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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Iris Humala is Postgraduate student (or Doctoral Candidate) in the School of Education, University of Tampere.

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; Zimmermann 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 leadership 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 Sharpnack (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 (Hardagon & 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 has also 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 were 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 & Haunschild 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 (Parjanen 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 (Metcalf & 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

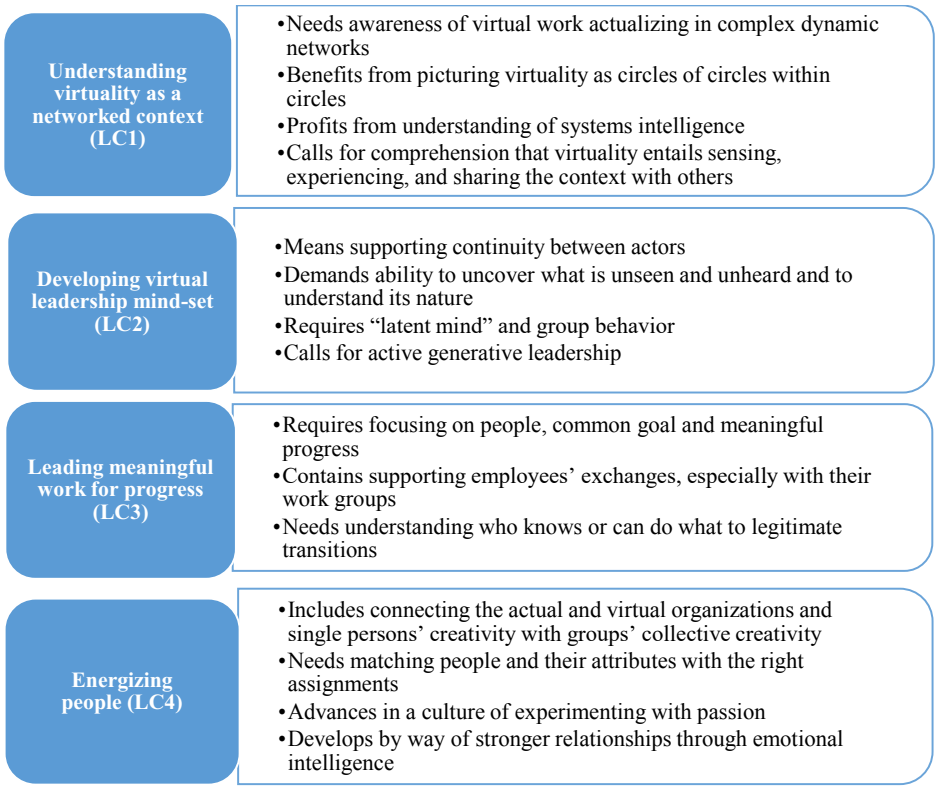

Figure 1. Summary of the focal challenges for leading the virtual workforce toward creativity (LC) with their main characteristics based on the literature and interviews.

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 1. The attributes of heterarchy in relation to leadership.

THE ATTRIBUTES OF HETERARCHY IN RELATION TO LEADERSHIP	REFERENCES IN THE THEORETICAL LITERATURE
A combination of organizing principles (AH1)	Goldstein et al. 2010; Grabher 2001; Holland 2006; Spelthann & Haunschild 2011; Stephenson 2009
• Complex adaptive system combines the action in market and centralized decision making and multiple organizing principles, organizational forms, business models, philosophies, and practices	
• Represents collective and cooperative organizational structure of distributed intelligence highlighting dynamic power relations within groups	Aime et al. 2014; Crumley 1995; McCulloch 1945; Stark 1999, 2009
• Incorporates distributed networks that have both reciprocal flows of information and clear accountability	Goldstein et al. 2010; Stark 2009
Supportive interdependent interaction (AH2)	
• Includes collaborative interdependent relationships and intermittent exchange	Stephenson 2009
• Success depends on mutual lateral learning, the quality of relationships, and the conversations among all actors	Erçetin & Kamacı 2008; Girard & Stark 2002; Kleiner 2009; Stark 1999
• The particular codes of conduct help to operate with trust that is diffused in the communities of practice	Grabher 2001
• Requires mutual helpfulness	Schein 2009
• Requires a common language and common cultural understanding in each link	Handy 2009
Distributed authority to orchestrate work (AH3)	
• Decision-making authority is not concentrated entirely at the top, and managers are accountable to other work teams	Girard & Stark 2002; Goldstein et al. 2010; Stark 1999
• Leaders need to have horizons beyond their own organizations and to focus on the collective good with knowledge management based on agreements	Handy 2009; Stephenson 2009
• Leadership is an enabler of interaction, meaningful work, inspiration, and the combination of networks with strong and weak ties	Goldstein et al. 2010; Spelthann & Haunschild 2011
• Requires fine-grained coordination to facilitate organizations that can reorganize themselves and the work of reflexive cognition (e.g., through tagging and projects)	Girard & Stark 2002; Grabher 2001; Stark 2009, 1999
Reinforcement for creativity and innovative ideas (AH4)	
• Heterarchy organizes dissonance toward discoveries	Stark 1999, 2009
• Organizational creativity can be activated in multiple ways by linking multilayerness, duplication, overlap, incongruence, redundancy, organizational slack, rivalry, and latency	Grabher 2001; Spelthann & Haunschild 2011
• 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	Aime et al. 2014

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

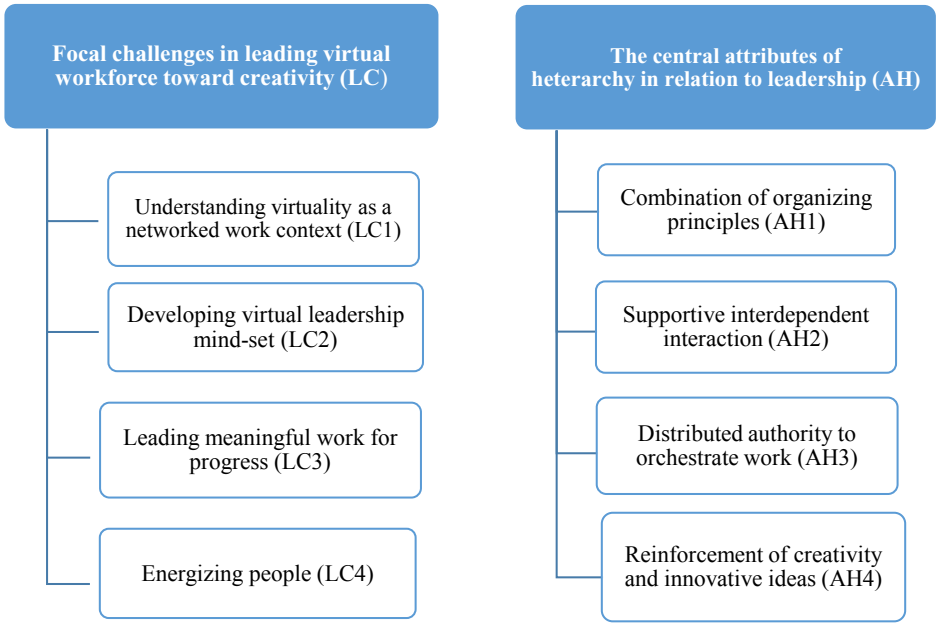

Figure 2. The focal challenges for leading the virtual workforce toward creativity (LC) and the central attributes of heterarchy in relation to leadership (AH).

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-

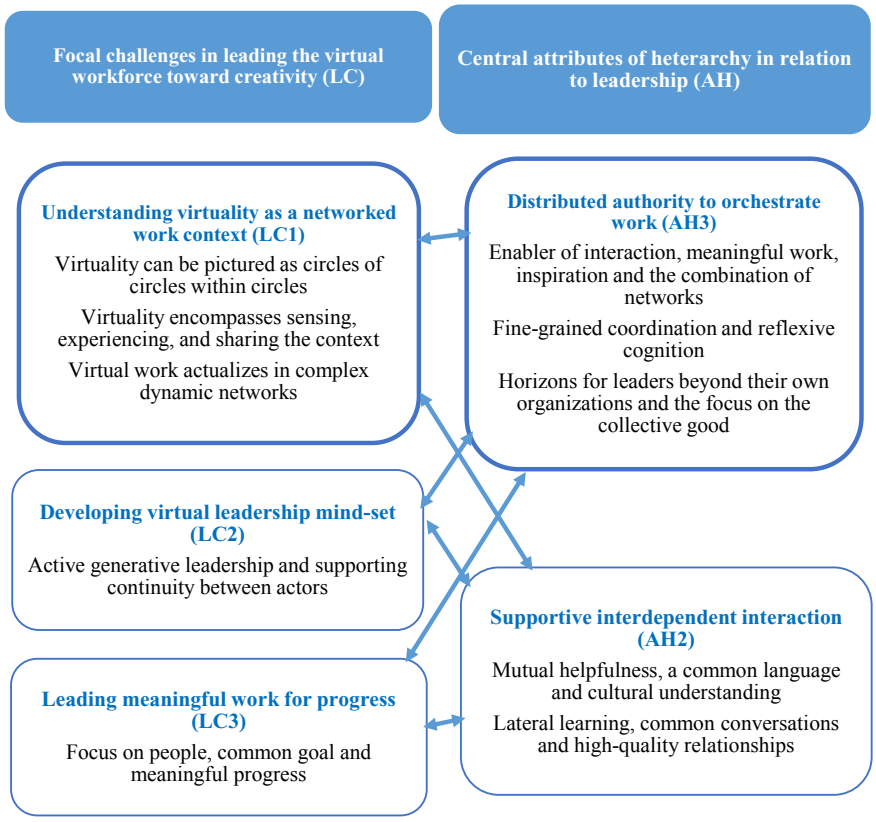

Figure 3. The most important relations between the focal challenges for leading the virtual workforce toward creativity (LC) and the central attributes of heterarchy in relation to leadership (AH). LC1 and AH3 with most relations are marked with a thicker borderline.

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.

To sum up, the analysis demonstrates that the strongest relations can be conceptualized between the three focal leadership challenges toward creativity (LC)—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 (AH)—distributed authority to orchestrate work and supportive interdependent interaction. The findings of the study will be discussed in the next section.

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. Johannessen & 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.

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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