for collective intelligence together with virtuality and ICT offer a seedbed for critical reflection and testing. The findings of empirical Studies 3 and 4 strengthened the impression about a working culture that utilizes conscious and critical reflection in inspiring creativity among a virtual workforce. This kind of working culture is also related to the mindset of a coaching culture, which emphasizes that inquiring together
and communal way of working together can generate better responses to new challenges.

As the virtual experiences of relationships and encounters play a significant role in virtual work, inspiring a virtual workforce toward creativity requires focusing on people and the microinteraction climate or grassroots dynamics (Phelps, 2013, p. 288). This kind of leadership also demands fine-grained human skills and relational competence (Hardagon & Bechky, 2006), meaningful shared objectives and values, and hence supportive orchestration abilities to enable individuals to reveal their thoughts and feelings and use conscious, unhurried times at work for reflection (Spelthann & Haunschild, 2011). This outlook supports the systemic view of leadership (Johannessen & Skålsvik, 2013) and recent discussions on meaningful work as an ongoing search for meaning, which calls for measuring the dimensions of meaningful work with each other (Lips-Wiersma & Wright, 2012).

6.2.3 Developing skills, tools, and spaces for social bonding

In virtual work, a lot is going on that cannot be seen (Hickman & Sorenson, 2014, p. 2). Therefore, the role of material objects like technology and digital communication tools is critical in mutual interaction and requires attention in leading a virtual workforce and removing factors that inhibit creativity. Indeed, virtuality and ICT provide chances for learning and growth for everyone at every turn. Through stimulating open conversation, interaction, and listening to one another, leaders enable people to express their voices and generate creativity in virtual work. This situation makes appropriate skills, tools, and spaces vital for social bonding in virtual work contexts, both inside the organization and with customers and other stakeholders. Leaders who care for their people and communicate actively and amicably with them through multiple channels and are visible to their employees and partners in cooperation can better develop social bonds to enhance creativity within the virtual work environment. On the basis of the results, remote employees appreciate leaders who regularly meet with them face-to-face and use modern functioning communication tools and spaces such as social media to discuss and reflect on issues together. Studies 3 and 4 underlined that multichannel communication and active transparent communication are effective ways to manage social and physical distances, stimulate discourse, and orchestrate creative interaction in virtual work. These results are linked with those of Bordi, Okkonen, Mäkinen, and Heikkilä-Tammi (2018), who concluded that social factors like organizational and team-level practices influence communication-related well-being in the digital work.
environment. Study 4 empirically supported the notion that collective creativity in virtual work requires both virtual and physical interaction in appropriate spaces and caring for one another. Further, both Studies 3 and 4 highlighted the relevance of unlearning old courses of action and the creative utilization of virtuality and ICT to help collective creativity in virtual work to emerge. This type of leadership refers to a joint effort among individuals and a new practice of communication that can lead to a more productive business (Ziek & Smulowitz, 2014).

The next chapter evaluates the research and presents its theoretical and practical implications.
7 IMPLICATIONS

7.1 Evaluation of the research

Evaluation of the research requires focusing on each of its phases: planning, data collection, data analysis, and interpretation. During the entire research process, I have tried to cast the study as a process in which the phrasing of the research question and the choices have varied. The final wording of the research question, “What are the key elements that enable leaders to foster creativity in a virtual work context based on the research data?” took shape after the latest empirical study and during the summary writing process. The research question highlights leaders as the primary target group of this research. Setting leaders as a target group is significant because one of my fundamental motives in carrying out this dissertation is to contribute to managerial discussions that can increase our understanding about the links between leadership and creativity in virtual work. Moreover, concentrating in this thesis on the key elements to foster creativity in a virtual work context is realistic enough, given the research data collected. I have also described the research process and its phases openly, justified the research problem, and explained the ontological, epistemological, theoretical, and methodological choices I have made. I have defended the decisions on drawing understanding from previous research literature and collecting empirical data in each separate study. Data and interpretation have gone together throughout the process.

The research project formally started with a literature review in 2012, although there had already been periods of active reading and reporting concerning the same general theme as this research in the preceding couple of years. The literature review and data analysis continued toward the end of the research project in 2018. The research problem was initially defined in spring 2012. The research process was not straightforward but meandered widely by approaching the whole complex cluster of issues from different perspectives to find a justified understanding of the interest. The alternative of concentrating on learning instead of leadership was considered, and the option of focusing on learning business know-how in Massive Open Online Courses (MOOCs) was studied. This detour started to direct the research toward a cul-de-sac but eventually strengthened to bring its focus back to the starting point—toward leadership that fosters creativity in virtual work.
Concerning methodological choices, selecting the basic qualitative research design as the research method in the third study was in no way straightforward. Instead, both the phenomenographic approach and the constructivist grounded theory approach were thoroughly investigated before the final choice was made. In the first phase, because the primary goal was thought to be increasing holistic understanding, discovering possible principles concerning creativity fostering leadership, and specifying the outputs of such leadership in virtual work, the phenomenographic approach was explored (Marton & Booth, 1997). Next, the constructivist grounded theory was deeply considered, because the aim of the research changed direction to derive new theoretical insights from the data. Constructivist grounded theory lies in the interpretive tradition, prioritizes the phenomena under study, and sees both data and analysis as being created from shared experiences and relationships with participants (Charmaz, 2006, p. 130). In the constructivist approach, researchers need to interpret how and sometimes why participants construct meanings and actions in specific situations. The theory depends on the researcher’s view, and any analysis is contextualized in time, place, and culture (Charmaz, 2006, p. 130; Mills, Bonner, & Francis, 2006). The final choice was the basic qualitative research approach (Merriam, 2009), because the aim of the third study crystallized into understanding better how the key people in the case study experienced the learning challenges of leadership that foster creativity in virtual work and the measures undertaken to meet them.

I conducted the research process, including data gathering, data analyses, and reporting, individually. Additional resources helped in language editing and partly in transcribing the data. However, I presented and discussed the progress and the results of the original studies several times in research seminars and with my supervisors as well as in review processes for scientific journals throughout the research process. The outcomes were also presented at two international research conferences in 2014 and 2017 and two national research conferences in 2016 and 2017.

7.1.1 Ethical considerations

Research ethics call for highlighting the interest and starting assumptions of the research and the researcher. Conducting research on leadership toward creativity in virtual work originates from my previous experiences, both as an employee and a leader, in virtual dispersed work and my interest in how to help people flourish at work and in business. It is also worthwhile to provide a new understanding of a modern phenomenon that has not been studied before, i.e., linking creativity and leadership in virtual work. My
background helped me to understand the issue under research and its basis but could also have influenced the way I interpreted the data. However, in agreement with the chosen ontological and epistemological approaches, the researcher is one actor inside the issue under study and explores it from her own perspective. Moreover, this dissertation represents multidisciplinary research that links educational and business research approaches. During the entire research process, I have strived for the realization of these approaches, both in carrying out research and in reporting the findings.

Ethical questions are present during the entire qualitative research process. Each person who was interested in participating in the empirical studies was contacted personally and informed about the research and her role in it. Dialogic and discussion-style interviews enabled an open and pleasant atmosphere for mutual interaction and allowed the researcher to monitor the emotional states of the interviewees. The confidentiality and anonymity of the respondents and their work organizations were guaranteed. Each participating organization was offered the opportunity to comment on the summary made from the interviews of their organization and the journal manuscripts. Ultimately, the start-up case company in Study 3, and the bigger company, the SME, and one start-up company in Study 4 commented on the outcomes. Ethical decisions have been based on the particularities of each context, mutual interaction with others, and sharing the research (Tracy, 2010).

7.1.2 Reliability and validity

In the qualitative paradigm, validity and reliability can be conceptualized as trustworthiness, rigor, and quality (Golafshani, 2003). Validity that is appropriate to the epistemological and ontological assumptions of the interpretive tradition can be redefined as the extent to which the research findings appropriately reflect the properties of the social setting investigated to achieve correct interpretations (Sandberg, 2005; Walther, Sochacka, & Kellam, 2013). The condition for validity in scientific knowledge is to analyze the underlying substance of the phenomenon to be studied, i.e., present and justify the core ontological assumptions and positioning in the field of science. This picture is of importance in research like this endeavor when the research aims to study a new phenomenon or a more established phenomenon from a novel point of view. Because replicability is not realistic in complex social systems and the qualitative, interpretive research tradition, reliability can then be understood as the procedure to achieve correct interpretations and to mitigate the effect of random
influences on the research process (Sandberg, 2005; Walther et al., 2013). In general, Tracy (2010) has suggested eight critical markers of quality in qualitative research: worthy topic, rich rigor, sincerity, credibility, resonance, significant contribution, ethics, and meaningful coherence. The combination of markers of quality depends on the researcher, context, academic affiliation, and project.

Sandberg (2005, p. 52) describes a truth achieved within interpretive approaches as “an ongoing and open process of knowledge claims correcting each other.” Instead of using positivist criteria to justify knowledge produced within interpretive approaches, he proposes validity as communicative, pragmatic, and transgressive validity and reliability as interpretive awareness as the most appropriate criteria (Sandberg, 2005). Communicative validity explains the co-construction of knowledge in the social context of investigation and within the research community (Walther et al., 2013); it focuses on the coherence of interpretations with the empirical material investigated (Sandberg, 2005). Pragmatic validity examines the extent to which theories and concepts are consistent with empirical reality (Walther et al., 2013) and corrects discrepancies between what the research participants say they do and what they actually do (Sandberg, 2005). Transgressive validity helps researchers become aware of their taken-for-granted frameworks and corrects possible contradictions (Sandberg, 2005). As to reliability, maintaining interpretive awareness means that the researcher acknowledges and explicitly deals with her subjectivity in making interpretations (Sandberg, 2005). Other strategies for reliability include communicative validation, validation of the interview situation, authenticity, an honest discussion of the limitation of the chosen approach, sufficient explanation of the methodology, method triangulation, and attempts to validate findings (Golafshani, 2003; Haunschild & Eikhof, 2009). Additionally, the provision of research process details, a thorough analysis, and the clear presentation of results helped to strengthen reliability.

This thesis examines validity from the perspectives of communicative validity, pragmatic validity, and transgressive validity. The evaluation criteria and the strategies that satisfy those criteria are explored in each aspect. Table 5 presents the evaluation of validity and reliability.
Table 5. The evaluation of validity and reliability of the research

<table>
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<th>Subject of evaluation</th>
<th>Evaluation criteria</th>
<th>Strategies to satisfy the criteria</th>
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| Communicative validity              | The coherence of the interpretations (Sandberg, 2005)                                | - Transparent and clear accounts and reflections of the research process were carried out from the foundations through methodological choices, data analysis, and reporting of findings  
- Semi-structured audio-recorded interviews and open-ended questions enabled the gathering of abundant data and checking the original data and emerging themes  
- The interpretations were made by ongoing engagement with the data, iteratively relating the parts to the whole, and continuously testing their stability  
- Verbatim extracts from the data were included in the study reports to assist the reader in making judgments about the coherence of interpretations |
| Construction of knowledge socially within the relevant communication community (Walther et al., 2013) | - Argumentative discourses within the research community were ongoing throughout the research process, such as presenting papers at conferences and seminars and in review processes for scientific journals  
- Participants were invited to comment on the research findings and the manuscripts |
| Pragmatic validity                   | Quality, quantity, and time frame of the data (Diefenbach, 2009)                    | - References to multiple theoretical approaches and other studies  
- Collection of enough data from different sources and different people relating to the same issues in different periods  
- Efforts were made to find appropriate case contexts for the goals of the thesis |
| Disparities between what the participants say they do and what they do (Sandberg, 2005) | - To avoid biased data, all interview statements were treated as equally important, participants were observed during the interviews, and follow-up questions were asked of them to embed their comments; data from the documents and interviews were compared with each other  
- The interpretations were validated in the subsequent studies |
| Transferability: i.e. how the concepts and knowledge claims withstand exposure to the reality investigated (Walther et al., 2013) | - Plentiful evidence of leadership and creativity in virtual work contexts deeply anchored to interaction, including the notions of both leaders and employees, facilitates the evaluation of the conclusions and their transferability to other virtual dispersed work contexts  
- Explanatory power of results that can also be utilized for future theory development |
| Transgressive validity               | Contradictions in interpretations (Sandberg, 2005)                                 | - Interpretations were consciously interrupted from time to time, and transcripts reread from different angles  
- Methods were critically reflected upon to search for contradictions and ensure sufficient depth and relevance of data analysis, e.g., an abductive form of analysis |
| Reliability                          | Interpretative awareness: how the researcher acknowledges and explicitly deals with her subjectivity (Sandberg, 2005) | - During the entire research process, the researcher strived to be aware of her prior subjective values, biases, inclinations, and experiences of leadership in virtual work and carefully checked that the interpretations were based on the participants’ actual views  
- A reflective research journal was kept to document challenges, issues, and decisions so as to maintain cohesion  
- The researcher’s background was openly brought forward to the reader |
| Triangulation: using multiple sources of data and various methods | - Multiple sources were employed in data collection in different phases of the research: written documents and interviews with female and male voluntary leaders and employees at various companies  
- Various qualitative methodological approaches were applied and supported by quantitative analysis to a lesser extent to produce more comprehensive findings |
Regarding the limitations of this research, the data in this qualitative study was collected by one researcher. Since I as researcher take full responsibility for all choices made, data collection, and the systematics of the analysis throughout the research process, I have addressed these matters in the above evaluation of the validity and reliability of the research.

The theoretical framework of this dissertation does not involve highly specific theoretical choices because there is as yet no fixed theoretical framework on leadership in virtual work contexts. However, the theoretical framework based on the literature review offers a groundwork for continuing theoretical discussion and theory formulation about leadership toward creativity in virtual work. Moreover, at the beginning of my doctoral studies and based on my practical experience, my interest focused more on the practice-based needs to conceptualize creativity-conducive leadership in virtual work that differs from traditional hierarchic leadership and that ensures daily business be done properly and on time in complex virtual work contexts with little or no face-to-face interaction. In other words, besides the complexity in virtual contexts, my initial view on leadership that stimulates creativity in virtual work was more directed to individual-based leadership thinking of the kind typically represented by transformational leadership. However, over the course of my doctoral studies, along with the heterarchical ontological commitment to leadership, my understanding of the creativity-conducive leadership in virtual work has become deeper and more collective. In any case, my practice-oriented mindset has mediated the more normative contribution of this thesis than its theoretical aspects.

The empirical data was collected almost entirely in Finland, except for two participants in Estonia in Study 2 and two participants in Study 4 who were originally from Southeast Asia but were working in Finland. However, half of the case companies operated globally, and several participants were experienced in global business. Finland, with 5.5 million inhabitants, is an example of an open economy that depends on world trade, with ICT integrated into the society. Both the society’s and the country’s digital operational environments are being reformed to improve the functionality and flexibility of current practices. This situation makes virtual work in Finland comparable to the rest of the world and facilitates the transferability of the findings to other virtual dispersed global work contexts, especially in service industries. Further, the extensive documentary data from previous research literature is supplemented by the geographical limitations of the empirical evidence.

Each of the original studies included shortcomings, some of which could be focused on and explored more in later studies to validate the findings. The concept analysis in Study 1 brought out other related types of leadership toward creativity, like servant
leadership and the visionary leadership style. Similarly, it highlighted power relations that might influence leadership toward creativity but were not analyzed in that study, because their significance did not come up explicitly in the texts chosen for the concept analysis. These issues were noted in subsequent studies to check for their relevance to the research problem. The explorative Study 2 called for more empirical evidence from multiple cases and different fields of operation in the future to be able to extend the study’s findings and to develop a theoretical foundation for leadership toward creativity in virtual work. The empirical data related to dispersed organizations and online interaction remained particularly modest in Study 2. Additionally, it showed the need to acquire more empirical evidence and a richer theoretical understanding regarding the notion of physical, social, and virtual distances and relations between people and how to exploit them. Ultimately, Study 3 and especially Study 4 offered more empirical evidence about the issue under study. However, Study 3 consisted of a single start-up case operating in a global sustainable engineering business, where the principal respondents made comparatively little use of virtuality and ICT, partly because the start-up was in an early development phase. Since all the interviewed principal people had several layers of prior knowledge in global business, and creativity can be conceptualized as a built-in element in start-ups, the case and its findings could justifiably pave the way for future empirical studies. To supplement the interview data, Study 4 included interviews with both female and male people of different ages at five companies. Even so, the case companies in Study 4 represented the ICT and ICT service sectors in Finland, because the case companies in the ICT field were interested in the research topic and willing to invest their time in the research project. However, the two case start-ups in Study 4 complemented the data received from the single partnership start-up in Study 3.

7.2 Theoretical implications

7.2.1 Multidisciplinary approach to understanding the links between leadership and creativity in virtual work

This dissertation relates to several organizational processes, such as collective creation (Sawyer & DeZutter, 2009), collaborative learning and knowledge creation, individuals’ contribution to the organizations’ knowledge (cf. Hämäläinen & Vähäsantanen, 2011; Scardamalia & Bereiter, 2006), and the leadership processes that foster creative
interaction and collaboration in virtual work. Based on the research data, this research mainly concerns leaders of people who work in abstract task-intensive occupations such as managerial, professional, and technical occupations that involve more cognitively complex tasks that have a high degree of uncertainty (Autor, 2015; Autor, Levy, & Murnane, 2003).

The thesis adds to the scholarly debate by integrating different academic streams in studying leadership toward creativity in virtual work. Based on the heterarchical ontological commitment to leadership, this research combined virtuality and virtual work, creativity and collective creativity, and creativity-conducive leadership approaches containing the following principal approaches: transformational leadership, emotional leadership, and complexity leadership. The research strengthens the benefits of integral theoretical pluralism in the future development of leadership theory toward creativity in virtual work. Moreover, integrating business-oriented and pedagogical leadership perspectives in this research broadens the understanding of empowering people and taking advantage of their ideas in leading a virtual workforce toward creativity. This integration supports Geerlof and Van Beckhoven’s (2016) views regarding applying multiple styles of leadership depending on the context and having the audacity to go beyond conventional and widely accepted behaviors in leading the transformation of an organization from a traditional toward a self-organizing organization.

### 7.2.2 Professional development of leaders in virtual work

Based on the results of this research, leaders who advocate humanistic values to care for and empower people support their professional growth and meaningfulness at work, foster collective creativity, and generate common good in the society. However, leading a virtual workforce toward creativity is not an easy task and may even be a chore to some leaders. Various skill requirements for leaders create the demand to craft ways to support leaders in their professional development and growth (cf. Hämäläinen & Vähäsantanen, 2011). The empirical results suggest the need for leaders to support their managers (Study 4) and reveal the benefits for leaders and managers from mutual coaching and collegial support (Studies 3 and 4). Support from superiors and reflective sessions together with colleagues and members from professional networks face-to-face and on social media are two effective ways to maintain leaders’ and managers’ enthusiasm, creativity, and well-being. Leaders may also utilize skills developed in hobbies like sports teams or musical bands in leading a virtual workforce toward creativity. The results support Adams and Gaster’s (2014) claim that it is essential for
leaders to approach their development from the inside out and make structural changes from the bottom up.

In addition, experienced leadership toward creativity in virtual work offers opportunities to take advantage of interpersonal interactions and thus enhance the development of the learning environments. The findings highlight the significance of participatory learning across role boundaries in authentic duties in the digital age. Authentic tasks in virtual work awaken individuals’ intrinsic motivation and engage them in working together and developing dialogic know-how.

Furthermore, virtual work challenges organizations, leaders, and employees to continually consider such issues as how individuals’ skills and resources can stretch to work collectively toward creativity and novelties. Significant concerns include how and where to find the time and space to enable concentration on certain assignments, how to avoid the common fallacy phenomenon, and how to readjust after unexpected breakdowns. The results of this dissertation indicate that a virtual workforce may be able to work collectively only occasionally to ensure continuous development of resources; meanwhile, the work may be organized in a new way. These circumstances can also mean finding new business models. Organizations can also apply various leadership and employment solutions, because they and their employees differ from one another. These kinds of considerations strengthen the fundamental role of conscious reflection in virtual work both inside organizations among leaders, managers, and employees and in cooperation with partners. Conscious reflection helps both people and firms to navigate the virtual business context as successfully as possible. Further, distributed leadership and changing roles in virtual networked work are crucial and highlighted by heterarchy. These courses of action can enable human beings to recover after intensive and exhausting work periods and rediscover their intrinsic motivation and creativity (Humala, 2017).

7.3 Practical implications

Based on the results, inspiring people and activating their energy, passion, and performance toward creativity in virtual work requires leaders who work in the middle of groups, are genuinely interested in people and their development, and take ample advantage of technologies. As virtual work is becoming more common, the realization of the practitioners’ ontological commitment can contribute to a more collaborative and committed virtual workforce and creative and innovative outputs. The results suggest that the heterarchical ontological commitment to leadership can “create prerequisites to use ICT tools to raise the present working culture to the next level focusing on changing
courses of action” and “continuous receiving and giving of feedback to achieve common goals” (Humala, 2016, p. 60). In the new working culture, leadership is coaching and dispersed, people and their interactions are in focus, and the role of technology is to create suitable means for creative interaction.

Table 6 presents an overview of how a coaching and dispersed leadership culture toward creativity can be implemented in different types of case companies studied in this dissertation. The table can help practitioners apply the research findings in practice. It was created by applying at the general level the ideas from soft systems methodology (SSM), which is a systems approach that attempts to understand the fuzzy world of complex organizations and conceive actions to improve the present (Checkland & Poulter, 2006). Table 6 pieces together the structured leadership situations in each company type studied in this thesis, feasible and desirable changes in each company type, and a set of actions for them to improve leadership toward creativity in virtual work. The structured situations of the case companies are based on the analysis in Studies 3 and 4, and they are named as the company types in the typology generated in Study 4: nascent launch pad, collective mind, command center, and leaky boat. Nascent launch pad symbolizes a company type in which leaders aim to reinforce the creativity of a virtual workforce by implementing a hierarchical leadership. A collective mind company has restructured its organization and leadership toward heterarchical integrative leadership while nurturing creativity in a virtual workforce. The command center represents a traditional company type with a hierarchical leadership mode. In a leaky boat company, it is typical that the business objective and leadership culture are perceived as confusing. A leaky boat company is not included in Table 6 because no such case company was involved in Study 4.
Table 6. An overview of implementing a coaching and distributed leadership culture toward creativity in different types of case companies studied in this research

<table>
<thead>
<tr>
<th>Company type</th>
<th>The structured leadership situation based on the research</th>
<th>Feasible and desirable changes to leadership</th>
<th>Set of actions to improve leadership toward creativity in virtual work</th>
</tr>
</thead>
<tbody>
<tr>
<td>A new start-up company</td>
<td>Nascent launch pad</td>
<td>Implementing a virtual leadership mindset and assertive and coherent organizing principles</td>
<td>Increasing openness in communication and interaction; recruiting the right professionals and developing their knowledge</td>
</tr>
<tr>
<td>A start-up with previous experience</td>
<td>Collective mind</td>
<td>Strengthening the role of common vision, collective intelligence, and employee empowerment in leadership</td>
<td>Highlighting the common vision and values; developing tools for mutual communication and participatory learning</td>
</tr>
<tr>
<td>An expansive SME</td>
<td>Collective mind</td>
<td>Sustaining cohesion in leadership during the expansion; breaking out of the burdens of history</td>
<td>Putting leadership toward creativity into practice all over the company and updating the skill requirements in virtual work from time to time</td>
</tr>
<tr>
<td>A more conventional and growing company</td>
<td>Command center</td>
<td>Updating the working and leadership culture for the digital era</td>
<td>Increasing distributed decision making and transparency; valuing people and their ideas and supporting interaction</td>
</tr>
</tbody>
</table>

For practitioners, the findings highlight the importance of coaching, collective leadership, working culture, and assertiveness and reflectivity for learning and growth and to minimize mistakes in virtual work. Companies and organizations can use virtuality to build a reflective organization, such as by developing multichannel interaction, sharing structured business analysis through ICT, lobbying before decision making, and organizing sessions for reflection as regularly and informally as necessary by using social media tools. Based on the findings, virtual work creates additional demands for leaders to stabilize the daily work by stepping back from complex and changing situations and organizing conscious reflection sessions to manage those situations together. Leaders can also tag essential themes in virtual work and encourage people to join those themes. In addition, new ways of working and leading require unlearning old courses of action. For instance, open discussions about the relations between an organization’s history and its future strategic aims can release individuals’ curiosity and creativity to shape innovative solutions. The findings also underline the importance of a shared objective and integrating customers and suppliers to commit them everyone toward that common target. The results help practitioners understand
the strong mutual links between leadership, communication and interaction, and learning and growth in virtual contexts; they all need to be developed to encourage creative interaction and improve productivity and competitiveness. Practitioners can also utilize the typology generated in Study 4 in evaluating their work performance and in developing appropriate performance assessment indicators for leaders and employees in virtual work.

The results also have implications for the development of leadership training and coaching and working tools and spaces. The findings indicate that besides being coaches themselves, leaders in practical virtual work need extra support from their own superiors or colleagues to better understand what is unseen in virtual work, retain control over the situation, and foster their own creativity and assertiveness. In virtual work in general, it is essential to specify skill requirements for leaders and employees and to hire the right people for the right positions. To succeed in leading a virtual workforce toward creativity, leaders must pay attention to the recruitment and orientation of their people. Additionally, executive education on coaching and dispersed leadership and skills to orchestrate distributed work needs more attention. Improvement of EI and listening skills in face-to-face and virtual interaction, professional utilization of modern virtual tools, and development of flexible activity-based offices and new mobile and remote ways of working contribute human capital and sustainability in people and business. Particularly in networks of organizations, these issues should be on the agenda as early as possible in the planning phase.

7.4 Recommendations for further research

Creativity is an enormous challenge for everyone; it touches all disciplines in society. To encourage creativity in virtual work, future scholars should explore a deeper and more concrete level in this field of study to find out how to adopt a virtual leadership mindset, respect for collective intelligence, and develop skills, tools, and spaces for social bonding in practice and how practical operative work looks when these key issues are addressed well. Researchers can also focus on the role and importance of the invisible aspects of leaders’ work, like the role of events and moments, as well as sensitivity, the ability to listen, and giving space to different views. The ways and tools to take advantage of physical, social, and virtual distances and relationships between people demand more research efforts. Additional empirical evidence and theoretical understanding of these issues can lead to a better understanding of the virtual context and foster reflectivity, critical thinking, and creativity. In addition, knowledge management in virtual work in general calls for future research.
The understanding of leading a virtual workforce toward creativity would be broadened by future empirical studies conducted by several researchers in other fields of industry, in several geographical locations, or using multiple cases, focusing on particular types of companies such as start-ups. Exploring how to use virtuality in the orchestration of networks and longitudinal studies would also be warmly welcomed.

To be able to lead different kinds of people, leaders need to know them well as individuals. One leadership style does not suit everyone, which is also true in virtual work. Because individual people have not been the focus of this research, future studies could focus on leading different individuals in virtual work. For instance, new insights could be found by exploring the links between leading a virtual workforce toward creativity and Kirton’s adaptive-innovative (KAI) theory, which suggests that all individuals are creative to a greater or lesser extent and in different ways within their cognitive styles (Kirton, 2003, p. 309). Future scholars could concentrate on developing proper incentives and compensations for people in virtual work. Additionally, research on tools and methods that help foresee individuals’ emotional severe baggage in time to avoid frustration, a sense of alienation, demotivation, or burnout in virtual work would be very valuable. Researchers interested in inquiring mindsets may be interested in studying the various virtual work mindsets of different individuals.

Future researchers are strongly recommended to study the outcomes of the coaching and dispersed leadership suggested in this research. Understanding better the outcomes of leadership toward creativity in virtual work is crucial for developing organizations and organizational cultures in practice and optimizing human and other resources for sustainable business and development. Additional empirical and theoretical evidence on leadership toward creativity in virtual work and its outcomes could also fill in the knowledge gaps to construct a theory about leadership toward creativity in virtual work and to establish options for ideological pluralism. For instance, the links between coaching and a shared leadership approach toward creativity in virtual work and sustainable leadership (e.g., Avery & Bergsteiner, 2011) could offer a fruitful path for future researchers.

This research also gives reasons to suggest future studies that use different methodologies in linking leadership and creativity to the reviews about virtual work. For instance, poststructuralist research could offer opportunities to wander through data by writing educative narratives, making observations, and including affect that can be understood as an experience of influence, intensity, and impact (Wetherell, 2012, p. 3). Additionally, collecting, analyzing, and interpreting data through social media could enable an exploration of individuals’ mental processes and greater consciousness of the
significance of invisible issues in leading virtual workforces toward creativity and illuminating them.
REFERENCES


Appendix 1

STUDY 2: THEMES OF THE SEMI-STRUCTURED INTERVIEWS

1. Background information about the interviewee’s current job and career history and the values and beliefs of the work organization

2. Collaborative dispersed work, virtual work, virtual communication tools as well as creativity and dynamism in virtual work – special characteristics, priorities, challenges

3. Leadership in virtual work in general – special characteristics, priorities, challenges

4. Nature of leadership that stimulates creativity among virtual workforce – special characteristics, priorities, challenges

5. Meanings of leadership toward creativity and dynamism in virtual work and its influences and outcomes

6. Possible other relevant issues
Appendix 2

STUDY 3: THEMES OF THE SEMI-STRUCTURED INTERVIEWS

1. Background information about the interviewee, his/her work organization and the reasons he/she has joint the case partnership startup

2. The interviewee’s understanding of the aims and business opportunities of the case startup and his/her experiences of the business so far

3. Experiences of mutual interaction, team dynamics and the ways and tools for collaboration
   - The roles of the key persons
   - Experiences of the physical distances
   - Experiences of the exploitation of different expertise
   - Factors that promote interaction and team dynamics
   - Challenging factors in interaction and team dynamics

4. Collaboration in the startup with its customers, and tools for customer interaction
   - Factors that promote collaboration with customers
   - Challenging issues in collaboration with customers

5. Leadership in the partnership startup and the ways and tools for interaction among key persons
   - Ways how leadership arises and develops
   - Essential factors in leading virtual collaboration in the partnership startup
   - Challenges in leadership
   - Needs to develop leadership in virtual work

6. Ways how creativity is connected to virtual collaboration and leadership and how it can be utilized

7. Possible other relevant issues
Appendix 3

STUDY 4: INTERVIEW INSTRUMENT

1. Background information about the interviewee and the case company
   • The interviewee’s role(s) at work, duties, work history in brief
   • Description of the company/work organization, its values, visions and aims

2. Experiences of leadership toward creativity by leaders and employees
   • How would you describe leadership in virtual work in your company currently? What kind of leadership task do you consider it? How do you experience it?
   • How do you describe good leadership in virtual work? In which kinds of situations does it arise? How do you experience and feel it? How does it differ from good leadership in general?
   • How do you describe leadership toward creativity in virtual work? What are the main characteristics in such leadership? Where, when and in which kinds of situations does this kind of leadership arise and how? Which personal characteristics of leaders are significant in inspiring creativity among a virtual workforce?
   • How can an individual become a source for creativity and energy for others in virtual work?

3. Contextual and organizational issues influencing creativity and its use in virtual work
   • e.g., organization structure and processes; work culture, communication, interaction; resources allocated to leadership, and virtual and physical settings and tools

3. Outcomes generated by leadership that foster creativity in virtual work
   • How is leadership toward creativity reflected in leaders/employees/business partners/customers in your company?
   • What kinds of outcomes have you noticed? How? To whom?
   • Which outcomes do you see the most significant? How? Why?

4. Possible other relevant issues


Defining leadership that fosters creativity in virtual work – Descriptive interpretative concept analysis

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sistä. Tulosten perusteella luovaa virtuaalista yhteistyötä edistävääsä johtamisessa virtuaalisuus, luovuu ja ihmisten väliset tilat ja suhteet on ymmärrettävä laajasti. Analyysi antaa viitteitä myös teoreettisesta pluralismista eli usean teoreettisen viitekehyksen käytön hyödyllisyydestä virtuaaliteorian teorian kehittämisessä sekä tarjoaa ajatuksia uusien käsitteiden luomiseen ja organisaatioiden kestävän kehittämiseen.

Avainsanat: luovuu, virtuaalisuus, virtuaalityö, johtaminen, transformaatiomainen johtaminen, tunnealjyjohtaminen, kompleksinen johtaminen, teoreettinen pluralismi

Abstract

Tapping common creativity of people inside and outside organizational, geographical and technological boundaries is a big challenge for leaders in virtual work to add value in value chains. The object of this article is – through the descriptive interpretative concept analysis and inductive epistemological approach – to define leadership that fosters creativity in virtual work. The outcome is a map of mutual connections of the concepts of virtuality, creativity, and transformational, emotional, and complexity leadership. The findings suggest that effective leadership in virtual work requires broad understanding of virtuality and creativity and spaces and relations between people. The analysis indicates benefits from integral theoretical pluralism, i.e. from utilizing several theoretical approaches in developing leadership theory for virtuality at work, and offers thoughts for creating new concepts and developing leadership towards sustainability in organizations.

Keywords: creativity, virtuality, virtual work, leadership, transformational leadership, emotional leadership, complexity leadership, theoretical pluralism

Introduction

Creativity is a strategic challenge in the global business environment where people communicate through virtual tools connecting social, organizational and personal realities. Fast developing information and communication technologies (ICT) challenge leaders to inspire virtual workforce for open interaction and foster creativity in virtual work. Key issues in these endeavours are 1) how to articulate broad business challenges to virtual workforce as inspiring personal tasks and directions and paths for professional growth, and 2) how to highlight the know-how and the creativity of the people and to create equal opportunities for influencing and providing value for all? To exemplify, for tapping both enthusiasm and experience of different people in virtual work leaders need to learn to respect remote expertise, listen to people, learn from mistakes, operate consistently and use virtual tools skillfully. Success enhances both personal and communal professional growth, productivity and competitiveness.

This article challenges the notion that the same conceptual framework leaders use for leading face-to-face followers can be used for virtual workforce as well. Virtual work creates special demands for leaders related to digital humanities (Svensson, 2012) to understand human consciousness and spaces between people (Ricœur, 1991), to support collab-
orative and processual work practices, create ongoing, cross-sectional dialogue process, and respect and emphasize initiative, individual creativity and passion for work (e.g. Hamel & Breen, 2007; Juuti, 2010b). Moreover, present-day leadership in virtual work is challenged by complexity and uncertainty, continuous emergence dynamic through relationships between people and informal communities, ethics, and managing leaders’ own human capital (Lane & Down, 2010; Snowden, 2002; Sutinen, 2012, 27-28; Uhl-Bien, Marion & McKelvey, 2007). Simultaneously, virtual work is present 24 hours a day, 7 days a week, which can lead to problems in managing work-life balance. Research in management and leadership in virtual work has found technology, trust, relationship building, diversity and communication to contribute to virtual work effectiveness (e.g. Quisenberry, 2011, 78; Panteli & Tucker, 2009). On the other hand, ICT can enable easy mutual communication and utilization of communal creativity (e.g. Alasoini, 2010, 52). However, not enough is understood of the potential effects of advanced information technologies on the leadership dynamic in or outside organizations, as well as how leadership appropriates these technologies faithfully or unfaithfully (Avolio, Sosik, Kahai & Baker, 2014).

According to my ontological commitment to leadership, traditional managerial view of leadership is moving towards heterarchy (e.g. Spelthann & Hauenschild, 2011, 102), in which an organization is regarded as a multi-layered entity with overlaps, rivalry and loose, hidden inconsistent parts maintaining creative organizing. In addition, leadership is regarded as an enabler of interaction, meaning of work, inspiration and creativity in heterarchy. Virtual collaborative work contexts question the traditional leadership thinking, which has its roots in objectivist ontology and positivist epistemology, according to which outside reality operates apart from people’s conceptions and beliefs about it (e.g. Houglum, 2012, 26).

Conceptual analysis and consideration in the meta level are necessary before discovering possible principles in leadership processes that foster creativity in virtual work and the outputs of such leadership. I argue that leadership that fosters creativity in virtual work needs to be defined for future research and business development purposes. This article deals with the following questions:

(1) How are the concepts virtual work, creativity and leadership connected to each other in research literature?
(2) How does one define leadership that fosters creativity in virtual work?

Before entering into the concept analysis in detail, the methodological choices will be discussed.

Methodology

Takala’s and Lämsä’s (2001) descriptive interpretative concept analysis offers a method to enhance and to understand a concept by focusing on interpreting definitions that are given in different sources and relating the concepts to each other (Nuopponen 2010). Takala and Lämsä (2001, 385-386) have divided the interpretative concept analysis into four different types: 1) a heuristical interpretative concept analy-
sis, where the chosen theoretical perspective directs interpretation broadly, 2) a theory-following interpretative concept analysis starting from the theoretical perspective, 3) a descriptive interpretative concept analysis aiming at enhancing understanding of the concept, and 4) a critical interpretative concept analysis, which aims for revealing how the meanings of the concept are defined by ideology and power relations. This concept analysis is a descriptive interpretative concept analysis with the important presumption to understand description of the concepts without any critical objectives connected in the interpretation. In general, interpretative analysis goes deeper into the concepts than a descriptive analysis, because it both describes the concepts and their use and also tries to find out the reasoning behind the conceptual structures of the field (Nuopponen 2010). Takala’s and Lämsä’s (2001) descriptive interpretative concept analysis aims is to find the entirety of the meanings and possible changed meanings and to describe and to interpret that entirety, and to form holistic idea of the concepts.

In an interpretative concept analysis concepts, the definitions and the meanings included in the concepts and in the definitions are studied and interpreted following the principles of the hermeneutic cycle (Takala & Lämsä 2001, 386). The data in the interpretative concept analysis is literal source material which is coherent and reliable relative to the research problem. The essential criteria in the choice are the research objective and the way the research topic is outlined. The subjects of interpretation are the definitions of the concept by other writers and theorists. It is especially the contextuality that defines the meaning (Takala & Lämsä 2001, 382-387; Wilson 1969, 58). This requires to understand the phenomenon from the history, current practices and from the immediate concepts by comparing them with each other. Clarifying the connection between the concept and institutional practices is especially important in exploring new concepts and the development of their meanings. Contextuality and thematics by a certain theoretical approach set the interpretative concept analysis apart from the traditional concept analysis (e.g. Näsi 1980). The significance of the theoretical approach is approximate but not strictly binding (Takala & Lämsä, 2001, 381). Source criticism is significant in the interpretative concept analysis focusing on the theoretical perspective, the quality of the references used, and the references by which the concepts are chosen as subjects of interpretation (Takala & Lämsä, 2001).

In general, interpretative analysis goes deeper into the concepts than a descriptive analysis.

The data of this study consists of definitions of the concepts of virtuality, creativity and leadership, and their related concepts in the central research texts (journal articles, books etc.) from the recent years. The data was searched using database searches and the so-called snowball method, which in qualitative research advances according to references until saturation. Database searches were conducted from Finnish and internation-
al education, business economics and information sciences databases using e.g. EBSCO, Elektra, SAGE Journals Online, Emerald, ScienceDirect and PsycINFO. In total, 101 papers were studied. This material was analyzed and synthesized using descriptive interpretative concept analysis as a research method (Takala & Lämsä 2001). The texts have been critically chosen, the quality of the references have been used - especially of those references on the strength of which the combined concepts are chosen as subjects of interpretation. The understanding has proceeded according to the principles of a hermeneutic circle.

Such emerging themes as complexity, emotionality and transformational leadership gelled during the data collection. Complexity featured in 15 %, emotionality in 26 % and transformational leadership in 11 % of all the 101 papers studied. Complexity derives from the ontological commitment to leadership of this study, heterarchy, which has roots in complex adaptive system (CAS) theory (e.g. Holland 2006). Heterarchies are viewed as complex adaptive systems interweaving a multiplicity of organizing principles and involving relations of interdependence. Virtual work is characterized by complex adaptive systems including evolutionary interaction, interdependent agents with a common outlook and capable of creative problem solving (Uhl-Bien et al. 2007). Secondly, emotions are included in virtual work interactions with different time zones, places and organizations and meanings of virtuality. Feelings and the expressions of emotions shape virtual relations and the meanings of virtual work (Sieben 2007, 565), and group emotions influence outcomes of virtual teams (Barsade & Gibson, 2012), which calls for the importance to study emotions in virtual work. Taking account of emotionality can create a better premise for leaders to interact with people and inspire them in virtual work. As for transformational leadership (e.g. Burns 1978, 20), it derives from the need in this study to base on such a leadership approach that supports followers’ creativity and provides conditions for improving organizational and individual performance.

In shaping a reflective mental structure for leadership that fosters creativity in virtual work contexts, I begin by analyzing the key and related concepts, suggesting a holistic idea of their connections to each other. Finally, I propose a definition for effective leadership in virtual work contexts and discuss the results in general.

**Interpretation of the key and related concepts and their connections to each other**

**Virtuality and leadership**

The concept of virtuality is interpreted related to work contexts, which have changed from traditional face-to-face contexts along the development of ICT. Virtuality is multidimensional: it can refer to people working isolated and dispersed through ICT as well as whole networks of companies with customers, users and suppliers working together. Silence and breaks of communication have been regarded important in understanding virtual interactions (Panteli & Fineman, 2005, 351).

Management and organizational literature mostly regard virtuality as an exten-
Virtuality is mainly understood as a team characteristic.

Virtuality is mainly understood as a team characteristic, and its definition is based on discontinuities. Discontinuities reflect problems of interaction, because more effort is needed in order to accomplish a task using virtual tools (Chudoba & Watson-Manheim, 2008). However, virtuality can be regarded as a novel organizational form with operations organized virtually, along with virtual teams, at the level of the whole organization or in dispersed networks (e.g. Noori & Lee, 2009, 40). According to Parjanen (2012, 73-74), virtuality as a novel organizational form changes practices, tools and processes, such as innovation activities in organizations.

The previous conception of virtuality as a team characteristic has been questioned in hybrid teams, where face-to-face interaction is mixed with technology-mediated interaction and in inter-team working in which people work at the same time with multiple tasks in multiple teams using technology-mediated communications (Dixon & Panteli, 2010). As technology-mediated interaction rather complements face-to-face interaction than substitutes it, Dixon and Panteli (2010) have defined virtuality based on continuities instead of discontinuities. They suggest that virtual continuities emerge within the team using both face-to-face and technology-mediated communication to mitigate the perceived effects of boundaries between the two means of communication. The con-
cept of virtuality in teams “includes virtual continuities and their mitigating effects on discontinuities that pre-exist in teams as well as those that can develop as a result of a team’s task, membership and temporal boundaries” (Dixon & Panteli, 2010, p. 1194). The new definition can be a basis for future research concerning the dynamics in teams mixing face-to-face and technology-mediated interaction and in multi-teaming contexts.

Collaboration in virtual teams has been studied since the 1990’s. Virtual teams include a group of geographically dispersed individuals working together during on a specific joint project or common task communicating mainly electronically (e.g. Jarvenpaa & Leidner, 1999). Research has indicated the importance of trust for enabling people to work together in virtual work contexts and the lack of face-to-face interaction causing decrease in productivity in truly virtual teams (e.g. Panteli & Chiasson, 2008, Parjanen, 2012, 74). According to Parjanen (2012, 74), virtual co-creation in virtual networks supports the participation of previously unavailable expertise into the creation of innovations. Virtual social networks, in general, represent virtual places where people can interact socially and also use them for innovative solutions (e.g. Panteli, 2009).

Leadership can be regarded as a social interaction process (e.g. Lord & Smith, 1999, 195; Beairsto & Ruohotie 2003, 138). Most leadership scholars define leadership as a active process of influencing, motivating and inspiring people for finding new possibilities and achieving their potential and for reaching the goals (e.g. Viitala, 2002, 31; Searle and Hanrahan, 2011). Leadership also serves a balancing function to continuous change, strategic goals, renewal and the emotional and motivational processes of people. According to Beairsto (2003, 37), management and leadership are needed simultaneously, because management gives directions and leadership invites dialogue and focuses on people by paying attention to relationships and aiming to invite people’s creative commitment. Recently, the importance of dialogue and dialogic leadership has been highlighted (e.g. Juuti 2010a).

Previous research on leadership in virtual work mainly focuses on leadership in virtual teams. Team leaders in virtual work contexts are challenged to adjust their leadership styles to meet the needs of virtual teams. ASTD (American Society for Training & Development) Forum’s Virtual Leadership Survey in 2012 survey indicated that the most different critical skills in leading a virtual environment include the ability to use process facilitation skills for meeting, monitor team progress over time, balance work and life based on 24/7 accessibility, and establish and maintain trust in a diverse environment with multiple cultures (Bergiel, Bergiel & Balsmeier, 2008, 105; Dennis, 2013).

To sum up, exploring virtuality has expanded from virtual individual remote
work contexts to virtual teams, organizations and networks also in contexts mixing face-to-face together with computer-mediated interactions. Virtuality can be regarded also as a novel organizational form and virtual co-creation important for innovations. Leadership as a social process in a virtual environment requires process facilitation skills, monitoring team progress, balancing work and life and establishing and maintaining trust between different actors.

Creativity and leadership

This article focuses on creativity and collective creativity in organizational contexts and contribution of leadership to creativity at work. In previous research creativity has been connected to (1) to the process of generating something novel and useful (e.g. Amabile, 1988, 126), and (2) both individuals and groups. It is commonly understood that creativity needs time to arise (e.g. Uusikylä, 2012).

One of the most popular theories on creativity, the componential theory, was developed by Amabile (1983) with three components influencing creativity: (1) domain-relevant skills and expertise, (2) creativity-related thinking relating to cognitive and personality processes conducive to novel thinking and (3) task motivation – specifically, the intrinsic motivation to engage in the interesting, enjoyable and personally challenging activity. Creativity can arise when all the components are present. Amabile (1988) has extended her theory to cover teams and organizations. In recent years, she has emphasized the power of progress as the top motivator of performance (Amabile & Kramer, 2010). According to Amabile’s & Kramer’s (2010) analysis, employees with positive emotions and high motivation have more frequently associated making progress than any other workday event. However, Amabile’s theory focuses only on inside organizations without including outside forces, such as consumer preferences and economic fluctuations (Amabile, 2013).

Creativity touches all disciplines in the society. Broadly, creativity can be defined as an attitude towards life, a problem-solving ability or artistic activity (Välikangas & Välikangas, 2004). European Commission’s publication The Impact of Culture on Creativity (2009) summarizes the scientific definitions of creativity in the psychological and the contextualists’ approach and the multi-disciplinary perspectives: creativity is ”a cognitive process which is triggered by motivation and interest in the new and which has no intrinsic link to the ability to score highly in intelligence tests for example; not genetic; usually the result of long periods of hard work and the acquisition of knowledge; a spontaneity requires a fertile ground; usually related to a specific field of activity; requires an audience assessment and is subject to cultural constraints (the social process) or subject to industrial constraints (in many of the creative industries)” (p. 169).

Creativity can be understood a process originating from personal pre-disposition and a hospitable social context and producing novel and useful outputs. It is a multidisciplinary concept meaning different things to different people and expressed in different ways. Especially in virtual work contexts, it is vital to understand creativity between people in organizations and be able to combine single
persons’ creativity with the groups’ collective creativity to energize all possible potential for innovations (e.g. DeZutter & Sawyer, 2010, 240).

Collective creativity (co-creativity) occurs in a social context, in which many people collaborate with each other and engage in verbal and nonverbal interaction. In collective creativity many people with different perspectives and experiences focus on a dialogue of a common concern, question the common challenge and create novel and useful ideas and solutions together. Interaction of individual creative skills, team dynamics and organizational solutions create collective outputs (Bissola & Imperatori, 2011; DeZutter & Sawyer, 2010, 229; Parjanne 2012, 55-61; Hargadon & Bechky, 2006). Employee’s exchanges especially with their work group, and to a lesser extent with their supervisor, influence on the creative performance (Muñoz-Doyague & Nieto, 2012). In addition, creative collaboration helps in handling with tensions. The study among teacher students showed that the most important obstacles to collective creativity are emotionally unsure and negative climate and unequal power relations including tensions (Eteläpelto, 2009).

Mihaly Csikszentmihalyi (e.g. 1999; 2003) uses his theory of flow and a system model of creativity to explain the creative process and to improve understanding of what leads to creative moments. The flow experiences are connected to the significance of emotional motives for performance and bringing happiness and enjoyment from pleasure, testing the boundaries and experienced the unexpected. Often they occur in situations when a person voluntarily stress-
es herself to extreme limits (Korpelainen, 2005, 55). Csikszentmihalyi explains collective creativity consisting of three components: individual, knowledge domains and a field of informed experts. For creativity to occur, a set of rules and practices must be transmitted from the domain to the individual, the individual then produces a novel variation in the content of the domain, and the field then selects the variation for inclusion in the domain (Csikszentmihalyi, 1999).

For creativity to occur, a set of rules and practises must be transmitted from the domain to the individual.

Organizational creativity means the creation of a valuable, useful and new product, service, idea, procedure or process by people working in a complex social system (Woodman, Sawyer & Griffin, 1993). Creative outcomes originate from the complex combination of individual, group and organizational characteristics and behaviors, and an organization can implement some of them in the future. Organizational creativity is a function of group creativity and contextual influences (Schepers & van den Berg, 2007; Parjanne, 2012, 43). Important components for organizational creativity are a relaxing environment, where freedom, security and control are deeply experienced, supporting organization’s structural and leadership solutions, resources and skills and organization culture (e.g. Andriopoulos, 2001;
Leaders and managers can enhance their followers' intrinsic motivation and creativity, for example, by paying attention to work environments, encouraging collaboration, mapping the phases of creative work and providing paths through bureaucracy and ways for passion at work (Amabile, Conti, Coon, Lazenby & Herron, 1996; Amabile & Khaire, 2008). Ways to support creativity in work communities include also interesting and challenging work, freedom, permission to fail, enough time, constructive debates and conflicts originating from contradictions from views, rewards, affect and small wins (Amabile, Barsade, Mueller & Staw, 2005; Korpelainen, 2005, 52-54; Uusikylä, 2012, 188-189; Amabile & Kramer, 2010). Leaders can also use virtual environments to foster collaboration and creativity in their own domains for example by creating their own social media environments for interaction and conversation (Peppler & Solomon, 2011).

Transformational leaders, in general, have been characterized by idealized influence, inspirational motivation, intellectual stimulation and individualized consideration (e.g. Burns 1978, 20; Bass & Avolio 1993, 112; Agin & Gibson 2010). Warrick (2011) has emphasized the need to integrate transformational leadership and organization development concepts to strengthen both concepts, and defined transformational leaders operationally as leaders who are skilled at leading, championing change, and transforming organizations.

Transformational leadership has been linked to employee creativity for instance through individual creative identity (e.g. Hu, Gu & Chen 2013; Wang & Zhu, 2011) and to providing the context for more effective organizational and individual performance (Bass & Avolio, 1993). Wang and Zhu (2011) have also found that group creative identity mediated the relationship between group-level transformational leadership and individual creative identity. However, according to Eisenbeiß and Boerner (2013), empirical evidence still includes both positive, negative and non-significant direct relationships between transformational leadership and followers’ creativity. The findings of Eisenbeiß and Boerner (2013) empirically identified that transformational leadership is negatively associated with follower creativity via follower dependency. However, the overall relationship between transformational leadership and followers’ creativity remained positive in their study.

Kolari (2010) regards important for leaders to have skills to perceive emotions of people and to enable significant experiences and meanings for people in their work. She defines transformational emotional leadership meaning social and emotional influence process based on understanding a person’s semantic, social and metacognitive processes and the ways leaders can positively influence on those processes (Kolari 2010, 199-200).

Creative leaders promote organizational creativity by displaying their own creative behavior, using their intuition and by promoting a creative climate in the
organization and balancing the needs and expectations of followers (e.g. Mathisen, Einarsen & Mykletun, 2012). Castro, Gomes & de Sousa (2012) found that followers’s creativity is associated with the leaders’ emotional intelligence (EI). The most important emotional intelligence dimensions are self-encouragement and understanding one’s own emotions. Emotional leaders are critical to inspire individuals and groups and to utilize their knowhow and skills effectively. Their empirical data consisted of 66 leader-employee dyads and collected by two questionnaires – one for leaders and one for employees. According to them, future studies shall carefully take the gender of the respondents into consideration and use both subjective and objective measures for creativity.

To conclude, as virtual work contexts connect people from dispersed locations, understanding collaborative creativity and combining it with individual creativity are most essential for organizations to gain positive outcomes. Virtual environments offer platforms for mutual interaction and conversations for collective creativity to develop and lead to novel and useful ideas and innovations. Followers’s creativity is also associated with transformational leadership and leaders’ emotional intelligence.

Transformational leadership in virtual work

Previous research demonstrates different views about the utility of transformational leadership in virtual work. In their study Ruggieri, Boca and Garro (2013) conclude that transformational leaders promote individual potential and inspire people towards longer-term goals and personal growth and are able to influence the emotional climate of the online work group. According to them, transformational leadership is in online teamwork more satisfying and cognitive and metacognitive style oriented than transactional leadership that is more participative style oriented. Empirical evidence for transformational leadership gives Schultz’ (2010) dissertation study, where he explored and identified effective leadership practices in the context of the virtual worker in a generationally diverse setting through a mixed method approach. He found that the virtual workers preferred aspects of transformational leadership in their leaders, and they regarded the medium of work more important than the generational differences when it comes to leadership preferences. Kahai, Huang and Jestice (2012) concluded after their study that the effect of transformational leadership is likely to be more effective on promoting teamwork in virtual teams when leadership occurs “in a medium that hides individualizing cues”.

Previous researchers have also suggested combinations of leadership styles to be applied in virtual work. Zayani’s (2008) dissertation study showed that transformational leadership is positively related to the success of global virtual teams but he suggested a combination of transformational leadership, with some elements of transactional leadership, as an effective style of leadership in global virtual teams. His survey included one hundred participants working in global virtual teams in the business processing industry. Whitford and Moss (2009) question the benefits of transformational leadership style in such virtual work where followers have to work for meeting obligations rather
than aspirations and instead suggest a visionary leadership style.

In conclusion, even though transformational leadership has been a popular approach in leadership research during the last decade, researchers do not agree on the superiority of transformational leadership in virtual work. Also the combinations of different leadership approaches have been highlighted to be applied in virtual work.

Emotional intelligence in leading virtual work contexts

Emotional intelligence (EI) refers, on the most general level, to the abilities of self-assertion, management of emotions and social awareness, and management of relationships to recognize and regulate emotions in ourselves and in others (Coleman, 2001; Virtanen, 2013, 55). Emotional intelligence has also been defined as the emotional, affective and social skills dimension of general intelligence (Frye, Bennett & Caldwell 2006, 49; Quisenberry 2011, 9). Mayer and Salovey (1997, p. 10) define emotional intelligence as “the ability to regulate emotions to promote emotional and intellectual growth”. Bar-On (2013) uses the concept emotional-social intelligence which he defines as “an array of interrelated emotional and social competencies, skills and behaviors that determine how well we understand and express ourselves, understand others and relate with them, and cope with daily demands, challenges and pressures” (The Bar-On EI Model section, para 1).

Emotional intelligence has been studied and used as a theoretical framework in a few studies on virtual teams. Quisenberry (2011) gathered the data for his study through survey from 31 self-managed virtual team members in the USA. The results indicated leaders should use a hybrid management approach using transformational principles and incorporating rewards and incentives based on group performance metrics. Leaders should also establish foundations and objectives at the beginning of the project, avoid micromanagement and use empowerment and autonomy to motivate employees. Virtual team members are motivated, when team leaders construct clear and concise goals, objectives and processes in the beginning of the project and then step back and allow the group to execute the strategy autonomously using their own skills and decision-making capabilities (Quisenberry 2011, 169-170). According to Vasilatos (2010), conscientiousness and emotionality have positive affects in hybrid teams, whereas extraversion, openness to experience, emotionality and honesty-humility effect positively on team outcomes in virtual environments. Vasilatos (2010) also points out that different personality traits are needed for face-to-face, hybrid and virtual teams.

Quantitative doctoral dissertation studies about virtual teams using emotional intelligence as a research framework have been conducted by e.g. Hart (2009), Lewis (2010) and Rajagopalan (2009). Hart (2009, 79) found that cognitive based trust, largely influenced by a person’s behavior, has the strongest relationship to perceived virtual team effectiveness rather than institutional or personality based trust. According to Hart (2009), perceived effectiveness in virtual teams can be increased by increasing the effectiveness of mutual communi-
cation and following through commitments as promised. Lewis (2010) found that social intelligence is associated with the development of trust in leader-member relationships in virtual project teams indicating strong links between interpersonal relationship skills and developing positive trust relations and interactions in virtual environments. Rajagopalan (2009, 136) suggested future studies of the emotional intelligence paradigm with the servant leadership style and evaluations of the relevance of this style in the global organizations having virtual team project structures.

Emotional leadership has developed based on emotional intelligence (EI) (Nokelainen & Ruohotie, 2006; Simström, 2009; Tirri & Nokelainen, 2011; Bar-On, 2004; Bar-On, 2006; Mayer & Salovey, 1997; Coleman, 1998). Emotional leadership deals with leadership as a social process influencing people’s personal emotions (Nokelainen & Ruohotie 2006). In work-related contexts, emotional leadership is defined as an ability based on emotional intelligence to recognize, understand and use emotional information relative to oneself and others in a way that leads to effective and high-quality performance at work (Coleman, Boyatzis, McKee 2004, 6; Boyatzis & Sala 2004, 149; Simström 2009, 83).

To summarize, leaders need emotional intelligence to recognize, understand and use emotional information about themselves and others to lead people to effective and high-quality performance at work. Through emotional intelligence and emotional leadership it is possible to inspire people, which is especially important in situations where people work in dispersed locations and at least partly via computer-mediated tools. Virtual team leaders can motivate team members by clear goals, objectives and processes and allowing the group to execute the strategy autonomously. In addition, effective mutual interaction and communication and following through commitments as promised enhance perceived effectiveness in virtual teams. Good interpersonal relationship skills enable positive trust relations and interactions to develop in virtual work environments.

Dynamic environment and complexity as challenges to leaders in virtual work

Leaders need an ability to navigate through complexity and to use that ability. Previous research has highlighted, for example, the need to emphasize complexity in multiple levels and ways in organizations and networks to release organizational creativity (Spelthann & Haunschild, 2011, 106) and to understand the ways temporal complexity influences people and organizations (Dekkers, 2009, 244; Plowman et al., 2007, 354).

Recent research on leadership for sustainability has highlighted complexity as a challenge in decision-making and the demand of emotion management in contributing the human capacity to lead through it (Metcalf & Benn 2013). According to Metcalf and Benn (2013), for successful leadership towards sustainability in organizations leaders have to be able to read and predict through complexity, think through complex problems, interpret the link between the organization’s wider complex adaptive systems environment and the internal organization, engage groups in dynam-
ic adaptive organizational change and manage emotion appropriately. However, they regard the concept of emotional intelligence (EI) questionable but agree that emotions may help us to navigate in complex information.

Leadership is a process.

On the other hand, complexity has been adopted in organizational research also as a lens through which to investigate personal experiences and to explore them in a novel way (Kennedy 2006). Kennedy (2006, 98) explored the experiences of leaders and managers by considering the connections of actors in an interactive system and by focusing on the emergence of phenomena from the interconnections of the components. The key objective in her study was integrating learning and knowledge management within a perspective focusing on the whole experience and the interdependence of its parts.

Virtual interaction includes typical characteristics of complex adaptive systems (CAS): open, evolutionary networks of interacting, interdependent agents having a common goal or outlook and capable of creative problem solving (Uhl-Bien et al. 2007). Focusing on spaces between people and creating the conditions for the emergence of something new and uncertain requires commitment from everyone in the value chain indicating that complexity leadership is not an easy and quick process to implement (Goldstein, Hazy & Lichtenstein 2010, 194). In virtual work contexts the process may be even more challenging. Leaders in virtual work contexts may need to develop other people around them to assist themselves and to move to leadership positions on demand (e.g. Dodich, Cairo & Rhinesmith 2008, 50).

Leadership through the orientation of complexity (e.g. Stacey, 1992; Stacey, 2000; Uhl-Bien et al., 2007) is an alternative conceptual framework for leadership providing an integrative theoretical framework for explaining interactive dynamics. It regards leadership as a complex interactive dynamic through which adaptive outcomes emerge. It is based on relationships, complex interactions and influences in spaces between individuals, which makes it suitable for examining leadership in virtual work contexts.

Complex Systems Leadership (CSL) understands leadership as an event emerging through dynamic interactions of people and complex interplay of many interacting forces (Lichtenstein, Uhl-Bin, Marion, Seers & Orton 2006, 3). Leadership is a process, which shapes the future by influencing the means of interaction and by clarifying a purpose for each member of the organization (Hazy 2009). Complexity leadership considers leadership in complex adaptive systems (CAS) where relationships among people are not hierarchic but regarded as interactions among heterogeneous agents and across agent networks. A CAS is comprised of persons and groups of persons sharing common interests, knowledge and goals due to the history of interaction and sharing worldviews (Lichtenstein et al. 2006). Leadership in this view is not only the act of a person or persons and not limited to a formal managerial
role – instead, it only exists in, and is a function of interaction (Uhl-Bien et al. 2007).

Complexity Leadership Theory (CLT) identifies three types of leadership – adaptive, enabling, and administrative (Uhl-Bien et al. 2007). CAS, when functioning appropriately, provide an adaptive capability for the organization, and bureaucracy requiring administrative leadership provides an orienting and coordinating structure. Adaptive leadership is important in focusing creativity and innovativeness. It is defined as emergent change behaviors under conditions of interaction, interdependence, asymmetrical information, complex network dynamics and tension (e.g. Lichtenstein et al. 2006). Novel information can emerge in ordinary conversations at the margins of the organization between people who are interwoven with feelings and emotions through the tension generated by agent interaction and valuing disagreements over interpretations as source of novelty, fresh ideas and new perspectives (Stacey 2000, 363-367, 414; Houglum 2012). Enabling leadership fosters enabling conditions that catalyze adaptive leadership and manages the entanglement between administrative and adaptive structures and behaviors enhancing the overall flexibility and effectiveness of the organization (Uhl-Bien et al. 2007). The end result can be emergent creativity, learning, and adaptability at all levels of the organization and at multiple scales of importance (Uhl-Bien et al. 2007).

Complexity leadership challenges the traditional leadership theories providing an integrative theoretical framework for explaining interactive dynamics. Complexity can also be used in management research also as a lens through which to consider organizational issues. Complexity as a challenge in decision-making and the demand of emotion management have been highlighted especially in leadership for sustainability. Tackling complexity, diversity and uncertainty in virtual work contexts requires commitment from everyone in the value chain and changing leadership positions among the participants in the common virtual work on demand.

Results

The concept analysis resulted a concept map (Figure 1) with the connections between the concepts. Concept mapping is a means to connect different kinds of thoughts of a subject and displaying relations among

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Computer-based interaction

Face-to-face interaction

Virtual interaction

 blended in

Special leadership skills

necessary for

Virtual teams

examples

Virtual networks

Spaces between people

are characterized by

Complex adaptive systems

are related to

Breaks of communication

Silence

Virtual work and workforce
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them (Reiska, Rohtla & Rannikmäe 2008, 18).

The analysis highlighted the multidimensional and multilevel conceptualization of virtuality at work. In present organizations virtuality mainly means work, in which virtual interaction is connected with face-to-face interaction. According to this analysis, the essential node for effective leadership for virtuality is collective creativity contributing to novel ideas and contributing to innovations.

The analysis revealed that especially transformational, emotional and complexity leadership approaches fostered collaborative creativity to arise in virtual work contexts. Therefore, these theoretical approaches are suitable to be combined to study leadership that fosters creativity in virtual work. They all have philosophical foundations on subjectivist and processual ontology regarding reality as a social construction and leadership as a continuous social flow (Crevani, Lindgren, Packendorff, 2010), and interpretivist epistemology (Houglum, 2012, 30; Hatch & Cunliffe, 2006, 12-
Symbolic-interpretivists understand that the reality exists when a phenomenon is experienced and given meaning and knowledge is created through collective cognition, and they analyze multiple understandings of the phenomena and include in their studies intuition and emotion (Houglum, 2012, 30; Hatch & Cunliffe, 2006, 13).

Transformational leadership, emotional leadership and complexity leadership are interlinked with each other, and especially transformational leadership presents elements of both emotional and complexity leadership. Combining these three leadership theories offers the potential to better link the areas of leadership and creativity within the virtual work research.

The analysis also foregrounds the importance of virtual spaces and relations between people which are typical in virtual work contexts. Understanding thoroughly the spaces and relations between people and exploiting them can bring valuable solutions for co-creative processes and supportive leadership practices and lead to profitable innovations and solutions towards sustainable organizations.

According to the analysis, effective leadership that fosters creativity in virtual work includes
• understanding that virtuality at work is complex, multidimensional and multilevel and people work in organizations and networks using both virtual and face-to-face interaction
• utilizing a combination of leadership approaches supporting inspiring interaction and collective creativity at work
• understanding the significance of virtual spaces and relations between different people in virtual work and the ways how to exploit them in interaction.

Discussion

This article addressed to defining leadership that fosters creativity in virtual work for future research and business development purposes. Leaders in virtual work contexts need to understand virtuality and creativity comprehensively to support collaborative work and bring joy to work for generating new innovations to tackle the overarching problems. The definition was shaped through descriptive interpretative concept analysis and inductive epistemological approach aiming at enhancing understanding of the entirety of the concept. The analysis focused on finding out how the concepts of virtuality, creativity and leadership were connected to each other resulting in a holistic map of their mutual connections. The article contributes to linking the research areas of leadership and creativity to virtual work research and to applying complexity leadership approach to study virtuality at work.

The analysis revealed the importance for leaders in virtual work contexts to focus on collective creativity with virtual spaces between interactive people to enhance innovative outcomes in organizations. Virtuality as an embedded way of interaction in contemporary organizations and working life shall be exploited more for common good. Virtual spaces between people can represent a type of nonlinearity in complex virtual systems mentioned by Goldstein (2008, 44-45). Increasing the number of nodes and
spaces between people makes the virtual system more complex demanding leadership that understands collective creativity comprehensively and supports continuity between actors. The analysis also indicated that this kind of dialogic and relational leadership may be effective in leading towards sustainability in organizations.

Transformational, emotional and complexity leadership approaches proved to be appropriate to study leadership processes fostering creativity in virtual work contexts. These three leadership approaches enhance understanding about leadership that fosters creativity in virtual work. Previously, studies on leadership in virtual work contexts have so far not been based on any specific theoretical framework. This analysis supported previous research findings about applying combinations of different leadership approaches in virtual work and indicated that the future development of leadership theory for fostering creativity in virtual work can benefit from integral theoretical pluralism.

Despite the analysis is based on a broad amount of scientific texts, the results mentioned above should not taken without reserve. The research texts were chosen to this analysis on the basis of including definitions of the key concepts and at the same time keeping the focus of the analysis in mind. The analysis brought out other related types of leadership, like servant leadership and visionary leadership style, which were not analyzed further in this study. On the other hand, virtual work contexts include issues such as power relations that may influence on leadership that fosters creativity but which were not analyzed in this case, because their significance didn’t come up clearly from the texts chosen to this concept analysis.

The evidence of this analysis consisted of definitions of the key and related concepts, my interpretations of the concepts and the construction of the concept map (Figure 1) showing the connections and correlations between the concepts. However, future empirical studies are necessary to verify and complement the connections and correlations. Also, the notion of spaces and relations between people and the ways how to exploit them need empirical evidence. Nonetheless, this concept analysis offers opportunities for the research community to create new related concepts and develop leadership towards sustainability in organizations based on intuition, imagination and interactive reflective consideration.

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Heterarchial ontological commitment for leaders to stimulate creativity among virtual workforce

Iris Humala

Abstract

This article debates heterarchy as the ontological commitment to leadership for stimulating creativity in virtual work. According to the heterarchy perspective, an organization is regarded as a multilayered entity with overlaps and hidden inconsistent parts that maintain creative organizing. Heterarchy has its roots in complex adaptive system theory and has so far not been applied to virtual work. The study identifies the focal relations between the challenges in leading the virtual workforce toward creativity and the heterarchial ontology in relation to leadership. Both qualitative and quantitative approaches were used in this exploratory study, and document-based inquiry was used as its main research method. The findings suggest that the heterarchial ontology is appropriate to leadership that fosters creativity in virtual work. Heterarchy can help leaders to perceive their own role in virtual networked work in a comprehensive way, develop supportive orchestration abilities, foster coworkers’ creativity and create a winning organizational culture.

Keywords

Leadership, creativity, virtual workforce, virtual work, heterarchy, ontological commitment

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1. Introduction
The question “How do you manage people whom you do not see?” has occupied scholars’ minds since the 1990s (Handy 1995; Jarvenpaa & Leidner 1999; Wakefield et al. 2008). Managing people remotely creates special demands for leaders to understand the human consciousness and spaces between people (Panteli & Chiasson 2008); to support collaboration; to create an ongoing, cross-sectional dialogue among people and encourage respect; and to stimulate initiative, individual and collective creativity, and passion for work (Hamel & Breen 2007). This requires a new kind of leadership, and leaders who understand creativity and leading creativity at work and how foster it in the interaction between technology and human creative processes as a strategic business challenge. This also requires new ways to use ICT in organizational learning and leadership, to stimulate seeing things in new ways, to improve the commitment of leaders and their coworkers toward a common goal and everyone’s healthy and happiness, and understand the potential effects of these technologies on the leadership dynamics (Avolio et al. 2014; Nemiro 2004, p. 283). To date, scholars have focused primarily on leadership in virtual teams and on understanding modern technology and using it in leadership (Avolio et al. 2014; Jarvenpaa & Leidner 1999; Jenster & Steiler 2011; Zimmerman et al. 2008). This paper addresses a new perspective: leadership that stimulates creativity in virtual work. Virtual work refers to the present way of working with people in collaborative networks in different geographical locations, communicating both face to face and using information and communication technology (ICT) to manage business processes.

Virtual work context reconceptualizes traditional leadership thinking, which has its roots in objectivist ontology and positivist epistemology underlining that outside reality operates apart from people’s conceptions and beliefs about it (Houglum 2012). Virtual work calls for a nondualistic ontology and a subjectivist and processual ontology. A nondualistic ontology emphasizes that people’s inner and outer worlds are connected to each other, and a subjectivist and processual ontology regards reality as a social construction and leadership as a continuous social flow (Crevani et al. 2010). Therefore, leaders of virtual workforce need to reflect their values and choices, and find such a leadership philosophy that supports successful collaboration and positive outcomes in virtual networked work. Because flourishing collective creativity requires reflective commitment from different contributors (Lipman-Blumen & Leavitt 2009) and time (Uusikylä 2012), and virtuality creates a socially constructed context in which leadership is fully integrated, there is a need for a more integrative ontology for virtual creative work to thrive (Drath et al. 2008).

This article aims at debating whether heterarchy is applicable as the ontological commitment to leadership for stimulating creativity in virtual work. An ontological commitment in a knowledge-based system, like leadership in virtual work, means that people can communicate about a domain of discourse without necessarily operating on a globally shared theory (Gruber 1995, Waterson & Preece 1999). According to Gruber (1995), “an agent commits to an ontology if its observable actions are consistent with the definitions in the ontology.” Heterarchy refers to the lateral coordination of organizational diversity, to both a structure and a condition, and to the relation of elements to one another when they are unranked or ranked in numerous different ways (Crumley 1995). The heterarchy perspective, rooting in complex adaptive system (CAS) theory (Holland 2006), has so far not been applied to virtual work. This is despite the fact that virtual work in networks resembles CAS, including groups that have been self-organized as networks of relationships toward a common interest (Wheatley 2010, p. 227). CAS have been characterized as open, evolutionary networks of interacting,
interdependent agents who have a common outlook and who are able to solve problems creatively (Uhl-Bien et al. 2007).

This article deals with the following questions: What are the focal challenges for leading the virtual workforce toward creativity? What are the central attributes of heterarchy (AH) in relation to leadership? What are the focal relations between leadership toward creativity in virtual work and heterarchy as the ontological commitment to leadership? By way of these focal relations this study focuses on finding out the applicability of the heterarchial ontological commitment to leaders toward creativity in virtual work.

The next section introduces the extant research knowledge in this field of inquiry. The subsequent sections describe the methodology and the findings of the study. Finally, the last section concludes the paper.

2. Literature

This study positions itself in the leadership philosophy and the ontological foundations of leadership toward creativity in virtual work. It is part of a research project incorporating business-oriented and pedagogical thinking in leadership. The research pays attention to the processes that occur at multiple levels of virtual work, and how leaders influence the underlying processes and dynamics that lead to organizational outcomes (Dinh et al. 2014). This multifaceted approach aims at advancing the success of organizations and their staff.

2.1 Virtuality and virtual work

Virtuality represents an organizational context where all the system properties develop and emerge (Zohar 1997, p. 52) and into which leaders and their coworkers need to assimilate to act successfully. According to Sharpanack (2005, pp. 39–52), a context “explains what is going on in the complex interactions that occur among ourselves and those around.” Virtuality can be regarded as a holistic organizational form with operations organized virtually at the level of the whole organization (Parjanen 2012, pp. 73–74). It covers individual remote work contexts and virtual teams, organizations and customers, users and suppliers in networks, mixing face-to-face with computer-mediated interactions. Virtuality is related to the real, the possible, and the actual, and it covers a multitude of heterogeneous forces, tendencies, continuous and discontinuous events related to organization and the “objects” it tries to organize (Linstead & Thanem 2007, p. 1485).

Virtual work is actualized in dynamic networks not directed from the top down. Therefore, in studying the ontology of its leadership, the focus of the study is the whole network, even as people work with individual parts or isolated problems (Wheatley 2010, p. 180). A network means not only its nodes and connections but also the webs of networks of interactions or flow, including the work community—the complex context with multilevel patterns and social relations (Clippinger 1999; Weil 2009). Virtuality as a work context can be described as a continuous dynamic bundle of processes consisting of circles of circles within circles (Zohar 1997, p. 132); each circle or network consists of smaller networks or teams of people, and each network works together in a large network. According to Zohar (1997, p. 55), each node in the network has both a particle-like and a wave-like aspect simultaneously. The particle-like aspect represents its actuality, and the wave-like aspect denotes its further group potentiality. Vision cocreation (Nie & Kosaka 2014) can be seen as one manifestation of the group potentiality aspect of each node in the network, thereby allowing individuals to flourish both as individuals and members of larger creative groups without any juxtapositions.

2.2 Fostering creativity in virtual work contexts

Here, creativity is seen as an everyday collective course of action for everyone in an organ-
ization—not only for the creative talents. Echoing Amabile (1998), when creativity is killed, an organization loses a potent competitive weapon that enables it to create new ideas, and it can also lose the energy and commitment of its people. Creativity is a process and a social system that originates from personal predisposition and a hospitable social context and that produces novel and useful outputs (Csikszentmihalyi 1999). As for virtual work contexts, they call specifically for sociocultural and collective creativity (Hämäläinen & Vähäsantanen 2011; Sawyer & DeZutter 2009), which is rooted in Vygotsky's (1978) sociocultural approach. Collective creativity consists of individual knowledge domains and a field of informed experts (Csikszentmihalyi 1999), and it occurs in a social context where people collaborate and engage in verbal and nonverbal interaction. Then there is an idea of organizational creativity that arises from a valuable and useful new product, service, thought, procedure, or process created by individuals working together in a complex social system (Woodman et al. 1993). In online social interaction, especially problem solving, creative cognition and interaction are vital in understanding creativity (Amabile 1998; Drazin et. al 2008; Wheeler et al. 2002).

Leading scholars and practitioners have emphasized focusing on people, the power of direction, and achieving meaningful progress toward excellence in leading toward creativity (Amabile & Kramer 2010; Bass & Avolio 1993; Catmull & Wallace 2014). For organizations and leaders this means generating work where people transform the outside world—not only to earn their living or make profit—find creative solutions to their everyday tasks and their longer-term goals, and have a sense of belonging to a community (Countlett 2011, p. 240; Handy 1995; Zhou & Shalley 2008). This requires supporting coworkers’ intrinsic motivation, passion at work, communal and individual flourishing, engagement, the ability to safely express one’s own voice and try something that may fail, and create a feeling that everyone’s contribution is valued (Amabile & Kramer 2010; Catmull & Wallace 2014). This is how organizations and their leaders can motivate people to want to use their creativity and provide their best expertise to the organization to create new ideas and replace ineffectual organizational activities (Huuhka 2010, 61).

Several research findings support a systems approach and the need for interconnected and systemic leadership to stimulate creativity (Johannessen & Skålsvik 2013; Werhane 2007). Respecting and fostering the individual and collective creativity of people inside and outside organizational, geographical, and technological boundaries is an immense strategic challenge for leaders in virtual work. In virtual work contexts, this requires connections between the actual organization and the virtual whole (Linstead & Thanem 2007). Because knowledge is dispersed among people in networks, and organizational imagination and creativity develop through a combination of individual and group efforts, leaders in virtual work need to constructively and persuasively support continuity between actors (Davis 2006). The leader’s ability to pay attention to network dimensions (Garcia 2014) is crucial to create a love of learning, discovery, and resilience, and to improve relationships and productivity. It requires combining single persons’ creativity with groups’ collective creativity to energize all possible potential for innovations (Sawyer & DeZutter 2009). However, the fostering of coworkers’ creativity from a distance has also been questioned, especially in regard to leading creative talents. Huuhka (2010, p. 140) argues that a strong, positive presence is needed to lead such talents.

The ability to uncover what is unseen and to understand its nature is vital for leaders of virtual workforce. The sense of separation among people is described through virtual spaces or distances, which represent a type
of nonlinearity in complex virtual systems (Goldstein 2008; Rosen 2009); silence and breaks in communication and their meanings (Panteli & Fineman 2005); or “hidden barriers,” misconceptions, and assumptions that impede us without our knowledge and that can hinder creative problem solving (Catmull & Wallace 2014, p. 169). This makes it crucial for leaders to understand the quality of virtual relationships as unseen connections between people and the ways how to exploit them during interaction (Agrifoglio & Metallo 2011; Zimmermann et al. 2008). Previous research has highlighted the fact that in the complex and multidimensional virtual work context, leadership emerges with the processes and understanding of the dynamics of the whole system, with a special focus on intelligence at all levels and organizing around intelligence (Thow 2007).

In the latent leadership approach—a way to “walk the talk”—the presence of the leader becomes latent when orchestrating the network. The “latent mind” may include the understanding of leadership as a system of behavior—that is, group behavior that contains complex relationships rather than the behavior of an individual (Metcalf & Benn 2013). Leaders in virtual work may also need to develop followers to provide assistance and to move up into leadership positions on demand (Dotlich et al. 2008). A leader with a “latent mind” can nurture the collective intelligence, emergent dynamic, and positive self-organizational ability (Thow 2007) and is able to find his or her inborn harmony and influence and inspire others to also find it within themselves (Perry 2011). According to this leadership approach control gives way to a more subtle, intuitive feel for the situation, the creative potential of its indeterminacy, and the building of flexible working cultures (Houglum 2012; Zohar 1997).

In general, matching people and their attributes with the right assignments and clear visions and strategic goals has been found to be an effective way for leaders to stimulate creativity in virtual work (Amabile et al. 1996; Handy 1995; Nie & Kosaka 2014). In hiring people, it is vital to import fresh knowledge and variety in terms of what people think, say, and do (Sutton 2001) and to respect the know-how of both the younger and the older coworkers.

Moreover, the virtual experiences of relationships and encounters play a major role in virtual interaction. Scholars have highlighted the importance of grassroots dynamics (Phelps 2013, p. 288) and managing the microinteraction climate—that is, different moments and events in collaboration (Hard-agon & Bechky 2006), and the quality, content and amount of connections and involving all members in collaboration (Hakanen & Häkkinen 2015). Strong relationships between people and things and the quality of relationships with stakeholders are important to generate new knowledge for the common good in networked virtual work, in which success depends on context and on the unique relationships available at the moment (Wheatley 2010; Hawkins 2012, p. 148).

Emotions are essential to understanding social relations in leading and working, as well as in virtual work. According to psychologist and philosopher John Dewey’s theory of experience, emotion reflects the underlying dynamics of the interaction between people (Alexander 1987, p. 137). Conversely, socially shared interactions “transport” and “transform” emotions and emotional rules (Siecke 2009). According to Castro et al. (2012), followers’ creativity is associated with leaders’ emotional intelligence.

Related to emotions, creating a culture of experimenting with passion is vital in unleashing creativity. This means creating a culture of making fast decisions, starting to test possible opportunities, making corrections during the task, analyzing what happens, and developing new kinds of courses of action. This emphasizes the ability to influence people’s willingness to do things differently in-
dividually and in groups to create something special, to find the other connectors to join the interesting ideas, and to help to put them into action (Handy 2009). Expanding people’s possibilities with a view to keeping their work interesting year after year—not constraining them and managing for creativity—requires a conscious effort toward constant mindfulness and experimentation, and different actions from managers and leaders, to commit to risky projects wholeheartedly and persistently (Sutton 2001).

2.3 Heterarchy as an ontological approach to leadership

Heterarchy was first employed in a modern context by McCulloch (1945). He examined alternative cognitive structure(s), which is the collective organization that he termed heterarchy. Crumley (1995) associated heterarchy to the lateral coordination of organizational diversity. Stephenson (2009, p. 6) defines heterarchy as “an organizational form between hierarchy and network that provides horizontal links permitting different elements of an organization to cooperate, while they individually optimize different success criteria.” Heterarchies are also viewed as CAS that interweave multiple organizing principles and involve interdependent relations (Holland 2006). Heterarchy organizes dissonance toward discoveries based on neither the market nor hierarchy (Stark 1999; Stark 2009, p. 31).

Heterarchy consists of distributed networks and combines the most informed aspects of centralized decision making and openness to informed decision making that is close to the action (Goldstein et al. 2010, p. 161, 171). Heterarchy represents an organizational form of distributed intelligence in which units are laterally accountable so that there is more than one way of evaluating worth (Stark 2009, pp. 19–27). Stark (2009, pp. 4–5) refers to heterarchies as cognitive ecologies that facilitate the work of reflexive cognition, which is necessary for inquiry that works through interpretation rather than simply through managing information. Stephenson (2009) refers to heterarchy as a “virtual organization” stressing the importance of trusted heterarchial interconnections via technology. He argues that hidden strategic connections—that is, significant collaborators—make the partnership work and reveal heterarchial organizational form. The connections are hidden because they are not visible to a hierarchy, but they are essential for governing and for sustainability. According to Aime et al. (2014), the heterarchial concept offers a theoretical core that integrates several distinct bodies of literature highlighting the dynamic power relations within groups. In heterarchial structures, power actively and legitimately shifts among team members to align their capabilities with dynamic situational demands (Aime et al. 2014).

Similarities with heterarchial ontology can be found in related leadership thinking. According to the relational leadership model, emergent coordination and change are constructed and produced through a process of social influence (Uhl-Bien 2006). In the leadership ontology by Drath et al. (2008) direction, alignment, and commitment are seen as essential elements of leadership and are supported by a view of leadership as dialogue and sense-making. Further, instead of hierarchies of domination, Riane (2005) has suggested hierarchies of actualization, which are more flexible, encourage collegial leadership styles, allow many people to be leaders in different contexts, empower workers, encourage creativity, and promote relational practices. In them, accountability and respect flow both ways, and they are based on creative power to help and nurture and the collective power to accomplish goals together (Riane 2005). In relation to complex adaptive thinking in leadership, Erçetin and Kamacı (2008) stress shared leadership, whereby the impact of leadership depends on interaction. Zohar (1997, pp. 146–153) underlines servant leadership and emphasizes the essentials of interconnectedness,
engagement, and responsibility; human endeavor as a part of the larger and richer universe; and leaders who know what they ultimately serve. Similar characteristics have also been team leadership, which is one of the three types of dispersed leadership in the teams model proposed by Konradt (2014).

3. Methodology

Both qualitative and quantitative methodological approaches are used in this exploratory study to provide richer data, encourage consistent interpretation and enhance the credibility of the study (Johnson et al. 2007; Tracy 2010). The aim of this study is to debate the applicability of heterarchy as the ontological commitment to leadership toward creativity in virtual work. An exploratory study focuses on studying a situation or a problem, exploring what is occurring, and asking questions about it (Gray 2014, p. 36; Saunders et al. 2007). First, document-based inquiry was used to identify the focal challenges for leading the virtual workforce toward creativity (LC) and the central attributes of heterarchy in relation to leadership (AH). In addition, five expert interviews brought empirical evidence for the document analysis to identify the LC. Second, both qualitative and quantitative analysis was used to identify the main groups of relations between the LC and the AH (Spelthann & Haunschmidt 2011). Data gathering and analysis were empowered by the researcher’s experience in management praxis and theory, carrying out documentary and conversational explorations and interest in linking educational and business knowledge.

3.1 Document-based inquiry and interviews

The research interest is to interpret the existing research texts presented in the literature section above, and to understand the information within them. Document-based inquiry was therefore chosen as the main method in this study. This method entails reviewing existing materials that have been recorded, without a researcher’s intervention, in printed, electronic, or other forms (Bowen 2009). The analytical procedure includes finding, selecting, appraising, and synthesizing the data contained in the documents (Bowen 2009). The theoretical perspectives of both business-oriented and pedagogical thinking were used to look at the same data to reduce distortion during data analysis (Patton 2015, 674). The viewpoints in research texts were explored, and those related to each other were grouped under suitable themes and further construed into leadership challenges and attributes of heterarchy. The main focus in the document-based inquiry is on content. However, attention is also paid to authenticity and usefulness, the original purpose of the documents, the context within which they were produced, and the intended audience (Bowen 2009; Tracy 2010), as well as on treating the research documents as dynamic expert discourses that provide valuable data for the study (Prior 2011; Wilson 2013). This method offers the opportunity to develop understanding through appraising viewpoints, contexts, and positions in research documents (Lankshear & Knobel 2004, pp. 54-55). The majority of the research texts have been written within the last ten years.

To provide perspectives of business actors for the document analysis to identify the LC, interviews with five leaders, aged roughly 30-60 years, were conducted in June 2013 and November 2014. Three leaders worked in Finland, one in Estonia, and one in both countries. They represented service and technology fields of networked businesses and had between five and 25 years of relevant work experience. Two of them were female and three male. The semi-structured format of interviews offered the interviewees good opportunities to discuss the issues relevant to them (see the interview themes in the appendix). Each interview lasting 1.5 to 2 hours was recorded, transcribed and analyzed manually.
Shortened extracts of the interviews are presented in the findings.

By comparing data from the documents and interviews and by grouping them, focal challenges for leading the virtual workforce toward creativity were developed. The central attributes of the heterarchial ontology were developed with the help of the data from the documents.

3.2 Qualitative and quantitative analysis in an interpretative process

The focal leadership challenges and the attributes of the heterarchial ontology were contrasted with each other in an interpretative process. Both qualitative and quantitative analysis was used to identify the main groups of relations between the LC and the AH (Spelthann & Haunschild 2011). A detailed Excel sheet was developed, and the principles of correspondence and similar emphases were used to interpret and compare the mutual relations. First, the characteristics of each LC and each AH were thoroughly outlined and analyzed qualitatively, and the relationships between the LC and the AH were interrelated, compared and tagged with color-coded labels. Second, the analysis focused on the strong relations between the LC and the AH. The strong relations were found by way of quantitative analysis by adding up the number of the color-coded relations. The coding and counting process supported qualitative analysis. These strong relations were divided into two groups: the strongest or the most important ones with the majority of mutual relations and the next best with less mutual relations. Finally, the analysis focused on the most important relations that were found between the LC and the AH. The next section examines the findings from the analysis.

4. Findings

4.1 The focal challenges in leading the virtual workforce toward creativity

With the help of the data from the document-based inquiry and interviews of five experienced leaders, the study revealed the following focal challenges for leading the virtual workforce toward creativity (LC): understanding virtuality as a networked work context (LC1), developing virtual leadership mind-set (LC2), leading meaningful work for progress (LC3), and energizing people (LC4).

Drawn on previous research studies, to understand virtuality as a networked work context it is essential to be aware of virtual work actualizing in complex dynamic networks (Clippinger 1999; Wheatley 2010, p. 180; Weil 2009), and picture virtuality as circles of circles within circles (Zohar 1997, p. 55, 132). Understanding virtuality including sensing, experiencing, and sharing the context with others (Parjaren 2012, pp. 73-74) contributes to seeing virtuality as a networked work context as also views from systems intelligence (Hämäläinen & Saarinen 2007). Systems intelligence as leadership approach emphasizes the importance of the context of action, trust to the human potential and mutually reinforcing positive loops, and organization’s purpose and values that matter (Hämäläinen & Saarinen 2007). An interviewee, who is an executive coach supported this notion:

“You may have the information but might not understand the context and the relations between the different stakeholders. If you as a leader do not share your beliefs and your contexts, you can’t expect others to follow you.”

(male, over 50 years)

To understand virtual interactions and to make decisions in the environment of new information systems, previous research studies reveals the need for a specific virtual leadership mind-set to be able to support continuity between actors (Davis 2006; Garcia 2014) and to uncover what is unseen and unheard and
to understand its nature (Agrifoglio & Metallo 2011; Catmull & Wallace 2014, p. 169; Panteli & Fineman 2005; Zimmermann et al. 2008). An interviewee, who is the head of finance, underlined the importance of sensitivity:

“The leader needs subtle and interlinear sensitivity to ask and anticipate the possible problems people may have, because in virtual work, it is so easy to be really remote.” (female, about 30 years)

A virtual leadership mind-set also requires “latent mind” (Thow 2007) and understanding group behavior (Metcalfe & Benn 2013). However, a leader with a “latent mind” is not an onlooker. Instead, a “latent mind” incorporates active generative leadership (Dotlich et al. 2008; Houglum 2012; Zohar 1997), the ability to be a step ahead, anticipate and confront the unknown, the ability to understand the right timing, and minimize fear among followers. The generative leadership approach focuses on “the space between” people and enriches all interactions between organizational members across the entire network to create new ideas and solutions (Goldstein et al. 2010, pp. 170–197). An interviewee who is a managing director supported this impression:

“You need to keep your feet on the ground and be more diplomatic, dialogic, and conciliatory than lose your patience and cause trouble.” (male, middle-aged)

The document-based inquiry highlighted that in leading meaningful work for progress it is important to focus on people, common goal and meaningful progress (Amabile & Kramer 2010; Bass & Avolio 1993; Catmull & Wallace 2014; Zhou & Shalley 2008). For leaders, this means accepting continuous challenges and failures; fixing and balancing actions continuously; caring for your people personally; having discussions with coworkers, customers, and all other interest groups; and listening to their thoughts and preferences (Catmull & Wallace 2014). The head of finance who was interviewed underlined mutual benefits:

“Working for meaningful progress and getting the feeling that you can really contribute and do a good job increases the passion toward the progress. Supporting the people toward a common goal also gives energy to yourself as a leader.” (female, about 30 years)

Meaningful work is related to self-organizing behavior. Stimulating intrinsic motivation and meaningful work among virtual workforce requires supporting employees’ exchanges, especially within their work groups (Muñoz-Doyague & Nieto 2012). This requires understanding who knows or can do what is in virtual work to legitimate shifts in power and for coworkers to manage the transitions effortlessly when necessary (Aime et al. 2014).

Moreover, the document-based inquiry reveals the importance of energizing people for leaders stimulating creativity in virtual work. To succeed, it is vital for leaders to connect the actual and virtual organizations (Linstead & Thanem 2007) and single persons’ creativity with groups’ collective creativity (Sawyer & DeZutter 2009). An interviewee who is a general manager agreed with this view:

“For a leader, this means being in the middle of the network and one of the other players … and to understand that work is done for the network.” (male, middle-aged)

Energizing people requires the ability to match people and their attributes with the right assignments (Amabile et al. 1996; Nie & Kosaka 2014), and to create and develop a culture of experimenting with passion (Handy 2009; Huuhka 2010; Sutton 2001). The following actions are important: letting people express their opinions, loosening control, accepting risk and failures, trusting colleagues, working toward a clear path for them, paying attention to anything that creates fear, and fostering a sense of personal ownership and pride in the company (Catmull & Wallace 2014, p. 267, 295). The interviewed female head of finance supported this view and emphasized “an open supportive culture without secrets and the joy of succeeding together.
where failures are analyzed in order to learn from them.” A senior male interviewee who is a head of the branch office underlined the importance of emotional intelligence of leaders in virtual work because “there are emotions and feelings behind the virtual world”.

Figure 1 presents the summary of the FC with their main characteristics based on the literature and the interviews.

The following subsection describes the central AH, derived from previous research documents.

4.2 The central attributes of heterarchial ontology in relation to leadership

The attributes linked to heterarchy explain the heterarchial approach to leadership. Grabher (2001) listed five basic features of heterarchy: diversity, rivalry, tags, projects, and reflexivity. Heterarchy values different skills, types of knowledge, and working styles without privileging one over another. Heterarchy has also been characterized as including collaborative relationships and intermittent exchanges, focusing on collective good, sensing changes and responding to them, and managing knowledge based on agreements (Stephenson 2009). For heterarchy to function, scholars underline a common language and cultural understanding in each link, and motivation for each member to be mutually helpful (Handy 2009; Schein 2009). Moreover, the leaders should have horizons beyond their own organizations instead of

**Figure 1. Summary of the focal challenges for leading the virtual workforce toward creativity (LC) with their main characteristics based on the literature and interviews.**

- **Understanding virtuality as a networked context (LC1)**
  - Needs awareness of virtual work actualizing in complex dynamic networks
  - Benefits from picturing virtuality as circles of circles within circles
  - Profits from understanding of systems intelligence
  - Calls for comprehension that virtuality entails sensing, experiencing, and sharing the context with others

- **Developing virtual leadership mind-set (LC2)**
  - Means supporting continuity between actors
  - Demands ability to uncover what is unseen and unheard and to understand its nature
  - Requires “latent mind” and group behavior
  - Calls for active generative leadership

- **Leading meaningful work for progress (LC3)**
  - Requires focusing on people, common goal and meaningful progress
  - Contains supporting employees’ exchanges, especially with their work groups
  - Needs understanding who knows or can do what to legitimate transitions

- **Energizing people (LC4)**
  - Includes connecting the actual and virtual organizations and single persons’ creativity with groups’ collective creativity
  - Needs matching people and their attributes with the right assignments
  - Advances in a culture of experimenting with passion
  - Develops by way of stronger relationships through emotional intelligence
purely local priorities (Handy 2009). Trust in heterarchies is diffused in the communities of practice (Grabher 2001), which supports the view that good-quality conversations among people who recognize, know, and trust each other are regarded as vital for success in heterarchies (Kleiner 2009).

Heterarchial organizations are decentralized with almost every unit engaging in innovation (Stark 2009, p. 21). Intentionally constructed heterarchy reinforces creativity and innovative ideas, and leadership in heterarchy is regarded as an enabler of interaction, meaningful work, and inspiration, bringing together the strengths of networks with strong and weak ties to facilitate creative organizing (Aime et al. 2014; Goldstein et al. 2010, p. 171; Spelthann & Haunschild 2011). Some scholars stress that a heterarchial approach needs to be emphasized and seen as one robust arrangement for embedded organizational creativity and developing new organizational mutations; leaders need to realize that a certain tolerance of inefficien-

<table>
<thead>
<tr>
<th><strong>The Attributes of Heterarchy in Relation to Leadership</strong></th>
<th><strong>References in the Theoretical Literature</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A combination of organizing principles (AH1)</strong></td>
<td>Goldstein et al. 2010; Grabher 2001; Holland 2006; Spelthann &amp; Haunschild 2011; Stephenson 2009</td>
</tr>
<tr>
<td>• Complex adaptive system combines the action in market and centralized decision making and multiple organizing principles, organizational forms, business models, philosophies, and practices</td>
<td>Aime et al. 2014; Crumley 1995; McCulloch 1945; Stark 1999, 2009</td>
</tr>
<tr>
<td>• Represents collective and cooperative organizational structure of distributed intelligence highlighting dynamic power relations within groups</td>
<td>Grabher 2001</td>
</tr>
<tr>
<td>• Incorporates distributed networks that have both reciprocal flows of information and clear accountability</td>
<td>Goldstein et al. 2010; Stark 2009</td>
</tr>
<tr>
<td><strong>Supportive interdependent interaction (AH2)</strong></td>
<td>Stephenson 2009</td>
</tr>
<tr>
<td>• Includes collaborative interdependent relationships and intermittent exchange</td>
<td>Ergüten &amp; Kamacı 2008; Girard &amp; Stark 2002; Kleiner 2009; Stark 1999</td>
</tr>
<tr>
<td>• Success depends on mutual lateral learning, the quality of relationships, and the conversations among all actors</td>
<td>Grabher 2001</td>
</tr>
<tr>
<td>• The particular codes of conduct help to operate with trust that is diffused in the communities of practice</td>
<td>Schein 2009</td>
</tr>
<tr>
<td>• Requires mutual helpfulness</td>
<td>Handy 2009</td>
</tr>
<tr>
<td>• Requires a common language and common cultural understanding in each link</td>
<td></td>
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<tr>
<td><strong>Distributed authority to orchestrate work (AH3)</strong></td>
<td>Girard &amp; Stark 2002; Goldstein et al. 2010; Stark 1999</td>
</tr>
<tr>
<td>• Decision-making authority is not concentrated entirely at the top, and managers are accountable to other work teams</td>
<td>Handy 2009; Stephenson 2009</td>
</tr>
<tr>
<td>• Leaders need to have horizons beyond their own organizations and to focus on the collective good with knowledge management based on agreements</td>
<td>Goldstein et al. 2010; Spelthann &amp; Haunschild 2011</td>
</tr>
<tr>
<td>• Leadership is an enabler of interaction, meaningful work, inspiration, and the combination of networks with strong and weak ties</td>
<td>Girard &amp; Stark 2002; Grabher 2001; Stark 2009, 1999</td>
</tr>
<tr>
<td>• Requires fine-grained coordination to facilitate organizations that can reorganize themselves and the work of reflexive cognition (e.g., through tagging and projects)</td>
<td></td>
</tr>
<tr>
<td><strong>Reinforcement for creativity and innovative ideas (AH4)</strong></td>
<td>Stark 1999, 2009</td>
</tr>
<tr>
<td>• Heterarchy organizes dissonance toward discoveries</td>
<td>Grabher 2001; Spelthann &amp; Haunschild 2011</td>
</tr>
<tr>
<td>• Organizational creativity can be activated in multiple ways by linking multilayeredness, duplication, overlap, incongruence, redundancy, organizational slack, rivalry, and latency</td>
<td>Aime et al. 2014</td>
</tr>
<tr>
<td>• Team creativity and innovation can be enhanced by shifting power actively and legitimately among team members to align their capabilities with the dynamic situational demands</td>
<td></td>
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cies is an asset and that the necessary idleness in project-based work provides an arena for improvisation and reflection (Grabher 2001; Spelthann & Haunschild 2011).

Stark (1999) and Girard and Stark (2002) see distributed authority as a method to lead heterarchy with extended organizational reflexivity that sustains complexity. Under distributed authority, managers are increasingly accountable to other work teams. This means that success depends on the mutual learning of laterally accountable units, and management becomes the art of facilitating organizations that can reorganize themselves (Girard & Stark 2002; Stark 1999).

Table 1 summarizes the analysis of the previous research literature on the AH. The analysis of the literature contributed the following list of the AH: heterarchy (1) combines different organizing principles, (2) highlights supportive interdependent interaction, (3) underlines distributed leadership and orchestration of work, and (4) reinforces creativity and innovative ideas.

The main attributes offer central grounds to further analyze the relations between the heterarchial ontology and the LC.

4.3 Relations between the challenges in leading the virtual workforce toward creativity and the heterarchial ontology in relation to leadership

Based on the document-based inquiry in previous sections, I will now discuss how the LC are linked to the AC to find the answer to the third research question regarding the relations between leadership toward creativity in virtual work and the heterarchy as the ontological commitment to leadership. This configuration is presented in Figure 2.

As described in the methodology section, both qualitative and quantitative analysis was used to identify the main groups of relations between the LC and the AH. First, each LC and

Figure 2. The focal challenges for leading the virtual workforce toward creativity (LC) and the central attributes of heterarchy in relation to leadership (AH).
each AH were contrasted with each other, and the principles of correspondence and similar emphases were used to compare and interpret the mutual relations. 115 relations were found altogether, and they were tagged with color-coded labels. Next, the analysis focused on the strongest and most important relations between the LC and the AH presented in Figure 3. These relations were found by way of quantitative analysis by adding up the number of the color-coded relations. The strongest or the most important relations hit 9–10 mutual relations and the next best with 7–8 relations in the LC, and accordingly in the AH, the strongest hit 11–15 relations and the next ones 7–8 relations.

The mutual analysis revealed that understanding virtuality as a networked context (LC1) is a challenge in leading the virtual workforce toward creativity, which has most relations with the AH. The three characteristics in LC1 that have the most relations with the AH are virtuality that consists of circles of circles with circles; virtual work that is actualized in complex dynamic networks; and sensing, experiencing, and sharing the context with others. The next LC turned out to be developing virtual leadership mind-set (LC2) and leading meaningful work toward progress (LC3). The most essential characteristics of the LC2 are active generative leadership and supporting continuity between actors. Focus-

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**Figure 3.** The most important relations between the focal challenges for leading the virtual workforce toward creativity (LC) and the central attributes of heterarchy in relation to leadership (AH). LC1 and AH3 with most relations are marked with a thicker borderline.
ing on people and meaningful progress and tagging to label important issues were important characteristics in the LC3. The fourth challenge of energizing people had the least relations with the AH.

Regarding the AH, the attribute of distributed authority to orchestrate work (AH3) proved to have the most links with the LC. The analysis revealed that the characteristics of leadership as (a) enabling interaction, meaningful work, inspiration, and a combination of networks of strong and weak ties; (b) requiring fine-grained coordination to facilitate organizations that can reorganize themselves and the work of reflexive cognition; and (c) requiring horizons beyond their own organizations and focusing on collective good with knowledge management based on agreements relate well to the LC.

The attribute of supportive interdependent interaction (AH2) received the second-highest number of hits. It revealed that mutual helpfulness, a common language and common cultural understanding, mutual lateral learning, the quality of relationships and conversations among all actors represent leadership for creativity in virtual work. The attribute of reinforcement for creativity and innovative ideas (AH4) scored third among the AH. The attribute of the combination of organizing principles (AH1) scored the lowest of the four AH.

5. Discussion

This explorative study contributes to the so far tangential research on leadership toward creativity in virtual work and applying the heterarchy perspective to virtual work. The findings suggest that the heterarchial ontological commitment is appropriate to leadership toward creativity in virtual work. Heterarchy can help leaders to perceive their own role in virtual work in a comprehensive way and to achieve successful business outcomes. The analysis reveals that it is particularly important for leadership toward creativity in virtual work to understand virtuality as a networked context and to apply distributed authority to orchestrate work. In general, the results support extant knowledge and underline that the heterarchial ontology relates most closely to the LC concerning virtuality as a networked context (Parjanen 2012; Weil 2009), developing a virtual leadership mind-set (Agrifoglio & Metallo 2011; Garcia 2014) and focusing on meaningful work for progress in leadership (e.g. Amabile & Kramer 2010). These findings are consistent with the necessary preconditions for collective creativity to occur highlighted in research literature: a social context (Csikszentmihalyi 1999), the “latent mind” (Perry 2011; Thow 2007) to uncover what is unseen and understand its nature so as not to hinder creative problem solving (Catmull & Wallace 2014), and the feeling that people can work with passion, try something that may fail, and become valued for their contributions (Amabile & Kramer 2010; Hakanen & Häkkinen 2015). However, based on the analysis, the fourth challenge energizing people (LC4) is less linked with the AH. Yet, it can be interpreted that LC4 is at least partly included in the concept of meaningful work. As to the AH, the findings emphasize that distributed authority to orchestrate work (AH3) and supportive interdependent interaction (AH2) have the most links with the LC supporting e.g. the findings of Girard and Stark (2002), Goldstein et al. (2010), Grabher 2001.
and Stephenson (2009). The analysis reveals, however, that the attributes of reinforcement for creativity and innovative ideas and combination of organizing principles are less linked up to the LC. Also these two attributes have some points of resemblance to distributed authority and supportive interdependent interaction, which enhances the relevance of AH3 and AH2.

The study enhances understanding about the heterarchial ontological commitment and creativity in virtual work. It strengthens the view that the heterarchial ontological commitment in leadership includes characteristics from both symbolic interpretive and postmodern perspectives of organization theory. This commitment follows the subjectivist ontology of symbolic interpretivism, where reality is socially constructed and knowledge is developed through meaning. With the postmodern ontology it supports interpretation, according to which the world appears through language and is situated in discourse (Hatch & Cunliffe 2006, p. 14, 56). Echoing subjectivism, the leader who stimulates creativity among the virtual workforce has to be subjectively aware of any external or objective existence of the situation in the virtual work context to know, understand, and handle it in a smart way. For instance, without agreeing with the existence of essential knots or people in the virtual context, it is impossible to lead the virtual workforce toward creativity or in any other direction. To achieve creativity in virtual work, leaders have to internalize the significance of discourse underlined by postmodernism, and they must understand that everything that exists is a text to be read or performed (Hatch & Cunliffe 2006, p. 14). Creativity in virtual work requires leaders to understand the relevance of a common language, discourse, and texts and to place strong emphasis on and listen to them. Through stimulating discourse and interaction, it is possible to make people express their voices.

With more nodes and spaces between people, the virtual system becomes more complex. Also complexity calls for leadership based on heterarchial ontology. Managing both creativity and complexity in virtual work requires focusing on people, fine-grained human skills and supportive orchestration abilities to enable people to express their thoughts and feelings and use conscious unhurried times at work for reflection (Niemi-Kaija 2014; Spelthann & Haunschild 2011). This supports the systemic view to leadership (e.g. Johannesen & Skålsvik 2013).

In relation to limitations, empirical evidence from multiple cases and different fields of operation is needed to extend the findings of this study and to construct a stronger theoretical understanding of leadership toward creativity in virtual work. Also the notion of physical, social, and virtual distances and relations between people and how to exploit them needs more empirical evidence and theoretical understanding.

Future studies can focus on the role and importance of the invisible aspects of leaders’ work, like sensitivity and ability to listen, in stimulating creativity in virtual work. Studying the role of events, moments, and leadership behaviors in virtual work can help to understand the virtual context more and to foster reflectivity and critical thinking. Also tagging as a systems-oriented concept deserves deeper notion in the future research on leadership in virtual work. Tags label the significant issues or themes in virtual work, which can encourage people to comprehend and join them and ask further experts or resources to work for them. Tagging requires leaders to valuate interaction and regard organizations as multilayered entities with overlapping and loose parts, like heterarchy (Spelthann & Haunschild 2011).

Future studies can use different methodologies in linking leadership and creativity to studies on virtual work. For instance, poststructuralist research can help to explore in
data by writing educational narratives and observations and by including affect. Various methodologies can also help researchers and practitioners to become more conscious of the significance of power and different power positions (Aime et al. 2014) in leading the virtual workforce toward creativity and making those positions visible when leading people remotely.

6. Theoretical and practical implications

This study contributes to the scholarly debate by combining two different theoretical streams: leadership of virtual work toward creativity and the heterarchial commitment to leadership. It contributes to the theory by bringing these different theoretical streams together. Hence, the study benefits the future development of leadership theory toward creativity in virtual work. Studies on leadership in virtual work contexts have so far not been based on any specific theoretical framework. By integrating business-oriented and pedagogical leadership perspectives this study broadens the understanding of empowering people and tapping their ideas in leading the virtual workforce toward creativity. The findings support the view of Aime et al. (2014) that heterarchy provides a theoretical core and integrates several distinct bodies of literature that cover the dynamic power relations within groups but are not yet connected to each other.

For leaders in practice, as virtual work is becoming more common, specification of their own ontological commitment can contribute to a more collaborative and committed virtual workforce and innovative outputs. The results suggest that heterarchy as an ontological commitment to leadership can create prerequisites to use ICT tools to raise the present working culture to the next level focusing on changing courses of action. The results underline creativity as a key factor in the new level of working culture, which can be characterized as an interactive course of action of the continuous receiving and giving of feedback to achieve common goals. In the new working culture, attention is focused on people and their interactions, and the role of technology is to create suitable means for creative interaction. People feel that they are looked after and listened to and that their ideas are appreciated and encouraged to be developed. If leadership can foster dynamic organizing energy (Wheatley 2010, p. 143) and bring this into relationships between people, collective creativity can be nourished, and new solutions and outcomes can be found.

7. Summary

This explorative study positions itself in the leadership philosophy and the ontological foundations of leadership toward creativity in virtual work. It aims at finding out if heterarchy as the ontological commitment is appropriate to leadership toward creativity in virtual work. The study identifies the relations between the challenges in leading the virtual workforce toward creativity and the central attributes of heterarchy in relation to leadership. The findings support the applicability of heterarchial ontological commitment for this leadership. Heterarchy can help leaders to perceive their own role in virtual work in a comprehensive way, develop supportive orchestration abilities and to achieve successful business outcomes in virtual contexts. To achieve creativity and to bring dynamism in virtual work, leaders have to understand virtuality as a networked context, internalize the significance of discourse and stimulate interaction.
8. References


**Appendix**

**Themes of the semi-structured interviews**

1. Background information about the interviewee’s current job and career history and the values and beliefs of the work organization
2. Collaborative dispersed work, virtual work, virtual communication tools as well as creativity and dynamism in virtual work – special characteristics, priorities, challenges
3. Leadership in virtual work in general – special characteristics, priorities, challenges
4. Nature of leadership that stimulates creativity among virtual workforce – special characteristics, priorities, challenges
5. Meanings of leadership toward creativity and dynamism in virtual work and its influences and outcomes
6. Possible other relevant issues
Leadership toward creativity in virtual work in a start-up context

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Abstract

**Purpose** – This paper aims to better understand how to lead toward creativity in virtual work in a start-up context.

**Design/methodology/approach** – The study investigates the participants’ experiences about the learning challenges in leadership toward creativity in virtual work in a start-up company and the meanings attributed to their experiences, and the measures they see to meet those challenges. The data have been gathered on a Finnish partnership start-up company through interviews capturing peoples’ personal perspectives and experiences. This study employs a qualitative research study approach to better understand leadership toward creativity in virtual work in a start-up.

**Findings** – The results underline the importance of co-creative and assertive coaching leadership in a start-up to foster creativity and create new shared value. Key persons’ multiliteracy skills and lobbying are means to manage social and physical distances in virtual work.

**Practical implications** – The study suggests collaborative coaching leadership and assertiveness for start-ups to minimize mistakes in virtual work. Practitioners must unlearn old courses of action to learn to operate in a start-up environment and utilize information and communication technology (ICT) in a smart way.

**Originality/value** – The paper gives empirical evidence in a start-up context about combining leadership and creativity within the virtual work research.

**Keywords** Creativity, Leadership, Coaching, Virtual work, Start-up, Assertiveness

**Paper type** Research paper

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1. Introduction
Business is increasingly global, dispersed and virtual; information society and its manifestations, such as social media, present many challenges. The winners in business can foresee developments, react creatively and collaborate effectively in global networks. “Virtual work” refers to people working in different geographical locations using information and communication technology (ICT) to manage business processes, and “virtuality” to a context for companies to work together with customers, users and interest groups in networks. In the future, virtuality and mobility will become natural prerequisites for work conditions and productivity. This requires better understanding of creativity in the interaction between technology and human creative processes. It requires finding ways how to use ICT in organizational learning, leadership and collaboration effectively, and how to foster creativity to contribute to healthier and happier coworkers, offer a broader ability to see things in new ways, and to understand the potential effects of these technologies to the leadership dynamics (Avolio et al., 2014; Nemiro, 2004).

The context of this study is a partnership start-up company. A partnership start-up company is a corporate alliance: a joint value creation arrangement between two or more sponsors (Osborn and Marion, 2009). Start-ups are vital for the economic development in knowledge-based societies, because they create new jobs and economic growth. However, start-ups are different from large businesses: they are fragile, and their policy needs and priorities are unique (Dearie and Geduldig, 2013). This makes leadership that fosters creativity to support successful collaboration in virtual work fundamental in start-ups.

The paper’s purpose is to better understand leadership toward creativity in virtual work in a start-up context. It investigates (a) the key persons’ experiences in a case start-up about the learning challenges in leadership and collaboration toward creativity in virtual work and the meanings attributed to their experiences, and (b) the measures they see to meet those challenges. This study is based on the ontological commitment of leadership that is moving toward heterarchy (Spelthann and Haunschild, 2011), in which an organization is seen as a multi-layered entity with overlapping and loose parts. Leadership in heterarchy is regarded as an enabler of interaction, meaningful work, inspiration and creativity. This case study is interpretive, aiming at understanding phenomena through assessing the meanings participants assign to them (Gray, 2014).

The paper contributes to scientific discussions on leadership in virtual work in a start-up by providing empirical evidence to link creativity and leadership within the research on virtual work. It also integrates educational and business knowledge and research.
First, this paper examines prior research relating to the research questions, then outlines the research context and methodology. At the end, it presents findings and discussion and conclusions.

2. Theoretical framework
The theoretical framework is based on previous research on leadership in virtual work, creativity, collective creativity, and creative-conductive leadership approaches.

2.1 Leadership in virtual work
Leadership is defined here as a social interaction process that actively orchestrates collaborative work; it influences and inspires people to find new possibilities, achieve their potential and reach their goals (Beairsto and Ruohotie, 2003; Searle and Hanrahan, 2011). Virtuality can be regarded as a nonlinear organizational form with free movement enabling flexibility and creativity (Panteli and Chiasson, 2008). Virtual interactions include silence, breaks of communication (Panteli and Fineman, 2005) and “virtual distance,” which describes the sense of separation among people (Rosen, 2009). Previous research has mainly focused on leadership in virtual teams and emphasized understanding modern technology and using it in organizational learning and leadership. Examples of research topics are distances between people, virtual co-presence, empowerment, participation and supportiveness to bridge the gaps between people (Avolio et al., 2014; Jenster and Steiler, 2011; Zimmermann et al., 2008). Moreover, leadership within early stage firms remains an under-researched area (Patton and Higgs, 2013).

2.2 Creativity and collective creativity
Start-ups in particular need to combine leadership with creativity to succeed. Creativity, the act of generating something novel and useful, has been connected to individuals, groups and to the process originating from personal predisposition and a hospitable social context (Amabile, 1988; Woodman et al., 1993). A creative person has a courage to create independently something new in his or her own way connected to some special field (e.g., Uusikylä, 2012). A state of concentration or complete absorption with the activity at hand and the situation is called “flow”, a creative peak experience contributing happiness, mental health and significance to one’s life (Csikszentmihalyi, 1990). Collective creativity can occur in a social context, where people with different perspectives and experiences question the common challenge and create novel and useful ideas and solutions together. It consists of three components: individual, knowledge
domains and a field of informed experts (Csikszentmihalyi, 1999). Additionally, echoing Woodman et al. (1993), organizational creativity means the creation of a valuable, useful new product, service, idea, procedure or process by individuals working together in a complex social system. A creative environment is open and safe, allowing mistakes and different opinions; it has respect for everyone and constructively evaluates the products rather than criticizing them (Uusikylä, 2012).

Problem solving, creative cognition and their interaction are vital in understanding creativity in online social interaction (Wheeler et al., 2002). Broad dialogue in work communities and virtual co-creation can support the birth of innovations through enabling previously unavailable expertise, interpretation of information and the construction of a common socio-cultural ground (e.g., Parjanen, 2012). Dialogue can enable efficient collaboration with (for instance) customers and user communities. Leaders aiming for creative virtual contexts need to hire the right people to the right positions, realize how to combine single persons’ creativity with the groups’ distributed creativity, and should support continuity and trust between people to energize all possible potential for novel solutions (Amabile et al., 1996; Sawyer and DeZutter, 2009; Panteli and Chiasson, 2008). Leading collaboration requires facilitation and cultivation (Rosen, 2009). As the perceived work environment influences on the level of creativity in an organization (Amabile et al., 1996), many organizations presently face this issue also in social media environments (Cortini and Scaratti, 2011).

2.3 Creative-conductive leadership orientations
Studies on leadership in virtual work contexts have so far not been based on any specific theoretical framework. However, transformational, emotional and complexity leadership as creative-conductive leadership orientations can be regarded as appropriate theoretical approaches to study leadership toward creativity in virtual work (Ruggieri et al., 2013; Uhl-Bien et al., 2007).

A clear vision and mission, inspirational motivation, intellectual stimulation and individualized consideration characterize transformational leadership (Avolio and Bass, 1988; Avolio et al., 1991; Warrick, 2011). Researchers also argue that the relationship between transformational leadership and creativity is not fully understood (Wang and Zhu, 2011). The study by Castro et al. (2012) indicates that followers’ creativity is associated with transformational leadership and leaders’ emotional intelligence (e.g., Coleman et al., 2004). Also other combinations of leadership styles in virtual work have been suggested, for example both transformational and transactional leadership (Zayani, 2008) and visionary leadership style (Whitford and Moss, 2009).
The virtual working process resembles a self-organizing system where the order is not linear. Virtual interaction includes typical characteristics of complex adaptive systems (CAS): open, evolutionary networks of interaction, and interdependent agents having a common outlook and capable of creative problem solving (Uhl-Bien et al., 2007). This makes leadership through the orientation of complexity (Uhl-Bien et al., 2007; Lichtenstein et al., 2006) as one possible theoretical orientation for leadership in virtual work. Complexity leadership challenges the traditional leadership theories. As an integrative theoretical framework it explains interactive dynamics and regards leadership as a function of interaction, a complex interactive dynamic through which adaptive outcomes emerge. Leadership is seen as a process, which shapes the future by influencing the means of interaction and by clarifying a purpose for each member of the organization (Hazy, 2009). Abilities required from leaders include thinking and predicting through complex problems, engaging groups in dynamic adaptive change, encouraging innovations and managing emotions (Plowman et al., 2007).

Besides diverse business skills, leadership and collaboration in virtual work require multiliteracy expertise, i.e., competences to manage the mass of knowledge and prioritize the essential information, and a positive mindset to explore and participate in online networks (Guth and Helm, 2010). The term “multiliteracy” refers to the increase in the number of communication channels and in the salience of cultural and linguistic diversity (New London Group, 1996). Previous research underlines the importance of the cultural and contextual factors, critical dialogue, reflection, dynamic approach, and the support from peers to learn multiliteracies (Guth and Helm, 2010; Smith, 2011).

To summarize, the points in the literature most informed this study include the notion of virtuality enabling creativity, lack of leadership research in start-ups, motivational aspects in transformational leadership and the interpretation of leadership as a function of interaction in complexity leadership.

3. Research context and methodology
This study was conducted as a qualitative research (e.g., Charmaz, 2006; Miller and Glassner, 2011) aiming to understand better how the key persons in a start-up experience the learning challenges of leadership toward creativity in virtual work and the measures to meet them. Understanding requires an interpretivist approach, where the researcher gets close to the people and the process under study (Hatch and Cunliffe, 2006; Newton Suter, 2012). To understand the role of collaboration between key persons and the changing context in the start-up, the
complexity leadership approach was used to interpret the data by paying attention to interaction and collaboration between the key players (Lane and Down, 2010).

Data gathering and analysis were empowered by the researcher’s experience in management praxis and theory, carrying out conversational explorations and interest in linking educational and business knowledge. The interviews can be characterized as mutual discussions, although the researcher’s main aim was to listen and understand. Additionally, the researcher wrote a report to the case start-up about the initial study findings immediately after the interviews. The report afforded an opportunity to give feedback for the interviewees and reflexive elaboration of the analysis for the researcher.

3.1 Data gathering
Finding case organizations started from discussions with a few company networks in the Finnish tourism sector. Due to the evident insignificance of virtual work in the tourism sector, the recruitment of the case(s) continued further. The chosen start-up, with promising business potential and networking capabilities, was found on the recommendation of the Federation of Finnish Technology Industries. The study was executed as a single in-depth case study. Through interviewing only a few people the aim was to hear their full stories and maximize the utility of information from one single representative case for obtaining information about start-ups, where leadership and collaboration can be especially problematic for the business to succeed (Flyvbjerg, 2007).

The case start-up, which operates a global sustainable engineering business, was founded in early 2013. It is owned by five networked partners working in different areas in Finland. The start-up’s vision is to coordinate a global supply network and become a globally preferred partner. Through cooperation with local partners and the global network, it offers advanced technology solutions for manufacturing, technology and assembly based on customer needs. Its strategy includes providing added value by minimum process time, reducing working capital for supply chains and executing projects quickly. During the data gathering the start-up had already moved from the idea stage to finding customers and initiating trading. The key persons also strove to secure financing and to specify the basic structure of the business.

The data were gathered through face-to-face interviews of the six male key persons in the start-up—five partners and one legal strategic advisor—during September through November 2013. All the interviewees were experienced in different fields of national and global technology business as managing directors, crew chiefs and counselors. Most of them already knew each other. The semi-structured interviews lasted 1 to 2.5 hours each. A semi-structured format of
interviews gave the interviewees good opportunities to discuss the issues relevant to them. Open-ended questions guided conversations about:

- the key persons’ backgrounds and roles in the start-up;
- their views, motivations and ambitions on the start-up business, and how they saw;
- interaction and communication both in the core team and with customers and other stakeholders;
- leadership and creativity;
- the role of virtual work and utilizing ICT in leadership and networking; and
- the significance of emotional intelligence in leadership and collaboration.

Interviews gave the interviewees a chance to voice issues about the leadership and collaboration not previously openly acknowledged (Rapley, 2010). Telephone conversations with the CEO, listening to one seminar presentation by the company, studying its presentation materials and reading stories about it in the media offered additional data to the analysis.

3.2 Data analysis

Each interview was recorded and transcribed, which resulted in 144 pages of transcript. The data was analyzed during data collection, to avoid unfocused and repetitious data collection, and after all the data was collected. Field notes, comments and questions were written during the data collection stage and analyzed later. The data in the interview transcripts was read through several times and coded and analyzed by one researcher. ATLAS.ti, version 7.1.4, the qualitative data analysis and research software developed by ATLAS.ti Scientific Software Development GmbH, was used to carry out the stages of open coding and code families. The coding unit was a theme of relevance to the research questions.

The data was first coded by identifying single words or phrases from the raw data to help to reach the aim of the research; also, two or more codes were attached to one single phrase. After the open coding stage the codes were categorized to 31 code families by reordering and connecting such codes that fit together. The code families included in this stage both learning challenges in leadership and the construed understandings based on the key persons’ previous expertise about meeting the learning challenges in leadership. The construed understandings are “presumptions about what will be, based upon what have been” (Isabella, 1990) indicated by the interviewees. During the process, the initial code families were modified by eliminating old ones and adding new ones to correspond with the evidence. Next the code families were clustered by using ATLAS.ti and manually into ten learning themes in leadership, presented in
Table I:
(1) learning to operate in a new start-up context;
(2) team dynamics;
(3) commitment of the owners of the company;
(4) a common business model;
(5) orchestration of the network;
(6) communication;
(7) the gaining of credibility;
(8) customer collaboration and development of business;
(9) the managing of projects; and
(10) project implementation.

Each learning theme included two groups of codes: those linked to the learning challenges in leadership (Table I) and those linked to the construed understandings to meet the challenges (Table II). Firstly, Table I illustrates the ten learning themes and the most relevant examples of codes of learning challenges related to each of the learning challenges.

The focal learning challenges to learn to operate in a new start-up context (Learning Theme 1 in Table I) are for all key persons in a start-up to operate originally, without existing structures; to unlearn or relearn the courses of action that work in big organizations; and to utilize peoples’ previous experience, ideas, expertise and contacts. It is also important to strive for good team dynamics and commitment, which presumes mutual trust among key persons (Learning Themes 2 and 3). One key person described the need for unlearning in Extract 1.

3.2.1 Extract 1

I am attuned to certain courses of action, so I notice I have sometimes difficulties to settle in. The old ways to operate do not necessarily work in this environment. The leadership in a big company is in a certain way different from that in a small company.

The challenge to learn new courses highlighted the need for the core team to reflect together the measures in changing business environments and to handle different expectations about the preferred measures (Learning Theme 1). Some of the interviewees thought there was not a joint vision. The analysis supported the importance of having a joint vision clearly in mind, and of making changes to the vision and to the common business model (Learning Themes 3 and 4). This has been highlighted both in transformational leadership (Avolio and Bass, 1988) and in complexity leadership (Hazy, 2009). Moreover, the data underlined learning to communicate...
Table I. Ten learning themes in leadership and examples of codes of learning challenges related to them.

<table>
<thead>
<tr>
<th>Ten learning themes in leadership in the case start-up</th>
<th>Examples of codes of learning challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Learning to operate in a new start-up context</td>
<td>Unlearning the courses of action learned before in bigger organizations</td>
</tr>
<tr>
<td></td>
<td>Tapping partners’ previous experience, ideas, expertise and contacts</td>
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<td></td>
<td>Realistic attitude towards challenges</td>
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<td></td>
<td>Critical reflection</td>
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<td></td>
<td>Power relations</td>
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<td></td>
<td>Decision making in the core team</td>
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<td></td>
<td>Managing the conflicts of competition</td>
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<td></td>
<td>Organizing for growth</td>
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<td></td>
<td>Creating a feeling of genuine collaboration toward a common goal</td>
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<td></td>
<td>Realizing unbalanced economical risk among partners</td>
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<tr>
<td></td>
<td>Overcoming the first tight spot</td>
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<td></td>
<td>Changes in partnerships and replacements</td>
</tr>
<tr>
<td>2. Team dynamics</td>
<td>Common targets</td>
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<tr>
<td></td>
<td>Global operational concept</td>
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<td></td>
<td>Network as an overarching power</td>
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<td></td>
<td>Cost-effectiveness and speed</td>
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<td></td>
<td>Established partners in right positions</td>
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<td></td>
<td>Building the network</td>
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<td></td>
<td>Managing the network</td>
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<td></td>
<td>Managing the development of the network</td>
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<tr>
<td></td>
<td>Contract management</td>
</tr>
<tr>
<td>3. Commitment of the owners of the company</td>
<td>Face-to-face meetings too seldom</td>
</tr>
<tr>
<td></td>
<td>Online communication problems</td>
</tr>
<tr>
<td></td>
<td>Getting information about the economic situation</td>
</tr>
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<td></td>
<td>Communication with customers</td>
</tr>
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<td></td>
<td>Communication with other interest groups</td>
</tr>
<tr>
<td></td>
<td>Credibility of a small company</td>
</tr>
<tr>
<td>4. A common business model</td>
<td>Supporting customers to find solutions themselves</td>
</tr>
<tr>
<td></td>
<td>Know-how in networking, lobbying and the field of operation</td>
</tr>
<tr>
<td></td>
<td>Effective communication face-to-face and online</td>
</tr>
<tr>
<td>5. Orchestration of the network</td>
<td>Managing change</td>
</tr>
<tr>
<td></td>
<td>Creating enthusiasm and commitment</td>
</tr>
<tr>
<td></td>
<td>Built-in encouraging elements for project management</td>
</tr>
<tr>
<td></td>
<td>Need of assertive project managers</td>
</tr>
<tr>
<td>6. Communication</td>
<td>Project implementation including follow-up</td>
</tr>
<tr>
<td></td>
<td>Managing project documentation</td>
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</tbody>
</table>

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effectively face-to-face and online and to manage distances between people (Learning Theme 6) (Cortini and Scaratti, 2011; Panteli and Fineman, 2005). Another key person told about the problems with information sharing in Extract 2.

3.2.2 Extract 2

The operative players may send you an e-mail at 10 in the evening and say that they have already thought to act in a certain way, and ask if it is okay to read the papers attached for the next day before 4 p.m. If I answer ‘no, it isn’t,’ it will arouse a ballyhoo that there is no time to change anything. I have had several times such a feeling that why they asked me at all.

Start-ups are typically involved in a networked business, which highlights the importance of skillful orchestration of networks and managing projects (Learning Themes 5, 9 and 10) (Lichtenstein et al., 2006; Rosen, 2009). Good orchestration and project management improve the start-ups’ credibility among interest groups and help to develop relationships with customers (Learning Themes 7 and 8). The data revealed the importance of foreseeing the network’s development needs ahead of time, managing contracts well, creating built-in encouragement elements for project management and hiring assertive project managers.

The third round of data analysis refined the learning themes further to four main learning challenges in leadership. From the analysis, the most important learning challenges for a partnership start-up are:

1. collaboration in a partnership team;
2. orchestration and leadership;
3. collaboration with customers; and
4. project management (Figure 1).
Successful start-up business requires simultaneously learning to connect orchestration and leadership, collaborating in a partnership team and collaborating with customers and project management.

Secondly, the data analysis revealed main measures in leadership to meet the main learning challenges (Table II). The main measures were derived from the interviewees’ construed understanding of how to meet the learning challenges in leadership. The construed understandings were initially coded during the open coding stage, then clustered together with the learning challenges under the ten learning themes and further under the main learning challenges. Table II gives examples of the most relevant construed understandings of meeting each of the four main learning challenges, and the main measures in leadership to meet the main challenges compacted from those understandings. The data highlights encouraging collective creation, critical reflection, assertiveness, flexible interaction, multiliteracy skills, creating shared value with customers, consistency and good management skills and systems.

Figure 1. The main learning challenges in leadership toward creativity in the case start-up derived from learning themes.
Table II. Main measures for leaders to meet the learning challenges (LC) in the case start-up derived from the interviewees’ construed understandings.

<table>
<thead>
<tr>
<th>Examples of the construed understandings of meeting learning challenges</th>
<th>Main measures in leadership toward creativity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LC 1: Collaboration in a partnership team</strong></td>
<td>Encouraging collective creation</td>
</tr>
<tr>
<td>Encouraging to share expectations, views, experience and know-how and use the strengths of key players</td>
<td></td>
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<tr>
<td>Regular discussions</td>
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<td>Courage to talk about facts</td>
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<tr>
<td>Mutual respect, trust and listening</td>
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<td>Emotional intelligence</td>
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<tr>
<td>Dispersed leadership</td>
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<tr>
<td>Critical reflection</td>
<td></td>
</tr>
<tr>
<td>Common rules of doing business</td>
<td>Assertiveness</td>
</tr>
<tr>
<td><strong>LC 2: Orchestration and leadership</strong></td>
<td>Assertiveness</td>
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<tr>
<td>Clear common targets for all</td>
<td></td>
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<tr>
<td>Resource allocation</td>
<td></td>
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<tr>
<td>Contract management</td>
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<tr>
<td>Network management system</td>
<td></td>
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<tr>
<td>Building a supplier network of high quality</td>
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<tr>
<td>Collaborative leadership with mutual trust, flexibility and cultural sensitivity</td>
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<tr>
<td>Emotional intelligence</td>
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<tr>
<td>Consistent leadership profiles toward different players</td>
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<tr>
<td>Orchestrating the creative development of the network</td>
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</tr>
<tr>
<td>Sharing structured information regularly face-to-face and through ICT</td>
<td>Constructive and flexible interaction</td>
</tr>
<tr>
<td>Lobbying as a means of utilizing distances between people</td>
<td>Multiliteracy skills</td>
</tr>
<tr>
<td><strong>LC 3: Collaboration with customers</strong></td>
<td>Creating shared value with customers</td>
</tr>
<tr>
<td>Providing solutions</td>
<td></td>
</tr>
<tr>
<td>Effortless collaboration for customers</td>
<td></td>
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<tr>
<td>Superior logistics</td>
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<td>Strategic agility</td>
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<tr>
<td>Good business relationships</td>
<td></td>
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<tr>
<td>Good communication skills face-to-face and through ICT</td>
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<tr>
<td>Proactivity towards customers’ customers</td>
<td></td>
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<tr>
<td>Consistent course of action to gain credibility</td>
<td>Consistent course of action</td>
</tr>
<tr>
<td><strong>LC 4: Project management</strong></td>
<td>Good management skills and systems</td>
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<tr>
<td>Reliable project managers and project management system</td>
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<tr>
<td>Linking customers to project follow-up</td>
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<tr>
<td>Emotional intelligence</td>
<td></td>
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<tr>
<td>Innate leadership to different customers and markets</td>
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<tr>
<td>Utilizing cloud-based services for document management and information sharing</td>
<td></td>
</tr>
</tbody>
</table>

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Even though the case start-up used ICT in leadership and collaboration relatively little, the data reveals that regular discussions between the key persons, and sharing structured business analysis by ICT before decisions were made, were a means for leaders to foster creativity in virtual work (LC 1 in Table II) (Wheeler et al., 2002). This course enables critical reflection and rich guidance to the operative company management and can generate collective creativity.

According to the data, lobbying is one means of managing social and physical distances in virtual work (LC2) (cf. Avolio et al., 2014). Leaders and managers aim to influence other decision-makers before an online or face-to-face meeting. One key person experienced in virtual global business elaborates on this matter in Extract 3.

3.2.4 Extract 3

Even if I am not the organizer of a videoconference, I telephone in advance such people who will participate the videoconference and collect information. It is influencing, it is lobbying. I can ask them not to talk about a certain issue because we can solve it just the two of us. It is a political game for the most part. After the meeting you may tell someone that the issue here is like so but I didn’t want to say that in the meeting when all the others were listening.

The data highlights the importance of leadership being in the midst of the groups, listening to people and respecting them as experts who can build co-creative interaction (LC 2); this was also underlined in transformational and in complexity leadership (Castro et al., 2012; Plowman et al., 2007). Such leadership incorporates critical reflection; the sharing of expertise, experiences and interpretations; and linking customers and customers’ customers to the business development (LC 2, LC 3). Such reflections can help key persons to commit themselves to the joint vision and rules and to stay partners in the start-up. It influences positively on the company’s economic results, as one interviewee indicates in Extract 4.

3.2.4 Extract 4

If the leader has given the employees the opportunity to succeed in their jobs and the employees know themselves the management is pleased with their work, probably something has happened in the leadership. If the leader succeeds in this matter, such companies get the best economic results. Absolutely.

According to the data, assertiveness—containing clear, common targets and rules; consistent course of action; consistent leadership profiles toward different players—is essential in meeting learning challenges (LC 2, LC 3).
4. Findings and discussion
To sum up, the results underline the importance of a co-creative and assertive leadership and collaboration to foster creativity in a start-up context. Such leadership and collaboration resembles coaching, which Hawkins (2012) defines as a form of leadership and management development combining different fields of expertise, know-how and skills to reach win-win targets. Coaching supports the learning of people and whole organizations, strategic and commercial development and the way of doing business with interest groups. Figure 2 combines the most important learning challenges derived from the learning themes and the measures in leadership to meet them.

**Figure 2.** The main learning challenges in leadership toward creativity in virtual work, and the leadership measures necessary to meet the challenges in the case start-up.

The results suggest that one way to improve collaboration from the early stage of a start-up between partners, customers and suppliers is to encourage multiliteracy skills, as well as the creative utilization of virtuality and ICT. Virtuality and ICT offer fora to critical reflection and testing.

The findings suggest the importance of a co-creative and assertive coaching leadership style and working culture utilizing critical reflection. This is important for start-ups that are coping with complex challenges and for all partners to learn to operate in a new start-up context; this
will help create new shared value. Mutual coaching requires each participant to act as both the coach and the coachee. Building and communicating reciprocity and respect of others enables everyone to experience inclusiveness (Alasoini, 2012) and creativity, even in virtual work. Additionally, the study highlights that co-creative and assertive leadership creates opportunities to improve business forecasting and decision-making and can bring about superior credibility among customers.

The study enhances understanding about the role of sharing experiences and coaching in the contexts of start-ups, supporting the views of Hawkins (2012) about building a listening and learning coaching culture. Co-creative and assertive coaching leadership can be extended to cover many directions, such as constructing a joint vision together with the core partnership team, customers and other players and jointly committing to that vision. The results support Merriam’s (2004) argument that the key to transformative learning is critical reflection on experience. However, contrary to her view on independent thinking as the goal of transformative learning, this study emphasizes joint understanding and commitment as goals in a start-up. The findings confirm Smith’s (2011) argument that a broader understanding of critical reflection helps participants to be constructive in their criticism. The finding of assertiveness supports Zayani’s (2008) suggestion about the combination of transformational leadership with some elements of transactional leadership as an effective style of leadership in virtual work. In general, the findings support the theoretical approaches of both transformational leadership (Avolio and Bass, 1988) and complexity leadership (Hazy, 2009; Uh-Bien et al., 2007), stressing specifically the significance of a joint vision, leadership as a function of interaction, and listening to people and respecting them.

The findings support the views of Guth and Helm (2010) and Wheeler et al. (2002) and highlight the importance of key persons’ multiliteracy skills in a start-up to make good decisions and orchestrate the creative development of the supply network. Sharing structured information regularly and lobbying are noteworthy measures to exploit distances between different players. This output contributes to the so far scanty research on how the distance affects the appropriation of ICT and on the impact ICT has on the appropriation of virtual leadership tools and processes (Avolio et al., 2014).

For start-up practitioners, the findings suggest the importance of both collaborative and coaching leadership and working culture and assertiveness to minimize mistakes in virtual work. Companies can utilize virtuality by sharing structured information of the business situation regularly with the start-up partners, organizing sessions for common reflection regularly, and informally as needed by using (for instance) managerial social media or other social media tools.
(Cortini and Scaratti, 2011). In this study, unlearning old courses of action needs special consideration among experienced practitioners in start-ups. Additionally, the findings underline the importance of a joint vision and strategy in a start-up to develop collaboration and business and to raise the start-up’s credibility among customers. Integrating customers and suppliers to the follow-up meetings in projects is one way to gather information from different players at the same time and commit them all toward a joint target.

Regarding limitations, this study consisted of a single start-up case, where the key persons were all men and piggybacked onto virtuality and ICT comparatively little, partly because the start-up was in an early development phase. Although being able to interview only men in this study is a limitation, another study in the future with only women would offer a good comparison. However, the start-up was exceptional because its key persons had broad previous experience in business. On account of the key persons’ several layers of prior knowledge the case can be regarded as representative for this study and can pave the way for future researchers to conduct empirical research on this topic in other companies and in other fields of industry. Future studies can focus on studying how to utilize virtuality in orchestration of networks, how events and leadership behaviors influence creativity in virtual work, and on outcomes of co-creative and assertive coaching leadership.

5. Conclusions
This study gives empirical evidence in a start-up context about combining leadership and creativity, which have so far remained separate within the virtual work research. The results suggest the importance of co-creative and assertive coaching leadership for start-ups in virtual work. Leadership that fosters creative and inspiring utilization of virtuality and ICT from the early stage of a company and utilizes multiliteracy skills and critical reflection can promote such success stories where both people and businesses can flourish in the digital economy. Moreover, by integrating business and pedagogical knowledge it is possible to gain a broader understanding of leadership and collaboration in virtual work.
References


TYPOLOGY ON LEADERSHIP TOWARD CREATIVITY IN VIRTUAL WORK

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ABSTRACT

Aim/Purpose This study aims to develop a descriptive typology to better identify leadership toward creativity in virtual work in different types of companies.

Background The study empirically explores how leadership toward creativity occurs in virtual work and uses the theoretical lenses of creativity-conducive leadership and heterarchy to generate a typology.

Methodology A multiple qualitative case study design, interpretivist approach, and abductive analysis are applied. Data is collected by interviewing 21 leaders and employees face-to-face in four companies in the ICT sector and one business advisor company.

Contribution The empirical evidence of this study enriches the understanding of leadership toward creativity in virtual work and contributes to the limited empirical knowledge on leadership that stimulates a virtual workforce to achieve creativity.

Findings The four different types of companies in the typology utilize various transitions toward leadership creativity in virtual work. The trend in leadership in the existing virtually networked business environment is toward the “collective mind” company, which is characterized by shared values, meaningful work, collective intelligence, conscious reflection, transparency, coaching, empowering leadership by example, effective multichannel interaction, and assertiveness. The findings empirically support applying a heterarchy perspective to lead a virtual workforce toward creativity and promote leaders who are genuinely interested in people, their development, collaboration, and technology.

Recommendations for Practitioners The typology helps professionals realize the need to develop leadership, communication, interaction, learning, and growth to foster creative interaction and improve productivity and competitiveness.

Recommendation for Researchers This study enables researchers to more rigorously and creatively conceptualize the conditions and relationships in leadership that facilitate creativity in virtual work.
Typology on Leadership toward Creativity in Virtual Work

Impact on Society  The findings highlight humanistic values for developing leadership. The study strengthens the view that collective creativity in virtual work cannot emerge without virtual and physical interaction in appropriate spaces and caring for each other.

Future Research  Future studies may focus on other fields, industries, networks, roles of materialities, and employees in fostering creativity and on theory development. Longitudinal studies are advisable.

Keywords  virtual work, creativity, leadership, typology, heterarchy

INTRODUCTION

In the face of rapid change, the complexity and importance of information and communication technology (ICT), virtuality, and mobility as well as the need to enhance innovation and productivity in today’s business and work, leaders must better understand the creativity that occurs when technology and human creative processes interact (e.g., Gilson, Maynard, Jones Young, Vartiainen, & Hakonen, 2015). The speed of digital development makes this even more important because new areas are becoming subject to automation, and people need to adapt to use their creativity in these new environments in which machines complement and augment human capabilities (Brynjolfsson & McAfee, 2014). This situation requires identification of ways to use ICT in leadership in order to efficiently organize internal collaboration and learning and their external applications (Guo, Dilley, & Gonzales, 2016) and an understanding of creativity as a strategic challenge in the global business environment to advance profitability in business and productivity and the common good in society. According to Chamakiotos (2014, p. 70), “creativity is pivotal in design, as it is closely linked to the problem-solving activity, as well as to the commercial success of a product.”

Virtual work is actualized in dynamic multi-mediated, massive, multi-actor social networks (Panteli, 2009) that are not directed from the top down. In this kind of work, it is vital to understand the creativity that occurs between people in organizations and combine single individuals’ creativity with groups’ collective creativity to enable all possibilities for innovation (e.g., Sawyer & DeZutter, 2009). “Virtual work” refers to the work performed by people in different geographical locations that use ICT to manage business processes and “virtuality” so that companies can work together with customers, users, and interest groups (Humala, 2015).

Previous research has found that it is important for leaders to foster a virtual co-presence of staff members to produce mutual trust for better interaction and outcomes (Altschuller & Benbunan-Fich, 2010), generate participation and supportiveness in virtual work, and maintain motivation (Jenster & Steiler, 2011). However, few studies have focused on the real-world applications of leadership toward creativity in virtual work. Few empirical studies have examined organizational creativity as a collective phenomenon, which requires researchers to study creativity in ongoing organizations (i.e., in organizations that grow) (Guo et al., 2016). Additionally, more empirical evidence is needed to apply a hierarchical perspective to virtual work and to understand the connections between stimulating creativity and heterarchy in order to foster better leadership of virtual workforces (Humala, 2016). Heterarchy has roots in complex adaptive system theory (Holland, 2006) and highlights the changing power relations within groups (Aime, Humphrey, Scott, & Paul, 2014). This study rises to these challenges by empirically exploring how leadership toward creativity occurs in virtual work and using the theoretical lenses of creativity-conducive leadership and heterarchy in leadership to generate a descriptive typology (Collier, LaPorte, & Seawright, 2012) including four different types of companies. According to Bell and Kozlowski (2002), a typology is especially useful in new areas of inquiry that have not been extensively explored and are characterized by a variety of diverse but related phenomena. The typology identifies leadership toward creativity in virtual work in various types of companies and defines various transitions toward creative leadership in virtual work. The typology serves as an analytical tool that helps both researchers and practitioners to understand and develop leadership toward creativity in virtual dispersed work as well as conceptualize the conditions and relationships inherent to leadership. This paper provides an elaborate understanding of the type of leadership that inspires a
virtual workforce to be creative, including its attributes, requirements, and societal significance. For practitioners, it helps identify the characteristics that differ between various types of companies and provide new ways to foster a competitive virtual workforce.

This study is part of a research project that aims to incorporate business-oriented and pedagogical thinking in leadership by investigating the processes that occur at multiple levels of virtual work and how leaders influence the underlying processes and dynamics that lead to organizational outcomes (Dinh et al., 2014). The aim of this multifaceted approach is to help increase the success of organizations and their staff.

The next section introduces the theoretical framework of the study. The subsequent sections describe the methodology and findings of the study. The final sections discuss the results and present the conclusion.

**Theoretical Background**

This study relates to the following academic discussions: virtuality and virtual work, creativity and collective creativity, creativity-conducive leadership approaches to virtual work versus task-focused leadership, and a heterarchical perspective in leadership versus a hierarchical perspective.

**Virtuality and Virtual Work**

Virtuality, as a multidimensional concept, is an organizational setup whereby operations are organized and distributed across geographical, temporal, cultural, and organizational boundaries (e.g., Parjanen, 2012). Virtuality is part of a social and conceptual network that allows interaction between people with the same interests and conceptual spaces, and it is supported by ICT and exploration both within and beyond organizations (Panteli & Chiasson, 2008). Technological and social changes revise how we understand virtuality, its role in organizations, and its future virtuality-based perspectives for businesses.

Explorations of virtuality have expanded from individual virtual work contexts to virtual teams, organizations, and networks and mix face-to-face and computer-mediated interactions. Since technology-mediated interaction complements rather than substitutes face-to-face interaction, Dixon and Panteli (2010) define virtuality based on virtual continuities that emerge within a team when both face-to-face and technology-mediated communication are used to mitigate the perceived effects of boundaries between the two media.

Virtual work, as shown in this study, broadly includes permanent, contemporary, intra- and interorganizational, nationally, and globally dispersed work (Panteli, 2004) as well as hybrid work, which combines face-to-face and virtual communication (Griffith, Sawyer, & Neale, 2003). In doing so, it involves specific remote work contexts and virtual teams, organizations and customers, and users and suppliers in networks. Virtual work is actualized in dynamic networks in complex contexts with multilevel patterns and social relations (Clippinger, 1999; Weil, 2009), and it includes dynamic structural arrangements (Gibson & Gibbs, 2006; Zimmermann, Wit, & Gill, 2008). Virtuality as a work context is a continuous, dynamic series of processes consisting of circles of circles within circles (each circle or network consists of smaller networks or teams, and each network works together in a vast network) (Zohar, 1997).

Virtual teams include groups of geographically dispersed individuals working together on a joint project or common task whose primary communication occurs electronically (e.g., Jarvenpaa & Leidner, 1999). Research has highlighted the importance of trust for enabling people to collaborate in virtual work contexts and found that a lack of face-to-face interaction decreases productivity in truly virtual teams (e.g., Panteli & Chiasson, 2008; Parjanen, 2012).
Recently, scholars have focused on factors affecting knowledge sharing and outcomes in virtual organizations. Virtual contexts are also unbounded and nonlinear with free movement, enabling flexibility, fluidity, creativity, and opportunities, which lead to improvements in the innovation process (Gibson & Gibbs, 2006; Panteli & Chiasson, 2008). Virtual co-creation in virtual networks supports the participation of previously unavailable experts in order to arrive at innovative solutions (e.g., Panteli, 2009; Parjanen, 2012). According to Chung, Cooke, Fry, and Hung (2015), promoting social values based on mutuality, trust, and shared goals can improve employees’ sense of well-being and knowledge-sharing via ICT, hence improving the organization’s competitive advantage. Moreover, perceived proximity — a symbolic representation of geographically distant coworkers — has been found to mediate the effects of communication and identification on relationship quality, reinforcing the hypothesis that critical aspects of distributed work are socially constructed and symbolically laden (O’Leary, Wilson, & Metiu, 2014; Wilson, O’Leary, Metiu, & Jett, 2008). Also, multiliteracy skills (e.g., Dawson & Siemens, 2014) and an understanding of collaborative and distributive participatory media literacy based on sharing, especially the sharing of collective intelligence (Kupiainen & Sintonen, 2010), are crucial for virtual collaboration and leadership of virtual work.

**Creativity and Collective Creativity**

Here, creativity is considered a joint course of action taken by everyone in an organization. Creativity, the process of generating something novel and useful, has been connected to individuals and groups, and it is said to originate from personal predispositions toward creativity and a hospitable social context (Amabile, 1988; Csikszentmihalyi, 1999; Woodman, Sawyer, & Griffin, 1993). Amabile (1983) states that creativity arises when the following three components are present: (1) domain-relevant skills and expertise; (2) creativity-related thinking related to cognitive and personality processes that are conducive to novel thinking; and (3) task motivation, especially intrinsic motivation. She extended her theory to include teams and organizations (Amabile, 1988) and later identified the power of progress as the top motivator of performance (Amabile & Kramer, 2011). In addition, creativity is embedded in dynamic interactional relationships between people and their cultural and material realities (Poutanen, 2016), and it needs time to arise (Uusikylä, 2012). Creativity can also be understood as divergent thinking — devising alternative solutions to problems — that produces novel and useful outputs and demands discipline, skill, hard work, and patience (Moeran, 2015; Penttilä & Hakala, 2016).

Studies on creativity have increasingly stressed sociocultural and collective creativity (e.g., Sawyer & DeZutter, 2009) based on Vygotsky’s (1978) sociocultural approach to human learning as a social process. The interaction of individual creative skills, team dynamics, and organizational solutions leads to combined outputs (Bissola & Imperatori, 2011; Hargadon & Bechky, 2006). Various social resources and tools related to collaboration can promote creativity (Hämäläinen & Vähäsantanen, 2011). For example, according to Hardagon and Bechky (2006), reflective reframing serves as the core of creatively collective moments because it draws upon participants’ prior experience and combines it in new ways. The ability for people to transform the outside world and gain a sense of belonging to a community by finding creative solutions to everyday tasks and longer-term goals have been underlined as ways in which creativity is meaningful (Countlett, 2011; Handy, 1995; Zhou & Shalley, 2008). Previous research has highlighted the role of micro-level interactions — that is, collaborative moments and events — and processes to generate collective creativity (Hardagon & Bechky, 2006; Poutanen, 2016).

Organizational creativity refers to the creation of a new valuable and useful product, service, idea, procedure, or process by people working within a complex social system (Woodman et al., 1993). This type of creativity is related to group creativity and contextual influences (Parjanen, 2012; Schepers & van den Berg, 2007). A relaxing environment, support for the organization’s structural and leadership solutions, resources, and skills, and a positive organizational culture are essential for organizational creativity (e.g., Kallio & Kallio, 2011; Martens, 2011).
In order to achieve positive outcomes, it is essential for organizations that connect people from various geographic locations to understand collaborative creativity and combine it with individual creativity. In online social interactions, especially those involving problem-solving, creative cognition and communication are vital to achieve creativity (Amabile, 1998; Drazin, Kazanjian, & Glynn, 2008; Wheeler, Waite, & Bromfield, 2002). In virtual work contexts, it is essential for leaders to understand the creativity that occurs among people in organizations, hire the right people for the right positions, combine individual creativity with collective creativity, and support continuity and trust between employees to foster innovative collaboration (Amabile, Conti, Coon, Lazenby, & Herron, 1996; Panteli & Chiasson, 2008; Sawyer & DeZutter, 2009). According to Hardagon and Bechky (2006), selecting individuals that pursue collective achievement over individual achievement, rewarding and encouraging those individuals, and requiring daily interaction between project teams are vital to foster social interactions in virtual work. Perceptions of an organizational work environment can influence the level of creativity in the organization (Amabile et al., 1996), even in virtual work environments (Cortini & Scaratti, 2011).

**Creativity-Condusive Leadership Approaches**

Leadership is defined as the process of actively influencing, motivating, and inspiring people to discover new possibilities, achieve their potential, and complete goals (e.g., Searle & Hanrahan, 2011). Good leadership must also balance continuous change, strategic goals, renewal of business, and people’s emotional states and motivation factors at work processes. Creativity-condusive leadership focuses on stimulating people and enabling relationships. It aims to foster individual and collective creativity inside an organization and outside organizational, geographical, and technological boundaries, despite the dynamic and complex nature of leader–follower interactions (Guo et al., 2016).

Leadership toward creativity involves focusing on people, understanding the power of direction, and achieving meaningful progress toward excellent outcomes (Amabile & Kramer, 2010; Bass & Avolio, 1993; Catmull & Wallace, 2014). Derecskei (2016) emphasizes the responsibility of leaders and managers to not only motivate and facilitate employees’ creativity but also take responsibility for their decisions. Leaders and managers can enhance their followers’ intrinsic task motivation and cause them to take more cognitive risks, thereby increasing their creativity skills (Amabile, 1983). Examples of such measures include paying attention to work environments, encouraging collaboration, mapping the phases of creative work, providing paths through bureaucracy, and creating outlets for passion at work (Amabile et al., 1996; Amabile & Khaire, 2008). Moreover, exciting tasks, freedom, permission to fail, sufficient time, rewards, positive affect, minor successes, and constructive debates support creativity in work communities (Amabile, Barsade, Mueller, & Staw, 2005; Amabile & Kramer, 2011; Uusikylä, 2012). In previous research on virtuality and virtual work and theories of creativity and collective creativity, the following key creativity-condusive leadership approaches are discussed: transformational leadership, emotional leadership, and complexity leadership. These approaches are connected; for example, transformational leadership involves elements of both emotional and complexity leadership. They all have a philosophical foundation in interpretivist epistemology (e.g., Hatch & Cunliffe, 2006) and subjectivist and processual ontology, which regards reality as a social construct and leadership as continuous social flow (Crevani, Lindgren, & Packendorff, 2010).

**Transformational leadership**

Transformational leadership is characterized by a clear vision and mission, inspiration, motivation, intellectual stimulation, and individualized consideration focusing on development of followers’ personal growth and attention to their individual needs (Avolio & Bass, 1988; Avolio, Waldman, & Yammarino, 1991; Warrick, 2011). This type of leadership has been linked to employee creativity through, for instance, individual creative identity (e.g., Hu, Gu, & Chen, 2013; Wang & Zhu, 2011). In addition, it creates a context for more effective organizational and personal performance (Bass &
Avolio, 1993). A group’s creative identity mediates the effect of group-level transformational leadership on individual creative identity through an innovative and creative climate and shared creative norms and regulations within the group (Wang & Zhu, 2011).

Previous research has presented different views of the utility of transformational leadership in virtual work. Ruggieri, Boca, and Garro (2013) concluded that transformational leadership with a cognitive or metacognitive style is more satisfying than transactional leadership with a more participative style in online teamwork. Transformational leadership has been recognized by Schultz (2010), Kahai, Huang, and Jestice (2012), and Eisenbeiß and Boerner (2013) as creativity-conducive in virtual work environments despite empirical findings that negatively link transformational leadership to follower creativity via follower dependency. A study by Castro, Gomes, and de Sousa (2012) indicates that followers’ creativity relates to transformational leadership and leaders’ emotional intelligence (e.g., Coleman, Boyatzis, & McKee, 2004). However, some researchers argue that the relationship between transformational leadership and creativity is not entirely understood (Wang & Zhu, 2011).

Other combinations of leadership styles in virtual work have also been suggested, such as a combination of transformational and transactional leadership (Zayani, 2008) with a visionary style (Whitford & Moss, 2009). Moreover, Wang and Rode (2010) call for greater understanding of the roles of followers and organizational context in transformational leadership processes. Recently, a study by Mittal and Dhar (2015) focusing on Indian small and medium-sized enterprises (SMEs) in the IT industry identified the relationship between the theory of transformational leadership and creative self-efficacy (CSE), which is the belief that an individual has the ability to produce creative outcomes (Tierney & Farmer, 2002). They found that transformational leadership has a significant and positive relation to CSE and that CSE mediates the relationship between transformational leadership and employee creativity (Mittal & Dhar, 2015).

**Emotional leadership**

Emotions are essential to understanding social relations while leading and working, including in virtual environments. In line with psychologist and philosopher John Dewey’s theory of experience, emotion reflects the underlying dynamics of interactions between people (Alexander, 1987). Emotional intelligence (EI) refers, on the most general level, to one’s ability for self-assertion, management of emotions, social awareness, and management of relationships to recognize and regulate emotions in ourselves and others (Coleman, 2001; Virtanen, 2013). It is related to social intelligence referring to individuals’ social awareness and skills to effectively operate in social environments (e.g., Coleman, 2006) and interpersonal intelligence which means skills to understand the intentions, motivations and desires of other people and interact with them (Gärtner, 1983). Emotional intelligence has also been defined as the emotional, affective, and social skill dimension of general intelligence (Frye, Bennett, & Caldwell, 2006; Quisenberry, 2011) and one’s ability to regulate emotions to promote emotional and intellectual growth (Mayer & Salovey, 1997). Lewis (2010) found that social intelligence is associated with the development of trust in leader–follower relationships in virtual project teams, indicating a strong link between interpersonal relationship skills, the development of positive trust relations, and interactions in virtual environments.

The development of emotional leadership is based on EI (Bar-On, 2004; Coleman, 1998; Mayer & Salovey, 1997). Emotional leadership considers leadership to be a social process that influences people’s emotions (Nokelainen & Ruohotie, 2006). In work-related contexts, emotional leadership is defined as one’s EI-based ability to recognize, understand, and use emotional information about oneself and others in a way that leads to efficiency and excellent performance at work (Boyatzis & Sala, 2004; Coleman et al., 2004).

As stated by Castro et al. (2012), followers’ creativity is associated with leaders’ EI. According to Humala (2014), leaders of a dispersed virtual workforce need EI to understand the role of emotions in revealing social relations between people and in creating a culture of experimentation and passion for unleashing creativity. Through EI and emotional leadership, it is possible to inspire people, which is
especially important in situations where people are working in geographically disparate locations at least partly via computer-mediated tools (Humala, 2014).

**Complexity leadership**

The virtual working process is a self-organizing system with a non-linear organizational structure. Such a complex and dynamic environment serves as a challenge for leaders of virtual workers, who must be able to navigate complex situations. The characteristics of virtual interaction are typical of complex adaptive systems (CAS): open, evolutionary networks of communication and interdependent agents with a common outlook that are capable of creative problem solving (Uhl-Bien, Marion, & McKelvey, 2007). This makes complexity leadership a possible type of leadership in virtual work (Lichtenstein, Uhl-Bin, Marion, Seers, & Orton, 2006; Uhl-Bien et al., 2007).

Complexity leadership challenges traditional leadership theories. As an integrative theoretical framework, it regards leadership as a function of interaction, which is a complex interactive dynamic through which adaptive outcomes can emerge (e.g., Uhl-Bien et al., 2007). Leaders of virtual workforces should understand the importance of virtual relationships between people and be aware of ways to exploit those relationships to achieve positive outcomes (Agrifoglio & Metallo, 2011; Zimmelmann et al., 2008).

Complexity leadership relies on relationships, complex interactions between people. It influences interpersonal interactions, and clarifies the purpose of each member of the organization (Hazy, 2009). Such leaders must predict and think through complex problems, engage groups in dynamic adaptive changes, encourage innovation, and manage emotions (Plowman et al., 2007). Previous research has highlighted the need to emphasize complexity at multiple levels in organizations and networks to promote organizational creativity (Spelthann & Haunschild, 2011) and to understand the ways in which temporal complexity influences people and organizations (Dekkers, 2009; Plowman et al., 2007). Geerlof and van Beckhoven’s (2016) recent study revealed that, in addition to its ephemerality, the specificity of an organizational context influences organizations’ potential for self-organization.

Focusing on the interactions between people and creating the conditions for the emergence of a new and undefined solution requires commitment from everyone in the value chain; thus, complexity leadership is neither easy nor quick (Goldstein, Hazy, & Lichtenstein, 2010). In virtual work contexts, the process may be even more challenging. To address complexity, diversity, and uncertainty in virtual work contexts, leaders may also need to surround themselves with people to assist them and move to leadership positions if necessary (e.g., Dotlich, Cairo, & Rhinesmith, 2008).

**Task-Focused Leadership**

Task-focused leadership is the opposite of leadership that inspires creativity in a virtual workforce. Task-oriented leaders focus on creating structure and engaging in transactional leadership (Derue, Nahrgang, Wellman, & Humphrey, 2011; Warrick, 2011; Yukl, Gordon, & Taber, 2002). To create structure, these leaders ask group members to follow standard rules and regulations, assign them to tasks and roles, maintain strict performance standards, and criticize mistakes (Derue et al., 2011). Transactional leadership (Bass & Avolio, 1993) involves clarifying performance targets and those responsible for achieving these objectives as well as identifying mistakes and deviations from performance standards (Derue et al., 2011). Structure and routine are typical ways to correct those deviations (Borgmann, Rowold, & Bormann, 2016). Task-oriented leaders primarily utilize directive leadership. According to Warrick (2011), transactional leadership describes the transaction that occurs between leaders and followers to accomplish the work and achieve goals. Leaders determine what needs to be done, and both parties receive something of value – for example, rewards for individuals and groups and greater productivity or conformity to standards for leaders (Humphreys & Einstein, 2003; Warrick, 2011). These objectives are related, but领导ship cannot bind the leader and followers to a continuous goal and thus cannot bind leaders to followers (Burns, 1978).
Task-oriented leaders focus on planning the short-term organization of job activities; clarifying policies, responsibilities, and performance objectives by communicating the action plans and milestones needed to achieve a goal; defining the need for resources; and monitoring operations and performance (Pinar, Zehir, Kitapç, & Tannirverdi, 2014; Yukl et al., 2002). According to Borgmann et al. (2016), three meta-categories of leadership—relations-, task-, and change-oriented leadership, as proposed by Yukl et al. (2002)—are sufficient to explain the leadership constructs of transformational and transactional leadership, laissez-faireism, consideration of followers’ needs and abilities, and the creation of structure. They argue that change-oriented leadership is most useful for predicting the job satisfaction of followers and that task-oriented leadership behavior negatively affects followers’ job satisfaction (Borgmann et al., 2016). In contrast, relations-oriented leadership fosters varied commitment and job performance.

In virtual work, technology and digital communication tools play a crucial role in interaction between team members and therefore must be considered when leading a virtual workforce and eliminating factors that inhibit creativity. In general, according to Zimmermann et al. (2008, p. 331), “most task-oriented leadership behaviors as well as relationship-oriented leadership behaviors are perceived to be somewhat more important in virtual communication settings than in face-to-face communication settings.” Pinar et al. (2014), who conducted a study of virtual teams in Turkey, a developing country, argue that task-oriented leadership, in which leaders determine the standards for business plans, is essential for both internal and external learning in virtual teams. According to them, as task-oriented leadership facilitates information acquisition and sharing, it allows solutions to problems to be developed quickly.

However, previous research has indicated that leaders who have a fixed mindset and focus on task-based factors are rational, normative, and less fostering of creativity (Kawrowski, 2014; Ruggieri, 2009). Kawrowski (2014) attempted to determine whether creativity is fixed or growth-based and demonstrated the inhibiting effects of a fixed mindset on creative problem-solving. Further, power relations and power negotiations between organizational members influence creativity; for example, biased power relations and steep hierarchies may disrupt creativity (Poutanen, 2016). Purvanova and Bono (2009) maintain that relational leadership behaviors may suffer if task-oriented communication displaces social–relational communication. Moreover, as stated by Ocker (2005), the creative performance of virtual teams is inhibited by dominance, domain knowledge, downward norm setting, a lack of shared understanding, time pressure, and technical difficulties. Previous studies have shown that organizational creativity is a function of group creativity and contextual influences (Schepers & van den Berg, 2007; Parjanen, 2012). This indicates that leaders who focus on the tasks that must be done and who are uninterested in how people work and interact with each other and the contexts in which people are working have unfavorable mindsets for enhancing organizational creativity. 

**Heterarchy in Leadership**

This study is based on the ontological commitment of leaders in a heterarchy (Spelthann & Haunschild, 2011). In a heterarchy, organization is regarded as a multi-layered entity with overlapping parts and organizational slack. Leadership in a heterarchy is shared and enables interaction, meaningful work, inspiration, and creativity (Crumley, 2005; Spelthann & Haunschild, 2011). An ontological commitment in a knowledge-based system, like leadership in virtual work, means that “an agent commits to an ontology if its observable actions are consistent with the definitions in the ontology” (Gruber, 1995, pp. 908–909). Heterarchy as an ontological commitment is appropriate for leadership toward creativity in virtual work as it helps leaders comprehensively understand their role in virtual work and stimulates discourse and interaction to release people’s creativity (Humala, 2016).

McCulloch (1945) first used the concept of heterarchy in nervous nets in neuroscience to demonstrate that the human brain functions in a hierarchical way, re-ranking values as circumstances change (Crumley, 2005). Citing Crumley (2005, p. 45), the concept of heterarchy is an approach “to identify ranked and unranked values, behaviors, and organizations as they shift in time, space and
tendency to publicly smooth over mistakes (Lipnack & Stamps, 1999; McGuire et al., 2015).

Hierarchical organizations focus on power, authority, and value control, which means that leaders engage in planning, instruct their employees on what to do and how to do it, and closely supervise them. Typical characteristics of hierarchical organizations are rule-based authority, a control-based definition of power, value exclusivity, a status quo, clear social distinctions, and substantial costs for security (Crumley, 2001). According to McGuire, Palus, Pasmore, and Rhodes (2015), in command and control leadership cultures, authority and control are prioritized, and success depends on obedience and loyalty to authority. The drawbacks of hierarchies are their one-way paths of information, conservative approach, vulnerability to change, emphasis on keeping things running smoothly, and a tendency to publicly smooth over mistakes (Lipnack & Stamps, 1999; McGuire et al., 2015).
People at different levels in an organization may experience hierarchical leadership differently. According to Jago and Vroom (1977), people may feel powerless when they are not able to actively participate in decision-making. Often, these feelings occur in the presence of autocratic methods, in which the actual decision-making process is participative but involves only people at high levels in the organization (Jago & Vroom, 1977).

Virtual collaborative work contexts question traditional leadership, which is hierarchical and authoritarian (e.g., Hougum, 2012). Democratic organizations include characteristics of both hierarchy and heterarchy (Crumley, 2001). Lipnack and Stamps (1999) noted that the 21st-century organization is comprised of virtual teams and networks of teams and that this new type of organization is complex and networked, not pyramidal, involving hierarchy, bureaucracy, small groups, and distinct networked relationships. Recently, Hoch and Kozlowski (2014) discovered that virtuality weakens the relationship between hierarchical leadership and performance but improves the relationship between structural supports and performance.

It is vital for future learning and growth for organizations to match their leadership culture and operational needs. A hierarchy can be efficient for routine tasks but makes it difficult to implement an innovative, agile strategy and carry out innovation activities, during which new knowledge arises via creative collaboration (e.g., Adler, 2001; McGuire et al., 2015). Citing Clemen and Reilly (2014, p. 239), “hierarchical organizational structures can hinder creativity, which, in turn, can be exacerbated by autocratic supervisors.”

**RESEARCH METHODOLOGY**

**RESEARCH OBJECTIVES**

This study aims to develop a descriptive typology based on empirical data to identify and describe how leadership occurs in virtual work in various types of companies. The research question is “How is leadership toward creativity made up in different types of companies in virtual work?” To answer this question, the following objectives were defined: (1) produce a descriptive typology of different company types by analyzing what, how, and why leadership toward creativity occurred in virtual work in the case companies; and (2) analyze four different types of companies in detail to identify the composition of each type.

A basic qualitative research approach was used to answer the research question and enhance the understanding of leadership toward creativity in virtual work. An interpretivist approach and a focus on meaning were applied to get close to the people and process under study (Hatch & Cunliffe, 2006).

**DATA GATHERING**

A multiple-case study was performed. The data is based on 21 face-to-face interviews with five female and ten male leaders and four female and two male employees aged roughly 20–60 years employed at five companies in Finland. Two of the employees were interviewed in English, and the others were interviewed in Finnish. Finland is a country in northern Europe with 5.5 million inhabitants, an open economy dependent on global trade, extensive ICT integration, and increasing production and distribution of digital products and services through various information networks. Finland’s digital operational environment is being reformed to develop practices that are more functional and flexible. This situation makes virtual work in Finland similar to that in the rest of the world and allows the findings to be generalized to other virtual dispersed work contexts around the globe, especially those related to service.

Two of the case companies were start-ups. The first start-up is a multinational company founded in 2011 that has a workforce of 12 people. Its headquarters are located in the Netherlands and its research department is in Finland. It operates in the global advanced ICT industry, especially in Asia, and uses virtuality in its professional internal and external communication. The other start-up, which
was founded in 2014, is in a beginning phase and employs 3-4 people. It operates virtually in the software industry in Finland and cooperates with Vietnamese organizations. The third case company is a Finnish SME with 130 employees working in the ICT service sector in different locations in Finland. It was initially founded over 100 years ago. It uses virtual tools in various ways to enhance transparency in business. The fourth company is large and was founded over 30 years ago. It offers real-time automated financial management solutions at several locations in Finland and employs more than 300 people. The SME and the large case company mainly operate in Finland. The fifth case company is a one-person business advising enterprise utilizing virtual tools to cooperate with its customers and partners at different locations in Finland. Its experienced owner has worked in leadership positions and as an entrepreneur in other fields of business and thus can offer different perspectives on the issue under study.

When recruiting cases, the goal was to find companies of different sizes that operate in part across national borders. The field of industry was considered during the recruitment process. Companies operating in the ICT sector were most interested in participating in this study because they regarded leadership that fosters creativity and supports successful collaboration in virtual work as important for their businesses. Even though there are differences in virtual labor between industries, there are also notable similarities. Because the ICT industry is most familiar with using ICT tools to achieve work-related collaboration, in a way it is a pioneer of virtual work and inspires virtual workforces to achieve creativity. Half of the case companies operated primarily globally, and many participants had previous experience in global business and virtual work. Therefore, the chosen case companies can be regarded as representative in this study as they align well with the main types of company profiles that exist in virtual contexts.

The semi-structured interviews were conducted from April to June 2016 and each lasted 1 to 2 hours. The two start-ups that operate globally were recruited first. One person was interviewed through Skype, and all the others were interviewed face-to-face. A semi-structured format was chosen for the interviews as it enabled the interviewees to discuss issues that were relevant to them, and open-ended questions made it possible for the researcher to hear respondents’ full stories. The chosen theoretical lenses of virtuality and virtual work, creativity and collective creativity, creativity-conducive leadership, and heterarchical leadership guided the interview protocol. The questions focused especially on leading a virtual workforce toward collective creativity and interaction and the outcomes of that kind of leadership as well as the interviewees’ views regarding the development of leadership toward creativity in virtual work. The conversations with the interviewees concerned how, why, where, and in which kinds of actions and events leadership toward creativity occurs and makes sense in virtual work as well as the physical, social, and virtual distance virtual workers experience and the relevance of distance to leadership toward creativity. Additionally, the respondents were asked to describe which kinds of outcomes leadership toward creativity in virtual work generates (e.g., for individuals, virtual teams, network partners, and customers) as well as how creativity and its exploitation can be better enhanced in virtual work. Echoing Brinkmann (2012), the “social” is comprised of experience, discourse, and objects. During data gathering and analysis, focus was placed on the experiences of human beings, their interactions, and virtual tools and other material objects that enhance creativity in virtual work (Brinkmann, 2012). Presentation materials and news about the case companies supplemented the interview data.

**DATA ANALYSIS**

Each interview was recorded and transcribed, which resulted in 474 pages of transcripts. Direct identifiers were removed from the interview data. The data was analyzed both during data collection and after all the data was received. Field notes, comments, and questions were written down during the data collection stage and examined later. The interview transcripts were read through several times, coded, and analyzed by one researcher. ATLAS.ti version 7.5.10, qualitative data analysis and research software developed by ATLAS.ti Scientific Software Development GmbH, was used during the coding phase. Figure 1 describes the entire analysis process.
Typology on Leadership toward Creativity in Virtual Work

The data was first coded by identifying single phrases from the raw data to help reach the aim of the research. Second, the codes were grouped into themes. Next, the themes were incorporated into five sections of leadership toward creativity in virtual work – separately in the SME and large case company and jointly in the two start-ups and business advising company. Thus, three summaries with the following five headings were created:

1. Appearance of leadership
2. Outcomes of leadership
3. Factors inspiring creativity
4. Development needs in leadership
5. Practices toward learning and exploiting know-how

Figure 1. The analysis process

The research problem guided the analysis process. The primary theoretical lenses – leading a virtual workforce toward creativity and heterarchy – functioned as tools with which to tackle the data analysis. The researcher responded to all information that positively or negatively related to the primary theoretical lenses when reading and rereading the raw data, identifying single phrases from the raw data, and grouping the codes into themes. Problems and shortcomings were highlighted by the interviewees and information that negatively related to the primary theoretical lenses of the study was noted in the raw data and included in the themes. In other words, the aim of identifying single phrases from the raw data was to detect all possible issues the interviewees had brought forward.

The researcher’s experience in management practice and theory and personal interest in linking educational and business knowledge influenced the data gathering and analysis. The researcher also provided reports of the initial study findings to the SME and large case company after the interviews. The five headings mentioned above formed the primary structure of these reports. The reports enabled the researcher to reflexively elaborate upon the analysis.

A descriptive fourfold typology was used as a framework for analyzing responses to leadership toward creativity in virtual workforces in case companies. The concepts and associated terms located in the cells of a typology constitute the cell types, which are related to “the overarching concept and the categories of the row and column variables provide the defining attributes” (Collier et al., 2012, p. 228). In the descriptive typology, the dimensions and cell types help identify and describe the phenomenon under analysis. The overarching concept measured by the typology is leadership toward creativity in virtual work.
The analysis consisted of three phases: 1) forming a rough outline of the typology, 2) identifying each of the company types in the typology in more detail, and 3) determining the final typology. A rough outline of a descriptive typology based on two dimensions aimed to identify the typical characteristics of leadership toward creativity in virtual work in each type of company. Two key theoretical lenses, creativity-conducive leadership and heterarchical leadership, were used to generate a typology of four modes of leadership with ontological commitment. The theoretical approaches also served as tools to detect the unnoticeable in everyday life such as beliefs and hidden power structures (Brinkmann, 2012). The descriptive typology is comprised of dependent and intervening variables in studies of leadership toward creativity in virtual work. Two dimensions of the dependent variable – leadership focus – were analyzed: leadership inspiring creativity among a virtual workforce and leadership with a task-based mindset. In addition, two dimensions of the key intervening variable, ontological commitment to leadership, were analyzed: heterarchical integrative leadership and hierarchical authoritarian leadership. These four dimensions established the rows and columns of the typology; on the vertical axis, leadership inspiring creativity in a virtual workforce increases upward, and on the opposing side, leadership with a task-focused attitude increases downwardly, while on the horizontal axis, heterarchical integrative leadership increases to the right and hierarchical leadership increases to the left. Cross-tabulating these dimensions yielded four company types: type A, “nascent launch pad”; type B, “collective mind”; type C, “command center”; and type D, “leaky boat.”

The outline of the typology was created with criteria based on a previous explorative study (Humala, 2016) that used document-based inquiry to identify focal relations between challenges in leading a virtual workforce toward creativity and a heterarchical ontology of leadership. The two theoretical lenses guided the location in which creativity-related and heterarchy-related data were placed in the typology. Those themes that did not relate to creativity and heterarchy were placed in other corners of the typology. The criteria for creativity-conducive leadership used in the analysis are the four main challenges of leading a virtual workforce toward creativity (LC): understanding virtuality as a networked work context (LC1), developing a virtual leadership mindset (LC2), leading meaningful work towards progress (LC3), and energizing people (LC4). Accordingly, the criteria for heterarchical leadership are the four attributes of heterarchical leadership (AH): a combination of organization principles (AH1), supportive interdependent interaction (AH2), authority distributed to best complete work (AH3), and reinforcement of creativity and innovative ideas (AH4).

The three summaries, including the five headings and their themes, formed the sources used for the analysis and subsequent typology. The study started from the viewpoint of creativity-conducive leadership. The three summaries were thoroughly explored, and the relationships between each theme in the three summaries and the four criteria for creativity-conducive leadership (LC1–LC4) were analyzed. If a theme and any creativity criteria (LC1–LC4) were found to be interrelated, that interrelation was indicated by a blue mark on the corresponding creativity criterion. Typification continued by analyzing themes related to heterarchy criteria, and any interrelations were indicated in red on the appropriate heterarchy criteria (AH1–AH4).

Next, the ways in which each of the LC and AH criteria were positioned in relation to different themes in the three summaries were analyzed. In other words, the amount of LC and AH symbols in each theme suggested how important creativity-conducive leadership and heterarchical leadership were to that theme. For instance, if a theme had several LC symbols, but only one AH symbol, the theme in question was significantly related to leadership that inspires creativity, but not heterarchical leadership. Based on the position of LC and AH symbols in different themes in the three summaries, it was possible to specify the angle of the typology at which each theme belonged. To complement the analysis and preliminary typology, original interview transcripts as well as field notes, comments, and questions were reread several times to re-check the interrelations between LC and AH symbols and the themes. During the first phase of analysis, creativity- and heterarchy-related themes located at the appropriate corners of the typology were chosen from each of the three summaries. Those
themes that did not relate to creativity and heterarchy were chosen for the other corners of the typology.

During the second phase of analysis, the composition of each type of company was investigated in more detail. The four types of companies were analyzed and described systematically to offer detailed information about leadership and how it appears to both leaders and employees in each company type (i.e., what, how, and why different characteristics are related to leadership toward creativity in virtual work). An abductive form of analysis (Brinkmann, 2014) suggested by researchers of process organizational studies and complex systems (e.g., Langley & Tsoukas, 2010) was used during this phase of analysis. It served as a supplemental form of analysis that allows the typology to guide practitioners in situations and highlight behavior and practices to avoid in the future (Staw, 2016). The abductive form of analysis is not data-driven, nor theory-driven, but breakdown-driven (Alvesson & Karreman, 2011) and is typically used in situations of uncertainty when it is necessary to understand something that happens (Brinkmann, 2014).

Three different but related analytic strategies suggested by Brinkmann (2012) for research on everyday life were applied during the abductive analysis process. First, a phenomenological strategy was employed to make the obvious clearer by focusing on how leadership toward creativity in virtual work appears to human beings. Second, a critical strategy was used to make the hidden obvious by trying to uncover the hidden power structures that regulate human behaviors and influence leadership that aims to inspire a virtual workforce. Third, a deconstructive strategy was applied to make the obvious dubious by questioning what is taken for granted and showing that meanings and understandings are unstable and ambiguous, for example, by bringing to light the different ways in which leadership toward creativity in virtual contexts can appear to different people.

Rereading the themes and original data from interviews and analyzing them using the three analytic strategies helped the researcher take note of surprising issues, such as those that arose in situations of instability, when it is hard to proceed as usual (Brinkmann, 2012; Dewey, 1938). During the abductive analysis, the research problem guided the searching process to further explore what the data reveals about the phenomenon under study, determine to interpret the relevant findings, and make sure that the issues were placed in the right corners in the typology. The second stage of analysis also focused on how humans’ experiences, interactions, virtual tools, and material objects are taken into consideration when leading a virtual workforce in different types of companies (Brinkmann, 2012).

An abductive form of analysis helped the researcher reread the themes and original data from the interviews and analyze the themes again to ensure that the themes were accurately located in the typology. While rereading the themes and original data, it was revealed that issues focusing on how leadership toward creativity in virtual work appears to human beings (phenomenological strategy) were mainly discussed under the headings “appearance of leadership” and “outcomes of leadership” in the three summaries. Further, hidden power structures (critical strategy) and issues to be questioned (deconstructive strategy) were discussed under the headings “factors inspiring creativity,” “development needs in leadership,” and “practices toward learning and exploiting know-how.”

The analysis in the identification phase highlighted three aspects of business related to creativity and heterarchy when leading a virtual workforce: (a) leadership as an experience outcome, (b) communication and interaction as essential tools in leadership, and (c) learning and growth as key objectives in leadership. These aspects help to compare different types of companies in the typology. Moreover, they expose major issues related to leadership toward creativity in virtual work that must be considered and reveal the ways in which different features are related to each other and have consequences (cf. Dewey, 1938).

During the third phase of the analysis, the final typology was determined by combining the key issues in the identification phase with each of the four company types in the typology. In line with current
theoretical understandings, the key issues in each company type are categorized as one of three critical aspects of business: leadership, communication, and learning and growth. The next section presents the findings of this study.

**Research Findings**

**Composition of the Four Types of Companies**

Identification of the four company types resulted in detailed specifications of the three critical aspects of business related to leading virtual work – leadership, communication and interaction, and learning and growth – in each type of company. Tables 1-4 present an accurate description of the composition of each type of company as well as the abductive analysis focused on breakdowns and inconsistencies of the activity. Identification of the company types also allowed discussion of the challenges that each type of company likely faces and their leadership-related actions (i.e., what leadership toward virtual work involves and why) (cf. Dubé, Bourhis, & Jacob, 2006). Extracts from interviews with employees of the case companies offer concrete examples of the critical aspects of business in each type of company.

**Table 1. Composition of company type A, “nascent launch pad”**

<table>
<thead>
<tr>
<th>ASPECT OF BUSINESS</th>
<th>COMPOSITION OF “NASCENT LAUNCH PAD” COMPANIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership</td>
<td>Common inspiring purpose based on strong previous know-how</td>
</tr>
<tr>
<td>Common objectives are inspiring, and a virtual leadership mindset and organizing principles are developing</td>
<td><strong>The knowledge and resources for leading people and managing data and projects are inadequate;</strong> vague areas of focus make employees confused</td>
</tr>
<tr>
<td></td>
<td>Moving from prototype to project leadership and sharing responsibilities is regarded necessary to improve employees’ commitment</td>
</tr>
<tr>
<td></td>
<td>Self-leadership needs improvement; employees find leaders difficult to contact, and working time is lost while waiting for final decisions</td>
</tr>
<tr>
<td>Communication and interaction</td>
<td><strong>Courses of action are not open enough for virtual work;</strong> unclearly justified plans are hard to understand, which makes it difficult for leaders to convince employees of new ideas</td>
</tr>
<tr>
<td>Communication and interaction are not transparent and supportive enough to fully energize people</td>
<td>Problems related to communication and interaction are recognized and managed slowly; for example, new older employees may not ask advice from younger ones who are more knowledgeable; more face-to-face and virtual interaction is needed to build a stronger sense of community</td>
</tr>
<tr>
<td></td>
<td><strong>Creating an inspiring multicultural working culture presents problems;</strong> for example, employees may not understand the importance of mutual communication and interaction with others, including on social media</td>
</tr>
<tr>
<td>Learning and growth</td>
<td>Creating new resources or facing a lack thereof enables and requires continuous learning</td>
</tr>
<tr>
<td>Recruiting and committing the right professionals and developing their know-how are key for achieving meaningful growth</td>
<td>Visionary and trustworthy team members are necessary for growth, but uncertainty about the future creates challenges to recruiting the right professionals that are committed; leadership toward creativity may enable the right people to be hired</td>
</tr>
<tr>
<td></td>
<td>To avoid disintegration, leaders may need to guide employees’ development toward a common objective and seek a balance between the objective and the enthusiasm and creativity of single employees or small groups</td>
</tr>
</tbody>
</table>
Better orientations and more frequent face-to-face work sessions are necessary to teach new remote employees, virtually brainstorm – especially in cases of foreign language communication – and increase employee commitment.

The detailed analysis of “nascent launch pad” companies indicates that moving from a prototype to project leadership and sharing responsibilities is regarded as important for success. A shared inspiring vision and business objectives motivate, enable, and require continuous learning. However, difficulties arise regarding recognition and management of communication problems ahead of time when leading people, managing data and projects, and leading oneself. One of the interviewees describes the situation as follows:

*So, the good thing is that I learn many new things because I need to do [things] by myself and not have any mentor. But it is sometimes very frustrating because I don’t know what to do, and because of the delay from the boss, so I just need to wait about [for instructions on] what I need to do next.* (male employee, about 20 years old)

The following extract from one interview highlights the challenge of facilitating mutual interaction and a common working culture for employees from different cultures:

*Have you ever talked together about virtual work, this way of working, culture, and problems and challenges you have encountered?* (interviewer)

*Not enough. In fact, not at all. In a way, organizing interaction is more emphasized [in virtual work], so that it is not only one-way communication but that everyone tries one’s best in communication, so that communication is not a self-evident fact…you need to do something together physically, and not only that “okay, now we met”…Now, when we have had a group in social media for a while for commenting and discussing…at least, I have got a feeling that we are in some common space when we are in that group. This situation requires indirect leadership, and that everyone is actively building the community spirit.* (male leader, about 30 years old)

The uncertain future of the business creates recruiting challenges, and the development of employees’ expertise requires leaders to have more know-how. However, the findings of this study indicate that leadership toward creativity may help recruit the right people for virtual work. Orientation and collaborating face-to-face are crucial for employees to learn, develop new solutions, and increase their commitment to the project.

**Table 2. The composition of company type B, “collective mind”**

<table>
<thead>
<tr>
<th>ASPECT OF BUSINESS</th>
<th>THE COMPOSITION OF TYPE B, “COLLECTIVE MIND”</th>
</tr>
</thead>
</table>
| Leadership Value-based leadership by example aims at common meaningful values, business objectives, and a communal course of action; to be successful, a leader must be positive and enthusiastic  
**Collective intelligence with shared power and responsibility guide the organization:** challenges, responsibilities, and survival awaken employees’ creativity and passion for work; encouraging different views and experiments and permitting failure enables power and commitment to arise in the virtual community; group pressure controls behavior  
Assertiveness and consistent leadership with clear common rules and expectations are needed; root causes of problems must be clarified, and solutions must be implemented; sufficient documentation, communication, and skillful project management reduce risks  
**Communication and interaction** Open and active dialogic interaction through multiple up-to-date communication channels helps a virtual workforce internalize values, broaden views about work, and feel secure enough to question present practices and reflect on issues; this requires regular |
The findings of the detailed analysis of company type B, “collective mind,” indicate the importance of collective intelligence, shared responsibilities (e.g., Hyypiä & Parjanen, 2013), leaders’ intrinsic motivation, resources for leaders to orchestrate collective work, and assertiveness, as highlighted in the following:

[The leader in virtual work] must be interested in people. There is an enormous strain to lead people beneath the surface… When you genuinely talk with people, trust emerges. First, people get the courage to bring the problems to the table and then ideas. When they see that the ideas come true and new kinds of doing, new businesses, right alignments develop from them, and they learn to see that the collective intelligence genuinely steers this company, not only one or two persons… Finally, it is a question of the fact that everyone wants to be in such an environment, where people take care of you. (male leader A, about 40 years old)

The role of a leader’s intrinsic motivation and leadership example aligns with Toom’s (2016) belief that a talented individual’s actions have a positive influence on the success of actions taken by communities. The results of this study support Thow’s (2007), which concern organizing around intelligence, and Johnson’s (2015), which concern innovation arising from the group level involving structured investments and requiring executives to know how to train their teams to improvise. The analysis reveals the importance of social norms and non-hierarchically organized social forces to control behavior in work communities (Post, 2001). The data indicate that leaders that are able to coach employees obtained their skills from previous experience participating in sports, coaching sports teams, or playing in bands.
Open and active dialogic communication and mutual interaction through the skillful use of multiple communication channels – including face-to-face and social media – as well as sharing know-how and helping each other are typical features of “collective mind” companies. Reflection with colleagues and members of professional networks in face-to-face and social media situations allows leaders to maintain their enthusiasm, creativity, and well-being. Below is an example of skillful communication:

_I have two different ways to be reachable: one is electronic visibility, and the other is direct contact. I am systematically visible [on] certain electronic channels, but you must make this [available] where people are working [by] themselves… it is active work all the time. In this way, I am far and near at the same time. The geographical distances disappear when you communicate with people actively._ (male business manager, about 40 years old)

Physical distances can balance cultural differences, decrease social pressure, and support knowledge-sharing and helping each other, as highlighted in the following:

_The social pressure decreases when the physical distance increases… In fact, virtuality equalizes cultural differences in communication in a certain way. It creates a certain rhythm that is common to all, not culture-bound, and that may even help to work in global teams._ (male leader B, about 40 years old)

Moreover, the findings revealed the importance of appropriate physical workspaces for inspiring creativity in virtual work.

Empowering and coaching people to learn and grow require understanding and compassion for others in organizations (Staw, 2016). As the following example shows, leaders that coach their employees may have obtained skills from their previous experiences:

_I am a former athlete and coach myself. In coaching, I have always learned that when we have training, I give instructions to the team members, and in game situations, I only give support and advice and encourage them, but then, the responsibility is on the field. In principle, the situation is the same in business._ (female business manager, about 50 years old)

The significance of participatory learning compared to role boundaries in authentic work tasks is emphasized:

_Bringing people around the problems of clients and by seeking for the solutions together, your own work becomes truly meaningful… This generates organizational creativity, which enhances human capital and innovativeness._ (female leader, about 50 years old)

This finding supports the views of Aarnio and Enqvist (2016) and Reeves, Herrington, and Oliver (2002) regarding the importance of authentic learning tasks in learning environments in the digital age to awaken individuals' intrinsic motivation, engage those individuals, and ensure that dialogic know-how is used to achieve success. Dialogue is defined as collaborative thinking based on equal participation and familiarity with an issue or activity (Aarnio & Enqvist, 2016).

**Table 3. The composition of the company type C, “command center”**

<table>
<thead>
<tr>
<th>ASPECT OF BUSINESS</th>
<th>THE COMPOSITION OF TYPE C, “COMMAND CENTER”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership</td>
<td>Pyramid-like organization with a top-down chain of command to ensure the completion of tasks; hierarchy dates from the history of the company or the industry and can create emotional baggage for people; the mindset of one larger head office for decision-making and smaller brand offices prevails</td>
</tr>
<tr>
<td>Decision-making authority being entirely at the top and non-transparency frustrate people</td>
<td>Delays due to the concentration of decision-making, complicating work and hindering development; unnecessary checking; abrupt occasions of “fighting fires” cause delays</td>
</tr>
</tbody>
</table>
and frustration, constricting creativity; managers do not get enough support and coaching from leaders

**Non-transparency**: the economic situation is not openly informed, and decisions are not justified and shared, so they can easily be felt to be unfair; this makes the situation difficult for the middle managers to perceive and weakens the quality of their decision-making and motivation

Cost leadership; quantitative figures and money assess work

Even though new technologies and different software solutions are successfully applied in production, internal communication in virtual work is not felt to be even-handed; interaction between departments, teams and people is weak and irregular; superiors seldom visit remote offices

**Emotions of employees are not optimally recognized**, which can make employees withdraw into themselves and not openly interact with leaders, e.g., when people work alone without colleagues and support from an immediate superior, or information is not shared with them

Technical communication problems, insufficient resources for up-to-date communication tools, and IT Helpdesks weaken knowledge-sharing and community spirit

Physical work environments do not support virtual dispersed work sufficiently; people work in isolation from their own colleagues; the space for internal and customer interaction is insufficient

**Silo effect**: diversity among the workforce is not utilized, and knowledge about different approaches and customers is not shared over role boundaries; people may not know who knows what or dare not share information to secure their superiority and jobs; remote employees feel that cost-optimization is unfair for them to attend common meetings and develop their expertise

**Failures are not spoken of and no lessons are learned from them**, e.g., failures can be mentioned only after many years

The orientation of new employees and team-building are inadequate; employees are left alone without peer-support

The lack of a business-like course of action weakens employee confidence in leadership and the organization, and business growth stalls; employees’ and leaders’ views on the solutions and situations can differ from each other; remote offices do not develop as planned

Type C, “command center,” represents a pyramid-like organization in virtual work with a traditional cost-oriented leadership mindset. The costs of working virtually are assessed by money, not benefits:

*Money talks [a lot], for instance, concerning [software] licenses and other issues [essential for virtual work]. Always, when you start to speak that something creates extra costs, it would be worth [to measure] them a little concerning the benefit you get from that. I think that money has quite a significant role in a certain way.*

(female employee A, about 40 years old)

This type of company succeeds in completing tasks. Some of its downsides are top-down power that does not recognize people’s emotions can “make others speechless” (Tost, Gino, & Larrick, 2013), delays in decision-making and not enough modern communication for the digital age. The significance of emotions and emotional consequences are highlighted in the following:

<table>
<thead>
<tr>
<th>ASPECT OF BUSINESS</th>
<th>THE COMPOSITION OF TYPE C, “COMMAND CENTER”</th>
</tr>
</thead>
<tbody>
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<td><strong>Communication and interaction</strong></td>
<td><strong>Insufficient support for internal cooperation and energizing leads to a weakened community spirit</strong></td>
</tr>
<tr>
<td><strong>Learning and growth</strong></td>
<td><strong>Diversity and ideas are not reinforced, employee confidence declines, and a company’s prospects dim</strong></td>
</tr>
</tbody>
</table>
Typology on Leadership toward Creativity in Virtual Work

No machine can transmit feelings...it requires different resources from employees. (female employee, about 60 years old)

In my opinion, the problem also related to the person; I can say that the leader was completely narcissistic. Then, I experienced my role as a filter, and I tried to build such a wall and be fully out of the daily necessary work and only protect your own team members, so that they could do their jobs in peace…Over two years, it was so hard, […] there was no sense. I can say quite honestly that in that situation, I was all out leaving, because you do not tolerate that endlessly. That was not worth it. (male district manager, about 60 years old)

Moreover, the silo effect, a lack of orientation, hiding failures and a lack of trust complicate work, decreasing business growth. People do not share know-how and practices:

I don’t know if I do my job in the same way as they do, for instance, in the [city A] team, I can easily have a different practice of my own, and they in the [city B] team can have their own as well. It can completely differ from that which would be an official way to do that job. (female employee B, about 40 years old)

<table>
<thead>
<tr>
<th>ASPECT OF BUSINESS</th>
<th>THE COMPOSITION OF TYPE D, “LEAKY BOAT”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership</td>
<td>Invariably changing organization principles and objectives, without accurately determining the success of the previous ones, confuses people</td>
</tr>
<tr>
<td></td>
<td>Efforts to share authority have not succeeded, and micromanagement in leadership prevails; leaders and managers have unclear responsibilities, and they give employees contradictory directives and continuously check issues and intimidate employees; employees are not aware of how to apply common instructions, which complicates work and the building of communal spirit</td>
</tr>
<tr>
<td></td>
<td>Attention to people is illusory, and key indicators for leadership are ignored; leaders do not care about their employees’ emotions, keep promises to them, or support them face-to-face in their work-related problems; nobody interferes in disturbing or wrong behavior; these circumstances dilute employees’ motivation, confidence, and commitment</td>
</tr>
<tr>
<td></td>
<td>Unworkable incentives and compensations; e.g., monetary incentives do not work for groups not committed to reaching a common objective</td>
</tr>
<tr>
<td>Communication and interaction</td>
<td>Sense of alienation and a lack of confidence in others’ competence to interact; none or few face-to-face interactions and informal meetings can make employees feel alienated and unmotivated; they do not get to know their managers and colleagues and do not receive enough help from their managers or know who could help them</td>
</tr>
<tr>
<td>Communication in virtual work is backward and does not support interdependent interaction</td>
<td>Standard codes of conduct are not functioning or are lacking; people do not discuss various views and attitudes together; leaders repetitively reschedule agreed meetings with their employees; employees do not know how others do their work, and therefore they cannot determine whether or not their treatment is fair</td>
</tr>
<tr>
<td>Learning and growth</td>
<td>Deficient investments in face-to-face meetings and up-to-date digital communication tools and their use; continuous technical problems irritate people</td>
</tr>
<tr>
<td>Culture of incompetence and hidden know-</td>
<td>Incompetent leadership hampers growth; leaders may be egocentric, pass over their superiors, favor friends, have unnatural roles, or have no interest in developing employees’ expertise and careers; leaders are unable to make decisions, keep their word, or delegate tasks; they must guide their employees continuously because they do not demand enough from them</td>
</tr>
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</table>
### How Kill Meaningfulness and Creativity at Work

Hidden know-how and blaming others dilute enthusiasm toward new work structures and methods; the knowledge and ideas of the personnel are not utilized and developed; ideas and proposals are rejected, killing employees' initiative; the roots of problems cannot be found; failures are experienced as disgraceful; issues are exaggerated or hidden; this situation can lead to uncertainty about the future employment and to conflicts, resignations, stress, and burnout in both leaders and employees.

**Recruiting and orientation do not support competence development in virtual work**; e.g., competent experts may be hired into leadership positions, where they are no longer competent; skill requirements in virtual dispersed work are not specified; orientation is neglected.

In type D, “leaky boat,” leaders have a task-oriented mindset, without a clear common objective, and with illusory attention to people. Further, people find micromanagement practices confusing. Incompetence among leaders and managers, especially during recruiting and orientation, and secret knowledge make the business shaky. The following extract highlights the culture of incompetence:

> *We have a culture of incompetence in this organization...the problem in leadership is that we have a culture, where a right expert, a good employee, is typically promoted to a superior position. It works only to a certain point...When you build an organization, you must be very careful that a person does not fall to a level of incompetence. Leadership and HR should think about these issues in advance and have the courage to ask the individuals in question if they want to be a superior and if they are ready for that.*

(male leader, about 55 years old)

Digital communication know-how and tools are not resourced enough, and people feel alienated, as described in the following:

> *I will quickly say goodbye soon. I have worked here [alone for] two years, and this absorbs so much, that it seems that a whole other life has taken second place. I am always so tired at home that I don't feel up to doing anything...Everything goes to working hard, which does not give anything, so you just do and do out of necessity...If you just got some feedback and such, it would probably bring you effort and cope. But I believe that I have reached the end of the road.*

(female employee C, about 40 years old)

Next, the final typology of leadership toward creativity in virtual work is demonstrated.

### Typology of Leadership in Four Types of Companies

The main findings of this study are illustrated in a descriptive typology on leadership toward creativity in virtual work (Figure 2). The four types of companies in the typology are named as type A, “nascent launch pad,” type B, “collective mind,” type C, “command center,” and type D, “leaky boat.”

To help compare different company types with each other in the typology, each company type is categorized under three critical business sections in relation to creativity and heterarchy in leading a virtual workforce: (a) leadership as an experience outcome, (b) communication and interaction as key tools in leadership, and (c) learning and growth as key objectives in leadership. The vertical axis of the typology represents leadership stimulating creativity in a virtual workforce versus leadership with a task-based mindset, and the horizontal axis represents heterarchical integrative leadership versus hierarchical, authoritarian leadership. Leadership encouraging creativity in virtual work in the vertical axis can also be interpreted to reflect competitive markets as in organizational form, where creativity is necessary for success and freedom is essential for creativity. It is noteworthy that none of the case companies can unambiguously be positioned in a single company type in the typology. The different types of companies specified in the typology are not necessarily represented as purely in reality. These various types may also be simultaneously active in real-life companies (cf. Seeck & Kantola, 2009).

Type A, “nascent launch pad,” represents a company type in which leaders aim to enhance the creativity of a virtual workforce by implementing a hierarchical leadership. This type is most typical in early-stage companies, which have strong know-how and an inspiring vision, but where leadership...
and management are in progress and mostly traditional. Instead, type B, “collective mind,” has already passed its infancy and has restructured its organization and leadership toward heterarchical integrative leadership while highlighting and fostering the importance of creativity in a virtual workforce. Value-based leadership by example, effective mutual interaction, collective intelligence, assertiveness, and empowering leadership are typical characteristics of this company type. The bottom of the typology highlights leadership with a task-based mindset. Type C, “command center,” in the lower left corner represents a traditional company type, which implements hierarchic leadership. Decision-making authority being at the top, joint communication being comparatively slight and closed, and the silo effect characterize this company type. Integration through heterarchy without paying attention to people and their effective interaction results in unsustainable success. Instead, people feel confused about the business and do not trust their leaders and colleagues.

**Leadership inspiring creativity in a virtual workforce**

**Type A: Nascent launch pad**
- **Leadership** Common objectives are inspiring, and a virtual leadership mindset and organizing principles are developing
- **Communication and interaction** Communication and interaction are not transparent and supportive enough to fully energize people
- **Learning and growth** Recruiting and committing the right professionals and developing their know-how are key issues for achieving meaningful growth

**Type B: Collective mind**
- **Leadership** Value-based assertive leadership by example and collective intelligence reflect an understanding of virtuality as a whole
- **Communication and interaction** Distances can decrease differences, and active, up-to-date multichannel communication supports helpful interaction
- **Learning and growth** Coaching leadership with participatory learning and skillful recruiting and orientation improves both meaningfulness and business

**Type C: Command center**
- **Leadership** Decision-making authority being entirely at the top and non-transparency frustrates people
- **Communication and interaction** Insufficient support for cooperation and energizing leads to a weakened community spirit
- **Learning and growth** Diversity and ideas are not reinforced, employee confidence declines, and a company’s prospects dim

**Type D: Leaky boat**
- **Leadership** Business objective and leadership culture are felt to be confusing
- **Communication and interaction** Communication in virtual work is backward and does not support interdependent interaction
- **Learning and growth** Culture of incompetence and hidden know-how kill meaningfulness and creativity at work

**Figure 2. Typology on leadership toward creativity in virtual work**

The next section discusses the findings of the study.
**DISCUSSION**

This study aimed at developing a descriptive typology to identify and describe leadership toward creativity in virtual work. Based on the empirical interview data, the study analyzed the typical aspects regarding what, how, and why leadership toward creativity in virtual work is comprised in each company type and specified the composition of each type in detail. The different types of companies define alternative trajectories in the transition toward leadership creativity in virtual work. This typology extends the leadership typologies of Dubé et al. (2006) and Hara, Shachaf, and Stoerger (2009).

The main contributions of this study are discussed below.

**Empirical Enrichment for Understanding Leadership toward Creativity in Virtual Work**

The typology based on empirical data from multiple cases enriches the understanding of leadership that fosters creativity in virtual work and contributes to applying the heterarchy perspective to such leadership. As an analytical tool, it helps researchers draw out underlying dimensions that influence leadership toward creativity in virtual work and more rigorously and creatively understand and conceptualize the conditions and relationships in leadership that are related to each other. The categories of the typology can also be used for the classification of companies and leaders.

Type B, “collective mind,” is of particular concern, as it most completely represents both leadership inspiring creativity in a virtual workforce and developing a virtual business in line with heterarchy and collective intelligence. It supports the previous research findings (Humala, 2016) about the appropriateness of heterarchical ontological commitment to leadership toward creativity in virtual work. The empirical evidence in this study affirms that leaders stimulating creativity in a virtual workforce need to understand virtuality as a networked context and apply distributed authority to orchestrate work. The finding of assertiveness in type B, “collective mind,” strengthens the view about combining different organizing principles to foster creativity in virtual work and hence supports the hierarchical criteria of the combination of organizing principles (AH1). It supports the previous results of Hoch and Kozlowski (2014) regarding virtuality enhancing the relationship between structural supports and performance as well as those of Humala (2015) in a start-up context. Further, full connectivity to customers and regular personal face-to-face meetings in communication, coaching leadership with participatory learning over role boundaries, and skillful recruiting and orientation suggest that energizing people (LC1) is also an important factor in leading a virtual workforce toward creativity.

**Leadership toward Creativity in Virtual Work Actualizes in a Collective-Mind Company**

The descriptive typology strengthens the view that in the present business characterized by globally operating networks and more technologically advanced contexts, the trend in leadership is toward that in type B, “collective mind.” Organizational leadership needs to be updated toward a virtual leadership culture to foster collective creativity. The characteristics of a virtual leadership culture are collective intelligence, an open and communal way of working together, and shared responsibility to reach a common objective. This culture echoes Poutanen’s (2016) view on a culture of working together, understanding the process, embracing variation and context, encouraging emergent practices, identifying levels of creativity, appreciating subjectivity, and developing communication to enhance collective creativity. The findings suggest that the creativity of a virtual workforce is best fostered and superior business outcomes are reached in type B, “collective mind,” where both leadership toward creativity and heterarchical integrative leadership are applied. Type B, “collective mind,” operates via a virtual mindset. Its characteristics include shared values with an important objective, collective intelligence, active and assertive leadership by example, transparency, shared power and responsibility, a helping culture, and empowering and coaching leadership. As leadership in this type enables power
Typology on Leadership toward Creativity in Virtual Work

and commitment to arise from the community, it resembles emergent (Chamakiotis, 2014) or ad hoc leadership (Hara et al., 2009) that enables transient leadership opportunities for people. A leader who has a virtual mindset and understands virtuality as a networked context internalizes the concept that leadership and context are intricately intertwined (Osborn, Uhl-Bien, & Milosevic, 2014). Based on this study, leadership toward creativity in virtual work requires leaders who are genuinely interested both in people, their development, and collaboration with them, as well as in the technologies. In type B, “collective mind,” intrinsically motivated people work together toward a common objective in a participatory culture, where people help each other, share knowledge (Prasad, 2014) through multichannel communication, and reflect on matters and phenomena to learn to enhance business.

From a critical point of view, since people are the focus here, consideration must be given to such emerging issues as the limitations in human energy and resources with regard to continually working toward creativity and innovations, and in time and space to enable concentration on particular assignments. Further, careful reasoning is necessary regarding how to avoid the phenomenon of collective misbelief as well as to readjust after the sudden breakdowns that are inevitable in complex environments. Because organizations differ from each other, type B, “collective mind,” can appear differently in various organizations and parts of them. To ensure the continuous development of resources, individuals in virtual work may be able to work in type B “collective mind” organizations only occasionally; meanwhile, the work requires organizing in a new way, and people must do different work. This may also mean finding new business models. These kinds of considerations cause the role of conscious reflection to become increasingly important in virtual work – both inside organizations and together in interest groups – so that both people and businesses can navigate in the virtual business environment as optimally as possible. As heterarchy emphasizes, shared leadership and changing roles in virtual networked work are crucial; this can also enable human beings to calm down and rediscover their intrinsic motivation and creativity.

In type A, “nascent launch pad,” both the development of company leadership practices and the organization of mutual interaction are in progress. This company type has enthusiasm toward developing new ideas and practices but it is still struggling with its development. Type C, “command center,” is led by hierarchy, which generates a lack of confidence among people and leads to difficulties in managing a business in the virtual environment. In type D, “leaky boat,” the overall culture of incompetence does not allow either the virtual workforce or the business to flourish. The findings in virtual contexts support Amabile (1998), who highlighted that when creativity is killed, an organization loses a potent competitive weapon that enables it to create new ideas, and it can also lose the energy and commitment of its employees.

**Leadership toward Creativity Requires Appropriate Virtual and Physical Spaces and Tools for Multichannel Communication**

Through communication, people exchange information and construct individual and contextually shared frames of reference (Poutanen, 2016). Appropriate knowledge-processing and communication that fosters the criticality and reflexivity of both individuals’ own and others’ ideas are important in the creative process (Mononen, Tynjälä, & Kallio, 2016; Poutanen, 2016). This situation makes the role of communication, a helpful and friendly communication style, and communication spaces and tools critical in leading a virtual workforce toward creativity. The findings support Chamakiotis (2014) notion of the crucial role of good communication and organizational skills in creativity.

Based on the results, leaders need to utilize ongoing multichannel communication, be visible to their employees and collaborators, and work actively for their groups of people in order to succeed in dispersed virtual work. Fostering collective creativity in the virtual context requires the development of social bonds between organizational members, who can freely voice criticism when necessary to reach a common meaningful target. This development of social relationships demands not only inhibiting people’s defense systems but also enabling people to meet each other face-to-face and work physically close together (Porges, 2011). The study indicates that both functional virtual and physical
spaces are necessary for genuine mutual interaction and collective creativity to develop. The findings of this study challenge the design of future physical working spaces to foster individual and collective creativity by respecting different ways of working and by enabling practical solutions for mutual interaction, private discussions, and intense concentration—in offices, hubs, homes, or mobile work settings. The study strengthens the view that collective creativity in virtual work requires physical interactions in suitable physical spaces and the emergence of caring for each other.

As outlined previously, virtual leadership closely relates to materialities such as virtual communication tools. Leaders need to meet their virtual workforces face-to-face regularly and use modern communication tools, such as social media, to develop social bonds with the virtual workforce and to reflect issues inside the company and with customers and other stakeholders. Leaders who inspire creativity in virtual work tend to be more open-minded about trying and using alternative and multiple tools in leading people, making the obvious dubious (Brinkmann, 2012) in the present business contexts, and activating people toward a collective intelligence.

To improve the quality of virtual communication, leaders must communicate and interact horizontally between people, which is also suggested by the heterarchical perspective. This requirement challenges leaders to develop the horizontal capability of people to consciously and appropriately develop their thinking, understand reality from multiple perspectives, and change their space of consciousness according to the situation (Jakonen & Kamppinen, 2016).

The results suggest that distances in virtual work can equalize cultural differences, decrease social pressure, and support people in working together more closely and efficiently. This finding is encouraging for developing leadership in technologically advanced dispersed contexts to piggyback diversity and different know-how to inspire a virtual workforce toward creativity and innovations in collaboration. In a sense, people in virtual settings operate in no-man’s land, which enables leaders, together with their collaborators, to create similar working cultures of their own and let collective intelligence lead the organization toward common success. However, this kind of collective mind organization emphasizes the demand for emotional intelligence, sensitivity, and transparency on the part of leaders, who must also receive bad news in business and understand the interlinear hints from their people in orchestrating the collaborative work. Further, developing cultures of collective intelligence creates broader social foresight and reflexivity, allowing organizations to match science and technology and respond to the emerging near-term future context (Jakonen & Kamppinen, 2015). These circumstances signify shared power and responsibility in virtual work.

**Supporting Professional Growth and Know-How Enhances Collective Creativity and Sustainability in Virtual Work Settings**

In general, the findings highlight developing leadership in virtual labor and the physical and virtual spaces in accordance with humanistic values to care for and empower people and support their professional growth, self-regulation, and meaningfulness at work, which will in turn foster collective creativity, utilize know-how, and promote the common good in society.

This kind of leadership enhances sustainability both for people and for business. The findings support the recent discussions on emerging pedagogies (Gros, 2016) and meaningful work (Lips-Wiersma & Wright, 2012) with clear challenges, transparency, using different forms of knowledge, and integrating the use of technology as a mindset for creativity, collaboration, and multimedia productivity. This position relates to a development culture in company type B, “collective mind,” which advances empowering and integrating heterarchical leadership.

Echoing previous research (Amabile et al., 1996; Nie & Kosaka, 2014), this study empirically supports the significance of the recruiting and orientation of suitable new leaders and employees to enhance creativity in a virtual workforce and to make virtual work successful. The person–job–fit and the recruitment of more skilled persons for the leadership positions have been found to be important for increasing motivation and enhancing creativity and its utilization (O’Connor, 2016; Staw, 2016).
Typology on Leadership toward Creativity in Virtual Work

Together, the findings empirically support applying the heterarchy perspective in leading a virtual workforce toward creativity. The study suggests that humanity, authentic shared values, empowerment, active and assertive leadership by example, transparency, sharing power, and encouraging a virtual workforce to assume more responsibility in organizations are key actions for inspiring creativity in a virtual workforce. However, successful empowerment in the digital era requires that leaders learn about their people and their expertise, skills, passions, and interests beyond the role limits and support their utilization. Moreover, ICT and modern multichannel communication media must be well resourced, and everyone at work should be encouraged to use them smartly to share know-how and knowledge genuinely.

The typology helps practitioners understand how leadership, communication and interaction, and learning and growth are inextricably tied together in virtual contexts as well as how they all need to be developed to foster creative interaction and improve productivity and competitiveness. It helps in identifying the characteristics that differ among the various types of companies and in realizing the connections between leadership and creativity and the role of ICT technology in developing leadership that inspires creativity and success in virtual work. Practitioners can also utilize the typology in evaluating their personal job performance and in developing suitable performance assessment indicators for both leaders and employees in virtual work.

**CONCLUSION**

This study developed a descriptive typology on leadership toward creativity in virtual work based on empirical case studies in five companies. The typology enriches the theoretical understanding of leadership that fosters creativity in virtual work by defining alternative trajectories in the transition toward leadership creativity in virtual work. As an analytical tool, it helps researchers draw out underlying dimensions that influence leadership toward creativity in virtual work and better understand and conceptualize the conditions and relationships in leadership that are related to each other. It can also be useful for the classification of companies and leaders.

The findings empirically support applying the heterarchy perspective to lead a virtual workforce toward creativity and affirms that leaders seeking to stimulate creativity in a virtual workforce need to understand virtuality as a networked context, apply distributed authority to orchestrate work, and also be assertive. As heterarchy emphasizes, shared leadership and changing roles in virtual networked work are crucial; this can also enable people to recover after intensive and exhausting work periods and rediscover their intrinsic motivation and creativity.

The study stresses that leaders who are genuinely interested both in people, their development, and collaboration with individuals, as well as in the technologies, can inspire collective creativity and promote the common good in society. Based on the results, in the present business involving globally operating networks and more technologically advanced contexts, the trend in leadership is toward collective-mind companies. Such companies operate following a virtual mindset. Their characteristics include shared values and meaningful work, collective intelligence, transparency, coaching, and empowering leadership by example with participatory learning beyond role boundaries, dynamic multichannel interaction, skillful recruiting and orientation, and assertiveness. However, a collective-mind company can appear differently in various organizations and parts of them. The role of conscious reflection on the ways to organize work and business models is crucial in virtual work – both inside organizations and together in interest groups – so that people and companies can navigate in the virtual business environment as optimally as possible.

The results highlight that leadership toward creativity requires appropriate virtual and physical spaces and tools for multichannel communication. The study strengthens the view that collective creativity in virtual work requires physical interactions in suitable physical spaces and caring for each other to create social bonds within the virtual workforce as well as with stakeholders. The future design of physical working spaces needs to respect different ways of working and enable practical solutions for mutual interaction, private discussions, and intense concentration – in offices, hubs, homes or mobile
work settings. Further, ICT and modern multichannel communication media must be well resourced, and everyone needs to be encouraged to use them to share know-how genuinely. To improve the quality of virtual communication, leaders must communicate and interact horizontally between people and develop the horizontal capability of people to develop their thinking consciously; this is also suggested by the heterarchical perspective. These findings encourage the development of leadership in technologically advanced dispersed contexts to piggyback diversity and different types of know-how to inspire a virtual workforce toward creativity and innovations in collaboration.

To succeed in empowerment in the digital era, leaders need to understand their people and their expertise, skills, passions, and interests beyond the role limits and support their utilization. The findings highlight developing leadership in virtual work and the physical and virtual spaces in line with humanistic values to care for and empower people and promote their professional growth, self-regulation, and meaningfulness at work in order to foster collective creativity, utilize know-how, and promote the common good in society. This kind of leadership both energizes people and enhances sustainability, both for individuals and businesses.

The typology helps practitioners realize the need to develop leadership, communication, and interaction, to prioritize learning and growth to foster creative interaction, and to improve productivity and competitiveness. Practitioners can also utilize the typology in evaluating their personal work performance and in developing suitable performance assessment indicators for both leaders and employees in virtual work. The typology can act as a foundation for workforce education and provide new ways of creating a competitive virtual workforce.

Regarding limitations, the data in this qualitative study were collected by one researcher almost entirely in the ICT technology and service sector in Finland, as the novelty of the results intrigued the case companies in the ICT field into investing their time in the research project. Future studies conducted by several researchers, in other areas of industry, in several geographical locations, or focusing entirely on, for instance, start-ups would broaden our understanding and fill in the knowledge gaps to create a theory about leadership toward creativity in virtual work.

Future studies could be executed on the network level to further cover customers’ and other stakeholders’ creativity. Both qualitative and quantitative research methods could be applied. Moreover, longitudinal studies are highly recommended to build an overall stronger evidence base. An additional direction for future research is to explore the role of materialities in leadership toward creativity in virtual work. A better understanding, for instance, of the role of social media in supporting creativity in virtual work would be useful for both academics and practitioners. For researchers interested in leadership development, one future research direction in virtual work could be to explore how a person’s background, especially in team sports, music bands, or coaching, influences her success as a leader.

Concerning the role of learning and supporting knowledge utilization in virtual dispersed work toward creativity, it would be fruitful in the future to shift the focus from leaders to employees and study the role of staff members in supporting each other to foster creativity in virtual work. This knowledge could also help practitioners to tackle different organizational changes and emotional baggage from the previous organizations.

Finally, further research could aim to create a theory that also explains the outcomes of leadership towards creativity in the virtual world.

Although further work is required to gain a complete understanding of leadership toward creativity in virtual work, the findings of this study indicate that combining creativity-conducted leadership approaches and the heterarchy perspective in leadership would enable both people and businesses to flourish in the digital era.

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**Biography**

Iris Humala is a Doctoral candidate in the Faculty of Education, University of Tampere, Finland. She has a PhD degree in Economics and Business Administration from University of Vaasa, Finland. She has a broad experience in program and project management, research management and consulting. Her current research interests are in the areas of leadership in virtual work and business networks. Now she is working in Iris Consulting ky as entrepreneur and coach.