Accomplishing Leadership-in-Interaction by Mobilizing Available Information and Communication Technology Objects in a Virtual Context

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Accomplishing leadership-in-interaction by mobilizing available ICT objects in a virtual context

Abstract

Leadership-in-interaction is a somewhat underdeveloped area of research which to date has concentrated on talk-in-interaction to the detriment of other modalities. Consequently, this paper seeks to illustrate how social actors make use of different modalities to accomplish leadership, which we conceptualize as the creation of direction, alignment, and commitment (DAC). Through multimodal conversation analysis this paper explores interactions between actors in virtual contexts, a particularly interesting empirical setting as the context offers specific constraints on everyday workplace interaction. By zooming in on the interaction using transcripts of naturally-occurring interaction, we find that the accomplishment of leadership, DAC, in a constrained virtual context can appear mundane. However, at the same time the accomplishment of leadership calls for the mobilization of several multimodal resources (both talk and ICT objects). The analysis makes it evident that the actors mobilize objects to draw on their situated affordances, in the accomplishment of DAC. With a fine-grained analysis of naturally-occurring data we illustrate that leadership is a collective achievement. We also expand the understanding of leadership in practice, especially in virtual contexts, by demonstrating how actors utilize objects and verbal resources in the co-production of leadership.

Key words leadership-in-interaction, virtual context, objects, multimodal conversation analysis, meetings, information and communication technology (ICT)

Introduction

In recent years, a significant part of the leadership field has developed from a leader-centric perspective (Uhl-Bien et al., 2014) towards a perspective in which leadership is increasingly understood as a process (Grint, 2005) involving both leaders and followers (Uhl-Bien and Carsten, 2018) in the co-production of interpersonal influence (Larsson and Lundholm, 2010). However, despite the leap that this field has taken, the number of studies informing us about *how* leadership is actually accomplished in everyday workplace interaction is quite limited (Larsson, 2017). The few studies that do exist demonstrate for example how leadership enables and facilitates organizing processes (Larsson and Lundholm, 2013), how leadership plays an important role in organizational and strategic change processes through categorization practices (Whittle et al., 2015), and how co-leaders successfully negotiate both the achievement of the task in hand and the maintenance of a

positive working relationship (Vine et al., 2008). This paper seeks to contribute to the growing number of studies attending to how leadership is accomplished in situ by exploring leadership-in-interaction in virtual meetings which, for many, has become a mundane aspect of their everyday workplace environment.

Virtual meetings are a particularly interesting empirical setting. This is because the context offers specific constraints on everyday workplace interaction, participants in virtual meetings are geographically distributed, and they interact and work together through information communication technology (ICT) (Gilson et al., 2015). Although ICT makes it possible to work in this way, virtual environments are said to be challenging settings (Heath, Knoblauch and Luff (2000). Being geographically distributed, actors cannot use their bodies to communicate, nor do they have the same access to artifacts such as whiteboards and at times technical challenges can disrupt an entire meeting (Laitinen and Valo, 2018). Nonetheless, research in virtual interaction shows that ICT is important for virtual team collaboration (Duranti and de Almeida, 2012). It supports the creation of trust in virtual teams (Kauffmann and Carmi, 2014), and, with the right use, ICT can have a positive effect on team performance (Malhotra and Majchrzak, 2014).

Recently, the field of leadership research has begun to explore connections between materiality and the accomplishment of leadership (Pullen and Vachhani, 2013). Furthering this line of research, which considers leadership in relation to material surroundings, objects and bodies, the virtual context is particularly interesting to explore. This is because, as previous research has shown, actors within a virtual context are highly dependent on ICT objects (Gilson et al., 2015; Malhotra and Majchrzak, 2014). To fully explore such a setting, we need to differentiate between objects such as desks and whiteboards and ICT objects such as software programs (e.g. PowerPoint). ICT objects can be observed and controlled from various locations, depending on technological access such as screen sharing or sharing of control of the software. As these ICT objects are predominantly the ones that participants draw on in business meetings, we therefore focus their use.

We are curious to understand leadership-in-interaction, and how leadership is actually accomplished in everyday workplace interaction. In this case, we find the empirical setting of virtual meetings particularly interesting, as the context in itself has some interactional constraints (Heath et al., 2000) that highlight the importance of ICT objects. Therefore, in this paper, we particularly focus on two types of resource available for interaction, namely talk and the use of ICT objects. We are interested in how actors mobilize ICT objects that are available to them in their virtual contexts, and how these actions, combined with talk, shape the interaction and accomplish leadership.

The paper is divided into four sections. First, we provide a literature review which addresses both prior work on leadership-in-interaction and materiality and objects. We relate this literature to current understandings of constraints within virtual contexts. Second, in the methodological section, we: introduce multimodal Conversation Analysis (CA); describe our analytical process; and present our data. Third, we then present the analysis of our selected extracts, illustrating how leadership-in-interaction is accomplished by mobilizing available ICT objects in a virtual context. Finally, we: discuss the theoretical implications of the findings of our analyses; present our conclusions; provide suggestions for further research; discuss implications for practitioners; and discuss the limitations of our study.

Literature review

Several concepts are of interest in this paper: leadership-in-interaction, virtual interaction, and ICT objects. First, as we will argue, leadership-in-interaction is of increasing interest to leadership research. Such an approach to leadership offers a lens to zoom in on what is actually taking place. Second, a place in which interaction often unfolds in organizations, is that of business meetings (Boden, 1994), which are becoming increasingly digitalized (Oshima and Asmuß, 2018). The virtual meeting is therefore an interesting empirical context, which is relevant for practitioners as well as scholars. In this setting interaction is carried out by ICT objects, which gives us the opportunity to visit the literature within the fields of both leadership and materiality. This invites us to divide this coming section into three different parts: leadership, materiality and objects, and finally, virtual interaction.

Leadership

Within leadership studies, scholars are increasingly focusing on the situated accomplishment of leadership (Uhl-Bien, 2006), where leadership is defined as a process (Grint, 2005) involving both leaders and followers (Uhl-Bien and Carsten, 2018) in the co-production of interpersonal influence (Larsson and Lundholm, 2010). This has prompted scholars to discuss how leadership can be understood as a collective phenomenon. Based on a significant literature review of contemporary leadership literature, Denis et al. (2012) present four different streams of leadership literature, which all, in one way or the other, address a distributed and collective approach to leadership. In one stream they categorize studies which focus on the interactional accomplishment of leadership. Here, they point to the increased attention to discursive approaches to leadership (Fairhurst, 2008). Scholars argue that words are best understood as actions (Fairhurst and Connaughton, 2014). Consequently, they focus on interaction, arguing that leadership is to be understood as accomplished within interaction (Clifton, 2006; Larsson, 2017). Using interactional data to "locate leadership in everyday organizational practice" (Larsson, 2017, p. 173), some scholars have begun to uncover the fine-grained interactional details of the leadership process (Larsson and Lundholm, 2013; Svennevig, 2008). However, this still remains a somewhat underdeveloped area of research.

Uncovering the fine-grained interactional details of the leadership process calls for a narrow definition of what we are looking for. Smircich and Morgan (1982) argue that "(l)eadership lies in large part in generating a point of reference, against which a feeling of organizing and direction can emerge" (p. 258). Similarly, Crevani (2018) argues that the production of direction is a central aspect of leadership work and that this offers a narrower definition of leadership than "influence process" (Crevani, 2018: 88). Denis et al. (2012) specifically point to the conceptual article on DAC (direction, alignment and commitment) by Drath et el. (2008), which centers their model around outcomes. Focusing on outcomes, allows them to argue that by accomplishing DAC, we have an indication that leadership has been accomplished. Further, in line with a collective processual understanding of leadership, Drath et al.'s (2008) focus on outcome, provides an ontological understanding of leadership, which implies that leadership can be produced in many different actor-constellations (Drath et al., 2008). In other words, from this perspective, leadership is not a matter of a leader's skills or of one person influencing others; rather it is a matter of the collaborative accomplishment of DAC.

A key point in this theoretical turn within leadership studies is that leadership is no longer attributed to one single person. Rather, leadership is accomplished collaboratively. As such, some leadership scholars are turning towards the role of materiality in this process of accomplishing leadership. Some scholars argue that the body is a part of accomplishing leadership (Ladkin, 2013; Pullen and Vachhani, 2013), while others point to the fact that artifacts and objects can be a part of the leadership process (Hawkins, 2015; Ropo et al., 2013). In short, as Grint noted, "leadership is essentially hybrid in nature – it comprises humans, clothes, adornments, cultures, rules and so on and so forth. There are, in effect, almost no cases of successful human leadership bereft of any 'non-human' supplement – that is naked" (Grint, 2005: 2).

In this paper we treat leadership as an interactional phenomenon. The DAC model by Drath et al. (2008) highlights the role of talk and interaction. Attending to the role of talk and interaction makes mundane interaction a primary empirical focus. In this way we can extend the DAC model by delving deeper into naturally-occurring interactional data. Thus, to operationalize the notion of leadership within interaction, we draw on Drath et al. (2008) and argue that leadership is accomplished within the interaction through a co-production of DAC. Drawing on Drath et al.'s (2008) leadership ontology allows for a nuanced, yet focused, understanding of leadership, and allows us to explore the situated accomplishments and possible variations of DAC in virtual contexts.

Materiality and objects

Before turning to studies of virtual contexts, we turn our attention to how objects and materiality have been considered in relation to leadership more generally.

In the aftermath of the linguistic turn within leadership studies, some scholars have recently argued that leadership studies should not merely focus on discursive aspects, but they should also attend to the material environment in which leadership is achieved (Fairhurst, 2009; Oborn et al., 2013; Putnam, 2015). This shift implies a need for a more multimodal approach to understanding the accomplishment of leadership (Pullen and Vachhani, 2013; Ropo and Salovaara, 2019). Consequently, there has been a proliferation of leadership studies which explore the relation between materiality and leadership. These studies address, inter alia, how such things as surroundings, objects, and bodies are, in different ways, part of the accomplishment of leadership. This is for example seen in relation to space (Pöyhönen, 2018; Ropo et al., 2013), embodiment (Fisher and Robbins, 2015; Pullen and Vachhani, 2013) felt experience and aesthetic (Ladkin, 2013; Ropo and Salovaara, 2019), and objects (Hawkins, 2015; Oborn et al., 2013).

Several of these studies consider that objects have agency and "produce and enable certain actions and behaviors" (Ropo et al., 2013: 379), Most research within this strand of leadership literature draws on theoretical perspectives such as actor network theory (ANT) (Bencherki, 2017) and sociomateriality (Orlikowski, 2007). Another line of research within organizational studies addresses the role of objects within the interaction (Streeck et al., 2011). However, this research does not assume that objects have agency, rather it is the social actor's use of objects that is of interest. Mortensen (2012) refers to this line of research as the "interactional perspective". Within this perspective, it is understood that a range of modalities might matter, but only when oriented to as interactionally relevant by the actors (Mortensen, 2012). Multimodalities are often understood as verbal and non-verbal communication (Deppermann, 2013). In more recent research, however, all aspects such as talk, body, objects and context are included in the definition (Oshima and Asmuß,

2018). Streeck et al. (2011) argue that individuals have a set of semiotic resources, which in themselves are partial and incomplete. However, when gathered in local contexts of action, these resources "create a whole that is both greater than, and different from, any of its constituent parts" (Streeck et al., 2011: 2). Thus, studies taking what Mortensen (2012) refers to as an interactional perspective focus on the social aspect of leadership and the agency of actors, not objects. In other words, objects "are not things which impose themselves upon humans' actions …But they do set limits on what it is possible to do with, around, or via the artefact" (Hutchby, 2001: 453).

Few leadership studies, with perhaps the exception of Van de Mieroop, Clifton and Verhelst (2019), attend to the fine-grained interactional details of the leadership process. Through close analysis of interactional data Van de Mieroop et al. (2019) show that leadership is negotiated in subtle ways through talk, gaze, the use of space, artifacts and so on. Further, although not studying objects as such, Meschitti (2019) argues that "(i)ndexicality and the negotiation around objects (such as the formula on the board) are also central in leadership work" (p. 17). Outside of the field of leadership, however, studies have demonstrated the relevance of focusing on objects in terms of understanding social phenomena such as sensemaking (Mondada, 2011), coordination (LeBaron et al., 2016) or strategizing (Samra-Fredericks, 2010). However, despite the fact that there is an increasing interest in the way in which leadership is enacted in interaction, few studies combine what Mortensen (2012) refers to as the interactional perspective with studying how actors put objects to use in the accomplishment of leadership. This illustrates a gap in the leadership literature, which prompts us to investigate how objects might be of use in the accomplishment of leadership. Further, how leadership is accomplished in a virtual context, where interaction is only possible if mediated by technology, remains unexplored. In this context, actors face other conditions for using objects than in face-to-face contexts in their everyday work situation. This is why virtual interaction becomes interesting in regard to the accomplishment of leadership.

Virtual interaction

Returning to our empirical setting of virtual interaction, we are curious about how actors use ICT objects to accomplish leadership in a virtual context. Virtual interaction occurs when actors are geographically distributed and interact through ICT. Considering matters such as the reliance on technology, possible cultural differences, and geographic dispersion (Gilson et al., 2015), this type of interaction has been found to be challenging. Further, although ICT makes work interaction possible for geographically distributed teams (Klitmøller and Lauring, 2013), research has demonstrated that mediation with ICT in itself adds complexity to the accomplishments of social interaction (Heath et al., 2000). This is because, on account of the lack, or limited use, of body cues, gaze, delay in minimal response, and so on (Kangasharju, 1996; Oittinen, 2018), technological mediation restricts virtual interaction. This consequently complicates the co-production of meaningful interaction in virtual contexts.

In line with this, previous studies find that leadership is challenging in virtual teams (Al-Ani et al., 2011; Antonakis and Atwater, 2002; Purvanova and Bono, 2009). Nonetheless, studies also find that leadership has a significant role to play in overcoming the collaborative challenges within the virtual context (Avolio et al., 2014; Gilson et al., 2015). Yet, despite these claims, no study to date has engaged with naturally occurring data of virtual interaction, to shed light on how leadership is accomplished as part of everyday workplace practice.

In this empirical context, actors use ICT objects, such as Teams, Skype, PowerPoint, and so on to collaborate. In this paper, we seek to understand how actors make use of ICT objects that are available to them to accomplish leadership within the interactionally constrained virtual context. Consequently, we find it highly relevant to explore how ICT objects can be mobilized in the accomplishment of leadership, understood as the co-creation of DAC. In doing so, we hope to fill the gap in understanding *how* actors mobilize both material and discursive resources in their virtual contexts to accomplish leadership. This prompts the following research question:

Looking at interaction within a virtual context, how do actors use both talk and ICT objects to accomplish leadership understood as the co-production of direction, alignment and commitment?

Data and method

Conversation Analysis

CA is an established method used to study how actors accomplish coordinated, meaningful actions (Sacks, 1995; Sacks et al., 1974; Schegloff, 2007) and how actors, through closely coordinated interactional actions, co-produce meaning (intersubjectivity) in-situ (Mondada, 2011). A growing number of studies draw on CA to explore organizational contexts and by connecting to organizational research, these studies expand our knowledge about phenomena such as routines (LeBaron et al., 2016), and strategy planning (Samra-Fredericks, 2003, 2010). Within leadership studies, we have seen this method in use by, for example: Larsson and Lundholm (2013) who explore the organizing properties of leadership in workplace interactions; Svennevig (2008) who explores leadership conversations; and Clifton (2019) who provides a case study which illustrates how CA can make visible, and thus analyzable, how leaderships is "done" in-situ. These studies, amongst others, illustrate how leadership is interactionally achieved through an array of seemingly small, yet closely coordinated actions, such as requests, questions, assessments and so on. Compared to more traditional methodological approaches on leadership, for example interviews or surveys, this approach thus provides us with an understanding of what is actually going on in mundane everyday workplace interaction in which leadership is supposedly accomplished.

Central to CA is the notion of co-production and intersubjectivity (i.e., a "socially shared grasp of the talk and the other conduct in the interaction" (Schegloff 1992: 1301)). Goodwin (2000) stresses that the "accomplishment of social action requires that not only the party producing an action, but also that others present, such as its addressee, be able to systematically recognize the shape and character of what is occurring" (p.1491). Whether the addressee is able to recognize the given action, and thus achieve intersubjectivity, will be observable in the utterance the addressee responds with. This could be, for example, displaying recognition of a turn as a request and accepting or rejecting it in an adjacent turn (Sacks, 1995). In that way, the situated co-production of intersubjectivity is made observable to the speakers as well as to the analysts. This intersubjectivity is accomplished through the sequential organization of talk (Schegloff, 1992). In other words: "through their talk, speakers can display aspects of their understanding of prior talk" (Schegloff, 1992: 1300).

The multimodal turn

As with the increasing focus on material aspects within organizational research, the number of CA studies taking a multimodal approach has proliferated in recent years, moving CA from being a method concerned primarily with talk, to one addressing all relevant modalities. Multimodal CA studies demonstrate the way in which talk as well as non-verbal actions (including body movements), objects, and contingencies of the surroundings influence the interaction. One of the pioneers of the multimodal approach, Goodwin (1994), demonstrated how professionals through the use of objects accomplished a shared understanding that enabled the progression of the work. Building on this work, more recent studies such as Deppermann (2013) and Mondada (2011, 2016) demonstrate the intricate relationship between different modalities in interactions. Studies such as these underline the importance of attending to multimodality when exploring social interaction and social phenomena. Particularly relevant for this paper, are studies that explore multimodal aspects of the accomplishment of workplace activities in, for example, medical environments (LeBaron et al., 2016; Mondada, 2007), the transport industry (Nevile, 2007; Nevile and Wagner, 2016), and corporate meetings (Asmuß and Oshima, 2012; Mortensen, 2013; Mortensen and Lundsgaard, 2011; Oittinen, 2018). Finally, we draw on the study by Van de Mieroop, Clifton and Verhelst (2019), which is, to date, the only study which combines leadership and multimodal CA.

In line with CA's emic approach, multimodal CA studies consider all modalities made relevant by the participants in interaction, while recognizing that no modality is to be attributed a priori analytical significance. Consequently, various modalities can be significant in interaction, *if* made relevant by the actors. One way to explore the use of objects in social interaction is by drawing on the notion of *affordances*. Originally presented by Gibson (1986), Hutchby (2001) describes affordances as "functional and relational aspects which frame, while not determining, the possibilities for agentic action in relation to an object" (p. 444); that is, affordances are functional in the sense that they enable, and constrain specific activities. In a study of technological affordances of online interactions, Meredith (2017) argues that the notion of affordances is particularly relevant when analyzing technology. This is because affordances are not static features of an object, rather the affordance depends entirely upon the relationship between the actor and the artifact , or as she writes: "The concept of affordances allows for the possibility that the practices of online interaction are not determined by the technology, but rather by how an actor uses that technology" (Meredith, 2017: 43).

Aligning with Hutchby (2001), we apply the notion of affordances as an analytical tool, which helps our exploration of how objects are mobilized in social interaction. In doing so we are not assuming that objects have agency, nor that they are completely open to interpretation (Hutchby, 2001); rather, objects gain observable meaning through their use by actors , which is restricted by the affordances of the given objects as well as the actors' ability to make use of the object. Multimodal CA studies have, by drawing on the notion of affordances, demonstrated how the affordances of different objects (e.g. technologies, media, post-its etc.) enable actors to co-produce meaning and how the objects are resources for the accomplishment of (both online and offline) interactions (Due, 2015; Meredith, 2017; Tudini, 2019), and work-related activities (Mortensen, 2013; Mortensen and Lundsgaard, 2011).

Thus, in this paper we apply a multimodal conversation analytic approach in order to explore the multimodal resources that actors use to produce DAC, and thus leadership, within virtual interaction. Whereas much previous multimodal CA research as well as studies of leadership-in-interaction have been primarily concerned with contexts in which the actors interact within the same spatial, temporal and material surroundings, this study considers how leadership-in-

interaction is accomplished in settings where the presence of ICT objects in a virtual environment offers the participants different affordances for action.

Data

The data for this paper are extracts from a large corpus of video and audio recorded conference calls (e.g. Skype, WebEx etc.) from 23 different teams in six different companies, comprising 110 hours of recordings. The companies come from industries such as IT, engineering, oil and gas, consulting and food & beverages. The meetings were audio-recorded and when possible video-recorded. In most of the video-recordings, it was the screen and not the participants that was recorded, that is, what the meeting participants themselves had visual access to during the meeting.

Following the data collection for this study, the recordings were repeatedly listened to, and based on an abductive approach (Svennevig, 2001), examples which could be related to direction, alignment and commitment were found. These extracts were then rigorously transcribed according to the Jeffersonian system (Jefferson, 2004), and a data-driven analysis based on the principles of CA was carried out CA emphasizes the importance of carrying out a detailed case-by-case analysis "to make an accountable decision that it is indeed a case of the phenomenon one is looking for" (ten Have, 2007: 162).

Analysis

The analysis uses multimodal conversation analysis to explore interactions between actors in a virtual context, focusing on how the actors utilize ICT objects and verbal resources to co-produce direction, alignment and commitment, and thus accomplish leadership (Drath et al., 2008). Contrary to Drath et al. (2008), who propose two central aspects of the DAC-ontology, namely *leadership beliefs* and *leadership practices*, in this study we will not attend to the beliefs as such nor trace patterns of practices. Rather, we will zoom in on the unfolding of *situated* practices that demonstrate the accomplishment of leadership-in-interaction.

In the analysis, two extracts will be presented to illustrate the interactional complexities of accomplishing leadership within a virtual context. The analysis of the extracts will, in different ways, demonstrate how the actors, both team managers and team members, orient to the available ICT objects and use the affordances of these to align with an understanding of the current work situation. Further, the analyses will illustrate how the actors build on alignment and use the ICT objects to produce direction for the ongoing work. In other words, we illustrate how meeting participants agree on an intersubjective version of what is going on, and based on that agree on future action. Additionally, through their engagement in both the present work and their focus on the future, it will be argued that the actors produce a commitment to the work at hand. In both extracts all meeting participants can see the ICT objects (i.e., a Kanban board and PowerPoint slides). However, in the first extract only the team manager can modify the Kanban board, and in the second extract only one particular team member can modify the PowerPoint slides.

Extract 1: accomplishing DAC with team manager in control of ICT object

Extract 1 is taken from an IT project team's virtual meeting. The core team consists of eight people who are all participating in the meeting. Five people, including the project manager, are in Denmark, one person is located in the UK, and two are calling from India (see Figure 1 below).
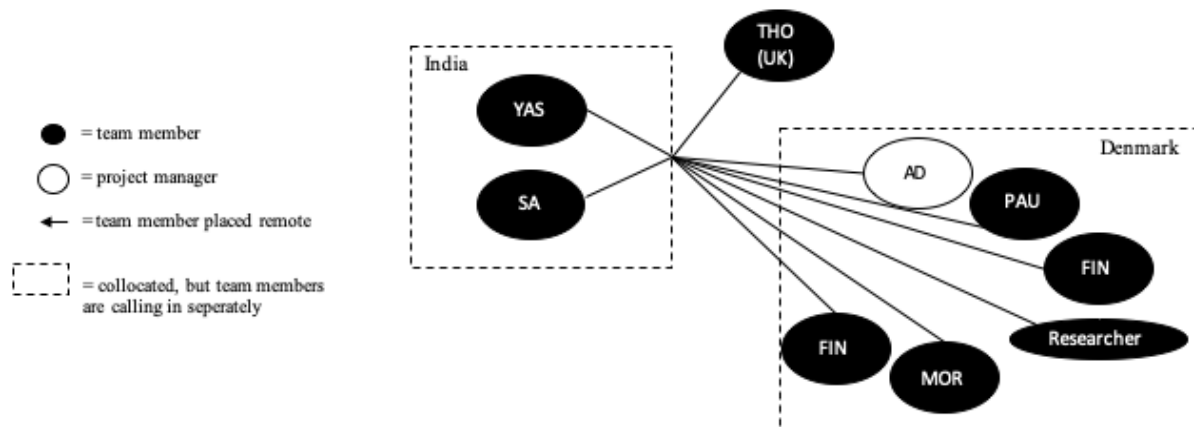

Figure 1: Seating plan of the virtual IT project team

In the extract analyzed below, the project manager (AD) and a project team member (SA) are talking about the status of a project. AD is located in Denmark and SA in India. In the meeting, the project team uses a virtual Kanban Board, a workflow visualization tool, which offers an overview of the different project activities (see Figure 2 below). The virtual board is visible to all the meeting participants through screen-sharing, but AD is the only person who can manipulate what appears on the screen/Kanban board.

Figure 2: Screenshot of the Kanban board

Extract 1: Identifying and deciding direction with the affordance of the Kanban board

```
1    AD:    okay (1.0) lets take a look at the board then development work
2           starting with the production support e s b↑ services
3           (1.0)
4    SA:    yeah adam this is regarding the ( ) commitment card [(        ) so]
5    AD:                                                      [((cursor starts
6           to move))]
7    SA:    [pradeep] has started regresion testing on that
8           [((cursor moves to second card in first row))]
9           (1.0)
10   SA:    [eh] (.) so once we see the outcome then no tha- [thats the] first card
11   AD:    [((moves cursor from one card to another)) ]
12   AD:                                               [((moves cursor back
13          to the initial card))]
14   SA:    in the eh:: (.) (ell) yeah
15   AD:    [this one].
16   AD:    [((clicks and new window opens) ]
17   SA:    [yeah] that's the one (.) eh yes (.) so pradeep has started testing on
18          that [(.) (we are identical ) (   ) (discuss) with pradeep he has
19   SA:    nothing]
20   AD:        [((scrolls down in text field on pop-up window)) ]
21   SA:    and now today he has started testing on that
22   AD:    okay
23          ((background noise))
24          [(5.0) ]
25   AD:    [((closes pop-up window))]
26          (0.5)
27   AD:    good (.) should this be moved into the ↑test column then or::
28          (3.0)
29   SA:    e:h yes actually we have already done the code so yeah we can move
30          it [to eh test column]
31   AD:       [((moves card to column named Test Cycle)) ]
```

In line 1, the project manager AD puts forward a proposal for the next action (Asmuß and Oshima, 2012), in this case what they are to talk about now. By mentioning "production support e s b services" he calls attention to a specific topic (also a headline on the board), and thereby uses the ICT object, the virtual Kanban Board, as a means of directing the conversation, much like an agenda (Asmuß and Svennevig, 2009). SA then initiates his turn in line 4 with a response token

"yeah", accepting the suggested topic, and mentions the "commitment card". Through this action, he demonstrates that he knows which specific card (and the work it represents) is relevant in relation to the topic.

When SA mentions the card, AD starts to move the cursor (line 5). AD continues to move the cursor around on the board, simultaneously with SA sharing information. In line 10, it becomes observable that SA orients towards the movement of the cursor, while he is speaking, as he produces a repair initiator which corrects AD's movement ("no tha- that's the first card"). It is thus apparent that SA orients to AD's cursor movements on the board as a non-verbal demonstration of a lack of clarity as to which card SA is referring to, or in other words, it is a way of assuring intersubjectivity (Schegloff, 1992). The movements are in that way treated as a 'search for the right card'. As a response to SA's repair initiator, AD moves the cursor back to the initial card (line 12), and thereby the cursor embodies AD's pointing to the card, which becomes observable in the next turn. Thus, in line 14, when AD's cursor is placed on the initial card, SA finishes his turn with a simple token of agreement: "yeah" (Schegloff, 2007). AD then asks "this one" (line 15), in which he asks for verbal confirmation that he has located the right card, which is then confirmed by SA in the next turn (line 17). Here it is apparent that the different modalities, both talk and the mobilization of the ICT object, are simultaneously at play and are influencing not only the sequential unfolding of the interaction, but also the accomplishment of the workplace activity. The ICT objects, the Kanban Board and the cursor, which are visible to all the meeting participants, but only controlled by AD, are functioning as means of producing a shared understanding of the status of the work.

Having successfully located the card, AD clicks on the card, which opens a pop-up window with additional information (line 16). Simultaneously with this, SA continues his explanation from line 7 (line 17-21). AD then starts scrolling down (line 20), as if reading the text in the box. These dual actions unfold without problem. In line 25 AD closes the window and then asks if the card should be moved to the "test column" (line 27) (which is another area on the virtual board). SA responds affirmatively in line 29-30, also producing an account for the confirmation. AD then uses the cursor to move the card to the test column, thus making it visible that a project activity has now moved into a new phase. By coordinating talk and the available ICT objects, the actors display that they align with the activity's status and are able to move the specific task into a new phase, thus producing the direction for that specific work activity and making it visible for all participants. In other words, through their actions, the actors orient towards the board as a relevant tool for accomplishing intersubjectivity in this virtual context.

The production of a shared intersubjective understanding and new direction is here accomplished using the affordances of the ICT objects. In this case, the affordances lie in the fact that the cursor points to the cards on a virtual Kanban Board, while the Kanban Board itself allows the participants to visualize the project, and the organization of work-related tasks (by moving the cards around the board). Although not all the participants control the ICT object, they coordinate and repair this through talk. As Hutchby (2001) concludes: "When people interact through, around or with technologies, it is necessary for them to find ways of managing the constraints on their possibilities for action that emerge from those artifacts' affordances" (p. 450). In this extract, we see how SA is constrained in terms of accessing and modifying the Kanban Board himself, but he manages this through talk. It is apparent in this extract that the ICT objects are not steering the talk, but their affordances are used to smoothly coordinate the talk and produce an intersubjective understanding of what is going on and what will happen next in the project (i.e. direction, alignment, and commitment).

Considering the analysis in the light of Drath et al.'s (2008) notion of direction, alignment, and commitment, it becomes possible to understand what is occurring here as leadership. The actors use the affordances of the ICT objects, in this case the cursor and the Kanban Board, to align their understanding of the current state of the project and to produce direction for, and commitment to, the future state of the project activity. More precisely, the analysis illustrates how the ICT objects are deployed by the actors as a resource to visualize an intersubjective understanding of the "here and now" work status. Upon this alignment, they then collectively agree on what the relevant next actions are, producing direction. In terms of commitment, by displaying detailed knowledge about the work at hand, the actors in this extract demonstrate an active involvement in the ongoing work. Further, by engaging in this meeting, where they observably report on the status of the work and plan how to proceed with the project, they make a commitment to continue the work. Thus, drawing on the DAC-notion of leadership, the analysis shows the interactional production and presence of alignment, direction and commitment, which in Drath et al.'s (2008) words "marks the occurrence of leadership" (p.63).

Extract 2: accomplishing DAC with team member in control of ICT object

Extract 2 is taken from a financial team's meeting. Nine people are participating in this meeting. Three people are in the same location in Denmark, one is calling in from another place in Denmark, two are calling from two different places in Finland (SAN and MAK), one is calling from Germany (ASH), one is calling in from India, and the team manager (JAK) is calling from UK.
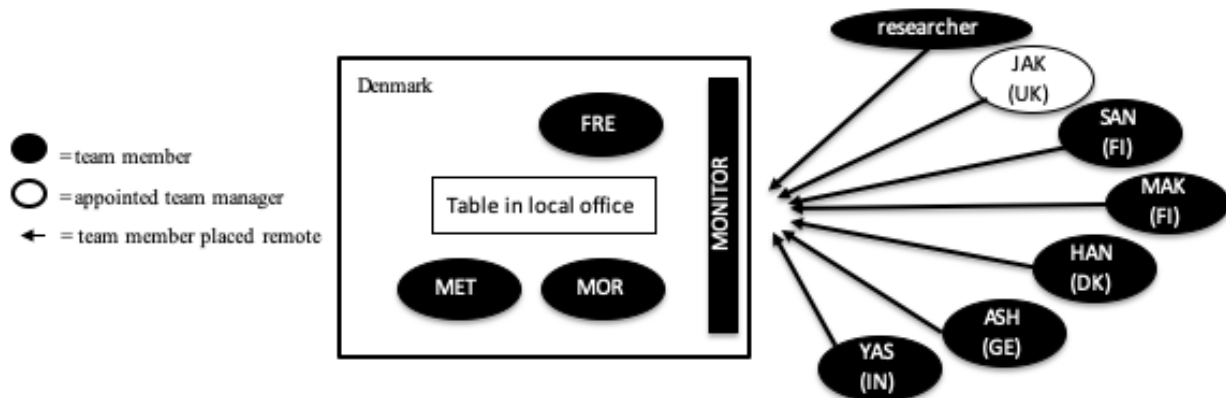

Figure 3: Seating plan of the financial virtual team

The purpose of the meeting is to evaluate the previous year's budgeting process and to improve the process for the coming year. A team member, SAN, who has been appointed facilitator of this evaluation process, has prepared a PowerPoint presentation with questions and headings and space to register comments (see Figure 4). Through screen-sharing, the presentation is visible to all participants in the meeting. However, the editing is only accessible to SAN.
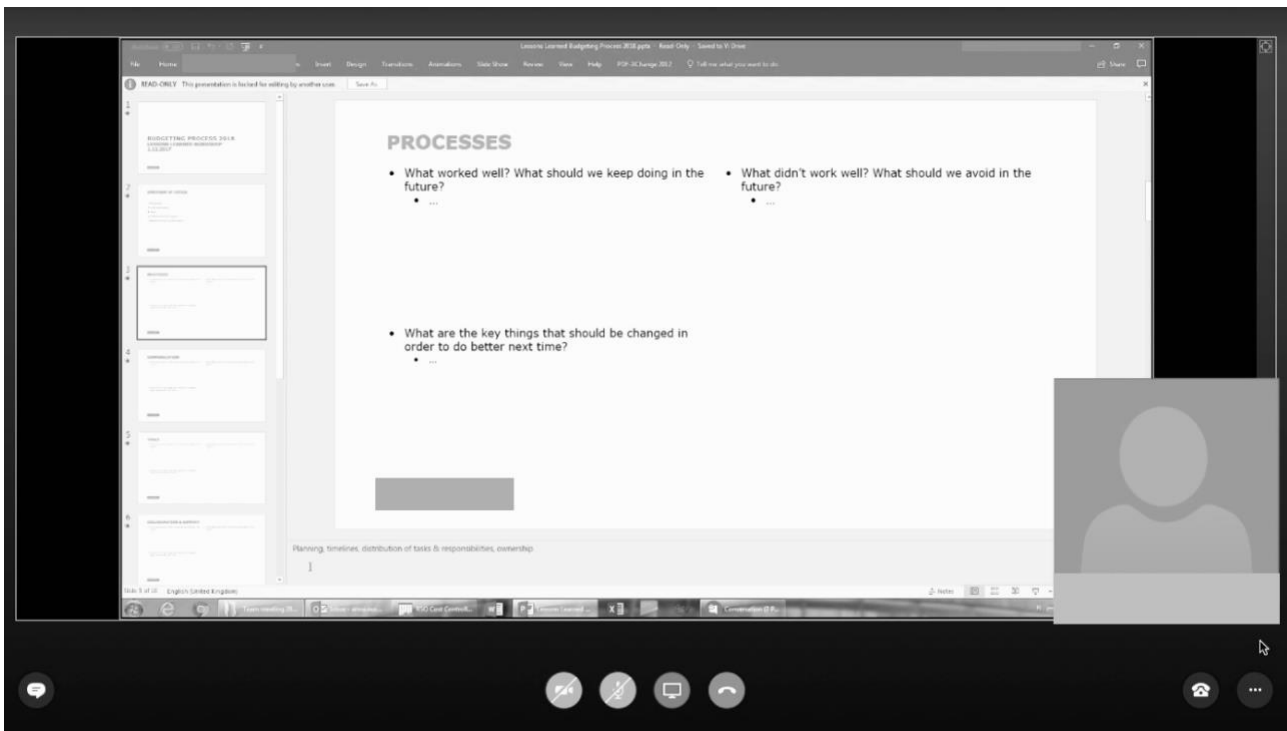
Figure 4: Screenshot of the PowerPoint slide

Extract 2:

```
1    *ASH:    but they also have initial in this part

2    *JAK:    ⌊((unintelligible))⌋

3    *ASH:    ⌊being able         ⌋ internally to:: to figure out what their

4             targets are what they their goals are and what (.) what what what

5             ↑clear tasks do they have to reach (.) eh within the next year

6             because it ⌊was⌋ ⌊one⌋ of the challenges with doing this budget was

7    *JAK:              ⌊mm ⌋ ⌊mm ⌋

8    *ASH:    to< (.) (pull) out from them  eh: ⌊reliable data⌋

9    *SAN:                                     ⌊((types "stakeholders")) ⌋

10   *ASY:    consolidated between them so that i can get (.) ⌊disregarded⌋

11   *SAN:                                                    ⌊((types "not

12            clear on what their goals are"))⌋

13            whether i ask (.) eh: ↑lucas or: ↑peter or: ↑william i would

14            nee- want to have one and the same answer for one question ⌊where⌋

15   *JAK:                                                                ⌊mm   ⌋

16   *ASH:    else
```

In lines 1-4 ASH states that their stakeholders should "figure out" their targets, indicating that this is not the case. This report of a problem is met with minimal response by JAK, the team

manager (line 7), and this functions as a continuer (Schegloff, 2007) and a token of weak agreement (Kangasharju, 1996). As ASH continues, she accounts for why the stakeholders should know their targets (line 8). SAN starts typing (line 9) in a PowerPoint slide titled "Process" under the subheading "What didn't work well / what should be avoided in the future". She types "stakeholders not clear on what their goals are". Thus, in overlap with ASH, SAN produces a formulation of the gist of the talk which as heritage and Watson (1979: 130) argue constitute clarifies, or demonstrates an understanding of prior talk which fixes the meaning of the talk and so, unless challenged, provides an intersubjective understanding of what is going on in the organization. Usually in meetings, a chair produces a formulation (Barnes, 2007) to summarize central points, but here the ICT object is used in the same way as SAN materializes ASH's comment, rather than verbalizing it. Without commenting on it or in any way responding to what has been typed, ASH continues to elaborate on what she finds to be challenging (line 13-14) to which JAK produces minimal response. According to Heritage and Watson (1979), disagreement to a formulation would be appropriately uttered soon after the actual formulation, hence as there is no disagreement with ASH's presentation of the situation and no response to SAN's writing on the slide. Silence, in this case, thus displays affiliation with the formulation that the stakeholders are not clear of their goals (Steensig, 2013). ASH, through her verbal contribution, and SAN, through her control of the ICT object (i.e., PowerPoint), thus co-produce a shared point of reference. Here, the use of the ICT object supports the work at hand, namely the evaluation of the budgeting process, as well as the production of a shared understanding of the current situation and requirements for the future.

In terms of affordances, the screen sharing of the ICT object, in this case the PowerPoint slide, gives the actors participating in the meeting an opportunity to view the slides and read what has been pre-written on them as well as the text being written during the meeting. As SAN controls the PowerPoint, it further gives her the opportunity to write and rewrite points. Thus, the affordances of the ICT object make the discussion points (pre-written on the slide) relevant as agenda points. This is because typing text into the PowerPoint, simultaneously with the talk, summarizes and visualizes central points. In that way, the ICT object is used by the actors as a resource for managing the talk and for creating an intersubjective understanding of what took place in budgeting process.

Considering the above in terms of DAC, it is clear that the talk and the ICT object are first used to create a shared and visualized understanding of the status of the work. Through the verbal contributions, non-verbal actions (writing on the board) and silence, the meeting participants co-produce alignment (i.e., an intersubjective agreement with what is going on in the organization and what needs to be done). Simultaneously, due to the nature of the talk, which is concerned with how to make adjustments in future processes, the actors are constituting the team's future activities. As with the first extract, the actors, through their talk and use of the ICT object, demonstrate a commitment to the work and display agreement on how to carry on with the work beyond the meeting. They, thus, also display that they are committed to the work in the future. This can be seen as the production of commitment which is a consequence of the alignment and direction.

The analysis of this extract illustrates that accomplishing leadership is not dependent on the participation of the formally appointed leader, but can be carried out by team members. In contrast to the first extract, the team manager in extract two only contributes to the production of DAC through minimal responses. Drath et al. (2008) suggest that leadership within a DAC-ontology is not restricted to leader-follower interaction, but encompasses a variety of constellations, and that DAC can take various forms. The analysis of this extract illustrates this, namely that the production

of DAC is not necessarily tied to a formal leader role, but can, given that the relevant resources available, be co-produced by other actors. Thus, our findings support Drath et al. (2008) who state that "leadership has been enacted and exists wherever and whenever one finds a collective exhibiting direction, alignment, and commitment" (p. 642). Further, although this extract illustrates that the production of leadership is a collective accomplishment, it is also shown that the actors, considering the constraints of the virtual context, have differentiated access in terms of influencing the production of DAC. While SAN has control of the object and can thus contribute verbally *and* visually, the others are limited to using verbal communication. In this case, the object is used to summarize what is said by others. The use of the PowerPoint slides thus produces a formulation (Barnes, 2007), which Clifton (2006) argued, is one way of 'doing' leadership. This is because it produces shared meaning (alignment) and outlines what comes next (direction).

In sum, the analyses of these two extracts, in different ways, illustrate the interactional accomplishment of leadership in a virtual context and how leadership, understood as direction, alignment, and commitment, is accomplished through the use of multimodal resources. Further, the two extracts illustrate how the use and control of ICT objects influence not only the sequential unfolding of the interaction, but more interestingly in this context, the situated accomplishment of leadership.

It could be argued, that accomplishing direction, alignment, and commitment could be done without the ICT objects used in the two above presented extracts. However, in this interactionally constrained virtual context, this would have placed other demands and constraints on the interactions, and hence would have called for a significant amount of interactional work, where the participants would need to actively seek alignment in another way. Further, considering that the actors have chosen to use these ICT objects, suggests that they orient to a need for this in order to accomplish the work at hand in the most efficient way (Streeck et al., 2011). Thus, it seems that the actors make use of these ICT objects in virtual interactions to overcome some of the challenges of the particular context.

Discussions and conclusions

Returning to our research question: how do actors use both talk and ICT objects to accomplish leadership understood as the co-production of DAC? In the analysis of extract one, we see that leadership is collaboratively achieved not only through sequences of talk that do repair but also through the use of objects such as the movement of a cursor on the Kanban board. Talk combined with the use of objects thus ensures an intersubjective understanding of what is going on in the organization and so paves the way for commitment to a future direction and so does leadership. Similarly, in extract two, we see that it is talk in the form of formulations and the materialization of such talk on a PowerPoint slide that does leadership by formulating an intersubjective understanding of the current state of affairs in the organization which leads to commitment to a future course of action and so does leadership. Broadly speaking, the analysis of the extracts thus illustrates how both team members and team managers can use ICT objects in their virtual context in the co-production of DAC and thus in their accomplishment of leadership. More specifically, considering the analytical findings, this paper offers four central contributions to leadership research, notably it: illustrates how leadership can be achieved in virtual interaction; provides empirical evidence of how DAC is realized in interaction; demonstrates that, contrary to

the findings of prior research, virtual settings are not treated as problematic for leadership; and offers insights into the doing of leadership in virtual contexts that may be useful to practitioners.

First, our findings suggest that the accomplishment of leadership, DAC, in a constrained virtual context occurs as part of mundane meeting talk. However, although mundane, the setting is interactionally intricate and calls for the mobilization of several multimodal resources, as the actors observably mobilize objects to draw on their situated affordances, in the accomplishment of DAC. We illustrate how leadership is both a complex task, calling for significant interactional work by participants, but also that the leadership process is deeply integrated in the midst of the mundane work-life. This paper makes a significant contribution that develops our understanding of how leadership-in-interaction can be accomplished and thus expands on previous work on leadership-in-interaction in everyday contexts (Clifton, 2014; Fairhurst and Connaughton, 2014; Larsson and Lundholm, 2013). In contrast, however, to existing studies of leadership and materiality (objects, space, place and bodies etc.) which draw primarily on retrospective data such as interviews (Fisher and Robbins, 2015; Hawkins, 2015; Ropo and Salovaara, 2019), our study zooms in on the actual interaction taking place. This methodological approach reveals the significant amount of interactional work which has to be done to accomplish leadership. This study therefore aligns with previous studies that argue that objects can be put to use in the process of accomplishing leadership (as seen in for example Ropo, Sauer and Salovaara, 2013; Hawkins, 2015). This study, however, further contributes to research on the multimodality of leadership by illustrating *how* the actors mobilize the objects to accomplish leadership, in this study understood as DAC. Specifically, we illustrate how actors mobilize the situated affordances of ICT objects to coordinate the talk and to achieve an intersubjective understanding of what is going on in the organization. This is achieved, for example, through pointing to specific cards, (extract 1) or writing in specific boxes on a PowerPoint slide (extract 2). Further, the analysis shows how the ICT objects are used to materialize shared understandings of current and future states of work, through the movement of a card (extract 1) and through the uncontested writing on a slide (extract 2). The situated affordances of the ICT objects thus enable the actors to smoothly coordinate and align with a shared understanding of the current situation and to produce direction for their work, while simultaneously showing commitment to the work going forward. In short, this paper shows how actors can actively mobilize and use the situated affordances of the ICT objects available in a virtual context to accomplish leadership.

Second, by illustrating how DAC can be accomplished in practice, this paper expands on the theoretical leadership propositions of Drath et al. (2008). The findings of this paper supplement both the argument of Uhl-Bien and Carsten (2018), who argue that leadership is a process of co-production, and the argument by Drath et al. (2008), who suggest that leadership should be conceptualized as DAC, located in a variety of actor constellations. Further, we also illustrate that producing leadership in practice is not just a matter of one actor articulating direction and influencing others to follow that direction, rather leadership, perceived as DAC, is a co-production (Drath et al., 2008). Specifically, the analyses demonstrate how team members as well as formally appointed leaders are important actors in the accomplishment of leadership. Additionally, while the accomplishment of DAC is shown to be a co-production in which all actors in the interaction engage with either verbal, non-verbal or object-based contributions, our findings indicate that actors with access to the ICT objects have a different and potentially more influential role in the production of DAC. In the first extract the appointed team manager had access to the ICT objects, making the team manager a natural part of the production of leadership. In the second extract, however, this access was assigned to a team member, who was consequently entitled to produce a

written formulation, summarizing what was being said and so she was instrumental in producing DAC, and so 'doing' leadership. As several scholars have pointed out (Clifton, 2006; Svennevig, 2008), producing such formulations is one way of doing leadership Thus, this paper illustrates the co-production of leadership (Uhl-Bien and Carsten, 2018) and also how leadership is not necessarily a process of influence unfolding between formally appointed leaders and team members (Drath et al., 2008) but one in which the formally appointed leader may play a minimal role. Further, the findings suggest that access to, and control of, ICT objects may be consequential in regard to the situated production of DAC in virtual contexts.

Third, the findings of this paper contribute to the studies of virtual contexts which in the past have tended to associate such contexts with problems for the accomplishment of leadership (Al-Ani et al., 2011; Gilson et al., 2015). Zooming in on mundane everyday interaction, our study refutes the assumption that mediated communication is necessarily problematic for the accomplishment of leadership. In the analyses presented here, the participants orient to the unproblematic nature of the interaction. Although we cannot know how the interaction would have played out without the use of ICT objects, we do know that the actors chose to use these ICT objects, which suggests that they orient to a need for this in order to accomplish the work at hand in the most efficient way (Streeck et al., 2011). Some studies would argue that since only some of the participants had access to the ICT objects, this could be considered to be a constraint (Barrett and Oborn, 2010). Our analysis, however, shows that actors are able to use talk to repair this problem. This is for instance apparent in extract 1 in which the actors used talk to coordinate the use of the ICT object and where the ICT object simultaneously supported the production of shared understanding, or intersubjectivity, and DAC. Thus, our study illustrates that through using different modalities, such as talk and ICT objects, the accomplishment of virtual collaboration and leadership *can* be smoothly accomplished.

Fourth, the findings of this study are highly relevant for practitioners collaborating in the virtual context. Although, actors seemingly are already using ICT objects in their meetings, our findings suggest that actors can mobilize the ICT objects available to them in a strategic and planned fashion, mobilizing them in the production of direction, alignment, and commitment. Further, our findings could indicate that practitioners should pay attention to who has access to ICT objects. This is because variation in one's assigned access to ICT objects influences not only the interaction but also different actors' influence in the accomplishment of leadership. Moreover, our findings suggest that practitioners should not necessarily dread virtual collaboration, as it is evidently possible to accomplish fruitful interaction, although it is produced with the support of ICT objects.

Finally, we note that limitations for our paper relate to the complexity of the context. A large number of things can and do influence the production of leadership, matters which we have not treated in this paper. Our focus was limited to the ICT objects in the sense of technological tools such as PowerPoint and the cursor. Previous research indicates that communication tools in themselves (such as Skype) have an influence on the interaction. It also matters whether the communication tools allow for video interaction and how it works, as previous studies argue that media richness do have an influence on the interaction (Klitmøller and Lauring, 2013). Additionally, the number of people participating and the degree of virtuality in the meeting might also have an influence on the production of leadership (Gilson et al., 2015). In general, linking this study to the scarcity of research in leadership-in-interaction, the findings in this paper should be considered as groundwork for further analysis to enhance the understanding of leadership-in-interaction. We therefore recognize that there are many more aspects of leadership in virtual

environments that could profitably be investigated, and we close this paper with a call for further studies into the achievement leadership-in-interaction in virtual contexts.

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