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Benjamin Schulte

# The Organizational Embeddedness of Communities of Practice

Exploring the Cultural and Leadership  
Dynamics of Self-organized Practice



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Benjamin Schulte

# The Organizational Embeddedness of Communities of Practice

Exploring the Cultural and  
Leadership Dynamics of  
Self-organized Practice



Springer Gabler

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*For the three woman in my life*

*Carmen, Mum, and my unborn baby girl.*

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## Foreword

In today's world, many companies—as well as public administrations—are confronted with the increasing necessity to adapt to rapidly changing environmental conditions. Established and hierarchically coordinated organizations, however, tend towards inertia and stability in their processes and routines, causing difficulties and resistance in adapting fast enough to environmental changes. Prior literature has shown that one crucial element for promoting learning and adaptation could be self-organized communities of practitioners (CoPs). They meet regularly in order to discuss not only their practical experiences but also cope with new evolving challenges to their practice by developing adaptive solutions and initiating their realization. Communities of practice thus spur change and flexible adaptation through self-organized and voluntary collaboration. Importantly, they do so without any formal assignment or external control.

Despite these promises, communities of practice raise crucial questions concerning the way they interrelate with their organizational context. Although these communities emerge and work detached from the formal hierarchy and formal rules of day-to-day work, they nevertheless are situated within this organizational context that they are supposed to adapt. Furthermore, control-oriented formal leadership of the hierarchy may suppress self-organization and informality in communities of practice because of the expectations to formalize and champion change throughout the organization. Hence, both culture and leadership of the organizational context may undermine the very core idea of communities of practice, namely emergent change and innovation through practitioner's self-organized interaction in communities. The questions thus remain, how communities of practice interrelate with their organizational context and how they ensure its continuous adaptation?

Referring to these questions, the present book examines the embeddedness of communities of practice in the formal organizational hierarchy. Its contribution is at least threefold: First, it presents an in-depth empirical study that vividly illustrates communities of practice as a source of learning and adaptation within the formal hierarchy of the German Federal Armed Forces. Second, it investigates the emergence of these communities of practice and their cultural embeddedness in this organizational context. Third, this study shows how formal leadership can affect the practices of communities without commanding them in a traditional military way, and therefore, can help to reconcile the tension between communities of practice and their formal organizational context.

To do so, the author is presenting an impressive literature review on communities of practice, their different interpretations in academic literature, and their embeddedness in the formal hierarchy. Based on a citation analysis and a subsequent content analysis, the author reviews the fundamental nature of CoPs, the practices within them, as well as their outcome and their interrelation with the surrounding organization. Notably, the author shows that different theoretical perspectives on communities of practice come to different and partly contradictory explanations concerning the embeddedness of emerging, self-organized communities of practice within their formal organizational context. Referring to this research gap, he underlines his research questions addressing (1) the emergence of communities of practice, (2) their cultural embeddedness within their organizational context, and (3) the dynamics of formal leadership to affect and embed these self-organized CoPs into the hierarchy.

The empirical study offers an impressive deep dive into three communities of practice. Based on a qualitative, interpretative research approach, the author presents a rich data set that has been gathered as part of an ample research project at our institute, focusing on “Communities of Practice in the German Federal Armed Forces”. These findings are structured in three consecutive parts, uncovering the emergence of three communities of practice, their cultural embeddedness, and their interaction with formal leadership. In detail, the author shows that these communities of practice emerged because practitioners sensed changed requirements for their respective practice. They began to self-organize and to create new resources. The author reflects his findings against the background of a “resourcing in practice lens” and complexity theory, explicating how new resources emerged in each of the three communities.

Furthermore, the findings reveal a very intensive interrelation between the communities of practice and their organizational context that is driven by cultural norms and values. Practitioners learn cultural resources during their education in the FAF, experience them as partly devalued in their day-to-day business within

the hierarchical administration, but reanimate and reproduce these norms and values through their membership in the informal communities. Drawing on a practice lens and complexity theory, the author refers to this process as “cultural resourcing”. Regarding the interaction between communities of practice and official leaders, the author uncovers four processes inherent in leader-member relations—enabling the emergence of a CoP, supporting its members with resources, sensegiving and sensemaking, and assistance in putting the solutions developed by a CoP into practice. The author substantiates this way of enabling leadership by referring to complexity leadership theory. Finally, he consolidates these different aspects of embedding self-organized communities of practice in a hierarchical context in a comprehensive model which is—to the best of my knowledge—the first model depicting the interrelations between self-organized communities of practice and their organizational context in a theoretical and empirically grounded manner.

In summary, this study offers remarkable contributions (1) for understanding the essential onto-epistemological nature of communities of practice as well as their potential for creating new resources, (2) for understanding the cultural embeddedness of communities of practice in their organizational context, and (3) for understanding the dynamics of influencing these self-organized CoPs via enabling leadership. These results are not only crucial for scholars but also for managers. The key takeaways are first the vast potential of communities of practice as a source of organizational adaptability, and second, the possibilities of how leadership can foster the alignment of these communities of practice with their hierarchical context. Due to these remarkable contributions, I hope that this study gets the attention and recognition in management and organization studies it deserves. Certainly, readers will have an exciting, inspiring, and enriching experience.

Prof. Dr. Hans Koller

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## Acknowledgements

The path towards this dissertation was by no means straightforward and a walk in the park. Instead, it was a challenging academic and personal journey that had its fair share of roadblocks and obstacles along the way, requiring me to take more than one detour. Despite or maybe because of it, this intellectual endeavor was not only an academic exercise in terms of exploring one particular area of research but simultaneously a journey towards myself as I gained a new vista on the world and developed a new and expanded understanding of myself. I not only learned how to actually do research, how to engage in scholarly discussions, and how to write papers as I slowly became absorbed into the academic practice, I also experienced a gradual shift in my identity. That is, as I began this journey, I viewed myself first and foremost as an armed forces officer. More specifically as a *Panzergrenadier* (mechanized infantry) officer. Yet, at the end of it, I became more than that and now understand myself as an academic, husband, son, friend, soldier, and soon as a dad of a little baby girl. I thus personally grew along this journey. In light of this, I am now the more grateful to have reached my goal and to be able to look back and think about those who helped me. Without their help and support this journey would have not been the same.

First of all, this dissertation would not have been possible without the research project on communities of practice in the German Federal Armed Forces (ComBw), which has been commissioned and supported by the German Ministry of Defense, department for management development. In conjunction with this, I like to thank my supervisor Professor Dr. Hans Koller, for providing me with the opportunity to work on this project. Besides, I would also like to mention the many soldiers we met during our research in the armed forces and thank them for sharing their personal stories for this study.

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# Abbreviations

CAC	Cultural Advisory Community
CAS	Complex Adaptive System
CBC	Chief Blaster Community
CEIC	Coordination element for Intercultural competence
CiPs	Collectivities of Practice
CLT	Complexity Leadership Theory
CoP	Community of Practice
COpCom	Center for Operative Communications
DoD	Department of Defense
DEU TDLMC	Deutsche TDL Management Cell
EC	Epistemic Communities
EU	European Union
FAF	German Federal Armed Forces
ICT	information and communication technology
KBV	knowledge based view
LPP	legitimate peripheral participation
MIDS	Multifunctional Information Distribution System
NATO	North Atlantic Treaty Organization
NCO	Non-commissioned officer
NetOpFü	Vernetzte Operationsführung
NoP	Network of Practice
RBV	resource based view
SSCI	Social Science Citation Index
TDL	Tactical Data Links
TDLC	Tactical Data Link Community
UN	United Nations

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# Introduction

# 1

*Organizations (...) have counteracting forces at play. Some forces push the system toward stability and order (...). Some other forces push the system toward instability and disorder (...). The coupling of these forces can lead to a highly complex situation.*

*Thietart & Forgues 1995*

Since the early writings in management and organization theory, it is well-established that firms need to adapt in accordance with their environment in order to survive (Schumpeter, 1949). Indeed, in an increasingly dynamic and complex world this capacity to continuously adapt structures and practices to new circumstances becomes ever more critical for contemporary organizations. However, despite ever unfolding change, organizations also require stability in their routines and practices to reliably and repetitively produce outcomes (Brown & Eisenhardt, 1997; Child & McGrath, 2001; Farjoun, 2010). These competing demands have divergent temporal orientations and rely on contradictory attributes, or as Cegarra-Navarro & Dewhurst state: “*While renewing to adapt for tomorrow requires change, flexibility and creativity, profits for today require order, control and stability*” (2007, p. 1721).

This paradoxical tension between stability and adaptability has long drawn interest from management scholars (Farjoun, 2010), and continues to spur research about how organizations should reconcile these contradictory states. Selznick (1948), for example, points out that organizations encompass formal organizational systems focused on efficiency and an adaptive social structure. Whereas, Burns

& Stalker (1961), in their seminal study, argue that organic structures support flexibility while mechanistic structures support efficiency. Similarly, Thompson (1967) refers to this trade-off between efficiency and flexibility as the central “paradox of administration”, stating that managers must choose between organizational designs suited for routine work and those feasible for non-routine, innovative work. Duncan (1976), in this regard, mentions that organizations require both organic structures generating innovations and mechanistic structures exploiting them.

In view of this, several authors argue that it is difficult to resolve this tension within a single organization, proposing the structural separation of organic, informal systems focused on exploration and mechanistic, formal systems focused on exploitation (Lawrence & Lorsch, 1967; March, 1991; Tushman & O’Reilly, 1996). Conversely, recent studies acknowledge the tension as a pervasive feature of organizing (Farjoun, 2010; Leana & Barry, 2000), occurring in organization members’ everyday practices (Birkinshaw & Gupta, 2013; Brown & Eisenhardt, 1997; Uhl-Bien & Marion, 2009). Researchers in this perspective suggest that firms achieve adaptability by designing “semisttructures” that combine organic and mechanistic features (Brown & Eisenhardt, 1997) or through creating supportive contexts that enable employees to recognize the need for adaptation but also remain sufficiently focused on current operations (Adler, Goldoftas, & Levine, 1999; Gibson & Birkinshaw, 2004). Similarly, scholars applying a complexity theory perspective on organizations, recently, note that adaptability occurs when administrative forces focused on the execution of business and adaptive forces driving organizational response become entangled with each other (Uhl-Bien & Marion, 2009; Uhl-Bien, Marion, & McKelvey, 2007).

Turning towards self-organized communities of practice (CoPs) as a source of organizational learning and adaptability (Brown & Duguid, 2001; Wenger, 1998), one can see this paradoxical tension unfolding from peoples’ everyday practices.

CoPs are self-organized groups of practitioners, who collaboratively engage with each other in their work practices, learn from each other, and solve their practical problems (Brown & Duguid, 1991; Wenger, 1998). They make up local contexts for adaptive and changing practice where new knowledge and innovations in response to specific practical challenges can arise from situated social interaction (Brown & Duguid, 1991; Jarzabkowski, 2004; Pattinson, Preece, & Dawson, 2016). For example, Orr (1996) shows, in his ethnography of photocopier repair technicians, how a CoP generates novel solutions to newly occurring technical problems by means of story-telling. While Dougherty (2001) argues, based on a multiple case study, that a firm’s innovative capabilities are rooted

in its different communities of practice whose members can imagine their role within the overall innovation process and autonomously solve problems.

These CoPs, however, do not emerge in a social vacuum (Heizmann, 2011; Roberts, 2006). Instead, they are situated in broader contexts of established organizations (Kerno, 2008) that, in the vast majority are still characterized by formal organizational hierarchy, involving top-down formal leadership, centrally imposed official rules, as well as preorganized tasks and practices (Leavitt, 2003). Embedding CoPs in formal organizational hierarchy thus creates tension because CoPs can drive local learning and change of practice (Brown, 2004; Brown & Duguid, 1991; Lave & Wenger, 1991), whereas formal organizational hierarchy is primarily designed to resist change and ensure repetitive practice for producing reliable outcomes (Stacey, 1995; Thietart & Forgues, 1995). Moreover, the attributes that underlie each of the two elements are typically seen to be mutually incompatible. For CoPs to emerge, organizations' members have to autonomously engage in practice (Brown & Duguid, 1991; McDermott, 1999; Thompson, 2005); in contrast, formal organizational hierarchy requires the alignment, predictability, and control of individual and collective behavior to generate results (Uhl-Bien & Arena, 2017; Uhl-Bien & Arena, 2018). Yet, too overly rigid formal structures and bureaucratic controls can stifle self-organization (Kerno, 2008; Thompson, 2005) while, on the contrary, full autonomy can lead to organizational fragmentation as adaptation remains local without some kind of integration (Brown & Duguid, 2001; Duguid, 2008; Tallman & Chacar, 2011a).

Embedding CoPs in formal organizational hierarchy thus is characterized through tension. Given this, understanding the embeddedness and how to navigate its inherent tension is critical for contemporary organizations that are looking to unlock the potential of CoPs for emergent adaptability in light of ever more dynamic and complex environments.

---

## 1.1 Research Gap

Since its introduction, the communities of practice construct has spurred vibrant research and fruitful discussions in academia. The interest of scholarship in CoPs, indeed, becomes evident by the yearly number of publications alone in management and business science journals which, according to the Social Science Citation Index (SSCI) of the ISI Web of Science database, has grown from an average of five publications over the period from 1995 to 2000 to an average of 15 in 2001 through 2010 to an average of 19 in 2011 to 2018.

Despite its growth and the impressive body of scholarly work, the CoP concept is far from being outdated and still requires further development (Pyrko, Dörfler, & Eden, 2019). Indeed, questions about how CoPs interrelate with broader, trans-local features of the surrounding formal organization remain to a large extent unanswered or under contestation in the extant literature (Hotho, Saka-Helmhout, & Becker-Ritterspach, 2014).

For instance, CoP research deeply rooted in a practice-oriented lens (Corradi, Gherardi, & Verzelloni, 2010; Gherardi, 2009b; Gherardi, Nicolini, & Odella, 1998; Lave & Wenger, 1991) focuses either on learning processes within a particular community (Gherardi et al., 1998; Lave & Wenger, 1991; Pyrko, Dörfler, & Eden, 2017) or how learning unfolds across the boundaries of several intersecting CoPs (Fox, 2000; Gherardi & Nicolini, 2002a; Oborn & Dawson, 2010), whereas other studies stress the emergent and informal nature of CoPs as sites for innovation and adaptation that, however, tend to evade managerial control (Brown & Duguid, 1991; Brown & Duguid, 2001; Wenger, 1998). Thus, the tension-ridden relations between communities and broader socio-cultural structures as well as formal leadership remain relatively vague in these perspectives (Contu & Willmott, 2003; Cox, 2005; Østerlund & Carlile, 2005). More recent research originating from the knowledge management discipline promotes different ways of operationalizing CoPs as tools for organizational learning (Bolisani & Scarso, 2014; Borzillo, 2009; Probst & Borzillo, 2008; Wenger, McDermott, & Snyder, 2002). Though authors in this instrumental perspective focus on CoPs within managerial-shaped surroundings, they tend to lose sight of the central premises of the CoP construct of identity and social practice within a particular social context (Corradi et al., 2010; Duguid, 2008; Lave, 2008). Instead, they recommend simplistic management approaches that detach the CoP from actual practice and, in doing so, largely fail to explicate the links between practice, community, and organizational context (Harvey, Cohendet, Simon, & Dubois, 2013; Roberts, 2006). Thus, taken together, these different lines of research do not sufficiently problematize the embeddedness and its tensions of communities of practice in the broader socio-cultural and power structures of the formal organizational hierarchy.

As I regard learning and adapting in CoPs as processes rather than as entities that cannot be “set up” instrumentally (Pyrko et al., 2019), I tend to agree with the critiques about the naïve and instrumental understanding of CoPs (Pyrko et al., 2017). Nevertheless, when we acknowledge CoPs as a source of organizational learning and adaptation, we need to know more about how such self-organized processes in CoPs emerge and embed within the broader cultural context and interrelate with formal leadership. That is, we need to explore how the tension between stability—induced through pre-organized practice—and change—emanating

from self-organized practice—works for organizational adaptability. Thus, the following thoughts aim at furthering our scholarly knowledge of how CoPs as sites of adaptability interrelate with and embed in a managerial-shaped organizational context.

### 1.1.1 Approach and Contributions

To fill this gap, I employ qualitative research methods based on the in-depth inquiry of three communities of practice that we were able to investigate within the German Federal Armed Forces (FAF) as part of a larger research project.<sup>1</sup> In particular, we studied the three practice areas of tactical data links, military blasting, and intercultural competence. The first involves soldiers who are concerned with establishing secure data connections between numerous units via Link encryptions. The military blasting practice comprises soldiers who are trained in the use of state of the art explosives and who are capable of conducting any military or civilian blasting assignment (e.g., skyscrapers, towers, or stadiums). Lastly, the intercultural competence domain describes a network of experts that started to enhance the FAF's awareness of intercultural aspects of modern warfare scenarios along the increasing amount of missions abroad.

In these three practice areas, we were able to detect how, in light of an increasingly dynamic and complex environment for task-fulfillment, self-organizing CoPs evolve and adapt their practice to the changed situation.

Based on these observations, I utilize an interpretative research approach (Gioia, Corley, & Hamilton, 2013; Glaser & Strauss, 1967) to build a grounded, process model (Langley, 1999; Langley, Smallman, Tsoukas, & van de Ven, 2013), which explicates the embeddedness of CoPs as sites of adaptability within the formal organizational hierarchy as profoundly shaped through cultural and leadership processes.

In building this model and theorizing its internal processes, I draw on two theories; namely, a practice lens (Feldman & Orlikowski, 2011; Feldman & Worline, 2016; Nicolini, 2012), combined and expanded with a complexity leadership

---

<sup>1</sup>The findings of this research project have been part of multiple conference papers that we presented on various conferences and meetings such as AOM, EURAM, EGOS, SMS and ECKM (Andresen, Koller, Kreutzmann, & Schulte, 2016); Andresen, Schulte, and Koller (2019); Nowak, Koller, Andresen, Kreutzmann, and Schulte (2016); Kreutzmann, Koller, Andresen, and Schulte (2016); Schulte, Koller, Andresen, and Kreutzmann (2016); Schulte, Andresen, and Koller (2017).

theory (CLT) perspective (Uhl-Bien et al., 2007; Uhl-Bien & Marion, 2009). Utilizing these two theoretical accounts helps me explain how community members generate new resources in self-organized practice, produce and reproduce cultural codes, as well as how formal leadership influences and interacts with these emergent processes. Note that throughout this manuscript, I subscribe to a broader resource understanding (Feldman, 2004; Feldman & Worline, 2012) as I describe CoPs as spaces for self-organized resourcing. Self-organized resourcing consists of and explains two critical processes of the grounded model: on the one hand, it explicates the generation of new, specialized resources such as new training programs, manuals, handbooks, or whole exercises through community activities and, on the other hand, it refers to cultural resourcing, that is the creation and reproduction of cultural resources such as identities, values, and symbols in practice.

In detail, the model shows that community members shape specialized resources through their self-organized interactions and, in doing so, adapt and renew the organizations' resource base to a changing environment. This form of self-organized resourcing builds on a practice-oriented lens (Feldman & Orlikowski, 2011; Nicolini, 2012) on resources that theorizes that individuals generate and mold resources as they make use of them in practice (Feldman, 2004; Feldman & Worline, 2012; Feldman & Worline, 2016; Howard-Grenville, 2007). Resourcing theory suggests that resources are malleable and dynamic compared to traditional perspectives, because resources hold meanings (a schema about a resource's qualities and its possible use), which can be constructed, altered, and reconceptualized (Feldman, 2004; Feldman & Worline, 2012; Kannan-Narasimhan & Lawrence, 2018; Schneider, Bullinger, & Brandl, 2020). Within the studied CoPs, we can see how community members built and molded new resources as they made sense of changing environments to their practice. That is, members identified the need for new or adapted resources and collaboratively began to improvise first responses to this need (e.g., a small exercise). By doing so, they constructed meaning about the kind of resource needed (i.e., a schema about its properties and potential uses) which, afterward, was continuously adjusted as they engaged with each other and with formal leadership, thereby refining and transforming the resource in the process (e.g., the small exercise developed into a bi-annual, international exercise).

This self-organized resourcing dynamic also resonates with what complexity theorists refer to as emergent self-organization unfolding in complex adaptive systems (CAS; Chiles, Meyer, & Hench, 2004; Lichtenstein, 2014). In complex adaptive systems new, emergent order (e.g., resource configurations) arises from the self-organized actions of interdependent agents who engage with adaptive

challenges based on local knowledge and feedback from others without an outside mandate or control (Chiles et al., 2004; Stacey, 1995; Tsoukas & Chia, 2002; Uhl-Bien & Arena, 2018). One intriguing insight from the current study thus is that the observed CoPs display the dynamics of emergent self-organization known within CAS as their members build and mold new resources without an external mandate or outside control.

The grounded model of the current study, furthermore, shows that self-organized resourcing within the local context of a particular CoPs does not unfold in a vacuum but, instead, is embedded within the surrounding broader, socio-cultural context of the armed forces. More specifically, the model illustrates how community members contextually shape hybrid cultures that embody deeply ingrained norms and beliefs but also entail altered and modified cultural elements. In theorizing this mechanism, I again utilize a resourcing in practice perspective (Feldman, 2004; Howard-Grenville, Golden-Biddle, Irwin, & Mao, 2011), and explicate the cultural processes unfolding in CoPs as cultural resourcing. Viewed from this lens, members draw on once learned and internalized cultural resources such as schematic identities, norms, and values and, in doing so, reproduce parts of the organization's broader cultural repertoire in their self-organized social praxis. Given this, CoPs are inherently embedded and linked to their formal surroundings and do not make up countercultures as some prior studies would suggest (Brown & Duguid, 1991; Orr, 1990; Orr, 1996). However, the findings also illustrate that by resourcing elements from the broader repertoire, community-members adapt and mold cultural resources to fit their local circumstances. Taken together, cultural resourcing creates a space in which social praxis is neither completely determined through macro, socio-cultural structure nor is it wholly constraint-free and self-caused. This newly resourced cultural space enables members to self-organize and collaboratively work out adaptive responses to their practical problems.<sup>2</sup>

Finally, the grounded model outlines how the processes of self-organized resource generation within CoPs interweaves with formal leadership. Based on complexity leadership theory, leadership works to unlock the "*learning, creative and adaptive capacity of complex adaptive systems (CAS) in knowledge-producing organizations*" (Uhl-Bien et al., 2007, p. 304). Similarly, the findings of the current study illustrate that formal leadership of the armed forces helps to embed the self-organized activities from which adaptability arises. That is, leadership,

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<sup>2</sup>These findings on cultural dynamics of self-organized practice in CoPs has been presented at multiple Academy of Management Meetings (Schulte, Andresen, & Koller, 2017).

on the one hand, enables self-organized, adaptive practice and provides much-needed assets (i.e., material and immaterial means) while, on the other hand, formal leadership helps to transform the emergent outcomes (i.e., the newly created specialized resources) into official processes and structures. Leadership, thus, is critical in embedding CoPs for adaptability into the formal organizational hierarchy without undermining its self-organized nature.<sup>3</sup>

In summary, the grounded model of this study introduces CoPs as spaces for resource generation and reproduction that are embedded into the structures of formal organizational hierarchy via leadership and cultural mechanisms. These mechanisms of embeddedness make sure that CoPs are neither wholly autonomous nor are they fully integrated and formalized. Instead, the paradoxical tension between informal, self-organizing system and formal system is sustained and navigated for organizational adaptability (Uhl-Bien & Arena, 2017; Uhl-Bien & Arena, 2018). More specifically, the findings of the current study illustrate that the tension mentioned above between change and adaptability inherent in the relation between CoPs and their organizational context may be better understood as a pervasive duality of change and stability occurring in local practice. CoPs reproduce but also change broader socio-cultural structures of the organization and they generate change in the organizations' resource base which in turn enables more effective practice in a changing situation.

### 1.1.2 Structure of Analysis

I begin the following remarks with a systematic literature review of the community of practice literature. This overview of prior work will outline the dominant perspectives on the CoP construct along its dimensions and, in doing so, will highlight that explanations of the interrelation between the CoP and its broader organizational context are contradictory and not sufficiently theorized in prior work. Therefore, I identify the embeddedness of CoPs within the formal organizational hierarchy as the current study's research gap and formulate the accompanying research questions that will guide the further reflections.

In section 3, I will outline the different theoretical and ontological groundings of the diverse CoP literature streams and illustrate how these contrasting underpinnings affect explanations of embeddedness. This shows that prior research either takes a process worldview with practice-oriented theories or has an

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<sup>3</sup>This finding has been recently published in an article in the *Journal of Leadership & Organizational Studies* (Schulte, Andresen, & Koller, 2020).

entitative understanding accompanied by traditional management theories such as the knowledge-based view. Nevertheless, neither theoretical perspective offers a complete picture of the relation of CoPs with the organizational context. Given this, I will introduce complexity theory and in particular complexity leadership theory as an extension to a practice-oriented lens for explaining facets of CoPs' embeddedness within established formal organizations.

In section 4, I will acquaint the reader with the German Federal Armed Forces, which offer a unique research setting to explore the interrelation between the local context of a self-organized community and the broader trans-local context of the FAF. I will then logically derive the method of a grounded, interpretative research approach to build process theory that explains the processes and mechanisms of a CoP's embeddedness.

Subsequently, I will provide the reader, in section 5, with the rich narratives of three communities of practice based on our informants' quotes and experiences. This section reveals how each of the three communities emerged, how their members built and renewed resources for better accommodating environmental dynamics, how members shaped their own informal cultures, and how they interacted with the formal leadership of the organization.

Founded on these descriptions, section 6 presents the grounded, cross-level model of the embeddedness of CoPs within formal organizational hierarchy which brings together the above outlined empirical insights and makes sense of them on a theoretical level using complexity theory reasoning and practice-oriented explanations.

Within the subsequent discussion, I will elaborate in more detail how the current study's findings and its grounded model contribute and add to several research streams. In particular, the discussion outlines where and how the notion of embeddedness extends scholarly knowledge on communities of practice research, how this study adds to research on complexity leadership theory and, also, how the current findings align with recent research on organizational culture.

I will conclude with remarks on the practical implications of this study and discuss in which organizational contexts, other than the German military, the obtained findings might be useable. Finally, I will outline how future research may build from this dissertation.



*Looking only at canonical groups (...) will not provide a clear picture of how work or learning is actually organized and accomplished.*

*Brown & Duguid, 1991*

In this chapter, I provide a thorough account of the debates within the communities of practice literature. I do so systematically by generating what I will refer to as the core collection of research about CoPs, comprising the most prominent and influential work in this academic field. Based on this core collection, I will develop an explanatory framework of CoP research that is organized around the central dimensions of the CoP construct. This framework helps me in reviewing and illustrating the ongoing debates and controversies within the extant literature.

The review will reveal that scholarly work on CoPs is, at its core, divided into three different perspectives, permeating through all the construct's dimensions. On the one hand, scholars perceive CoPs as a theoretical lens to look at learning processes in practice; on the other hand, researchers understand CoPs as informal, self-organizing groups of practitioners within established organizations. With the popularization of the concept a third perspective that tries to instrumentally design, setup, and actively manage CoPs for organizational benefits has gained momentum. Depending on the respective perspective, prior work offers different and, at times, contradictory explanations of the interrelation between the local context of a given CoP with its broader, trans-local context. Early research mostly focuses on community internal learning processes that did not interrelate with broader structures beyond a local CoP. Later, other practice scholars

explore organizing and learning across the boundaries of multiple communities. Meanwhile, researchers who understand CoPs as a source for adaptation and innovation study how to enable and embed these emerging dynamics. This discussion, however, recently developed towards naïve and simplistic management approaches that remove any conflictive tension between community and formal management. Taken together, embeddedness of CoPs as sites of emergent adaptability within established organizations remains undertheorized. Although this gap of a CoP's embeddedness in formal organizational hierarchy mainly covers one dimension of the CoP construct (i.e., the broader context around CoPs), I will summarize the discussion in every element of the framework not only for the sake of completeness but also because these elements are interrelated and affect each other.

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## **2.1 Identifying the Core Literature on Communities of Practice**

Since the publication of Lave & Wenger's (1991) seminal work on situated learning in communities of practice, the topic has drawn much interest from scholars and practitioners alike. Thus, there has been a vast amount of research that has employed a practice-oriented perspective to learning or inquired on informal and self-organized organizational groups. From this apparent interest on the topic, one might surmise that there exists a common understanding on communities of practice. The CoP construct, however, remains vastly open for numerous conceptualizations and interpretations concerning even its basic definition. This variation in understandings, on the one hand, has contributed to vibrant research developing in different streams and disciplines. Yet, it also causes general confusion over what CoPs basically describe which, ultimately, results in incoherent empirical findings (Lindkvist, 2005). For instance, some authors bemoan that the community of practice notion has become an "umbrella term" that scholars too often use unreflectively and in inappropriate ways, stretching the notions' core assumptions (Amin & Roberts, 2008).

Although, there have been some literature reviews on communities of practice in the past that serve as a good starting point, these are either no longer contemporary, solely focus on one particular research topic such as knowledge management (Bolisani & Scarso, 2014) or innovative capabilities (Pattinson et al., 2016), or appear somewhat fragmented (Aljuwaiber, 2016). Hence, to be able to develop a perspective on the phenomenon at hand, provide a complete picture of extant work and, more importantly, identify research gaps that still exist and are worth

pursuing, I first need to survey the relevant literature with its diverse perspectives and conflicting findings by myself.

Because the above reviews either do not report on their search method or employ unlike approaches resulting in different “data sets” of literature, the first step in gaining an overview about existing work is to identify what I refer to as the core collection of relevant research in the communities of practice field. To this end, I followed the approach outlined by Di Stefano, Peteraf, & Verona (2010) in their work on examining the intellectual core of research papers in the dynamic capabilities literature based on a citation analysis. This bibliometric analysis assumes that citation counts are valid measures for prominence and influence in a given research field.

I conducted my analysis in the THOMPSON-ISI Web of Science database based on the Social Science Citation Index. I began by retrieving all papers published between 1994 and 2018 with titles, abstracts, keywords containing either the term “community of practice” or “communities of practice”. As this search yielded 2560 results, I narrowed the further exploration to the business and management categories in the database which reduced the dataset to 351 published research papers, of which 309 papers had at least one citation.<sup>1</sup> Based on this set I excluded every non-cited article and examined each paper in respect to its overall relevance to the field. That is, I reviewed if the community of practice notion is a central theme or issue in the paper. Intriguingly, this further reduced the set to just 138 accounts.

Moreover, by hand, I included the seminal works that have either been published earlier or in monographs such as Brown & Duguid (1991), Wenger (1998) and Wenger et al. (2002) into the collection because the database only searches research papers published in scientific journals in a timespan after 1994.<sup>2</sup> Also, I added work that has not been detected by the database, but I found to be central to the community of practice literature such as the articles from Bechky (2003), Boland & Tenkasi (1995), or Cook & Brown (1999). To identify the core collection, I ordered this panel of papers according to the times that they were cited by any publication in the ISI database.

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<sup>1</sup>Note that within subfields such as education and nursing the community of practice notion has gained massive prominence in recent years. However, these streams are not relevant for my research purpose.

<sup>2</sup>I was only able to find citation counts for books/ monographs based on google scholar that are inflated and are hardly comparable to the SSCI which only includes cites from other publications within the database. For example, Wenger and Snyder (2000) Harvard Business Review article has 5307 citations according to google scholar compared to 950 within the ISI database.