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Rethinking Distributed Leadership: Dimensions, Antecedents and Team Effectiveness

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Purpose – Studies of distributed leadership (DL) are increasing, but are not systematic, often taking a normative position emphasizing the superiority of DL to solo leadership and using the term in an imprecise way. This paper aims to re-conceptualize DL and develop a systematic framework to identify dimensions of DL and their association with team effectiveness.

Design/methodology/approach – Based on a comprehensive review of existing literature, this paper develops a framework of DL and team effectiveness by deriving eight research propositions.

Findings – The paper identifies four main dimensions of DL: shared, conjoint, fragmented, and dispersed leadership, each of which represents a specific pattern of DL activities. A Leader-Task-Context framework is developed to analyze outcomes of DL dimensions in different settings. The eight propositions developed clearly identify where DL can be best applied, how particular configurations of DL affect team performance, and in what situations it is most effective.

Originality/value – This paper has made several contributions. First, we address the question of what constitutes DL by conceptualizing its dimensions. Second, we extend the DL literature by arguing and modeling how different contexts influence the fulfillment of DL. Third, we develop an analytical framework of DL – the "Leader-Task-Context" (LTC) framework - to help build a foundation and guide further research on the relationships between DL and team performance.

Key words: distributed leadership, shared leadership, dispersed leadership, conjoint leadership, team performance

Introduction

The study of distributed leadership (DL) has emerged as a body of theoretical and empirical work over recent years

(Gronn 2000; Gronn 2002; Carson *et al*. 2007; Bolden 2011; Thorpe *et al*. 2011; Harris 2012). According to Thorpe *et al*. (2011:241), DL refers to 'a variety of configurations which emerge from the exercise of influence that produces interdependent and conjoint action'. It represents relational activities and processes of a team constituted and shaped by the interactions among team members and the team context (Fitzsimons *et al*. 2011). Leadership roles, responsibilities, activities and functions are considered emergent properties and distributed in various ways throughout the team (von Krogh *et al.* 2012).

The terms used to describe DL models include shared leadership (Pearce and Conger 2003; Ensley *et al*. 2006; Pearce *et al*. 2008; Nicolaides et al. 2014) and collective leadership (Hiller *et al.* 2006). Shared leadership (SL), for example, is a widely used term in the USA, especially in nursing, medicine and psychology (Bolden 2011). SL represents a dynamic, interactive influence process among team members to lead one another to the achievement of team goals (Pearce and Conger 2003), often linked to 'the CEO's use of empowering leadership behavior specifically focused on the encouragement of leadership from below' (Pearce *et al.* 2008:354). In this sense, SL is a form of 'empowering leadership' where leadership activities or roles are 'distributed' by the formal leader more widely to team members.

While we believe that DL and SL encapsulate similar leadership phenomena, the current paper questions whether and how these terms should be differentiated. Since the terms 'fragmented', 'dispersed', 'shared', and 'conjoint' leadership are widely used to describe 'distributed' phenomenon in the business and organizational fields, it would be pertinent to disentangle whether are they are interchangeable terms or whether each represents a different aspect of DL. Mainstream research on DL, so far, has failed to reach definitive conclusions on these issues.

The confusing terms used in this field make it very hard to identify the definitional boundaries of DL, which inevitably generates debate on DL's outcomes. Some studies support the role of DL in effective team performance (Drath *et al.* 2008; Carson *et al*. 2007; Gronn 2008), whilst Mehra *et al*. (2006) in a study of U.S. sales teams found

no support for the claim that the more leadership is distributed across team members, the better the team's performance.

This paper argues that it may not be appropriate to believe that any form of DL is inherently effective (Harris 2008); it depends, and this question requires further analysis. The need for coordination and alignment is often stressed as particularly necessary in highly interdependent tasks requiring high levels of knowledge and information exchange, sharing and integration, which brings considerable uncertainty to DL outcomes. More specifically, rapidly changing organizational contexts characterized by increased complexity, new technologies and team-based work structures (Thorpe *et al.* 2011), the increasing complexity of executive tasks (Pearce 2004; Pearce and Conger 2003) and the need for knowledge sharing (Iles and Feng 2011), often cited as drivers of DL, requires the development of more robust conceptions of DL that incorporate these concerns, suggesting the importance of recognizing, analyzing and modeling different structural patterns or configurations of DL and their association with team effectiveness in different team settings.

The primary aim of this paper is to examine these issues by integrating recent research on DL to develop a systematic analytical framework. It makes three specific contributions: Firstly, it extends current definitions of DL by clarifying what is meant by DL and identifying its main dimensions in order to understand its boundaries and levels. Secondly, it analyzes systematically the 'process' and contextual issues of DL by developing a framework linked to organizational and environmental dynamics, specifically uncertainty, complexity and knowledge intensity. Thirdly, it uses this framework of DL to propose further research into the possible outcomes of DL in specific contexts by exploring the circumstances under which DL is more likely to be practiced successfully.

The paper is organized as follows: In the next section, we review the definitional and outcome issues of DL from the literature. In section two, we discuss the meanings and configurations of DL by identifying its main aspects or dimensions. In section three we develop a general 'Leader-Task-Context' or LTC framework to analyze

relationships between DL and team performance and to guide further theoretical and empirical discussion. The final section discusses implications for future research and practice.

Recent research on distributed leadership

The 'definitional' issue in DL research

A key question in this domain centers on what is being distributed for DL (Bolden 2011). Gibb (1954, 1958) seems the first to employ the specific term 'Distributed Leadership', arguing that 'leadership is probably best conceived as a group quality, as a set of functions which must be carried out by the group' (Gibb 1954:884). Revived by Brown and Hosking (1986), DL was seen as reflecting the relational activities and process of a team or organization, not the characteristics of a person. Such a distribution also involves multilaterally shared responsibility (Benne and Sheats, 1948), indicating that groups may operate with various degrees of diffusion or concentration of leadership functions. In this sense, leadership roles, responsibilities, activities, and functions are shared by two or more members, and will be distributed in various ways throughout the team. This leadership configuration, in which collaborating agents may be coalitions of individuals and teams, acting in close proximity, or across a number of sites, accounts for one of the hybrid forms both within and between organizational units identified by Gronn (2009),

Distributed and centralized leadership (Pearce *et al*. 2008) can be seen as end points of a continuum, because when the extent of distribution is low enough, the leadership style tends to be centralized. Leadership aggregation is 'minimalist' DL, with responsibility shared among others in a 'leader-plus' manner (Spillane et al. 2006) such as in co-leadership, or leader partnerships. DL can be dispersed and 'numerical', or conjoint and 'concertive' (Gronn 2002). The first additive or numerical view suggests that all organizational members can be leaders at some time; leadership work of particular members is not privileged, nor is there a presumption about which individual's behavior carries more weight. The role of leadership is an aggregated enactment among some or all of team or

organization members, or a sum of the parts of leadership from different members (Gronn 2002). Thereafter, the role of leader is likely to change due to specialist expertise at each stage of an organizational process (Wenger 2000; Gibb 1958).

Gronn's (2002) second view of DL is as concertive action, is characterized by interdependence, coordination and the complementary overlapping of procedures and behaviors among individuals. Concertive action emphasizes the holistic aspects of developing collective leadership activities and processes (Currie and Lockett 2011): leadership results from conjoint, synchronized agency and actions and dispersed enactment through three forms: *spontaneous collaboration*, *intuitive working relations*, and *institutionalized practices*.

Spontaneous collaboration refers to occasional and voluntary leadership alignment, whether anticipated or unanticipated. Intuitive working relations can emerge over time, as in co-leaders (e.g., part-time chairs and full-time CEOs) where 'leadership is manifest in the shared role space encompassed by their partnership' (Gronn 2002: 430). The concept of *role space* is a key concept; for example, Doos and Wilhemson (2003) analyzed 'co-leadership' in four Swedish organizations where two leaders worked side by side, not in tandem with each other, with equal responsibility and influence. Institutionalized practices in contrast are related to formal arrangements of structural relations (e.g., CEO, president, coach).

As we have seen, there have been many other appellations used to express the connotation of leadership as an emergent property of a group or a network of interacting individuals (Gronn 2000). Also, authors often use different terms, or the same terms carrying different meanings, for this diffused leadership phenomenon, such as shared (Pearce and Conger 2003; Ensley *et al.* 2006; Pearce *et al*. 2008), collective (Hiller *et al.* 2006), and dispersed (Konradt, 2014). For example, 'shared leadership' (SL) is used by Pearce *et al.* (2008) as virtually interchangeable with 'decentralized' leadership, in contrast with 'vertical' or 'centralized' leadership (Pearce *et al*. 2008: 355). According to Nicolaides et al. (2014) and Fausing et al. (2015), SL emerges when leadership behaviors are

performed by multiple members of the team. These studies, all on small teams, come out of small-group research on 'empowerment' and 'self-directed teams' (SDTs) rather than executive-level research. Both SL and DL capture the premises including the openness to the boundaries of leadership and varieties of expertise distributing across many individuals. Yet there remain some differences in utilizing these terms (i.e., DL and SL are prevalent in different subject disciplines) (Bolden, 2011). As suggested by Leithwood et al. (2006), the conceptual overlap between DL and SL does not represent that these two are equivalent. Among all these terms, 'distributed' is perhaps the most common one in research on 'collective leadership'. The conceptual confusion makes identifying the configurations of DL and its boundaries an urgent task, prompting an important question: How do these conceptions relate to DL? Here we argue that DL is a general, overarching label for these kinds of configurations, but seek to go further by analyzing its dimensions.

The 'outcome' issue in DL research

Many studies are beginning to support the role of DL in effective team performance. Theoretically, DL has achieved a high level of theoretical and practical uptake (Gronn 2008), which helps exert positive impact on team effectiveness and customer services (Carson and colleagues 2007). For example, Drath and colleagues (2008) point out that DL challenges the conventional assumption of a central leader who exerts influence over followers to achieve an outcome.

A number of other studies (e.g., Bolden 2011; Fitzgerald et al. 2013; Fausing et al. 2015) indicate a positive relationship between DL and significant aspects of organization performance. Kempster et al. (2014) examine how DL can help to promote organizational change. In the specific context of education, scholars have reviewed the evidence for the effectiveness of DL (Harris 2008; Jones *et al.* 2014), and developed a toolbox of distributed leadership skills for school leaders (McBeth 2008). Their findings indicate that here leadership plays a key role, influencing both school climate and teacher capacities and motivations, especially in schools facing difficult

situations. Similarly, Spillane et al. (2001, 2006) make claims for U.S. school leadership: leadership shifted according to need, leader roles resided with those with expert authority for designated tasks, and collaborative teams with fluid membership-including parents and students- formed across staff and disciplines for specific purposes according to task, role and talent. Nevertheless, as Harris (2008:184) points out, 'it remains questionable how far distributed cognition provides us with a robust theory of distributed leadership'. As creation of new 'distributed' leadership roles and patterns was a consistent feature of effective organizations, the crucial question was not whether, but *how* leadership was distributed.

The empirical evidence about DL effectiveness is encouraging but far from conclusive (Harris 2008). DL is not necessarily beneficial, as inconsistent evidence on the impact of DL on organizational performance has been identified. For example, an empirical study by Mehra *et al.* (2006) fails to find support on linear relationship between DL and team performance. They point out that if DL is fragmented there may be no direct connections between distributed leaders. Also, periodic leadership support and maintenance by vertical leaders is necessary in order to achieve effectiveness for DL. This is supported by Harris (2008) who asserts that without stable, consistent leadership, DL is very fragile, and DL does not seem to generate less demand for formal leadership positions.

Taken together, some patterns of leadership distribution seem more effective than others and different patterns of DL were associated with different organizational contexts (Leithwood *et al.* 2006). According to Bolden (2011), in order to account for the inconsistent evidence on the effectiveness of DL, future research needs to understand particular configurations of DL and how this contributes towards organizational performance in different settings. In order to fill these gaps in the literature, in this paper we develop a systematic framework to identify dimensions of DL and to analyze how each DL dimension performs differently in different situations.

The dimensions of distributed leadership

According to Thorpe *et al.* (2011) it is necessary to explore how informal and formal leaders share leadership,

both horizontally and vertically. The traditional view of leadership entails a top-down influence of the leaders on followers (Hiller *et al*. 2006). As formal leaders are considered as the major conductors of leadership, they usually undertake relative functions and fulfill their responsibilities relating to the leader position. Thus, by concentrating on leadership distribution, we specifically focus on allocating of leadership functions among formal and informal leaders. According to Gronn (2002), leadership distribution may appear in different aspects and configurations. Here we strive to develop a framework of DL dimensions to clearly identify different forms and meanings of leadership distribution. As we pointed out earlier, the key issue of leadership distribution refers to how to distribute, that is, the ways to allocate leadership functions among individuals. For the formal and informal leaders, they may take up leadership individually or jointly, which is reflected by Gronn (2002) who differentiates between numerical and concertive actions of leadership distribution. For the leadership functions, they may be shared, as a whole, by individuals, or allocated, with different functions to different individuals. That is, as Heenan and Bennis (1999) pointed out, individuals share the same role space, or occupy different role spaces. Based on the work of Gronn (2002) and Heenan and Bennis (1999), we develop the configurations of DL using two dimensions, as shown in Figure 1.

The first dimension relates to Gronn's (2002) two types of distributed action: concertive action and numerical action, both of which refer to dependency of actions. If members of a team act interactively, the form of distribution is concertive; if not, it is numerical. The first form of distributed action is a recognition that informal leaders tightly connect with each other to fulfill the leadership functions, emphasizing the holistic and synergetic aspects of developing collective leadership activities and processes. In such situations, functions are accomplished through the interaction of multiple leaders. This is close to Spillane *et al.* (2001) who focus on the nature of interdependence and co-performance of leadership practice. In contrast, the second form represents the sum of each separate part of DL actions (Gronn 2002). Leadership is passed from one individual to another as the situation changes (Gibb 1954).

This means no shared knowledge or procedure among individuals, and informal leaders fulfill their duties independently and diachronically. These two forms of distributed action demonstrate a continuum of how informal leaders interact with each other. Dependency of actions, concertive—numerical, therefore, is the first axis.

Our second axis, role space occupation, is adapted from Heenan and Bennis (1999) who consider role space as a key issue in sharing leadership functions. Role space here refers to the leadership functions that may be occupied by team members. As Yukl (1999: 292) has pointed out, 'some leadership functions may be shared by several members of a group, some leadership functions may be allocated to individual members, and a particular leadership function may be performed by different people at different times'. When two or more incumbents share a role space, this kind of leadership distribution seems close to shared, rather than dispersed or allocated action. More specifically, the division of role spaces (Heenan and Bennis 1999) among members of a team can be highly influential over the form of leadership distribution. This variation also connects to one of the assumptions by Spillane *et al*. (2004) concerning how DL is better understood by exploring leadership functions. As leadership functions are allocated to individuals, there are two situations: individuals taking the same functions (role space), or each one occupying their own roles. Here we differentiate two situations of role space occupation: same and different, to demonstrate how individuals share leadership functions.

We develop Gronn's work by introducing the concept of role space and identifying the main dimensions of DL. While the first dimension (dependency of actions) relates to leadership distribution over individuals, the second one (occupation of role space) is about leadership functions that informal leaders may occupy. Based on the two dimensions, we identify four types of DL combinations (see Figure 1):

1) team members with concertive action sharing the same role space (here termed *shared-distributed* leadership)
2) members with concertive action occupying different role spaces (here termed *conjoint-distributed*

leadership)

3) members with numerical action, sharing the same role space (here termed *fragmented-distributed* leadership)

4) members with numerical action, occupying different role spaces (here termed *dispersed-distributed* leadership)

Therefore, we conceptualize DL here as a multidimensional construct comprising four distinct aspects or dimensions: *shared, conjoint, fragmented,* and *dispersed.*

Insert Figure 1 about here.

The shared dimension of distributed leadership

In a series of case studies, Heenan and Bennis (1999) have explored situations where more than one incumbent shares a leadership role space, called co-leadership by Day *et al*. (2004). In our analytical framework, this is specified as the *shared* dimension of DL, i.e. one leadership role space shared by two or more team members, with concertive cognition or common action. In contrast to the 'shared leadership' of Pearce and Conger (2003) and Ensley *et al*. (2006), the shared aspect of DL is identified here as a more specific conception representing common role space occupation and coordination.

Day *et al.* (2004) suggest that there may be two main forms of leadership sharing: 'The first is anchored in a formal relationship in which, for example, the role incumbents exercise co- or joint authority. The second may be either a formally or informally grounded relationship across hierarchical levels'. In each form, there may be consistent goals and cognition among team members. The action of sharing leadership is a dynamic interactive influence process among individuals in teams (Pearce and Conger 2003:1); authority (formal or informal) stemming from the role space may be transferred among members of the team, or be occupied by all members at

the same time. While individual leaders may hold a "crucial role in the organizations capacity to learn from its past, adapt to its present and create its future" (Boal and Schultz 2007:411), team members with *'shared-distributed'* leadership may integrate different member' knowledge or capabilities simultaneously. Because team members connect and collaborate with each other by occupying the same role space, there is a need for the formal leader to define clearly the boundary of each leadership function and delegate responsibilities. An organizational mechanism is also needed to specify what actions could be taken to facilitate the transfer of power and responsibilities and how.

The conjoint dimension of distributed leadership

In our framework, the conjoint aspect of DL appears when team members in different role spaces take concertive action, with collective influence of the team on individual members. Individual members loaded with different role spaces can exert influence on each other because of interconnection of functions and interdependence of relationships. Zhang and Faerman (2007:479) describe conjoint-distributed leadership in a knowledge sharing system where:

> 'the leadership was fulfilled by the interdependent and emergent roles played by several individuals: the spearheading and coordinating roles of a knowledgeable and persistent project leader, the supporting and steering roles carried by a group of perceptive and collaboration-inclined executives, and the knowledge sharing and momentum driving roles performed by knowledge champions. Each of these leadership influences was indispensable. None of the leaders could have accomplished this task individually, without the active involvement of the other types of leaders'.

According to Gronn (2002), we may identify two distinguishing features of conjoint-distributed leadership: interpersonal synergy and reciprocal influence. So DL is concerned with "the co-performance of leadership and the reciprocal interdependence that shape the leadership practice" (Spillane et al. 2006: 58). There may be also a range of modes of coordination and role interdependencies.

Another perspective on the conjoint aspect of DL is provided by the mutually influential leadership activities embedded within social networks of interpersonal relationships (Granovetter 1985). The social ties that contribute

to interactions of trust and interdependence (Coleman 1990) between individual members within the team may be the source of synergy. As pointed out by Preece and Iles (2009) and Balkundi and Kilduff (2005), leadership can be understood as social capital that collects around certain individuals who may or may not be formally designated as leaders. Leaders' social networks can enhance coordination across different role spaces within the team (Balkundi and Kilduff 2005). To develop conjoint DL in organizations, formal leaders need to delegate responsibilities in advance. More importantly, the informal leaders should launch emergent actions that help leverage the opportunities and challenges in their role spaces.

The fragmented dimension of distributed leadership

The fragmented dimension of DL captures the situations in which team members take numerical actions in the same role space. A good example would be the team for diagnosing an explosion hazard in an factory, in which experts from different areas such as chemistry and construction engineering to jointly fulfill the same task. According to Gronn (2002), numerical action represents the sum of its parts. When the same role space is shared by individuals at the same stage, they need to negotiate and cooperate to complete their functions. When individuals share the same role space at different stages, there must be some shared knowledge or negotiation to make sure that functions are being transferred from one person to another effectively (Miller 1998). Both situations require that team members aggregate their inputs in leading collective behaviors.

Because team members share the same role space, there is a need for them to closely coordinate with each other when performing leadership function respectively. However, the numerical nature of this kind of DL indicates little coordination. In this sense, team members should have collective vision and value about how others in the team conceive their strategies and lead collective behaviors. According to Mehra et al. (2006: 233), the fragmented DL refers to not only the leverage of each other's actions, but also the aggregation of team members' 'perceptions about how much influence the team members have over leadership'. Given a sequential pattern of leadership

distribution, team members could then relay their strategies and value so as to keep team behaviors consistent throughout the process of distribution. To develop fragmented DL, formal leaders should make detailed rules defining the responsibilities for each team member and the ways how their roles relate to each other.

The dispersed dimension of distributed leadership

If the shared and conjoint dimensions of DL mean that team members communicate and cooperate closely and frequently, the dispersed dimension represents looser relationships within a respectively enacted role space. A good example of dispersed DL would be a consulting team that serves for the purpose of going public, in which each of the team member comes from different service companies (e.g., accounting, finance, and strategy) to fulfill different tasks required for Initial Public Offerings. Here no one agency or actor (e.g., Chief Executive, Party Leader, Standards Committee, Standards Board for England, Monitoring Officer) seemed to take leadership of the 'ethical agenda'; such leadership was enacted in coordinated and fragmented, rather than concertive or conjoined ways. From this dispersed perspective, leadership is seen as involving aggregated (Gronn 2002), rather than collective or coordinated, actions in teams.

This dispersed dimension of DL is similar to 'spontaneous misalignment' or 'anarchic misalignment' (Lethwood *et al.* 2006) where many team members engage in active rejection of influence from others, and so behave in a competitive and independent way. According to Thorpe *et al* (2011), planned/aligned or 'classical DL' approaches may become misaligned over time, whereas emergent/misaligned or 'chaotic' ones may develop over time and with adaptation become more aligned. Successful emergent/aligned 'emergent' approaches may then become institutionalized.

Not all leadership practices with fragmented or dispersed characteristics appear solely because of a lack of coordination or recognition; this form is not necessarily connected with team inefficiency. In many situations, team

leadership is dispersed as an outcome of new patterns of division of labor, such as the modular organization, widely perceived as a new, important trend in industrial and organizational change (Sanchez and Mahoney 1996). Here functions or processes may be divided into several loosely coupled work units by standardized interfaces to create coupled components, allowing each component within a product design to be treated as a "black box", in which there may be little coordination between distributed leaders of each fragment (Sanchez and Mahoney 1996). The importance of modularity for DL is developed further below. Because team members occupy different role spaces with loose connections between each other, the delegation of responsibilities should be done in ways that stimulate autonomy in their own role spaces.

Development of the LTC framework: Implications for performance

As is pointed out by Harris (2008), it may not be rational to believe that any form of DL is inherently effective. Developing a map to identify the effectiveness for all four DL dimensions and understanding how to execute DL in different settings remains an issue for further research (Bolden 2011).

Here, we develop a systematic framework for such a research agenda, based on Johns (1978), Kavanagh (1965) and Iles and Feng (2011). A 'leader-task-context' (LTC) framework of DL is proposed where the attributes of the leader (e.g., participatory style and integration skill), of the task (e.g., complexity, modularity and knowledge intensity), and of the context (e.g., collectivism, technological dynamics, and social exchange relations) constitute three influential settings of DL configurations (see Figure 2). Given a specific state of leader-task-context, we suppose that different dimensions of DL have different impacts on team effectiveness. Nicolaides et al. (2014) have demonstrated that DL is positively related to team effectiveness. When the way of distributing authorities and responsibilities changes, the team will be confronted with varied challenges in coordinating team activities (Fitzgerald et al. 2013), thus resulting in different team performance. Formal leader style, task characteristics, and

context will have extensive impacts on the distribution of leadership functions, leading to the situation in which certain dimension(s) of DL can be more effective than others in improving performance (Fausing et al. 2015). We here consider team effectiveness as the outcome of the dynamic process from team input to output. We discuss when certain dimension of DL is more effective than others based on the LTC framework in the following sections.

Insert Figure 2 about here.

DL and the formal leader

Participatory style. The leadership style of leaders has long been considered as an important factor associated with organizational and employee effectiveness (Cusumano 1988). Leaders with participatory styles tend to support open-minded discussion of opposing positions and enhance the value of joint decision-making (Chen and Tjosvold 2006). In addition, leaders with autocratic styles may also accept DL; many DL forms, like sports coaches and deputies, and part-time chairs and full-time CEOs, are compulsory for formal leaders of either style. Secondly, team member expertise could be integrated effectively through delegation, so we can expect that formal leaders with both participatory and autocratic styles may be inclined to delegate and distribute leadership in times of necessity.

We propose that the leadership styles of formal leaders are performed differently among the four dimensions of DL. Formal leaders with participatory styles stand for collective decision-making, consulting with employees, asking for suggestions, and taking ideas into consideration before making decisions (Chen and Tjosvold 2006). They share information with team members and develop reciprocal trust (Harris 2012), preferring concertive actions rather than numerical actions and developing ‘high involvement leadership’ (Yukl 2002). We therefore expect that formal leaders with participatory styles are more willing to develop shared or conjoint rather than fragmented and dispersed DL.

With autocratic leaders, collective decision making is less accepted, and knowledge sharing is less likely to happen (Iles and Feng 2011), making them less commonly associated with the shared or conjoint dimensions of DL. However, they still need members to act in expert roles in many situations, as with increasing use of empowered teams and flattening of organizational structures. They will find it difficult to occupy all leadership role spaces by themselves, and hence may choose to design authority systems to disperse leadership among members so that they still control dominant power. Therefore, formal leaders with autocratic styles are more likely to be associated with the fragmented or dispersed, rather than the shared or conjoint, dimensions, of DL.

Proposition 1: Formal leaders with participatory styles are more willing to associate with the shared or conjoint rather than the fragmented or dispersed dimensions of DL, while formal leaders with autocratic styles are more likely to associate with the fragmented or dispersed rather than the shared or conjoint dimensions of DL.

Integration skill. Individuals emerging as leaders carry a significant load of integrating other team members' work into final deliverables, and, thus becoming the central hub for task completion. While different teams had different approaches and structures for assigned tasks, emergent leaders often became the final "check point" of deliverables. Allen (1977) claims that when the expertise of most team members differs considerably, some are likely to assume relatively centralized roles. Formal leaders can then be seen as system integrators of the team.

The integration skills of formal leaders, such as making use of the technical capabilities of members, coordinating interpersonal affairs, learning and absorbing knowledge from other members and getting "reactive circle" information from the activities and processes of team work, can enhance the effectiveness of leadership distribution. When DL appears in the fragmented or dispersed dimensions, leadership may be allocated among many members (Gronn 2002) and each may be a leader at some stage (Wenger 2000). Communication between members may be inadequate, as longitudinal role space occupation makes it very difficult for formal leaders to connect all the actions by all the informal leaders and integrate knowledge from different team stages. Formal

leaders, therefore, need to take the whole situation into account and plan accordingly. More specifically, they need to know not only how to allocate authority, but also how to improve team performance through leadership distribution, making strong integration skills necessary.

If formal leaders lack strong integration skills, fragmented- or dispersed-distributed leadership may not be effective in improving team performance, as formal leaders cannot deal with interpersonal affairs or integrate members' capabilities, relying on collective decision-making and communication to ensure effective team work. Hence, if the formal leader's integration skills are weak, it is more likely that DL appears to show the shared, rather than conjoint or dispersed, dimensions.

Proposition 2: Fragmented and dispersed DL are more likely to be related to strong rather than weak integration skills of formal leaders, and the weaker the integration skills of formal leaders, the more likely DL appears to be a shared dimension rather than other three dimensions.

DL and task characteristics

Complexity. Task complexity is an important determinant of leadership perceptions (Kavanagh 1965), affecting the mode of division of labor among distributed role spaces concerning how to allocate authority and responsibilities (Pearce and Conger 2003). It defines the relationships between positions within the task boundary, and identifies the interconnections of different technological trajectories. For each of these tasks, complexity stems from the interdependence of components (Baldwin and Clark 2000). Changes in one task module will stimulate changes in, or be inhibited by, interrelations with other modules.

High uncertainty in many complex tasks may encourage more spontaneous and intuitive actions of mutual collaboration, highlighting the significance of dependency among distributed task processes (Coombs *et al.* 2003). While interdependence exists in a distributed system, it would be difficult to clearly differentiate the boundary of task modules (Baldwin and Clark 2000), making formal or contractual coordination necessary to ensure knowledge

transfer and sharing between distributed leaders. Investing in coordination mechanisms helps ameliorate the performance impact of interdependence within the distributed system (Srikanth and Puranam 2010). Common knowledge among members also plays an important role in coordinating distributed activities. Formation and leverage of common knowledge without the need for direct, ongoing communication (Srikanth and Puranam 2010) greatly enhances leader-member exchange effectiveness. Hence, within a complex task which requires more concertive and coordinated activities, the shared or conjoint dimensions of DL will be more effective than the fragmented or dispersed dimensions of DL in knowledge sharing and communication, and consequently more effective in team performance.

Proposition 3: Task complexity is more likely associated with the shared or conjoint dimensions rather than the fragmented or dispersed dimensions of DL.

Modularity. It is widely accepted that business processes have moved beyond Chandler's vertically integrated multi-division toward so-called modular production systems (Sanchez and Mahoney 1996; Baldwin and Clark 2000). Modularity is a continuum describing the degree to which a system's components can be separated and recombined (Sanchez and Mahoney 1996). Modular production systems arose in ancient China to enable the assembly of objects from standardized parts or modules, prefabricated in great quantity and put together quickly in different combinations to create an extensive variety of units from a limited repertoire of components, using such principles as large quantities of units, building units with interchangeable modules, division of labor, a fair degree of standardization, growth through adding new modules, proportional rather than absolute scale, and production by reproduction (Ledderose 1999).

Tasks with high levels of modularity facilitate specific forms of interconnected coordinated self-organizing processes (Daft and Lewin 1993); interdependence of sub-tasks is substituted by standard interfaces (Sanchez and

Mahoney 1996) within the task system. There can be little coordination among members of the team, which encourages aggregation and dispersal of leadership. Each member of the team undertakes the leadership role space solo, and there may be little conflict or concertive action. To some extent, task modularity makes the lateral and vertical distribution of leadership more possible, and practitioners of leadership can more easily execute reintegration within design rules (Baldwin and Clark 2000) of "mixing and matching", allowing for the absence of the overt exercise of managerial authority (Sanchez and Mahoney 1996). Therefore, fragmented- and dispersed-distributed leadership may be more acceptable.

Proposition 4: Task modularity is more likely associated with the fragmented or dispersed dimensions rather than the shared or conjoint dimensions of DL.

Knowledge intensity. Gronn (2002) argues that the shift towards DL help to shape knowledge-intensive work. Iles and Feng (2011) also suggest that DL may be associated with more knowledge sharing/ information exchange than solo leadership, although it is still unclear whether knowledge sharing predicts distributed rather than focused leadership. DL may have the potential to encourage employees willingly to share their knowledge. But if so, how? How does DL encourage knowledge-sharing, especially of tacit knowledge? According to Pearce (2004), particular characteristics of knowledge work such as interdependence, creativity and complexity are specifically related to the need for DL.

Knowledge sharing can be regarded as a process of social construction and distribution, embedded in ongoing relationships (Drath *et al*. 2008). Knowledge intensive tasks are widely involved in this kind of embeddedness. In general, knowledge-intensive, as compared to labor intensive, teams require the development of more professional skills and expertise. However, cognitive limitations may inhibit team members from dealing with knowledge intensive tasks independently; more cooperative relations are then needed to share information and enhance

interpersonal learning (Pearce and Conger 2003). As a result, authority is allocated, in either a conjoint or shared way, to give rise to the co-performance of leadership and interdependencies that shape leadership practice (Spillane et al. 2006). In order to absorb knowledge from the environment, leadership practices need to go far beyond the current structural boundaries of the team (Harris 2008), which probably creates dynamic and diversified interactions within the team system. The distribution of leadership will also be dynamic within a framework of learning, diversity and systems variation, making coordination and communication crucial for task dynamics and performance improvement. Hence, the shared and conjoint dimensions of DL are more likely to be associated with knowledge intensive task environments than the fragmented or dispersed dimensions.

Proposition 5: The knowledge intensity of tasks is more often associated with the shared and conjoint dimensions rather than the fragmented or dispersed dimensions of DL.

DL in different contexts

Collectivism. Collectivism/individualism defines personal identity and relationships with others, affecting the development of interpersonal relationships (Earley 1994). Triandis (1994) sees collectivism as referring to a culture of interpersonal cooperation and interdependence, whilst individualism refers to one of personal freedom and independence. Collectivists support more collective than individual goals (Earley 1994), and may be more willing to take collective responsibilities and share their own rewards for common outcomes.

Teams whose members endorsed more collectivistic views exhibited higher levels of collective leadership (Hiller *et al.* 2006). However, individualism is also considered to be compatible with collective participation (Edwards 2011). We argue that this apparent paradox may be resolved if we consider the different dimensions of DL.

Collectivists make decisions together, share business opportunities and take collective responsibilities. They define their own expectations from their team, and rely on interpersonal relationships, interdependence and cooperation to improve the total performance of the team and share outcomes together. So they may be more

willing to take collective, participative, and coordinated actions for leadership distribution. In individualistic contexts, members prefer to take actions or make decisions individually (Iles and Feng 2011); shared or conjoint leadership cannot be developed effectively. Therefore, we expect that the shared and conjoint dimensions of DL will be more effective within collectivistic rather than individualistic contexts.

In contrast, individualists support numerical rather than concertive actions, requiring little coordination and interpersonal relationships with each other. Individualistic cultures encourage members to take actions independently and derive benefits from their own work, which may motivate them to work for team effectiveness.

Proposition 6: The shared and conjoint dimensions of DL are more effective within collectivistic than individualistic contexts, whilst the fragmented and dispersed dimensions of DL are more effective within individualistic than collectivistic contexts.

Technological dynamics. Revolutions in information and network technology have led firms to acknowledge the difficulty of creating and exploiting technological capabilities on their own (Howells *et al.* 2003). Teams/organizations can be seen as distributed knowledge systems favoring the appearance of distributed innovation (Howells *et al.* 2003) by allowing shared risk, reduced costs and access to readily available skilled staff. Distributed knowledge requires new forms of division of labor among team members, especially changes of authority allocations associated with distribution of leadership.

Within a highly dynamic technology context, team members endeavor to learn about technology demands from the market, needing a diversified knowledge background to deal with complex task structures, like multifunctional product development teams working on a common product (Dougherty 1992) and top management teams whose members represent different business functions (Eisenhardt 1989). Here knowledge is distributed among individuals, and each member grasps certain kinds of differentiated knowledge. Leadership is then distributed into several role spaces, and decision-making processes alter among informal leaders. From this point of view, shared-

and fragmented-distributed leadership is unlikely to appear in such teams.

Knowledge owned by individual members of such teams must spiral up to teams, where it can be integrated and exploited to cope with dynamic technology demands. This requires that team members take concertive rather than numerical actions to realize synchronized effects and negotiate a fit between personal knowledge and the knowledge of others to take responsibility for the overall advancement of knowledge in dynamic technology contexts. Therefore, we can expect that conjoint-distributed leadership is more effective than shared or dispersed-distributed leadership within higher dynamic technology contexts.

In contrast, within low dynamic technology contexts, the technology demands from outside are stable and foreseeable; team members can set tasks and tactics along a specific trajectory, and tasks can be distributed easily among team members, each contributing to the team individually or jointly by sharing a common role space or acting in different role spaces. Therefore, each dimension of DL may play important roles respectively in such settings.

Proposition 7: Conjoint-distributed leadership is more preferable than other three aspects of DL within higher dynamic technology contexts, while all four dimensions of DL could be effective within lower dynamic technology contexts.

Social exchange relations. As pointed out by Balkundi and Kilduff (2005), an emphasis on actor relations is the most important distinguishing feature of the network research program; interaction between actors and social exchange relations are focal points of social network analysis embedded in certain kinds of network structures (Kogut and Walker 2001). Different social-structural positions within a team reveal the status of informal leaders and their interconnections.

Social exchange relations, with the focus of exchange ideology that stems from strong believes of interpersonal dependences, help members access knowledge and control resource flows and business opportunities, ensuring

exchange and integration of knowledge. Members also share information from outside and synchronize their efforts to effectively channel joint decision-making. Since members have their own social capital, i.e., the interpersonal relationships and resources embedded in those relationships, an aggregation of their efforts for knowledge absorption greatly expands knowledge creation in the team.

As the role of the leader changes among team members, each may be motivated to exert reciprocal influence and shape social ties so as to explore resources and improve team performance. Social networks among informal team leaders strengthen cognitions about decision-making processes and coordination mechanisms, and concertive actions can be strengthened to enhance team performance. Since little coordination exists within fragmented and dispersed DL, social exchange relations cannot be expected to improve team effectiveness for this form of DL.

Furthermore, the benefits from social exchange relations may be different between the shared-distributed and conjoint-distributed leadership. When co-leaders share one role space and work side by side, endeavoring to solve common issues through working simultaneously in one role, improvements for team solutions can be made in two ways. One is to integrate social capital to shape stronger ties and obtain more valuable knowledge for common work; the other is to integrate social capital with common issues to expand the solution space and enhance performance. Such leaders are then more likely to integrate social capital and find synergetic points to improve team performance than conjoint-distributed leaders working in tandem with each other.

Proposition 8: Teams within high social exchange relationship environments are more effective when adopting shared-distributed rather than conjoint-distributed leadership, and when adopting conjoint-distributed leadership rather than fragmented- and dispersed-distributed leadership.

Discussion

In the last decade, DL has been promoted as ‘the very anti-thesis’ of solo leadership (Thorpe *et al*. 2011). This paper has developed a conceptual framework for defining and analyzing DL, identifying four dimensions: shared,

conjoint, fragmented and dispersed. It has also stressed the need to see DL in the light of different settings, leading to the development of a LTC (Leader, Task, Context) framework in order to identify the specific settings surrounding DL. The attributes of formal leaders are considered important variables associated with DL, especially participatory styles and integration skills. The characteristics of the task (especially complexity, modularity, and knowledge intensity) are other important variables influencing leadership distribution. Furthermore, distributed leadership is influenced by the context within which it occurs. Collectivism, technological dynamics, and social exchange relations are seen as three main aspects of the context affecting leadership distribution. Our study has suggested that certain dimension(s) of DL will be more effective than others in promoting team performance given a specific situation of leader style, task characteristics, and context, and has developed eight propositions to demonstrate how a team manager should manage the distribution of leadership functions.

Contributions

This paper has made several contributions to existing research. First, we address the question of what constitutes DL by conceptualizing its dimensions. Existing research on DL tends to be diversified and characterized by different terms being used to express similar meanings. By introducing dependency of actions and role space occupation as two axes, we identify four dimensions of DL. Our work has developed Gronn's (2002) research that differentiated two kinds of distributed action: concertive and numerical. The identification of DL dimensions makes it clear about the boundary of DL, a multi-dimensional perspective that may improve its applicability. Second, we extend the DL literature by arguing and modeling how different contexts influence the fulfillment of DL, especially the effectiveness of different DL dimensions. We propose that four dimensions of DL may perform differently, which supports the contention of Harris (2008) that no form of DL is inherently effective. For each of the four dimensions of DL, their relationships with team performance change along with the dynamics of DL settings. The eight propositions developed here clearly identify where DL can be best applied, how particular configurations of

DL affect team performance, and in what situations each is most effective. Third, we develop an analytical framework of DL – the "Leader-Task-Context" (LTC) framework - to help build a foundation and guide further research on the relationships between DL and team performance. Although there is an increasing amount of studies exploring DL in recent years, no systematic framework has been identified. Our framework includes major variables which may influence DL and has drawn a holistic picture to help to understand how DL behaves in different contexts.

Implications to practice

One managerial implication is that DL is not an integral management paradigm, but a concept with different dimensions. For team managers, their decision revolves around not only whether to introduce DL, but also how to distribute the leadership functions. Managers may distribute the leadership in anyone of the four ways we propose. A second implication is that team managers should know what type of DL they would like to pursue. Our study suggests that the four dimensions of DL are different from each other in terms of applying conditions and impacts on team effectiveness. Team managers should thus find their ways to distribute responsibilities and leadership functions to well support the specific tasks and contexts. For example, if a team has been assigned a task with high knowledge intensity, the team manager should distribute leadership in shared and conjoint ways rather than fragmented or dispersed manners; if a team is confronted with a context of individualism, the team manager should introduce fragmented and dispersed dimensions of DL.

Recommendations for future research

The examination of different variables mediating or moderating the relationships between DL and team performance. The LTC framework provides an extensive perspective on DL effectiveness. However, reciprocal influences among these variables are not considered in this study. Future research could develop the LTC framework by testing the influential effects of these variables, e.g., how the integration skills of formal leaders

affect DL outcomes in technological dynamic environments, and how knowledge intensity moderates the relationship between participatory style and DL outcomes.

Discussion of methodology for improving current DL research. The importance of DL has been widely recognized during the past decade, but little discussion of methodology has been found in previous literature. As Thorpe *et al* (2011:246) pointed out, 'there is space for finely tuned case studies of different configurations of leadership, requiring a multi-voiced and multi-layered approach where influence can be exerted by anyone present, at any time'. We also need to develop longitudinal field studies exploring contextual variables such as the dynamics of role performance among conjoint agents and the wider environmental and organizational circumstances governing the creation and development of forms of distributed leadership (Gronn 2002). Future research should focus on the development of appropriate methodology and empirical testing of this potentially insightful and integrative framework.

References

Allen, T. J. (1977). *Managing the Flow of Technology*. Cambridge, MA: MIT Press.

Baldwin, C. Y. and Clark, K. B. (2000). Design Rules: The Power of Modularity. MIT Press, Cambridge, MA.

Balkundi, P. and Kilduff, M. (2005). The ties that lead: A social network approach to leadership. *The Leadership Quarterly*, 16: 941-961.

Benne, K. D. and Sheats, P (1948). Functional roles of group members. *Journal of Social Issues*, 4: 41-49.

Boal, K. B., and Patrick, S. (2007). Storytelling, Time, and Evolution: The Role of Strategic Leadership in Complex Adaptive Systems. *The Leadership Quarterly***,** 18:411-428.

Bolden, R. (2011). Distributed Leadership in Organizations: A Review of Theory and Research. *International Journal of Management Reviews*, 13(Special issue): 251-269.

Brown, M.H. and Hosking, D.M. (1986). Distributed leadership and skilled performance as successful organization in social movements. *Human Relations*, 39/1: 65-79.

Bush, T. (2013). Distributed leadership: The model of choice in the 21st century. *Educational Management Administration and Leadership*, 41(5), 543-544

Carson, J. B., Tesluk, P. E. and Marrone, J. A. (2007). Shared leadership in teams: an investigation of antecedent conditions and performance. *Academy of Management Journal*, 50: 1217–1234.

Chen, Y. F. and Tjosvold, D. (2006). Participative Leadership by American and Chinese Managers in China: The Role of Relationships. *Journal of Management Studies,* 43/8: 1727-1752.

Coleman, J. S. (1990). Foundations of social theory. Cambridge, Mass: Harvard University Press.

Coombs, R., Harvey M., and Tether B. S. (2003). Analyzing distributed processes of provision and innovation. *Industrial and*

Corporate Change, 12/6: 1125-1155.

Currie, G., and Lockett, A. (2011). Distributing leadership in health and social care: Concertive, conjoint or collective? *International Journal of Management Reviews*, 13(3): 286-300.

Cusumano, M. A. (1988). Manufacturing innovation: lessons from the Japanese auto industry. *Sloan Management Review*, 20: 29-39.

Daft, R. L. and Lewin, A. Y. (1993). Where are the Theories for the 'New' Organizational Forms? *Organization Science*, 4/4: i-vi

Day, D. V., Gronn, P., and Salas, E. (2004). Leadership capacity in teams. *The Leadership Quarterly*, 15/6: 857-880.

Doos, M and Wilhemson, L. (2003). *Work Processes of shared leadership*. Paper presented to British Academy of Management Annual Conference

Dougherty, D. (1992). Interpretive Barriers to Successful Product Innovation in Large Firms. *Organization Science*, 3(2): 179-202.

Drath, W.H., McCauley, C.D., Palus, C.J., Van Velsor, E., O'Connor, P.M.G. and McGuire, J.B. (2008). Direction, alignment, commitment: toward a more integrative ontology of leadership. *The Leadership Quarterly*, 19: 635-653.

Earley, P. C. (1994). Self or group? Cultural effects of training on self-efficacy and performance. *Administrative Science Quarterly*, 39: 89-117.

Edwards, G. (2011). Concepts of Community: A Framework for Contextualizing Distributed Leadership. *International Journal of Management Reviews*, 13 (special issue): 301-312.

Eisenhardt, K. M. (1989). Making Fast Strategic Decisions in High Velocity Environments. *Academy of Management Journal*, 32(3): 543-576.

Ensley, M. E., Hmieleski, K., and Pearce, C. L. (2006). The importance of vertical and shared leadership within new venture top management teams: Implications for the performance of startups. *The Leadership Quarterly*, 17/3: 217−231.

Fausing, M.S., Joensson, T.S., Lewandowski, J., and Bligh,M. (2015). Antecedents of shared leadership: Empowering leadership and interdependence. *Leadership and Organization Development Journal*, 36(3): 271-291

Fitzgerald, L., Ferlie, E., McGivern, G., and Buchanan, D. (2013). Distributed leadership patterns and service improvement: Evidence and argument from English healthcare. *Leadership Quarterly*, 24(1): 227-239.

Fitzsimons, D., James, K. T. and Denyer, D. (2011). Alternative Approaches for Studying Shared and Distributed Leadership. *International Journal of Management Reviews,* 13(special issue): 313-328.

Gibb, C. A. (1954). *Leadership*. In G. Lindzey (Ed.), Handbook of social psychology, vol. 2 (pp. 877–917). Reading, MA: Addison-Wesley.

Gibb, C. A. (1958). An interactional view of the emergence of leadership. *Australian Journal of Psychology*, 10/1: 101-110.

Granovetter, M. S. (1985). Economic action, social structure and embeddedness. *American Journal of Sociology*, 91: 481-510.

Gronn, P. (2009). Leadership configurations. *Leadership*, 5: 381–393

Gronn, P. (2008). The future of distributed leadership. *Journal of Educational Administration*, 46/2: 141-158

Gronn, P. (2002). Distributed leadership as a unit of analysis. *The Leadership Quarterly*, 13:423-451.

Gronn, P. (2000). Distributed properties: a new architecture for leadership. *Educational Management & Administration*, 28/3: 317-338.

Harris, A. (2008) Distributed leadership: according to the evidence. *Journal of Educational Administration*, 46/2: 172-188.

Harris, A. (2007). Distributed leadership: conceptual confusion and empirical reticence. *International Journal of Leadership in Education,* 10/3: 315–325.

Harris, A. (2012). Distributed leadership: implications for the role of the principal. *Journal of Management Development*, 31/1: 7-17.

Heenan, D. A., and Bennis, W. (1999). *Co-Leaders: The power of great partnerships*. New York, Wiley.

Hiller, N. J., Day, D.V., and Vance, R. J. (2006). Collective enactment of leadership roles and team effectiveness: A field study. *The Leadership Quarterly*, 17: 387-397

Howells, J., James, A. and Malik, K. (2003). The sourcing of technological knowledge: distributed innovation processes and dynamic change. *R&D Management*, 33/4: 395-409

Iles, P. A. and Feng, Y. (2011). Distributed leadership, knowledge and information management and team performance in Chinese and

Western groups. *Journal of Technology Management in China*, 6 /1: 26 - 42

Johns, G. (1978). Task moderators of the relationship between leadership style and subordinate responses. *Academy of Management Journal*, 21/2: 319-325.

Jones, S., Harvey, M., Lefoe, G., and Ryland, K. (2014). Synthesising theory and practice: Distributed leadership in higher education. *Educational Management Administration and Leadership*, 42(5): 603-619.

Kavanagh, M. J. (1965) Leadership Behavior as a Function of Subordinate Competence and Task Complexity. *Journal of Personality*, 33/1: 60-81.

Kempster, S., Higgs, M., and Wuerz, T. (2014). Pilots for change: Exploring organisational change through distributed leadership. *Leadership and Organization Development Journal*, 35(2): 152-167.

Kogut, B., and Walker, G. (2001). The small world of Germany and the durability of national networks. *American Sociological Review*, 66: 317-335.

Konradt, U. (2014). Toward a theory of dispersed leadership in teams: Model, findings, and directions for future research. *Leadership*, 10(3): 289-307.

Ledderose, L. (1999). *Ten Thousand Things: Module and Mass Production in Chinese Art*. Princeton, NY: Princeton University Press,

Leithwood, K., Day, C., Sammons, P., Harris, A. and Hopkins, D. (2006). *Successful School Leadership: What it is and How it Influences Pupil Learning*. NCSL/Dept for Education &Skills, University of Nottingham Paul, Nottingham.

McBeth, M. (2008). *The distributed leadership toolbox: Essential practices for successful schools*. Thousand Oaks, CA: Corwin.

Mehra, A., Smith B. R., Dixon A. L., Robertson B. (2006). Distributed leadership in teams: The network of leadership perceptions and team performance. *The Leadership Quarterl*y, 17: 232–245

Miller, E. J. (1998). *The leader with the vision: is time running out?* In E. B. Klein, F. Gabelnick, and P. Herr (Eds.), The psychodynamics of leadership (pp. 3–25). Madison, CT: Psychosocial Press.

Nicolaides, V.C., LaPort, K.A., Chen, T.R., Tomassetti, A.J., Weis, E.J., Zaccaro, S.J., and Cortina, J.M. (2014). The shared leadership of teams: A meta-analysis of proximal, distal, and moderating relationships. *Leadership Quarterly*, 25(5): 923-942.

Pearce, C. L., and Conger, J. A. (Eds.). (2003). *Shared leadership: Reframing the hows and whys of leadership*. Thousand Oaks, CA: Sage.

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

Pearce, C. L., Manz C. C., Sims Jr. H. P. (2008). The roles of vertical and shared leadership in the enactment of executive corruption: Implications for research and practice. *The Leadership Quarterly*, 19: 353-359

Sanchez, R., and Mahoney, J. T. (1996). Modularity, flexibility, and knowledge management in product and organisation design. *Strategic Management Journal*, 17/special issue: 63-76.

Spillane, J., Halverson, R. and Diamond, J.B. (2001). *Investigating school leadership practice: a distributed perspective*. Research News and Comments paper available on Distributed Leadership Studies website, Northwestern University.

Spillane, J. P. Halverson, R. and Diamond, J. B. (2004) Towards a theory of leadership practice: a distributed perspective. *Journal of Curriculum Studies*, 36/1:3-34.

Spillane, J. P. Camburn, E., Lewis, G. and Stitziel-Pareja, A. (2006). *Taking a distributed perspective in studying school leadership and management: epistemological and methodological trade-offs*. Paper presented at the Annual Meeting of the American Educational Research Association, San Francisco, April.

Srikanth, K. and Puranam P. 2011. Integrating distributed work: comparing task design, communication and tacit coordination mechanisms. *Strategic Management Journal*, 32: 849-875.

Triandis, H. C. (1994). *Cross-cultural industrial and organizational psychology*. In H. C. Triandis, M. D. Dunnette, and L. M. Hough (Eds.), Handbook of industrial and organizational psychology, Vol. 4 (2nd ed.). Palo Alto, CA: Consulting Psychologists Press.

Thorpe, R., Gold J. and J. Lawler. (2011). Locating Distributed Leadership. *International Journal of Management Reviews*, 13(special issue): 239-250.

Wenger, E. (2000). Communities of practice and social learning systems. *Organization*, 7/2: 225-246.

Yukl, G. (1999). An evaluation of conceptual weaknesses in transformational and charismatic leadership theories. *The Leadership Quarterly*, 10/2: 285-305.

Yukl, G. (2002). *Leadership in Organizations*, 5th edition. Upper Saddle River, NJ: Prentice-Hall.

Zhang, J. and Faerman, S. R. (2007). Distributed leadership in the development of a knowledge sharing system. *European Journal of Information Systems*, 16/4: 479-493

Figures:

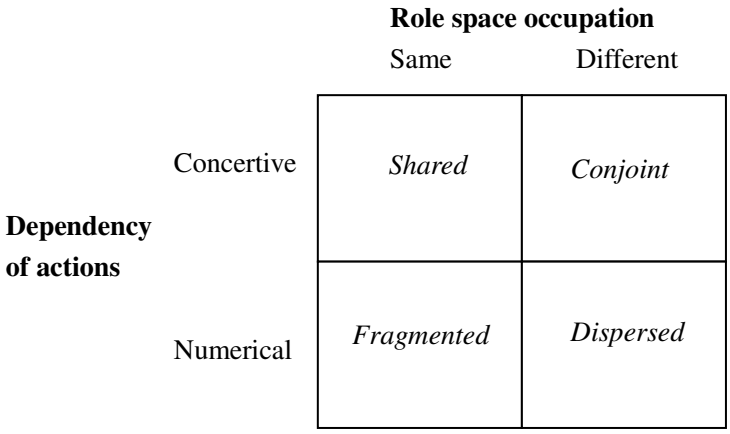

Figure 1. Dimensions of distributed leadership

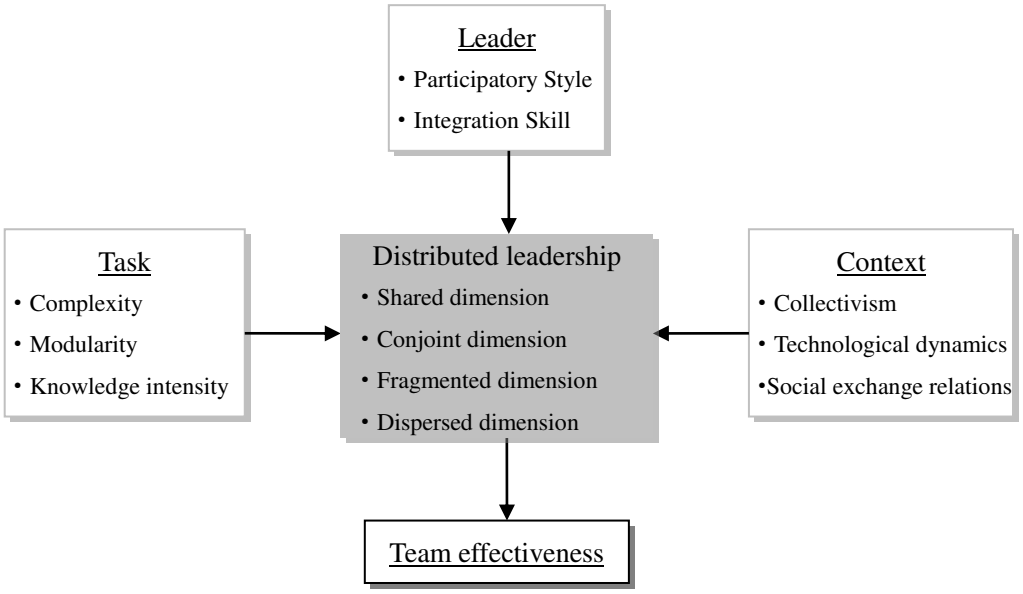

Figure 2. LTC framework of distributed leadership