Digital Media Literacy in Teamwork and Distance Work:

Competences, Discourse and Organizational Design

Edited by Jerry Jacques and Anne-Sophie Collard

PRESSES UNIVERSITAIRES de Namur

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Chapter 1: Scope and Objectives of the LITME@WORK Research Project

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Digital technology has become ubiquitous in the workplace, especially for office workers. Processes and services are more and more digitalized, allowing paperless work and changing ways of working. The digitalization of organizations implies a wide diffusion of Information and Communication Technologies (ICT) like mobile devices, multimedia content, groupware, cloud computing and big data technologies (Holtgrewe, 2014). It also enables the implementation of distance work. Furthermore, work spaces change as organizations try to find ways to reduce building costs, deal with energy issues or implement organizational change projects. In NWOW projects (New Ways of Working, or "New World of Work" as Microsoft has called it), spaces are reduced, diminishing the number of workstations and suppressing desks allocated to individuals in open spaces or flexible workspace configurations. These changes imply the development of mobile work inside workspaces but also outside, in coworking spaces, for example, or at home. Such transformations are grounded in new ways of thinking about organizations but also in contemporary concerns with mobility. Working at a distance, supported by digital tools, is seen as a possible answer to the difficult question on how to resolve mobility problems (Marzloff, 2013).

So-called "new ways of working", practiced both individually and collectively, gradually emerge, enabled by technological, organizational and social evolutions. For example, workers have to deal with increasing quantities of information and need to develop strategies to avoid information overload. They have to coordinate with multiple people through synchronous and asynchronous computer-mediated communication. This has become commonplace and workers are now often equipped with mobile technologies that may be necessary to perform at least a part of their professional activities in these increasingly mobile contexts. Collaboration at a distance has become more and more common over the years but it also raises questions regarding the evolution of the infrastructures provided by organizations, the changing ways through which work is achieved by individuals and teams, the complex relationship between one's professional activity and private life, and the new set of competences that workers need to have. These transformations cross all sectors and are visible in both public and private organizations.

This book addresses these changes through the lens of digital media literacy[1] (DML) for office work (from clerical work to managerial tasks), focusing specifically on teamwork and distance work. Changing ways of working require a new range of technical, social and communicative competences. For instance, office workers are expected to engage in collaborative writing, to manage personal and shared information, to re-create and maintain one's personal work environment in multiple contexts of work, and/or to manage teams at a distance. These competences have been the focus of the LITME@WORK project, entitled "Digital and media literacy in teamwork and distance work environments", funded by BELSPO[2] during four years (2015-2019). This lens has allowed us to gain insights into the ways office workers use ICTs. We were also able to shed light on the job demands as well as on the needs and the fears regarding DML. It has also provided information about workers' expectations, for instance in terms of opportunities for using and learning DML competences.

Competences are often approached on the basis of a concern with efficacy and performance. The LITME@WORK project also explored other dimensions of competence in organizations undergoing a digital turn. First, being competent is a factor of inclusion not only within the organization but also in the broader work environment, as today's collaborations within and across organizations are sustained through diverse ICTs. A related point is that DML has implications for well-being at the workplace: a lack of competence can create stress and frustration, and ultimately lead to demotivation and isolation. A third issue is the redefinition of time and space. ICT-supported work practices such as distance collaborative writing tend to blur the boundaries between work time and leisure time, professional life and private life, workplace and home. These new conditions also require a range of competences in order to be handled in an effective and meaningful way.

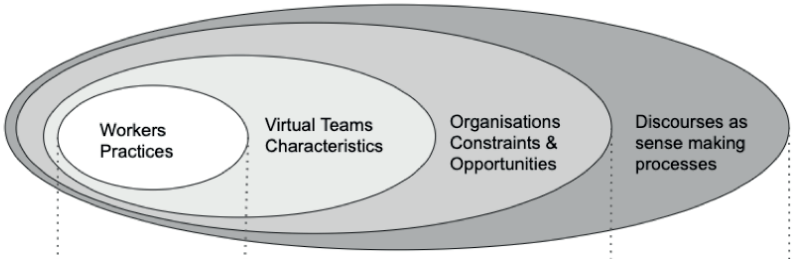
LITME@WORK asked the following research questions: (1) how is DML addressed and practiced in today's office work and (2) how can DML be further integrated in emerging distance teamwork structures and practices in order to support effective, stimulating and meaningful ways of working. Starting from these questions, LITME@WORK has pursued four objectives: (i) to understand changing work environments and their DML requirements, (ii) to develop a systemic approach to DML in office distance teamwork, (iii) to provide resources for societal and policy stakeholders, and (iv) to contribute to research efforts in relevant fields of research.

Relying mainly on qualitative analyses, LITME@WORK has investigated DML from three different but complementary perspectives, each corresponding to one work package (WP) in the research project structure: (1) a critical discourse analysis focusing on the sense-making processes office workers rely on when they conceptualize (DML) competences in organizations transitioning to new ways of working; (2) an organization

[1] Digital media literacy is defined as a set of interrelated informational, technical and social competences (Fastrez, 2010; Fastrez & De Smedt, 2012) involved in digital media practices (see chapter 2).

[2] Belgian Science Policy, Brain-be program, <http://www.belspo.be/>.

design analysis focusing on the relationship between work organization, workplace design and structural conditions for (DML) competence utilization and learning; and (3) a practice-oriented perspective focusing on the relationship between digital media uses and competences in employees' new work practices. As is shown in Figure 1.1, these three perspectives treat different levels of analysis.



Work package	WP4	WP3	WP2
Analytical focus	Practices as performances revealing competences	Team and job characteristics as opportunities to learn and utilize competences	Discourses as sense making processes for the experience of work
Methodological / Epistemological status of competences	Competences as a priori theoretical category	Competences as assumed ultimate outcome of a dependent variable (successful learning opportunities)	Competences as a discursively constructed object of analysis
Scope of "competences"	DML competences for distant collab.	Work-related competences developed as output of learning opportunities	Work-related practices, attitudes and values labelled as competences

Figure 1.1: The work packages of the LITME@WORK project and their approaches.

Firstly, WP4 focused on workers' practices as performances revealing competences. Competences are therefore considered as a priori theoretical categories. Observation and analysis of work practices lead to the identification of DML competences required by distance collaboration. The WP4 team was composed of researchers and academics in information and communication sciences from UCLouvain[3] and Université de Namur[4]. Secondly, WP3 studied the characteristics of virtual teams and the organizational constraints and opportunities. Specifically, it has analyzed team and job characteristics as opportunities to learn and utilize competences. Competences are considered as the ultimate outcome of a dependent variable, defining successful learning opportunities. The results aim to reveal learning opportunities from which work-related competences can be developed. The WP3 team was composed of sociologists from HIVA, KU Leuven[5].

[3] Valèria Ligurgo, Thibault Philippette, Thierry De Smedt and Pierre Fastrez (coord. WP4).
[4] Jerry Jacques and Anne-Sophie Collard (coord. WP1).
[5] Yennef Vereycken, Arne Vanderstukken, Irina Nikolova, Annelies Antheunis, Laurianne Terlinden

Thirdly, WP2 focused on discourse as a sense-making process structuring the interpretative experience of work. Competences were analyzed as discursive constructs whose meanings emerge in close articulation with work-related identities, practices, attitudes, values and other relevant discursive elements. The team in media and communication studies at Université Saint-Louis – Bruxelles[6] was in charge of WP2. Finally, the team from the Université de Namur was in charge of the overall coordination of the LITME@WORK project (WP1).

Each approach has used specific methods, adapted to its particular focus and theoretical framework, but the WPs did work with a shared data set of case studies. The LITME@WORK project studied ten Belgian organizations that took measures to enhance ICT supported teamwork and distance work. The selected cases represent a variety of work contexts that can be distinguished on the basis of parameters such as the public/private distinction, the sector of activity and/or the size of the organization. This diversity is represented in the nicknames attributed to these organizations that will be used throughout this book to ensure the anonymity of these companies and their workers. Each nickname combines a clue about the size of the organization with a clue about its activity sector:

- SmallBusiness – private sector
- SmallIT – private sector
- BigEmp (for big Employment) – private sector
- BigTransport – public sector
- BigHealth – public sector
- MediumTerritory – public sector
- MediumHealth – private sector
- MediumIT – private sector
- BigInsuranceOne – private sector
- BigInsuranceTwo – private sector.

As presented in Figure 1.2, the data collected in each organization included interviews with managers, union representatives and HR managers. We collected organizational documents relevant to the organizational transition. We also conducted interviews with team members and team leaders, supplemented by observations made in their respective work environments. Each worker in each organization also participated in a two-waves quantitative survey, the first wave at the beginning of the data collection process and the second six months later. Finally, the WP2 perspective required interviews with additional stakeholders such as politicians and unionists without direct affiliations with any of the ten cases chosen for the research.

and Monique Ramioul (coord. WP3).

[6] Jan Zienkowski, Marie Dufrasne, Sabri Derinöz and Geoffroy Patriarche (coord. WP2).

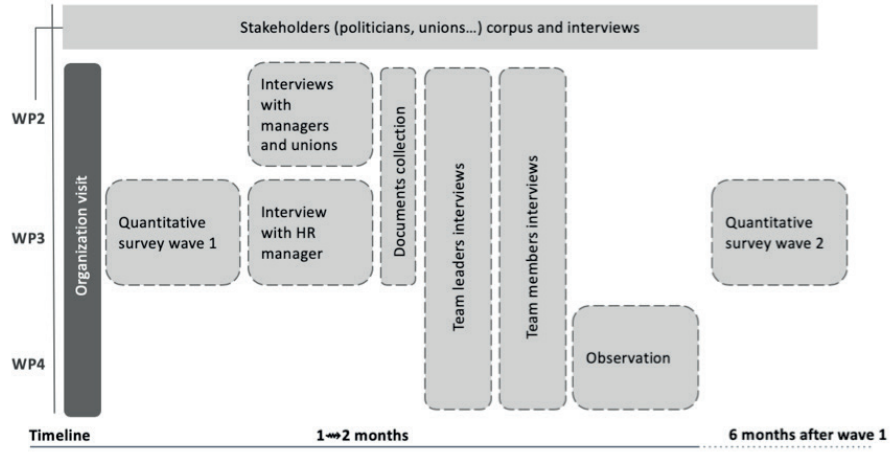


Figure 1.2: Summary of the data collected by the work packages of the LITME@WORK project.

The research provides an up-to-date, encompassing knowledge of DML in teamwork and distance work, which will enhance stakeholders' understanding of DML and their capacity to take action. Specifically, LITME@WORK delivers as main research results: a research framework for analyzing the many aspects of DML in distance teamwork practices and environments, ranging from the broader context of organizational structures to the point of view of individual workers themselves; an in-depth analysis of the ways in which organizations understand and negotiate the "(digitally) competent worker"; an up-to-date description of the changing office work competences, practices and structures, with a focus on teamwork and distance work trends; and a conceptual map of DML competences aimed at serving as a resource for societal and policy stakeholders in terms of defining, evaluating, monitoring, recognizing and supporting DML in office work.

Book Structure

This book is divided into seven chapters. Each chapter can be read independently. Nevertheless, readers are encouraged to read the whole volume to come to terms with the complexity of the problematic nature of DML competences in team and distance work. Following this first introductory chapter, the three teams of LITME@WORK present their perspectives, methods and results in four chapters.

Chapter 2 answers the following question: what are the digital competences needed by workers to collaborate in distance work environments? This question is addressed from the perspective of digital media literacy (DML), defined as a set of interrelated informational, technical and social competences (Fastrez, 2010; Fastrez & De Smedt, 2012) involved in digital media practices. The authors develop a perspective that goes

beyond a technology-centered approach to DML competences. They consider how workers integrate the use of ICT into meaningful activities that articulate tools, contents and relationships.

For this reason, the authors adopted an interpretive approach that allowed them to define these competences from the point of view of workers, by documenting how they conceive their work situations of distant collaboration, and to what extent they are able to deal with them in meaningful and appropriate ways. Sixty-one interviews were conducted with managers and workers which took the form of guided tours of the informants' workspaces.

The main findings consist of a definition of the competences which takes the form of a matrix crossing activities involved in distance collaborative work with dimensions workers take into account when they think about and engage in these activities. This chapter ends with a detailed description of these activities and dimensions followed by a complementary look at the qualitative data presented in the form of aggregated quantitative indicators.

Chapter 3 revolves around the organizational structure of virtual teams. Although increasingly popular, virtual teamwork is often associated with communication and collaboration challenges. Studies identify a multitude of coordination challenges that negatively impact on team members' autonomy. Such factors include knowledge barriers or losses in communicative richness. Research often focuses on managerial (e.g. trust and leadership) and technical factors to solve coordination problems within virtual teams, and overlooks the fact that virtual teams are embedded within a larger organizational structure. In this chapter, we examine whether the organizational structure utilized in virtual teamworking matters for the coordination challenges outlined above. Interviews were conducted with human resources managers as well as with team leaders and team members. The findings outline a strong relationship between the organizational structure of virtual teams and coordination issues present in these teams. We found two types of teams. A first type includes teams working in silos with high levels of division of labor work. This division creates a lot of interdependencies between team members and results in higher levels of coordination requirements. The virtual environment makes everything even more complex to organize. In such teams, centralized information and communication technologies are often used to constrain team members' control capacity by imposing standardized procedures. A second type includes teams working in autonomous cells with low task interdependencies and coordination requirements. Such teams can therefore absorb the complexity related to working in a virtual environment. This chapter contributes to the literature by showing that the organizational context in which virtual teams are embedded matters. The manner in which tasks are divided across team members in virtual teams explains whether organizations have few or many coordination problems.

In *Chapter 4*, the authors ask under which circumstances teleworking and virtual teamwork lead to learning outcomes for team members (i.e. developing skills, acquiring

technical and communication literacy to deal with virtual teamwork). Indeed, despite advances in information and communication technologies, there are still challenges attached to teleworking and virtual teamwork, most of which pertain to lower communication frequency and worsened professional relationships. Because of these challenges, learning outcomes for team members are not obvious and only occur when these challenges have been overcome. The authors therefore investigate which circumstances can help in safeguarding these learning outcomes. Specifically, they focus on knowledge sharing within a team, on team trust, and on consistencies among team members (i.e. in terms of use of communication channels, hours of teleworking per week, and learning climate perceptions), three circumstances that many experts consider to be important for successful team and distance work but currently lack empirical evidence. Hypotheses were tested with a two-wave survey study involving a sample of employees (N1 = 1297, N2 = 564) nested in nine Belgian organizations among the ten chosen for the research. The results of this study showed that trust and consistency in hours of teleworking are indeed needed to ensure learning outcomes such as skill development, technical literacy and communication literacy. Knowledge sharing, consistency in use of communication channels and consistency in learning climate, on the other hand, did not show the expected results.

In *Chapter 5*, the issue of (DML) competences is addressed as part of a wider analysis that focuses on the interpretive frameworks office workers rely on in order to make sense of so-called New Ways of Working (NWOW). The authors name and identify the logics constitutive of celebratory accounts of NWOW, while also exploring the logics office workers who criticize and even resist aspects of the associated techno-managerial apparatus.

The authors base their analysis on principles derived from Critical Discourse Analysis (CDA) and Poststructuralist Discourse Theory (PDT) (Fairclough, 1992; Glynos & Howarth, 2007; Zienkowski, 2017). They analyze interviews conducted with employees (managers, team leaders and team members) working in a selection of public and private enterprises where NWOW are being or have been implemented. The authors show that celebrations and critiques of NWOW are both marked by complex articulations of norms, values, practices, and identities that follow specific interpretive logics. The analysis shows that even though office workers generally use several logics to embrace celebratory NWOW discourse, many of them are able to engage in a limited form of critique regarding real or potential perverse effects of NWOW. At times they even rely on certain logics in order to develop micro-resistances to specific aspects of the NWOW apparatus without calling its *raison d'être* or constitutive logics into question. Nevertheless, truly oppositional critiques remain rare and do not necessarily lead to actual practices of resistance. Overall the analysis demonstrates the extent to which celebratory accounts of NWOW enjoy a relatively high degree of hegemony on the work floor.

The two final chapters address key dimensions and challenges for DML in collaborative and distance work. In these chapters, the authors of this book create bridges between

their respective approaches. As such, the final two chapters constitute an integration effort whereby the different contributors to this volume provide a number of reflections on key issues in contemporary debates about office work, collaboration, technology and competences, based on their respective observations.

In *Chapter 6*, authors of this book therefore address the following themes: (1) DML in collaborative and distance work; (2) the concept of "newness" in discussions about DML and NWOW; (3) DML as a social construct; (4) implications of collaborative and distance work for well-being; (5) the issue of digital (social) inclusion; (6) the role of technology; and (7) management in team and distance work.

Finally, *Chapter 7* asks the question how digital and media literacy can be further integrated in emerging team and distance work structures and practices, in order to support effective, stimulating and meaningful ways of working. In this chapter, the researchers of the LITME@WORK project then formulate seven recommendations for policy makers and practitioners: (1) treat competences as abilities to perform particular practices rather than abstract values; (2) use the DML matrix presented in Chapter 2 in a reflexive way; (3) (re)consider the organizational design of teams as a strategic factor for organizations; (4) acknowledge the value of articulation work in hiring and career development; (5) focus the team leader's role on facilitating a shared understanding of teamwork and supporting distributed articulation work; (6) re-design training and evaluation initiatives beyond individual practices, operational skills and digital tools; (7) integrate the development of DML in a more balanced discourse about organizational change.

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Bibliography

Fairclough, N. (1992). *Discourse and social change*. Cambridge: Blackwell Publishers.

Fastrez, P. (2010). Quelles compétences le concept de littératie médiatique englobe-t-il? Une proposition de définition matricielle. *Recherches En Communication*, 33, 35–52.

Fastrez, P., & De Smedt, T. (2012). Une description matricielle des compétences en littératie médiatique. In M. Lebrun-Brossard, N. Lacelle & J.-F. Boutin (eds), *La littératie* médiatique multimodale. De nouvelles approches en lecture-écriture à l'école et hors de l'école (pp. 45–60). Québec: Presses de l'Université du Québec.

Glynos, J., & Howarth, D. (2007). *Logics of critical explanation in social and political theory*. London: Routledge.

Holtgrewe, U. (2014). New new technologies: The future and present work in information and communication technology. *New technology, Work and Employment*, 20(1), 9-24.

Marzloff, B. (2013). *Sans bureau fixe. Transitions du travail, transitions des mobilités,* Limoges: Fyp éditions.

Zienkowski, J. (2017). *Articulations of self and politics in activist discourse: a discourse analysis of critical subjectivities in minority debates*. Cham: Palgrave Macmillan.

Chapter 2: A Definition of Digital Media Literacy Competences Required by Workers to Collaborate in Distance Work Environments

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Introduction

Over the years, information and communication technology (ICT) has become a cornerstone of the world of work, as it has for all other aspects of our lives. Digital technology is now ubiquitous in the workplace, especially for office workers. Technological and social evolutions have given way to new ways of working individually and collectively. Digital tools contribute to redefining the content of work, as much of the information workers deal with is now digitized, and comes in increasing volumes, creating risks of information overload. The context of work has also undergone major changes, with more and more people teleworking from their homes, sharing coworking spaces, or working on the go with mobile technology. Additionally, how people work together, and coordinate to do so, heavily relies on (synchronous and asynchronous) computer-mediated communication, shared information spaces, social networks and authoring tools and platforms.

In all of these domains, digital technologies create challenges for workers as much as they offer opportunities and support. As they are both the objects and the agents of these massive evolutions, workers need to develop new strategies, build new knowledge, acquire new skills. In a word: they must develop their competences. This chapter focuses on the issue of the competences related to the digitization of work, in the specific area of distance collaboration. The main question it attempts to answer is: what are the digital competences needed by workers to collaborate in distance work environments?

Rather than considering this question from the perspective of technical skills, we address it from the perspective of digital media literacy (DML). Defined as a set of interrelated informational, technical and social competences (Fastrez, 2010; Fastrez & De Smedt, 2012) involved in digital media practices, digital media literacy extends the view of the competences required to collaborate in the distance beyond technology-centered approaches, to consider how workers integrate the use of ICT into meaningful activities that articulate tools, contents and relationships.

Discourses in organizations emphasize the *need* for people to collaborate in teams and to work at a distance, to be able to share information in various formats and to cooperate in flexible ways through the mediation of technology, especially in "New Way of Working (NWOW)" contexts. In this view, workers seem required to simply follow technological transformations and adapt to the ever-changing work landscape. In comparison, we consider that digital media literacy cannot be limited to a set of skills that enable workers to comply with the evolution of organizational socio-technical systems. These evolutions of work environments also call for the ability to be critical towards them, as well as to be creative and to combine, invent and modify innovative technologically-mediated practices.

The focus of this chapter is set on the very definition of this array of competences. Contrary to most existing approaches, we chose to adopt an agnostic stance towards our object of study, by acknowledging that we did not know what competences composed the digital media literacy of distance collaboration. Consequently, rather than proposing a definition of DML competences for distance teamwork based on the opinion of experts, a literature review, or a theoretical construction, we set ourselves to define these competences from the perspective of the actors who exert them: the workers. Hence, our overall approach is an interpretive one. Our goal is to propose a map of the DML of distance collaboration based on the discourse of workers: how they conceive the work situations of distance collaboration, and to what extent they are able to deal with them in meaningful and appropriate ways from their perspective.

This chapter is structured as follows. First, we lay out the theoretical framework for our work. We introduce the concept of digital media literacy and discuss how it positions our object of study beyond a technologically-centered approach, encompasses both basic operational skills and full-fledged competences, and allows us to articulate both functional and critical aspects of these competences. We then specify the relationship between DML and the social practices that actualize them. Finally, we define categories of collaborative work that are essential to our observation of distance collaboration practices. Second, we detail the methods of data collection and analysis we used to infer a map of DML competence from the interview and observational data of sixty workers engaged in distance collaboration in ten public and private Belgian organizations. Third, we present an overview of the results of our analyses, followed by a detailed description of the domains of competence we identified, in terms of activities collaborators perform, and dimensions these activities include. Fourth, we offer an alternative, complementary

look at our data in the form of aggregated quantitative indicators. Finally, our conclusions are presented based on the discussion of the results.

Theoretical Framework

Digital Media Literacy Competences

Abilities related to the use of digital technology have been called a number of names: online skills (Hargittai, 2002), internet skills (Hargittai, 2010; Litt, 2013; Scheerder, van Deursen & van Dijk, 2017), digital skills (Curtarelli, Gualtieri, Jannati & Donlevy, 2017; Eynon & Geniets, 2016; J. A. G. M. van Dijk & van Deursen, 2014), e-literacy (Brandtweiner, Donat & Kerschbaum, 2010), digital literacy (Buckingham, 2006; Eshet-Alkalai, 2004), digital competence (Carretero Gomez, Vuorikari & Punie, 2017), to name only a few. Considering the multiple approaches to these abilities that this diversity of names reflects, digital *media* literacy[7] does not necessarily appear as the obvious first choice when it comes to choosing a concept to frame the description of how people are able to work together with and through technology. Why, then, treat the issue of distance teamwork from this perspective?

Our argument is that studying technologically-mediated collaborative work practices in terms of digital media literacy anchors our analyses in a conceptual framework that broadens the way they are viewed. In brief, it allows us to use the conceptual apparatus built to conceptualize media literacy (mostly originating in the field of media education) and specify it in the realm of digital technology (hence the expression "*digital* media literacy"). This position justifies itself by the limitations we see in the common approach to digital literacy.

Describing how the presence of media literacy in the public agenda has evolved over time, Buckingham (2009) warned that the proximity between media literacy and digital literacy, another concept that gained substantial importance in the official discourses, may have dire consequences on what is included in the concept of media literacy. His argument, to which we subscribe, stemmed from the claim that media literacy and digital literacy fostered participation:

> Participation is clearly seen here as a good thing in itself – although it is often rather loosely defined. In practice, participation seems to be largely confined to basic functions such as accessing e-government, job seeking, finding health information, online training, paying your taxes, and of course shopping. It stops quite a long way

[7] In this chapter, we will use the phrase "digital media literacy" to name the general category of abilities in which we place the competences of distant collaboration studied in our research. These competences could arguably also be seen as related to information literacy – a perspective we have adopted in other publications (Collard, De Smedt, Fastrez, Ligurgo & Philippette, 2016; Ligurgo, Philippette, Fastrez, Collard & Jacques, 2018). Rather than viewing digital literacy, media literacy and information literacy as exclusive categories, we consider them as concepts designating largely overlapping phenomena.

> short of the kinds of democratic participation that some of the more enthusiastic proponents of digital activism find so exciting. The skills that are involved here are also essentially functional or operational – "how-to" skills. (Buckingham, 2009: 17)

We identify three distinct shortcomings in the view of digital literacy denounced by Buckingham: it is technologically-centered; it is limited to basic, operational skills; and it is essentially functional and instrumental. These three shortcomings may easily be applied to the way distance collaborative work is studied. The view we advocate for constitutes an attempt at overcoming them. Let us consider them each in turn.

First, our research veers away from tool-oriented approaches that reduce digital competences to technology-related skills. Such approaches tend to define their unit of analysis based on the use of specific software or hardware tools by workers, and to focus on the individual's ability to operate them. By examining digital competences through the lens of literacy, we mean to focus on meaning-making rather than on technical operation. Literacy, traditionally defined as the ability to read and write,

> is beginning to be defined as the ability to share meaning through symbol systems in order to fully participate in society. Similarly, the term "text" is beginning to be understood as any form of expression or communication in fixed and tangible form that uses symbol systems, including language, still and moving images, graphic design, sound, music and interactivity. (Hobbs, 2010, pp. 16–17).

We associate this broad view of literacy, conceived as calling "us to generate and communicate meanings and to invite others to make meaning from our texts in turn" (Knobel & Lankshear, 2007, p. 4), with a similarly broad view of media. As Anderson and Meyer defined it, "a medium is a recognizable human activity that organizes reality into readable texts for engagement" (1988, p. 316). The combination of these two definitions of media and literacy leads us to envision media literacy as the ability to share meaning in order to participate in human activities that organize reality into readable texts for engagement.

The choice of studying how people are able to use technology (for distance collaboration at work) through the lens of media literacy represent a shift from a focus on digital technology to a focus on the human activities they support, and on the meaning these activities have for those who participate in them. Referring to *digital* media literacy limits the abilities under scrutiny to those related to digital technology, or, to be more specific, to digital information and communication technology (ICT), that is, those technologies involving the production, diffusion and reception of "readable texts". In this view, digital technology is best seen as means of producing texts (calls, messages, documents, reports, job descriptions, meeting agendas, file collections, digital workspaces, ...), or as texts themselves (as a technology's interface needs to be readable and meaningful to its user).

The notions of "engagement" in Anderson and Meyer's definition of media, and of "participation in society" in Hobbs' definition of literacy, can be easily specified in the

context of the digitized world of work: digital media literacy at work enables workers to engage into meaningful work activities through the use of digital technology: meaningful for their employers, as well as meaningful for themselves and their coworkers.

A second potential shortcoming of the study of the abilities related to digital media and technology lies in its limitation to basic, operational skills, such as using a search engine to find information online, connecting to content providers (news, movies, television programs…), interacting with public or private institutions through the web, staying in touch with friends, family or colleagues through the use of mobile telephony, e-mail or social networks, or posting statuses, comments or pictures on the web for others to see.

This is where the difference between competences and skills needs to be introduced. The concept of competence emerged as an attempt to reduce a gap between formal education and the employment market, that is, between qualifications, defined as a set of techniques and know-hows recognized by a degree or a certification (Rey, Carette, Defrance & Kahn, 2012), and the reality of the job. The competent worker is able to "manage a complex professional situation" (Le Boterf, 1997). Whereas skills enable the reproduction of learnt procedures in ways and contexts that are similar to those in which they were assimilated, the concept of competence (Rey et al. 2012; Scallon, 2004) refers to the ability of the individual to engage intentionally in relevant courses of action in complex, novel and non-stereotyped situations, by drawing on their knowledge, skills and attitudes, and on the external resources available in the situation. Rey et al. (2012) mentioned four inherent properties of the concept of competence: (1) the adaptability it confers to a person, allowing her to face unexpected situations efficiently; (2) its singularity which connects it to the personality and the history of the person; (3) the fact that one cannot observe a competence directly, but only its effects through the performance of an activity and (4) the fact that it exceeds the simple possession of knowledge and know-hows to include the capacity to call upon them selectively to act in relevant ways in novels situations.

In brief, the basic skills needed to operate digital technology are only part of the resources available to the competent (media literate) individual (or in our case, worker), among which they can select, combine and apply the most relevant ones depending on the situation they are part of. Such cognitive resources not only include other skills than technical ones, but also knowledge of various types. Cognitive resources are themselves part of what Masciotra and Medzo call internal resources, which also include conative (e.g. motivational, attitudinal) and corporeal (e.g. one's dexterity, motor skills, strength, morphology...) ressources, as opposed to external (human and material) resources (Masciotra & Medzo, 2009, pp. 65–70). Confronted with a novel situation, the competent individual can intentionally choose and articulate the most relevant internal and external resources at their disposal to provide a solution to the problem they are facing. As a matter of fact, the very ability to define the problem and its constitutive dimensions (and hence how to best solve it) is part of the individual's competence (Schön, 1983). In addition to being able to act in relevant ways in the face of the unexpected, the same

authors insist that the competent individual is also able to take a reflective stance on their own actions, rather than mindlessly execute them. Intentional action and reflection both call upon the individual's metacognitive abilities, which have been associated both with competence (Westera, 2001) and with media literacy (Piette, 1996).

The distinction between skill and competence, as defined above, is what motivates us to define the digital media literacy of distance work collaboration as a set of competences. But even when one embraces the concept of digital competence (rather than skill) and integrates reflexivity in its definition, a third potential limitation concerns the general orientation of such competence, and correlatively the very purpose of its development.

Livingstone (2008) contrasted the different purposes that may be assigned to the development of media literacy. According to her, a first purpose is related to democracy, participation, and active citizenship. In this view, media literacy benefits individuals in that it allows them to be informed citizens that are well equipped to participate actively in the democratic process. The ability to access, understand and evaluate information and media allows them to inform themselves and think autonomously and critically. The ability to create media supports them in making their voice heard in the public sphere.

A second purpose cited by Livingstone et al. (2008) is related to the knowledge economy, competitiveness, and choice. Here, the individual is considered in their relationship to the economy, that is, the market economy, in two respects: as a consumer, or as a worker. As consumers, the media literate individuals are expected to be able to maximize their knowledge of alternatives in a transparent market, in order to make informed choices. For example, their ability to search for information online, coupled with their capacity to forestall the strategies of advertisers, would empower them in the choices they make regarding the products and services they wish to acquire. As workers, they are expected to put their media competences to use as part of their professional activity: accessing, selecting and evaluating the most relevant information for their job, and producing media messages in the context of work, all to achieve more on the workplace, and possibly climb up the ladder of employability. In both cases, media literacy is meant to allow people to reap the benefits of the use of media and technology to achieve their personal (or professional) goals (van Deursen, Courtois & van Dijk, 2014).

While the first purpose detailed above is historically linked to the media education movement, this second purpose is very much in line with the emergence of digital skills in the public (and particularly political) discourse (e.g. European Commission, 2009). In this context, the skilled use of digital technology (and especially the internet) is seen as essential for participation in a knowledge economy (Grant, 2007), and is considered as a way of reducing the second-level digital divide (Brotcorne, Damhuis, Laurent, Valenduc & Vendramin, 2010; Hargittai, 2002; J. van Dijk, 2005; J. A. G. M. van Dijk & van Deursen, 2014).

These two purposes delineate two horizons for digital media literacy, based on an opposition between compliance and inventivity in the uses of digital media. The first term

of this opposition is represented by the individual who develops *compliant* uses of media and technology. In this perspective, media literacy is defined as a set of functional skills necessary for being a "good citizen" or a "good economic agent" (e.g. a "good worker"). In other words, the literate individual is the one that is able to make use of technology to access information and maintain their relationships to other people and organizations. From this perspective, individuals must be able to adapt to the system. Technological innovation corresponds to an ineluctable evolution, with which they must keep up by developing appropriate uses of media and technology. As such, the citizen or economic agent is the object of change. The second term of the opposition is the individual who develops *inventive* uses of media and technology. In this perspective, media literacy is defined as a set of creative and critical competences that enable individuals to emancipate themselves from power relations and to adjust and rethink their media environment to improve their participation. In this case, the media literate individual is seen as an agent of change towards the media system they are a part of: instead of adapting to the system, they can trigger adaptive transformations of the system.

Of course, the relationship between compliance and inventivity cannot be conceived as a dichotomy. Rather, they define two alternative views of digital media literacy, one narrower than the other. In our research, we support the second, more inclusive view. The first view is functional, instrumental, and centered on the notion of compliance only. It poses that people should be able to use digital media and technology to properly function in their everyday life and not live in isolation: have access to information and entertainment media, be registered with public services, shop online, and maintain contacts with other people. At work, this means having access to the digital information required to perform one's job, using a mailbox, video calls or instant messages with colleagues, producing and distributing documents (possibly with the cooperation of others), managing one's files on storage devices, etc. This perspective also corresponds to a minimal view of autonomy, in which the individuals are able to "manage themselves" and to function within the established frames of society or work without the constant and necessary assistance of others. We call this first-order autonomy.

The second view is not opposed to the first one, but rather extends it considerably, and combines compliance *with* inventivity. Instead of limiting media literacy to functional skills, it defines it as the set of media competences that enables active citizenship (or workmanship), critical emancipation from media discourses, and creative appropriation of media devices. This means they can be both compliant and inventive, depending on the situation. This second view poses that the digital media literate person is able to (re)define, or (re)invent, the conditions of their own inclusion to society (or to the workplace), that is, how they perform their roles within the different communities to which they belong, how they maintain, nurture or alter their relationships with institutions and organizations, or how they achieve their duties as citizens or workers. We call this second-order autonomy.

Whereas the first, instrumental and functional view of digital media literacy may appear as a natural fit for the contemporary world of work, where pressure towards competitiveness and employability is high, we advocate the wider view combining compliance with inventivity. In this view, we consider workers' abilities to go beyond the mindless execution of their tasks with technology, and take a critical and reflexive perspective on the way digital media and technology supports (or hinders) their work, potentially leading to the formulation of inventive technological solutions to the problem-situations they encounter as part of their work. Of course, the level of inventivity in any worker's practices may be a function of their position, or of the organizational context in which they evolve. Still, considering inventivity as a possible horizon beyond compliance in digital media use is important. More fundamentally, our perspective on DML is centered on meaning-making rather than on technology use itself, and on competence rather than on skills.

Literacies as Competences and Social Practices: An Interpretive Approach

In the previous section, we highlighted how studying distance collaborative work *practices* from the perspective of digital media *literacy* lead us to focus on meaning-making rather than on technology use. However, the relationship between literacy and practices needs to be elaborated a little further, and this is the purpose of this section.

The very concept of literacy has been the topic of lively discussion in the scientific literature, and has lent itself to diverging interpretations. On the one hand, literacy has traditionally been defined in terms of generic cognitive skills that, in themselves, have effects on the development of the individual's cognitive life. Street (2006) cites Goody (1977) as the primary advocate for this view in the field of social anthropology. In the field of media literacy, Potter (2004) represents a notable example of such an approach, rooted in the information-processing tradition of cognitive science, and founding the definition of media literacy in seven skills (analysis, evaluation, grouping, induction, deduction, synthesis, and abstracting) and five types of knowledge structures (on media content, media industries, media effects, the real world, and oneself). As such cognitive skills are highly abstract, they are assumed to lend themselves to assessment through standardized tests independently of the specific context of their use. On the other hand, an alternative view of literacy, developed through a body of research known as the New Literacies Studies, has emerged in reaction to this cognitive view. This alternative view describes literacy in terms of situated social practices that depend on the socio-cultural context in which they develop. Street (1984) uses the terms "ideological models of literacy" to describe this approach, as opposed to the (cognitive) "autonomous models" of literacy. An important aspect of ideological models of literacy is the recognition that there is no such thing as one literacy, but rather that many different literacies exist, all tied to their respective contexts, each involving "a diverse range of skills and understandings,

for example digital literacies" (Stordy, 2015, p. 459). As a matter of fact, what counts as literacy (and who is in a position to decide it) is an essentially political question. Considering literacies as a social practices means that "some conceptions of literacy are more powerful and imposed on other cultures or classes" (Stordy, 2015, p. 457). From this standpoint, autonomous models simply reflect the western view of literacy, and impose it on other cultures without acknowledging it (B. Street, 2006).

Based on how we framed digital media literacy in terms of competence, one may believe we place ourselves in the cognitive "autonomous" tradition of literacy studies. This is not the case, for the following reasons. While we don't specifically identify with the New Literacy Studies movement, we do adopt the perspective of studying social practices in order to define digital media literacy, or, more specifically, of studying distance collaborative work practices to define the specific form of digital media literacy they are associated with. Yet, we emphasize the importance of defining digital media literacy in terms of abilities (what people are able to do) and not just in terms of practices (what people do), as any definition of (digital media) literacy includes the notion of ability, not just practice.

Still, our approach to DML *competences* is (1) situational (we consider skills as merely one type of resources that can be combined in the context of situated action) and (2) rooted in the analysis of digital media practices. Framing what workers do when they collaborate from a distance in terms of social practices emphasizes three features of their action. First, they are habitual, routinized ways of acting that both have a material and a mental dimension.

> A "practice" (Praktik) is a routinized type of behaviour which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, "things" and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge. (Reckwitz, 2002, p. 249)

The elements in Reckwitz's definition echo the notion of multiple (internal and external) resources combined by the competent individual in the context of their situated action. In addition to be routinized or habitual, these practices are also social, in the sense that they are shared: they represent "socially developed and patterned ways of using technology and knowledge to accomplish tasks" (Scribner & Cole, 1981, p. 236). Finally, they are inseparable from the meaning that individuals invest in them, as there is neither "practice without meaning", nor "meaning outside of practice" (Knobel & Lankshear, 2007, p. 2).

Shove and colleagues proposed a model of social practices that includes several of the elements we already mentioned. Their model connects three types of elements:

> *materials* – including things, technologies, tangible physical entities, and the stuff of which objects are made;
> *competences* – which encompass skill, know-how and technique; and

> *meanings* – in which we include symbolic meanings, ideas and aspirations. (Shove, Pantzar & Watson, 2012, p. 14)

Let us briefly examine how these different elements affect our own approach to distance collaborative practices. As far as their *material* and *social* dimensions are concerned, when documenting these practices, we examine how courses of action depend on their material and social circumstances, and consider office spaces as "ecologies where office and inhabitant co-evolve" (Kirsh, 2001, p. 308). Treating distance teamwork as shared social practices also means looking at practices in teams, and how they are constructed through social interaction between team members. This requires collecting data on how team members work together, that is, coordinate (establish routines) and cooperate (enact them). (The distinction we make between coordination and cooperation will be covered in the next section.)

The inextricable relationship between practice and *meaning* is what justifies our interpretive approach: we mean to examine the practices of distance collaboration from the perspective of the lived experience of workers (i.e. the meaning they associate with the practices they engage in), and to derive the competences of distance collaboration from this perspective as well.

As for the relationship between competences and practices, we consider it to be the following. Practices are situated performances that are shaped by the affordances and constraints of the material and social resources of the site in which they unfold. Practices make the individual's competences manifest: their ability to opportunistically make relevant use of the material and social resources available in the context in which work is achieved, along with their own knowledge and skills. In this sense, digital media literacy can be interpreted both as a set of competences and as a set of situated practices.

Hence, we examine the practices of distance teamwork to infer the DML of the individuals that perform them. Specifically, we examine how they *define* work situations that involve distance collaboration from their perspective, how they position themselves in these situations, and how they consequently *adopt relevant conducts* (Masciotra & Medzo, 2009). We will come back to these distinctions in the Methods section.

Categories of Collaborative Work

In the previous sections, we described distance teamwork as an array of activities involving the use of digital media and technology, and proposed to study it as a form of literacy, thereby focusing on meaning-making rather than on technology use. We now turn to another central aspect of our research object: its collective dimension. Two distinctions need to be introduced in order to further frame our analyses: a distinction between coordination work and cooperation work, and a distinction between articulation work and production work.

Coordination Work vs. Cooperation Work

Working with others within a team at a distance is a form of collaboration. In this chapter, we use the terms "collaboration" or "collaborative work" as the general category describing the activity of people who work together[8] towards a common goal and share the responsibility of the outcomes of their activity (see Chapter 4). Within collaborative work, we distinguish between cooperation (or cooperative work) and coordination (or coordinative work).

Cooperation[9] indicates the collective performance of work, the achievement of interdependent work-related tasks itself. As Schmidt and Bannon put it: "The term 'cooperative work' should be taken as the general and neutral designation of multiple persons working together to produce a product or service" (Schmidt & Bannon, 1992, p. 15). In brief, cooperation means doing one's job collectively. By contrast, we define coordination[10] as the activities through which coworkers produce the necessary organization of the tasks, resources and roles that allow them to perform their cooperative work together. In that respect, coordination work represents a type of "meta-work" (working collectively on how collective work is performed). The concept of coordination mechanism helps specify the role of technology in coordination.

> A coordination mechanism is a construct consisting of a coordinative protocol (an integrated set of procedures and conventions stipulating the articulation of interdependent distributed activities) on the one hand and on the other hand an artifact (a permanent symbolic construct) in which the protocol is objectified. (Schmidt & Simone, 1996, pp. 165–266)

Coordination work involves the design or re-design of coordination protocols, which, in many cases, come to be objectified into a technological artifact (hardware or software, analog or digital, possibly combining many bits of technology), which both stipulates and mediates how cooperative work is supposed to be coordinated.

Articulation Work vs. Production Work

Strauss (1985, 1988) introduced a distinction between production work and articulation work, which, at first sight, may look similar to the distinction between cooperation and coordination[11]. This distinction is based on the recognition that collaborative work

[8] As the etymology of collaboration indicates it: from "co-" (from latin "cum", with) and "labor" (from latin, work).
[9] From "co-", 'together' (from latin "cum", with) and "operor" (from latin, to work, to produce an effect, to be efficient).
[10] From "co-", 'together' (from latin "cum", with) and "ordinare" (from latin, to order, from "ordo", order).
[11] Other authors have reused Strauss' distinction but relabeled production work as 'cooperative work' (Schmidt & Simone, 1996). For the sake of clarity, we will stick to Strauss' original choice of words.

dedicated to the production of goods or services entails, by nature, a division of labor (both between actors and between actions), and that the different tasks it involves, and the relation of actors to tasks, need to be articulated. Hence, articulation work is

> a kind of supra-type of work in any division of labor, done by the various actors (themselves accountable to others). Articulation work amounts to the following: First, the meshing of the often numerous tasks, clusters of tasks, and segments of the total arc. Second, the meshing of efforts of various unit-workers (individuals, departments, etc.). Third, the meshing of actors with their various types of work and implicated tasks. (Strauss, 1985, p. 8)

The concept of articulation work highlights the fact that cooperative work does not consist in the simple execution of coordination protocols, be they imposed by the organization or chosen and designed by the team members. "Articulation work arises as a integral part of cooperative work as a set of activities required to manage the distributed nature of cooperative work." (Schmidt & Bannon, 1992, p. 18). As Schmidt and Simone noted, coordination mechanisms do not direct action per se. They are not simply or mindlessly executed. Rather, they act as resources (either internal when they only exist in workers' minds, or external when they are objectified in an artifact) that can be called upon as part of the cooperative work. Just like a map does not control the traveler's movements, but is produced to guide travelers, and interpreted by them in context (Suchman, 2007), a coordination mechanism is designed to guide workers, but needs to be instantiated and interpreted during cooperation (Schmidt & Simone, 1996). This means that coordination protocols are by nature underspecified, and that in many cases, workers need to adapt them, circumvent them or deviate from them, and make ad hoc decisions based on the contingencies of the situation they are in. These decisions are part of the articulation work.

The relationship between production work and articulation work is a recursive one, as the management of articulation work is itself articulation work (as when team members pause a meeting to discuss the necessity to change how the meeting is managed), ad infinitum (Schmidt & Simone, 1996; Star & Strauss, 1999). It is also worth noting that articulation work is most often "invisible work" that fails to appear in job descriptions or be valorized as actual work (Star, 1991; Star & Strauss, 1999).

Articulation Work in Coordination Work and in Cooperative Work

The place of articulation work within collaborative work is subject to what appears to be different interpretations among the authors who described it. For example, Star (1991) seems to equate articulation work with real-time adjustments to put cooperative work "back on track".

> Articulation work is work that gets things back "on track" in the face of the unexpected, and modifies action to accommodate unanticipated contingencies. The important

> thing about articulation work is that it is invisible to rationalized models of work. (Star, 1991, p. 275)

We do not share this view, which positions articulation work solely as a part of what we called cooperative work. In contrast, we consider coordination work to be another type of articulation work, as explained in this description of coordinative protocols by Schmidt and Simone:

> A coordinative protocol is a resource for situated action in that it reduces the complexity of articulating cooperative work by providing a precomputation of task interdependencies which actors, for all practical purposes, can rely on to reduce the space of possibilities by identifying a valid and yet limited set of options for coordinative action in any given situation. (Schmidt & Simone, 1996, p. 174)

Figure 2.1 depicts how we conceive the relationship between coordination work, cooperation work, articulation work and production work.

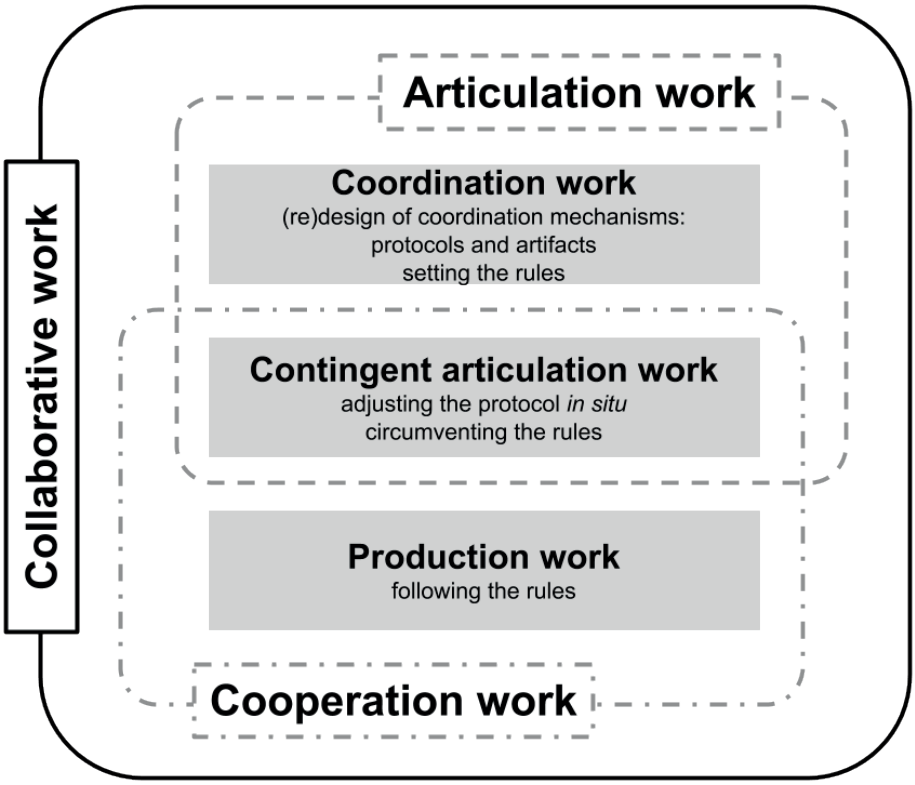

Figure 2.1: Categories of collaboration: coordination and cooperation, articulation and production.

Hence, we examine how office workers perform articulation work both as they design coordination mechanisms and as they adapt their execution of coordination protocols to accommodate the "unanticipated contingencies" of the distribution of their work (Star, 1991, p. 275). Whereas research on computer-supported cooperative work (CSCW) has devoted its attention to the design of systems that adequately support cooperative work by providing coordination mechanisms in the form of "artifactually imprinted protocols" (Schmidt & Simone, 1996), we look at the workers' ability to design their own coordination mechanism using technology, and use and adapt them as part of their collaborative work. Of course, this assumes that team members are actually in a position to design anything at all (either by developing their own technologies, or □in most cases□ by adopting and assembling existing and available technologies), which critically depends on the organizational context they work in. To the extent that they have the possibility to do so, our observations include, for example, how workers are able to combine systems, create specific tools or bypass the devices implemented by their employers, all of which may be required by the workers' team activities to achieve their objectives. In all of such instances, workers switch from complying with an established coordinative protocol involving the use of digital technology, to inventing ways of adapting the protocol to the current situation.

The use of the concept of articulation work allows us to emphasize how workers are able to develop a mindful posture towards the role played by technology in their work, as articulation work is necessarily a process of conscious thought, whether in the form of precomputation produced by coordination work, or in the form of ad hoc adaptation of the designed procedures. This mindful posture, that exceeds the routine application of technological know-hows, is in line with the idea that competence involves intentional, conscious behavior (Westera, 2001)[12].

Method

Data Collection Instruments and Process

Our data collection process primarily involved interviews with office workers, complemented by observations in their everyday work environments. Two teams were selected within each of the ten organizations participating in the research program, which each introduced changes in the way their employees work in team and at a distance. In each of these teams, one manager and two team members were interviewed, making up a total of forty-one workers[13] and twenty managers.

[12] Westera notes that even if competent behavior can be highly routinized and automated, its routinization necessarily starts from intentionally elaborated action sequences.

[13] The configuration of one team, which included a project manager in addition to the team members and team leader, lead us to interview and observe four participants instead of three, leading to a total of 41 workers.

Our informants' work practices were documented through interviews which turned into guided tours of the informants' workspaces (Malone, 1983; Barreau & Nardi, 1995), led by the informants. Our interview protocol was based on a set of collaborative activities identified by reviewing the computer-supported cooperative work (CSCW) literature (Olson & Olson, 1997, 2012; Grudin & Poltrock, 2012, 2013), a subfield of the Human-Computer Interaction dedicated to the design of collaborative technologies, based on observational research on collaborative work practices. We used the CSCW literature to identify the activities related to distance teamwork that could be supported by digital technology. The following eleven activities (Collard et al., 2016) were selected as an initial, tentative inventory of technologically-mediated distance collaborative activities:

1) Making collective decisions regarding task distribution, team governance and roles, and overall team functioning
2) Managing one's tasks in relation with others
3) Planning the team's activity
4) Planning a meeting
5) Working synchronously in the distance with other team members
6) Organizing one's workspaces for collaboration
7) Managing incoming information
8) Managing outgoing information
9) Using others to find information
10) Sharing a collection of documents
11) Authoring a document collectively

Our interview guide detailed each of these eleven activities into up to eight dimensions of distance teamwork, which were systematically accounted for in our data collection. These eight dimensions allow for the fine-grained analysis of how workers are able to perform these activities. The necessary redundancy between activities and dimensions accounts for the intricate relationships between the technologically-mediated activities of distance teamwork. These dimensions are the following:

1) Task management
2) Information management
3) Time management
4) Awareness
5) Space and distance management
6) Collective decision making
7) Réflective tool use
8) Comprehension of "sociomatics"[14]

Not all eight dimensions are relevant for all eleven activities. Table 2.1 represents which dimension was explored for which activity. Each dot in the table corresponds to a (set of) follow-up question(s) in our interview guide.

[14] Understanding the social consequences of technology use.

Table 2.1: Eleven Activities and Eight Dimensions Covered by the Interview Guide

Activities \ Dimensions	Task management	Information management	Time management	Awareness	Space and distance management	Collective decision making	Reflective tool use	Comprehension of sociomatics
Making collective decisions regarding task distribution, team governance and roles, and overall team functioning		●	●	●	●	●	●	●
Managing one's tasks in relation with others	●	●	●	●	●		●	●
Planning the team's activity	●	●		●	●	●	●	●
Planning a meeting	●	●	●	●	●	●	●	●
Working synchronously in the distance with other team members	●	●	●	●			●	●
Organizing one's workspaces for collaboration	●	●	●	●	●	●	●	●
Managing incoming information		●	●	●			●	
Managing outgoing information		●		●	●		●	●
Using others to find information			●	●	●		●	●
Sharing a collection of documents		●		●	●		●	●
Authoring a document collectively	●	●	●	●	●	●	●	●

The categories detailed above acted as the basic structure of our interview guide, therefore orienting our data collection process and the initial phases of analysis. However, ultimately, these categories were questioned and revised through the analysis process. The revised categories are presented as part of our results.

Data Analysis Process

From Deductive to Inductive Coding

As stated above, we consider competences as not being limited to generic sets of attributes that workers possess and use (e.g. knowledge and skills), defined independently of their context. Indeed, "two workers may be identified as possessing identical attributes but may accomplish work differently, depending upon which attributes they use and how they use them" (Sandberg, 2000, p. 11).

Consequently, we aim at defining competences based on the "lived experience of work" (Sandberg, 2000), that is, the relationship between the worker and their work environment, taken as inextricably related. In this context, phenomenography (Marton, 1981, 1986), which has already yielded abundant discussion in the field of information behavior (see for example Bruce, 1997; Limberg, 2000, 2005; Yates et al., 2012), came as an important inspiration for the construction of our method, as it proposes "a research method for mapping the qualitatively different ways in which people experience,

conceptualize, perceive, and understand various aspects of, and phenomena in, the world around them" (Marton, 1986, p. 31).

Adopting an interpretive approach to the workers' perspective on distance teamwork calls for inductive analysis. However, a first "deductive scan" was applied to the interview transcripts and observation notes, in which we coded each part of the material according to the eleven activities and eight dimensions that structured of our interview guide, which were used as a tentative list of activities in which distance collaboration may arise and call for digital media literacy competences. This list allowed us to ensure that a variety of work practices were covered in our data. It also distributed the object of the investigation on several practices and allowed for a fine description of each of them (and possibly for a grouping of some of them based on the data). This represents an alternative to existing phenomenographic inquiries in information science, where researchers have tended to focus on the way people understand a single broad concept, as Bruce (1999) did with information literacy, Sandberg (2000) with competence in engine optimization, or Smith & McMenemy (2016) with political information. In our case, instead of explicitly asking our informants to describe their conception of a general category, such as "distance collaboration" or "digital media literacy for collaboration", we asked them to describe an array of specific collaborative practices they engaged in, and we used these descriptions to infer what the digital media literacy of distance collaboration is (see below).

The application of the deductive activity categories was followed by the inductive coding of the informants' experiences, with codes describing their practices. At this stage, our analyses used principles from the grounded theory method to build a theoretical understanding of the studied experiences (Charmaz, 2006; Glaser & Strauss, 1967). Our informants' discourse and our observations were coded to identify "properties of the subjectivity of actors" (Lejeune, 2014), which are gradually articulated to define conceptual categories. The categories account for the variation in the different conceptions of distance team-work practices, in accordance with the principles of phenomenography (Marton, 1981).

Inferring Competence Definitions from Descriptions of Practices

How we infer competences from this coding is not a straightforward process. Two principles of phenomenography define how we initiate this step of our analysis. First, our unit of analysis is the practice, not the individual. Distance teamwork practices are coded based both on the informant's discourse on them, and on their traces in the guided tours and in our observations. Second, the coded practices are pooled across our whole sample of informants, so that practices can be compared, contrasted, or grouped both within each informant and between different informants.

Our objective of competence definition imposes at least two requirements on our analysis: we should be able to describe the objects of competence (in terms of problem

situations workers are able to deal with) as well as the nature of a competent conduct (in terms of situated intentional action).

By describing their practices, our informants provided descriptions of the problem situations they need to address as part of their work, which constitute the objects of their competence. We used these descriptions as a basis for our analysis to build an inventory of typical problem situations that call for DML competences from the perspective of workers. Our focus on practices (not individuals) as the basic unit for analysis allowed us to pool descriptions of practices across all informants, so that we could group together descriptions that referred to the same problem situations. These problem situations are components of what we called activities in the description of our interview guide. For example, one activity labeled "organizing team meetings" contains several different components (which we will call "actions" later on) including "identify coworkers availabilities", "informing coworkers about one's own availability", or "making information available for the meeting participants". Each of these actions point to a different problem situation (e.g. "how can I make my own availability visible for my coworkers?"), which is addressed in different ways (i.e. through different situated social practices) by different informants. Hence, in our analyses, practices stand as alternative ways of performing actions as part of activities. In the process of constructing the inventory of problem situations, we used the list of eleven activities we surveyed in our interviews as a guide that was constantly challenged and questioned. The grouping of practice descriptions redefined the scope of these activities, and broke them down into smaller activity components (actions) corresponding to problem situations.

Additionally, the way our informants describe these situations depends on their competence. Indeed, a key aspect of professional practice is the ability to properly frame the problem situations that are constitutive of one's work: setting its boundaries, attending to its most relevant features, and imposing a coherence upon it. What Schön (1983) calls the "reflective practitioner" is able to frame known situations, and to construct new frames to face novel situations based on their experience. Our inductive coding documents the way our informants frame the work situations they describe, that is, how they identify and articulate different aspects, or dimensions of these situations and of the conduct they adopt to address them. Based on this coding, for any given problem situation, we group together descriptions that correspond to qualitatively similar conceptions of that situation.

Essentially, our analysis works towards both the identification of the set of distance collaboration situations that call for DML competences, and the identification of the different conceptions of (i.e. different ways of framing) each situation.

As Limberg (2000) noted, different conceptions of the same phenomenon can often be hierarchically ordered in terms of their increasing complexity. "More complex ways of experiencing means that the categories comprise more dimensions and a simultaneous awareness of these dimensions." (Limberg, 2000, pp. 58–59). The analytical process through which we define competences relies on this hierarchical ordering. As one's

ability to frame a situation in more or less complex ways is indicative of their competence (Sandberg, 2000), the ordered conceptions of distance teamwork partly define levels of DML competences.

However, our analysis does not stop at describing how workers understand (i.e. frame) their experience of work in qualitatively different but increasingly complex ways: it must also encompass how they are able to develop relevant conducts in the work situations they encounter. Here, our analysis shifts its focus to the intentional actions performed by our informants based on their understanding of the situation. In this case, competence is not necessarily indicated by the complexity of actions, but rather by their matching with their conception of the situation.

Of course, framing a problem situation and developing a conduct in it are related: "a capability for *acting* in a certain way reflects a capability of *experiencing* something in a certain way. The latter does not cause the former, but they are logically intertwined. You cannot act other than in relation to the world as you experience it." (Marton & Booth, 1997, p. 111). We consider the relationship between these two terms to be a conditional one, with framing being a necessary but insufficient cause to conduct.

Results

A Matrix Definition of Competences Required by Workers to Collaborate in Distance Work Environments

The results of our analyses take the form of a matrix of the competences required by workers to collaborate in distance work environments. This matrix of competences crosses activities involved in distance collaborative work with dimensions workers take into account when they think about and engage in these activities. This matricial definition allows for a fine grained description of the competences analyzed and has the advantage to display the relations between the different components of these competences which are deeply intertwined (Jacques & Fastrez, 2018).

The practices documented through the workers' interviews were grouped according to their nature into generic categories within a three-level activity structure. This hierarchical structure is the result of an inductive reorganization of the deductive categories used to structure our interview guide, leading to the formulation of original conceptual categories. These three levels can be described as follows, from the most abstract to the most specific:

- *Activity areas* are defined in terms of general objects that are essential components of distance collaboration: the team's tasks, team meetings, remote communication between team members, shared information spaces, and co-authored documents. These areas stand as meaningful units in the collaborators' conceptions of collaborative work.

- *Activities*: for each activity area, we identified two activities that complement each other. In each case, one activity is aimed at performing cooperation work (working together), and the other is aimed at performing coordination work (collectively producing the organization of the tasks, resources and roles necessary to work together). As explained in the first part of this chapter, the coordination activity is a kind of "meta-work" with respect to its cooperation counterpart. For example, shared information spaces call for both "organizing shared information spaces" (coordination) and actually "sharing information in dedicated spaces" (cooperation).
- *Actions*: activities can be divided into actions, "conscious processes directed at goals" (Kaptelinin, 2013) that contribute to the fulfilment of the activity's motive. These actions correspond to the problem situations we mentioned in the previous section. For example, organizing team meetings requires to identify the availabilities of team members, to schedule meetings, to make information available for the meeting participants, etc.

In our analyses, the same generic action corresponds to different specific *instrumented practices* performed (and described) by different informants: these practices are alternative ways of using ICT to perform or coordinate collaborative distance work in a given problem situation and given contextual conditions. In other words, our analyses grouped all the instrumented practices described by our informants into actions based on the kind of goal they contribute to achieve. Whereas the activity areas, activities and actions are abstract generic constructs, the instrumented practices represent specific instances of the action categories in which an informant makes use of digital tools to address the problem situation at hand. These practices are instrumented in the sense that the technological artifacts that are being used are associated with a personal or shared utilization scheme that assigns it a signification and a function (Rabardel & Bourmaud, 2003) that are specific to their contextual practice[15]: the same artifact can potentially be used differently either by different informants, or by the same informant in different problem situations (and hence correspond to different instruments). By describing their practices, each informant not only describes their instrument of choice, but how it is part of a meaningful, habitual, and sometimes shared way of achieving a given goal in the context of collaborative work. As previously stated, the description of the practice by the informant reflects both their conception of the problem-situation and the way they act to address it.

In this chapter, only the first two levels (activity areas and activities) will be used to define competences required to collaborate at a distance. Specifically, we will present each activity in a dedicated section. The actions composing each activity will be listed and referred to, but will not be presented separately, in order to underline the connections between them. Specific instrumented practices will be used to illustrate each activity. Table 2.2 outlines these three levels and their associated dimensions. The complete list

[15] In Rabardel's theory of instrumental genesis, an instrument is defined by the combination of an artifact and a utilization scheme.

of activity areas, activities, actions and alternative instrumented practices for each action is available in Appendix I.

Table 2.2: Five Activity Areas, Ten Activities and Six Dimensions Defining the Digital Media Literacy Competences of Distance Collaboration

Area	Activity	Tasks	Time	Space / Distance	Informa-tion	Techno-logy	People
Interdependent Tasks							
	Collectively allocating tasks (coordination work)						
	Implementing tasks interdependency (cooperation work)						
Team Meetings							
	Organizing team meetings (coordination work)						
	Meeting with the team members (cooperation work)						
Remote Communication							
	Organizing means of communication (coordination work)						
	Communicating with coworkers (cooperation work)						
Information Spaces							
	Organizing shared information spaces (coordination work)						
	Sharing information in dedicated spaces (cooperation work)						
Document Production							
	Organizing the collective authoring of a document (coordination work)						
	Authoring a document collectively (cooperation work)						

In our matrix, the activity areas, activities and actions are crossed with six dimensions of work situations individuals take into account when collaborating at a distance: tasks, time, space and distance, information, people, and tools. Each dimension relates to a set of characteristics of the activities (e.g. “tasks complexity”, “tasks recurrence”), grouped under an overarching category (e.g. “tasks”) workers perceive and understand in order to take action when they collaborate. As for the activities, these dimensions stemmed from a grouping of the inductive codes into abstract categories that constitute a revised version of the deductive categories formulated at the beginning of this research. The process of grouping the inductive codes into dimensions highlighted the tight interconnection between these dimensions: two thirds of the categorized inductive codes were actually assigned to more than one dimension (most often two). For example, the code “avoiding

delays in the execution of tasks" was assigned both to the "tasks" and the "time" dimensions.

In the next section, we provide an overview of each of the six dimensions, before moving on to the description of the different activity areas, activities and actions documented in our data.

Dimensions of Activities

Tasks

Task management is a crucial process when collaborating: team members have to understand the qualitative and quantitative aspects of the different tasks attributed to the team as a whole and to each member of the team. First, task management is related to the nature and scope of the tasks. Workers have to understand what has to be done to be able to collaborate. They also have to qualitatively evaluate the tasks' importance, complexity, usefulness, urgency, regularity, etc. Second, task management is a process dealing with the amount of tasks and associated shared workload. Workers have to manage the team's tasks with the resources they have to complete them as a team. Third, when managing tasking, workers also have to deal with the interdependency of the tasks, as the execution of the tasks involves different intertwined steps, sometimes assigned to different colleagues, and the result of some tasks directly impact the completion of others. Some tasks also have to be completed synchronously and imply the expertise and actions of several workers.

This dimension addresses how workers make use of digital media to address all of these aspects in the way they manage their tasks both at team and individual levels. At the collective level, it consists in the technologically-mediated management of the distribution of tasks among team members. At the individual level, it involves the use of technology to adjust one's task execution to the others' activity.

Time

As the creation of shared sense of time is an important aspect of collaboration, workers have to take a series of complex time-related issues questions into account. Time is a shared resource for work, but it is by essence difficult to grasp and organize. Time management touches upon how team members make use of information technology to manage the time allocation, frequency, scheduling, and synchronicity of both the team's activity and the individual's activity in relationship to the activity of the team (Blandford & Green, 2001). Individuals and teams have to set time objectives and deadlines in order to organize the time they share in order to reach their goals. To do so, representations of time-related decisions have to be shared for members of teams. These representations make time visible and apprehendable, and are tools for action. They can serve for example to assess progress of tasks completion and avoid delays. They can also be used

to identify suitable time periods for specific collective action like meetings, for example. Time management also includes the management of interruptions (O'Conaill & Frohlich, 1995), that is, managing both the extent to which one interrupts others, and the extent to which one is accessible and can be interrupted by others (Reder & Schwab, 1990).

Space and Distance

When collaborating, team members have to understand the implications of spatial configurations and distance between them. Similarly to time, creating a common sense of space is an important aspect of collective work. Space and distance management thus pertains to the management of the spatial properties of one's work environment at different scales. It affects the spatial layout of one's local workspace (Kirsh, 1995), the proxemics of one's workplace (e.g. who is working closest to whom), and the separation between work sites in teleworking (Olson & Olson, 2000). It's important for workers to know where they can find their collaborators, and what are the efforts needed to reach them physically or through digital tools. Indeed, the opportunity and/or obligation to share space is a complex issue. On the one hand, collaboration often rely on the co-presence of team members to facilitate the sharing of information and take synchronous collective action. Despite the development of digital mediating tools, direct interactions remains for many a better way to deal with complex issues. The importance of direct human contact has also been often mentioned by interviewees as a way to humanize work relations. On the other hand, being co-present in shared space often implies efforts for the workers. Shared work spaces can also lead to frequent interruptions and distractions. Isolation possibilities, either for individuals or groups, are therefore needed to facilitate concentration, to make meetings possible, and to prevent the disruption of the work of others. All these reasons make the ability to understand the implications of space and distance configuration on collaboration crucial for workers.

Information

Collaboration is built upon collections of shared information between team members. Team members have to understand and collectively decide and act on the management of this information.

Workers have to understand the meaning of information, but also its forms and formats. They have to manage information in order to remember and re-find information. The exactitude and value of information, its contribution to what is already owned or known, have to be assessed to avoid mistakes and redundancy. The security and privacy of information is also an important aspect to think about in organizational contexts. At the individual level, an important characteristic is the private or professional nature of information.

When sharing information, workers also have to bear in mind its social dimension, assessing its value and accessibility for other workers, for example. The ability to

discriminate between information useful for oneself and information useful for other specific coworkers or a team in general is a core aspect of information management. This ability then allows workers to share and find ways to make information available for others team members. Finally, they need to take into account the collective dimension of digital information production, as well as the contribution of individual information authoring for the team, and the processes through which information is shared (including the timing of sharing, the organization of shared resources, and the management of accesses to shared information).

Technology

Collaboration at a distance implies the use of a wide range of digital tools which supports the activities of workers, their communication and the way the exchange information. Considering the technological dimension of distance collaboration activities involves the individual's ability not only to use information technology as part of their professional activity, but also to reflect on the way information technology affects their work, which necessarily interweaves technology with other dimensions.

At the individual level, this includes identifying one's technological needs for distance collaboration, evaluating how the affordances of different technologies meet them, selecting tools accordingly, appropriating them (i.e. tailoring them to one's needs – Dourish, 2003), and assessing their efficiency *post hoc*. Another important aspect is the role of digital tools in the management of work/life balance as these tools they may accompany the workers in the different context of his life and not only when working at the office during work hours. For example, the impact of being always "reachable" and its implications on daily life have to be considered.

At the collective level, this involves what we call the comprehension of "sociomatics". The term "sociomatics" refers to the fact that information technology has gone from enabling the automatic processing of information (or informatics) to including the automatic processing of social interactions (or sociomatics). The comprehension of sociomatics corresponds to the understanding the individual has of the social entailments of technology use. For example, this includes understanding how the choice of one tool for sharing information with the team impacts how each team member may access information, or considering how the affordances of shared tools will support the collaborative work of smaller or larger teams. It also involves understanding how one's activity is made visible to different people by technology, and how others can negotiate access to one's time through the use of a given tool (Hollan & Stornetta, 2000).

Users also need to understand how shared tools are used by others, the place they have in their activities and the competences they have to use those tools, in order to ease the collective operation of such applications.

The reflexivity towards tools may lead workers to test alternative technological options to assess their efficiency and efficacy in the context of their work activities. It may also push them to adapt their work processes to the tools they have at hand.

People

The ability to understand others is central when collaborating with coworkers. In the CSCW literature, the concept of awareness has emerged as a critical factor for successful collaboration and coordination: the understanding of the activities of others, which provides a context for your own activity (Dourish & Bellotti, 1992). Schmidt (2002) highlighted how awareness was a (too) broad concept that spans from a general awareness of the respective knowledge, expertise and social standing among team members, and of their respective location and availability (or social awareness – Tollmar et al. 1996), to a much more specific awareness pertaining to tightly coordinated team activities, namely the practice and ability to coordinate by monitoring others and making one's own activity visible to others.

Mutual awareness allows each member of the team to adapt their activity to the activities of the others. Understanding the roles of coworkers within a project or the organization also facilitates the collective course of action. Knowing when others are available and where they are is also essential. Workers working in teams frequently have to share information about availabilities and locations of team members to organize meetings, for example.

However, the dimension of "people", as used in the context of this study, goes beyond the sole perception of the activities of others. To collaborate, workers also have to take into account the complexity of humans characterized by their different levels of expertise, competences, goals, aspirations, personalities, etc. Therefore, our informants note how team members have to develop a deeper comprehension of others, exceeding what they are doing or supposed to do. For example, workers could anticipate the arrival of a new collaborator with little experience by creating occasion to collectively share experiences between senior and junior team members. The people dimension also touches upon the well-being and the involvement of the team members, which are related to the stress and/or satisfaction coworkers may experience.

The importance of the "people" dimension has been widely emphasized by our informants, making it a particularly complex and important dimension of distance collaboration. This dimension was frequently connected to the other dimensions (e.g. the availabilities of team members as a relation between time and people) which shows a central role of this dimension in the way workers frame collaboration at a distance.

Activity Areas, Activities and Actions Involved in Distance Collaborative Work

The following sections will describe the activity areas, activities and actions used to define the digital media literacy competences of distance collaboration. Examples from the interviews will be used to anchor the definition of these three levels in actual work practices described by our informants.

Interdependent Tasks

A core issue when teams collaborate at a distance is to be able to work together on the advancement and completion of different types of tasks. The process is complex and implies that individuals and teams put efforts into coordinating and monitoring interdependent tasks. Tasks are interdependent when their execution depends on one another, causing the necessity for the joint interaction of several team members (e.g. several team members working on different aspects of a single project, each according to their own competences). The level of task interdependence may vary greatly across teams, as a function of the division of labor in the productive tasks, in the regulatory tasks, and the technical system supporting production and regulation within the team (see Chapter 3).

This process is two-fold: on the one hand, individuals have to coordinate to set the conditions of the collaboration. They have to prepare work that will be done by more than one individual by attributing the tasks to teams and workers, setting the objectives, deciding for deadlines, etc. On the other hand, they have to cooperate on collective tasks by monitoring the progress of coworkers and by sharing their progress to keep them informed. Therefore, following the distinction between coordination and cooperation actions, two activities comprised in this activity area are proposed: collectively allocating tasks (coordination work), and managing tasks interdependency (cooperation work).

Collectively Allocating Tasks (Coordination Work)

When colleagues are working partially at a distance, an important activity for teams resides in providing and planning out a series of tools allowing the distribution of tasks that are dependent on a given group. Groups can be composed of the whole team or of smaller groups of coworkers which can vary according to the nature of incoming projects and workers' available time. This variability is also an element that encourages teams to set up coordination tools regarding interdependent tasks. Individuals work with a large range of digital tools to coordinate collective tasks allocation (e.g. shared spreadsheets, online collaborative platforms, ticketing systems, kanban-style boards, shared e-calendars, etc.). These tools allow workers to record their decisions and multiple information about the tasks so that these data remains available for the team and doesn't depend on the physical presence of workers to be reached.

If one could think that the distribution of interdependent tasks is traditionally shouldered by team leaders, our observations show a more nuanced situation, with team members being in charge of tasks distribution inside restricted groups. However, the initial setting up of the digital media apparatus that supports the coordination protocol is nearly always a team leader's initiative, if not an initiative coming from a superior hierarchical level, or from the IT department. In any case, the formal inscription of this coordination work within tools is necessary but can be experienced as time consuming. Time spent on these activities is paradoxically often not considered by our informants as actual work, and reminding themselves to fill out the digital documents they use for tasks distribution generally requires a conscious effort on their part. We note that if the coworkers discuss tasks allocation together willingly, collective discussions and decisions about how to formalize it within tools is rarely on the agenda despite the constraints it can generate.

The work of interdependent task coordination is *de facto* closely linked to its "cooperation work" counterpart, that is to say the implementation of tasks interdependency (see next section). But this activity is also highly intertwined with team meetings activities (see below), especially in their cooperation part. Members of teams participate in tasks organization preferably when they are gathered, either by being physically co-present in the same room or by taking part in a meeting remotely through a videoconference system.

An example that reflects these interconnections can be found in a practice spotted in a team (MediumTerritory) where the procedure leading to task distribution has been clearly established. Each week, the team meets physically in a room and a significant part of the time is devoted to the presentation of new projects by members of the team. The arrival of a new project in that organization implies to form a temporary group of colleagues deciding to play a role in it, depending on their attributions and availabilities, the person presenting the project becoming its official and temporary leader. To prepare this process, workers that have a project to present must publish information the week before the meeting on the organization's social network (Microsoft Yammer) to advise their coworkers and ensure those who are interested to participate to be physically present during the meeting. The digitally shared information will in that case help mobile workers decide whether they have to be physically present or not at that moment of task distribution and prepare in case they decide to join in the project. In addition to this formal process, future project leaders may also target coworkers that might be interested and meet with them informally on the workplace to tell them more about their project in advance.

This complex practice, in addition to involving both digital and non-digital artifacts, involves many of the dimensions we identified in our analysis. It combines considerations about tasks, information, people and tools that enable the group to identify the nature of potential tasks in order to make arrangements about their distribution.

Collectively allocating tasks (list of related actions)

- Identifying coworkers working time and work responsibilities
- Identifying the nature of tasks
- Making the team's tasks and deadlines visible
- Identifying the workload related to tasks treatment
- Ensuring a balanced collective workload
- Ensuring one's individual balance toward collective workload
- Identifying constraints of media apparatus for interdependent tasks allocation

Implementing Tasks Interdependency (Cooperation Work)

Team members who collaborate in the distance spend significant time using digital media on a day-to-day basis to make the progress of their tasks visible, to monitor others while they execute their tasks, and to reconfigure the allocation of the tasks within their team as they progress. This specific activity seems to constitute one of the key aspects of collaboration as it is associated to a wide range of other activity areas we describe in our findings. One of the challenges for the team is to maintain a shared awareness of the progress of interdependent tasks without losing time or causing information overload.

Implementing task interdependency is characterized by the use of a profusion of tools ranging from shared online documents and spreadsheets, shared e-calendars, project management systems to ticketing systems and collective e-mailboxes, to name a few. This abundance can sometimes lead to situations of confusion between coworkers and problems of compatibility between team members' work habits can appear, raising questions of appropriation and competence levels. Our informants sometimes describe the procedures this activity calls for as "heavy" but necessary. They especially stress the need to share meaning between coworkers with clear shared processes, in order to avoid misunderstandings. Missing information about task progress can lead to overlook operational problems and thus to the inability to solve them. We observed many ways of preventing the loss of information on tasks advancement in distant teams, such as simply CCing the other members by e-mail or adding comments in a shared document to ensure others receive an e-mail notification, for example. The necessity to know the progress of coworkers in common tasks emphasizes the particular salience of the mutual awareness dimension we described earlier as part of the people dimension.

Maintaining mutual awareness at a distance seems to be a demanding activity, which calls for what some informants call "discipline". They highlight how they find it difficult to remember and find time to update and inform others about the progress of their tasks. That could explain why it happens often during team meetings. One solution adopted in several organization is to organize frequent team meetings as a way for workers to share updates about their work. Another option is to rely on digital tools to automatically support the implementation of task interdependence. Especially when it comes to time management, technology is being used and programmed to remind workers of tasks deadlines, to see if there is a delay in their execution and to decide if the work distribution

requires adjustments. This activity stays somehow problematic when people don't have much control on the workload that is automatically assigned to them.

In some cases, it is the team leader's role to use technology to control the collective workload. This seems to be the case when coworkers have lower levels of collaboration with their colleagues (e.g. within IT support teams, with workers mostly dealing with customers individually). For instance, team leaders who formalized a coordination protocol to manage task interdependence can then assess its efficiency and further adjust the task distribution process, which would amount to a contingent phase of articulation work. A telling example from our data is the way one team (SmallIT) uses a digital kanban board in order to have an up-to-date overview of ongoing tasks. Each task has a determined duration which is encoded in the system by workers. The system records the period of time the task is supposed to run until its term. The task gets an initial color that changes automatically as it comes closer to its deadline. The team leader pays particular attention to this kind of information and estimates if the team gets overwhelmed and if adjustments in the workload need to be done. In another organization (BigInsuranceOne), with a background of increasing tensions due to cost cuts and staff restructuring, such formalized processes cause serious concerns among coworkers. Adopting a more critical perspective, these workers perceive such explicit information about their tasks as a resource that could be used by their hierarchy and jeopardize their employment.

Finally, we note the need to match the tools' degree of complexity to the organization's own degree of complexity, size and degree of tasks interdependency and collaboration between coworkers. In this respect, some digital tools were pointed out for their relative "rigidity", and especially for their inability to be used synchronously by several members of the team without risks of data loss. When addressing task interdependence issues, the synchronicity of tools came back repeatedly in the interviews, because it allows colleagues to adjust together in real time and to save time by receiving instant feedback.

Implementing tasks interdependency (list of related actions)

- Making content of tasks available for team members
- Inquiring about collective progress on tasks
- Identifying changes in a collective task progress
- Identifying other's degree of availability to exchange about tasks progress
- Informing other on one's own availabilities to exchange about tasks progress
- Collectively evaluating tasks progress
- Identifying daily work load
- Identifying coworkers' work overload
- Balancing time dedicated to collective and individual tasks
- Making oneself localizable for coworkers
- Identifying a convenient moment to work together at a distance
- Identifying constraints of media apparatus to work synchronously

Team Meetings

Collaborative office work is steadily punctuated by team meetings. Bringing people together is an imperative when collaboration and, consequently, the success of task interdependence are at stake. In our data, team meetings occur mainly face-to-face, but increasingly at a distance.

Organizing Team Meetings (Coordination Work)

Generally in the hands of a single person, and more occasionally in the hands of a group, organizing a team meeting through digital tools raises questions about the visibility of everyone's schedules. Organizations tend to make their employees' calendars more visible to each other to facilitate this process, with shared e-calendar politics for example. This aspects of meeting organization takes a significant place in the success of this activity and asks for specific competences.

Between members of a team, we find a uniformity of shared digital tools, generally calendars, which seem necessary to set up moments to meet. The interface structure and especially the "automatic" features included in tools such as e-calendars allow certain information or tasks to be handled by the machine. This reduces the cognitive effort workers have to make when planning meetings (encoding them, inviting a group of people, guaranteeing direct access in the case of distance meetings...) or canceling them. Automatic "planning assistants" are used to find suitable moments for the whole team and to inform team members about the meeting's program, particularly in distant teams, where coworkers don't have the occasion to see each other.

Managing such shared calendars can be complex as they often include different overlapping kinds of data: collective professional information (mainly meetings or collective events), individual professional information (time spans blocked for tasks, work location, holidays...) and individual private information. To be able to clearly identify the differences between them is important to inform others about one's availabilities and, on the other hand, to visualize easily others' availabilities. We found many problematic situations regarding availabilities identification on the field. For example, a project coordinator (BigHealth) experienced great difficulty to organize meetings with coworkers and already failed several times. She used a planning assistant and shared e-calendars. According to her, information about others' availabilities was not correct: calendars were not up-to-date and travel time was not encoded when they had other meetings out of the office. For her, this situation can be explained by the fact that her coworkers are senior, very busy colleagues who have been in the organization for a long time, meaning they have anchored habits corresponding to more traditional ways of working. Her framing of the situation takes into account the "people", "tools", and "space and distance" dimensions on which she relies in order to find a solution to her problem. In another attempt to organize a meeting, she encouraged them to update their calendars and suggested the possibility to organize teleconferences, with or without video, to

ensure they feel at ease with this. However, she sees that it remains a problem for her coworkers to work that way. Her conduct shows an emphasis on reflective tool use and mutual awareness in the sense that she tries to find a solution consistent with her view of "the good way to use shared calendars" and the activities and habits of her coworkers.

These shared e-calendars can also have different degrees of openness regarding writing and access rights. In some cases, workers can directly place meetings in their colleagues' calendar, skipping the invitation step. This could be seen as a risky practice, and indeed it can rapidly lead to meetings overload, but we've observed strategies to prevent its excesses. To avoid being overwhelmed by meetings, workers might set limits to the number of people with writing access or block time spans absolutely dedicated to individual work to indicate unavailability.

Organizing distance meetings through videoconference is a way to spare work time and unnecessary travel to coworkers and is seen in this regard as an efficient way to meet with remote colleagues. However, this practice appears to be less frequently adopted when team leaders perceive the meeting's topics as sensitive, causing them to require the physical presence of the whole team (or of a specific coworker). When meeting with external teams or partners, physical presence may facilitate the discussion if people don't know each other yet or don't see each other frequently. For some people, it can really become uncomfortable to take part to a meeting while working at home or from a distant place. These kinds of remote meeting through videoconference can block their feeling of participation and using a webcam can make them uncomfortable. Knowing and discussing these preferences and feelings between coworkers supports meaningful coordination actions that foster a sense of comfort (following a chosen way of working is easier) and allow workers to identify suitable times to telework. The technical aspects such as choosing appropriate rooms, tools and connection take also a substantial place when organizing remote meetings as well as coworkers' knowledge about technical aspects. It guarantees that the group will benefit from aforementioned time saving.

Some teams that need to meet frequently put great efforts into formalizing recurrent meeting times in shared calendars, in order to secure them. These particular teams with high levels of collaboration have their own preferences and habits regarding the possibility to meet face-to-face or remotely. In some cases, team members have formally insisted that participating in a remote meeting should be considered as natural, and become the norm for meeting with colleagues.

Finally, the number of participants plays a great role in the decision to make a distance meeting. In most cases, remote participants are limited to ensure mutual understanding, to avoid speech interruptions and inattention.

Organizing team meetings (list of related actions)

- Scheduling team meetings
- Identifying coworkers availabilities
- Informing coworkers about one's own availabilities

- Making information available for the meeting participants
- Identifying appropriate media apparatus for team meetings

Meeting with the Team Members (Cooperation Work)

Even if it is necessarily linked with the previous one, the activity of meeting with team members (cooperation work) is of a very different nature, calling for distinct competences. Meeting times are frequent and are occasions mainly dedicated to implement various other actions constituting collaborative work.

Getting together around a table at the office or behind a screen from one's home in order to achieve cooperative work implies activities alternatively related to the proper conduct of the meeting itself (e.g. accessing the link to the remote meeting, or checking whether everyone can hear them) as well as activities related to, as mentioned above, the execution of interdependent tasks and the collective assessment of tasks progress (e.g. updating a shared file about interdependent tasks). Meeting time is also dedicated to collective workload distribution and planning. Teams review and update digital monitoring documents stored on different kinds of information spaces to control their work pace and if adjustments are needed. These adjustments coincide with contingent articulation work that can also encompass improvements of distance collaboration processes, like collective authoring of a shared document for example.

The person in charge of the meetings organization (see previous section on coordination work) is, in most cases, recognized as its supervisor and responsible for its handling. He or she is often the person who will amend the documents that are used during the meeting. However, some teams are trying to work with tools that allow synchronous writing, as online shared documents for example.

Meeting participants use a great range of digital and non-digital tools (online shared documents, paper notes, shared spreadsheets and calendars, project management software, etc.) to support the performance of aforementioned activities. The e-calendar is the main tool used to be reminded of the meeting time although the use of other tools can serve as reminders (e.g. keeping meeting invitation e-mails up in the mailbox).

In most cases, the majority of the team is at the office in a face-to-face setting and a minority of coworkers join in from a distance. Participants generally use their own laptop computers to take notes and look together at a bigger screen where relevant documents are projected. Teleworkers follow the course of the meeting thanks to a camera, and sometimes a shared screen mechanism. To our informants, the possibility to share a common view and the ability to actually see one's colleagues, and thereby seize their feelings and affects during the discussions, are of particular importance.

In remote meetings, participants have to deal with the risk of attention loss fostered by the distance between the coworkers. In this context, the appropriateness of the media apparatus and the number of people gathered need to be taken into account. The balance between the right number of people in the office and people at a distance is not easy to

find. When too many people are in the office and the digital equipment is not adapted, the feeling of participation and satisfaction can decrease because of misunderstandings, the microphone and the camera being too far from some participants to hear and see them properly from a distance. One organization (SmallIT) found a way to deal with this issue by organizing very short (fifteen minutes) daily "standing" meetings dedicated to tasks monitoring with a large number of team members at the office, and several distant ones appearing on a big screen through videoconference. When someone's turn to talk comes, the person steps in front of the camera so she can be heard by all (remote and local) participants. This example highlights how the success of a given collaborative practice rests on an intricate combination of dimensions: short meetings with a routine agenda, a perfectly functioning equipment, an excellent internet connection, a known-by-all operating method, and shared habits of remote meetings developed as a consequence of having different company sites and regular homeworkers. This system is, for example, less adapted to longer meetings, with complex and tense topics.

Another risk for attention in videoconference meetings is the management of interruptions. When one worker participates in a videoconference meeting from their desk, other workers who are not invited to the meeting are likely to be unaware of its planning and to interrupt it with requests. This phenomenon is especially likely to occur in mixed companies, where office workers are not separated from operative workers (who do not use the same digital communication tools). Such companies tend to tolerate more meeting interruptions due to this inability to openly share their planning with every worker.

Finally, finding a concerted way to keep a shared record of meetings seems very hard for workers who prefer to keep their own personal notes. Taking formal notes during a meeting is demanding and they are most of the time not read afterwards. Sometimes team leaders send an e-mail after the meeting to remind the team about the content and decisions that were taken. Digital tools offer numerous ways to keep track of collective decisions and remarks by allowing to insert comments and notes directly next to the concerned task or project. Still, we observed that there is a real challenge in terms of information management to avoid creating additional confusion and overload when documenting collective decisions.

Meeting with team members (list of related actions)

- Recalling the chosen moment to meet
- Interacting with coworkers
- Distributing collective tasks and workload
- Scheduling team's collective tasks
- Establishing collective authoring processes
- Inquiring about each other's progress
- Managing interruptions
- Keeping track of shared information during the meeting

Remote Communication

Working in geographically distributed teams raises the question of communication and information transfer between colleagues. As the range of available digital tools and types of use is quite large, there is a need to think collectively about their use in order to prevent issues like information overload or misunderstandings between colleagues. Balanced arrangements must also concern homeworking policies to control the implications of online communication that can cause potential encroachment on workers' private life, suggesting concerns about time and information management.

Teams also need to decide and distinguish between interactions which require face-to-face interaction from the ones that can take place at a distance. Such decisions rely on mutual awareness and sociomatics concerns, based on the elusive perception that technology modifies social contact within a variety of communication situations.

Organizing Means of Communication (Coordination Work)

In the context of distributed teamwork, organization of communication means consists in finding ways to configure the technological environment to support mediated interactions between team members preventing potential pitfalls related to distance communication. The complexity of this process resides in the selection and implementation of an array of tools adapted to the team's activity and most importantly in their harmonious collective use. As distance collaborative work practices imply continuous access to communication means in different kinds of locations (abroad regardless of time difference, at home, from another site of the organization, on another floor of the building,...), a series of issues must be addressed to avoid problems linked to information transmission, mutual understanding, informational load, private life preservation and social bonds maintenance.

Distance tends to intensify the need for communication between coworkers and contributes to an increase in the amount of messages transiting between them. The e-mailing system is the most common tool used for message transmission and is by far causing the most trouble. Intense e-mail use is associated with information overload and with a feeling of continuous connection with work that can be exacerbated by contemporary mobile means of e-mail consultation enabled by laptops or smartphone apps. Controlling the intensity of these two phenomena represents a complex question for organizations. Although it seems mainly considered as an individual competence of personal information management, team leaders can play a role in spreading common guidelines that support a shared awareness of problematic situations. This process is not easy as shown in the following example from the field, where a team leader (MediumTerritory) notes a disturbing inflation of after-hours useless e-mails in her organization. She explains that such e-mails often contain several recipients and generate multiple answers that are poor in terms of content, but act as a way to visibilize one's reactivity, even during the evening or at night. She says this compulsory need to show one's presence generates "pollution" of mailboxes and private time. She advised

her team to ignore after-hours messages but she recognizes that she's part of the problem by maintaining such practices herself. She discussed the issue with other managers and asked for the implementation of filters to block incoming mails at late hours. Eventually, they didn't adopt this measure because it could have restrained worker with different preferences regarding working hours. So far, the team leader has been unable to change this situation that still represents a great problem for her coworkers. In this case we see that despite a complex framing of the problematic situation made by the respondent, her conduct does not lead to the situation's solving because of the pre-eminence of external and simultaneous framings competing with hers.

As far as information overload is concerned, we found other examples of conducts that resulted in a decreasing number of e-mails and in a better control of information. Such teams have organized their set of digital tools dedicated to internal communication in accordance with their own work activities and set up concerted guidelines for their collective use (common use of e-mail filters, CC policies, "out of office" messages, etc.). In these cases for instance, e-mails are often identified as means to transfer succinct and official messages. For other forms of informal communication, these teams found alternative tools, such as instant messaging apps, that allow a more direct way of communicating, closer to traditional face-to-face discussion. Participants describe instant messaging (e.g. Skype messenger, Slack) as an easier alternative to e-mail for ad hoc interactions with a large number of employees working in the same workplace, and for maintaining contact with teleworking colleagues. The use of instant messages also serves teams in maintaining a quiet work atmosphere within busy work environments.

Once again we see the importance of collective adjustments regarding technology adoption. With an instant messaging tool like Skype for example, the management of people's availability through personal statuses (green dot for "available", orange for "busy", etc.) is subject to discussion as it allows workers to define themselves as reachable or not, conditioning the circumstances of remote collaboration. When working remotely from one another, the way team members express their availability for direct interaction must meet two kinds of requirements. One the one hand workers must strike a balance between staying available and care for limiting interruptions that impede the progress of work. On the other hand, they must be able to use the information regarding their colleagues' availability to their benefit at the appropriate moment. The complexity of this process encompasses a various range of dimensions team members have to take into account to find a balance between the team's and individual workers' interests.

Team leaders generally manage communication means organization, but team members also take collective decisions in order to define personal limits, like private/professional life boundaries. Members of a team (BigInsuranceOne) we interviewed refused to link their instant messenger (Skype) to their private mobile phone. They already use instant messages or teleconference when they are not co-present and don't own a professional mobile phone. They consider that adding this additional communication mean could overstep the boundaries of their private life.

Moreover, the ability to set one's communication means to limit interruptions due to collaborative activities is also valued as a means to take control over one's work pace and planning. When every single tool used on the workplace is designed to ease communication and connection between coworkers, teleworking can be seen as a way to regulate the density of exchanges with colleagues and to gain concentration on one's tasks, particularly on complicated ones. This distance tends to increase the efforts workers have to make when they want to reach their colleagues, leading to a reduction of interruptions. However, decisions can be taken at the team level to reduce (or not) this distance by finding agreements on the settings of shared communication tools.

Finally, and as mentioned in the previous activity about meetings, teams where operatives and office workers collaborate sometimes need to find other systems to adapt communication tools to the different kinds of work environments. Remote operative workers don't necessarily have access to a computer and to a professional e-mail address. In that case, simpler tools can be developed to allow official message and documents transmission between coworkers in such mixed teams as smartphones app.

Organizing communication means (list of related actions)

- Accessing one's communication tools
- Avoiding interruptions
- Controlling information load to be treated
- Segmenting private and professional life
- Identifying appropriate media apparatus for communication means organization

Communicating with Coworkers (Cooperation Work)

One of the benefits but also one of the challenges organizations encounter with interpersonal communication resides in the presence of a multiplicity of digital tools allowing interactions with coworkers. This technological richness therefore requires specific competences to cope with its complexity and to find a balance between the maintenance of social needs and the risk of increasing information overload. In this respect, the activity of communicating with one's coworkers seems highly linked with the "people" dimension (mainly through aspects of sociomatics and mutual awareness) and the "information" dimension, as interacting involves the transfer of different kinds of information within a group. This circulation of information is precisely what requires consideration from workers when they work remotely from each other. Copresence generally facilitates the possibility to gather valuable information opportunistically, without the planning required by mediated communication. Even if digital tools now include features that decrease the effects of distance (e.g. videoconference, smileys, feedback signs within an instant message, etc.), they face the difficulty to overcome the barrier they form to social interaction. This explains the need a lot of workers express to keep co-present activities to preserve social relationships with their colleagues.

We observed situations where team members (MediumIT) were encouraged to use asynchronous mediated communication (i.e. instant messages or email) as the norm, as if they were conducting face-to-face discussions, both when working at a distance or in copresence. Such recommendations may cause unexpected problems. On the one hand, when at a distance, encouraging to use messaging tools to maintain social and collaborative interactions could create a risk of perpetual interruptions. As team members don't see their colleagues, they need to find ways to estimate others' availability to avoid contributing to an overwhelming information flow. On the other hand, the use of messaging tools was encouraged when team members sat together in the same workspace, in order to reduce noise and support concentration. In those cases, we observed that technology can not totally compensate for a lack of social bonds, and habits of face-to-face discussions come back quickly.

Work visibility (in other words, making the progress of each team members' work visible to the whole team) represents also an issue experienced by team leaders and team members that seems to lack prior consideration in terms of coordination. As a consequence, problems of time management and stress can appear when working from a distance. These phenomena can arise in the absence of prior common discussions regarding trust. The risk for the workers is then to internalize apprehension and adopt counterproductive conducts that complicate the way they deal with interactions with other colleagues.

> My difficulty is that I'm scared that others think I'm not working. It's mental patterns, it's stupid because no one never blamed me about this. It's myself. If I see that I receive e-mails, I answer immediately to show people that I sit well behind my computer. On Skype too, I answer right away. I couldn't help answering. (Team leader, MediumTerritory)

The fear to be perceived as not working urges this person to always appear available for her colleagues through her multiple communication means and causes disrupted conducts towards work achievement. Moreover, it maintains a feeling of guilt likely to damage teamwork atmosphere and performance. On the other hand, keeping away from others' sollicitations from a distance can be hard because of the large number of communication means available (telephone, e-mails, instant messaging, corporate social networks,...) and sometimes because of the impossibility to show one's unavailability to others. Being able to anticipate such implications of one's own distance and of the distance of colleagues is a key to gain control over permanent connection.

The choice of a specific communication tool to send a message to colleagues can also be made in anticipation of its reception. An example from our data shows an informant (MediumIT) who will select either an instant message (Slack) or an e-mail (Gmail) depending on the urgency of his request. The instant message will ensure his message will be treated faster and he will be able to see if its recipient has seen it. The e-mail offers him less precision about the moment his coworker will react. Another respondent

(BigHealth) presents the same way of working with Skype instant messages but he adds two elements: he will send an instant message to a colleague only if his or her status is set on "available" and he suggests the idea that it's less intrusive for the recipient than a phone call or a face-to-facer encounter. The answer will be faster than with an e-mail but he will not disturb his coworker. We see here two conceptions of a situation that present the same kind of basic assumptions: the two informants take into account the time and the sociomatics dimensions when framing their actions. However, the second one, by mentioning the potential disturbance of his own actions, is proposing a broader and slightly more complex way to consider the way he chooses his communication means. To be able to frame these dimensions accordingly between team members is important to manage and balance collective information load.

Communicating with coworkers (list of related actions)

- Identifying coworkers availabilities
- Locating one's coworkers
- Making one's activity visible for coworkers
- Avoiding disturbing others' work
- Forwarding information to coworkers
- Identifying information coming from coworkers
- Avoiding information overload from other members of the team
- Communicating with coworkers to find information

Information Spaces

Another core component of collaborative work practices in organizations resides in their information storage systems, containing a variety of documents, increasingly in a dematerialized digital form.

Organizing Shared Information Spaces (Coordination Work)

A significant part of employees' collaborative work is based on digital document use and/or production. These documents are located on both individual and common information spaces on workers' computers. They represent an important and valuable source of information for organizations but their management can become a source of trouble, given their breadth and complexity. Difficulties that often arise concern information retrieval, data loss due to versions conflicts and confusion due to information overload and duplication. The multiplication of similar tools (corporate servers, Microsoft SharePoint platforms, Google Drive online storage, e-mail archives...) to store information can also cause documents duplication and overlap or version conflicts and therefore cause trouble for workers in the absence of coordination support from the team.

The coordination process about organizing shared information spaces to prevent these risks is rarely addressed at the team level and therefore seldom appears in our data. These problems are often put in the hands of external experts or IT services of organizations with

sometimes relays within teams. They have to face the recurring issue of the coexistence of competing sorting and use logics between workers, amplified by the abundance of documents. The challenge is to take into account the multiplicity and the evolution of these sorting logics, as teams and organizations can restructure themselves frequently. Standardized solutions and harmonization measures of information spaces can also lead to micro-agreements between work groups organizing information spaces according to their habits. These informal shared rules allow workers to function locally but increase the risk to add complexity to an already complicated information environment.

This activity seems therefore to require long-term coordination work while taking into account multiple levels of team organization. Coordination is needed within teams but also between teams to foster awareness about information management. This activity represents nevertheless a complicated issue because it needs dedicated time and procedures that are hard to remember and to maintain on the long run. Besides, sharing information can also be a delicate topic considering confidential aspects of information, involving implications concerning workers accesses and rights and regarding mutual trust in the use of these spaces.

Although it's not a widespread activity operated by distributed coworkers, we observed that the organization of information spaces encompasses the anticipation of a series of key elements. First, the necessity, when colleagues are geographically distant from each other, to support effortless information retrieval, for oneself and for members of one's team. This can alternatively be materialized by clear shared sorting rules (a common way to name documents, limitations of folders levels, etc.) or by the use of desktop shortcuts to access the most frequently used files, as well as the use of a powerful search tool with multiple search criteria, to mention just a few examples. Consequently, we note the importance of unambiguous information visualization to avoid informational "shock" when navigating in environments with few or unclear reference points (e.g. a long list of undifferentiated files in a SharePoint folder). This issue can come from a lack of technology affordances or from inadequate collective use of information spaces. Selecting and implementing tools that provide workers with features that allow visual sorting of information and share awareness of their concerted use is a way to improve information retrieval abilities.

Lastly, we noted that shared information spaces often exceed the context of a given organization to include distant external partners involving varied types of workers or groups. In accordance with cybersecurity principles, IT services in charge of information spaces generally restrict accesses for external people. As a result, such limitations can create a tension regarding the compatibility of information spaces and their uses with external partners, both interested parties being forced to find a compromise to share documents. Coworkers then need to adopt strategies to bypass technical constraints and be able to work with their partners. This adaptive way of working requires specific competences in order to differentiate one's uses according this arrangement, avoiding confusion and confidentiality pitfalls.

Organizing information spaces (list of related actions)

- Adopting procedures for collective file management
- Sorting documents according to coworkers access
- Avoiding coworkers' information overload
- Identifying constraints of media apparatus
- Identifying appropriate media apparatus for information space organization

Sharing Information in Dedicated Spaces (Cooperation Work)

As explained above, the challenges of digital information sharing, especially when people don't work in the same physical space, are numerous: sorting and finding information in multiple information spaces, adding new information and ensuring its subsequent re-use, coping with teams and corporate structures' evolution, etc. Sharing information within teams is plainly linked with the previous (coordination) activity and also mainly calls for tool, information and people management dimensions, especially in the sense of mutual awareness and sociomatics. As a result of what we observed on the coordination work side of information spaces management, we note that understanding a shared folder's architecture in its globality is very complicated, particularly within complex large-scale organizations. Workers often use digital information spaces without having participated to their structuration and implementation. They easily locate files and documents they use daily or share with their team but they need to deploy a lot of efforts and alternative strategies to find information or documents they more rarely work with, for example.

We noticed that when the coordination and the rules to sort information are unclear or nonexistent within the team, many messages and interactions are needed between team members, especially to locate and to be aware of the addition of a document. The management of these messages and interactions then plays a big part in this activity, as the available digital tools do not fulfill the team members' needs. For example, in cloud storage service (such as Google Drive or SharePoint), the author of a new shared document, can send a notification to their colleagues. In one of the teams (MediumIT) we observed, team members decided to duplicate these notifications by posting the link of the document in their instant messaging tool (Slack), in the group (called "channel" in Slack) related to the associated project. In doing so, information posted on the channel is immediately associated to a topic and less likely to be lost in mailboxes filled with undifferentiated e-mails.

Information search in an informational environment where people don't have control on the architecture and don't understand its logic can be very time-consuming. We observed numerous strategies developed by our informants to reduce this time loss, involving the re-creation of a personal information space (within a personal disk or e-mail folders for instance) where workers save or copy the documents they need but struggled to find beforehand. The coexistence of multiple information spaces organizing the same resources, each by its own logics, can help individual workers but may also increase

the complexity of collaborative information management. Indubitably, this activity raises questions about boundaries between personal and collective information management.

Workers decrease complexity of information spaces by maintaining a high degree of mutual awareness, which means providing the team with a good knowledge of what information spaces contain and how they evolve through time. In our data, informants seemed to distinguish between information spaces containing "moving" information and information spaces containing "fixed" information. Moving information is related to working documents that are dedicated to follow the course of projects, of day-to-day work follow-up and are frequently used and updated. On the other hand, "fixed" information relates more to support documents and procedures that are less often mobilized and act as reminders. It would seem very time-consuming, useless and troublesome to inform the team about every changes occurring to "moving" information as these documents are likely to change every day, unlike when changes occur to "fixed" information. However, coworkers find it sometimes useful to update their colleagues on some working documents, generally the "hottest ones" which there are very busy with at a determined moment. With people not necessarily close to each other, the e-mail is the main way to let colleagues know about updates in information spaces.

Information duplication and document versioning problems represent a great concern in the day-to-day processing of information, because of the multiplicity of information storage devices, the multiplicity of actors operating them and the multiplicity of modifications a document can undergo. An important aspect of competence lies in the awareness of the consequences of one's actions in the shared system on the others' understanding of the available information. In this matter, the use of an intermediary space which is more personal to temporarily isolate a working document from others seems to represent a common way to work, given the fact that informants predominantly use tools and documents that don't allow synchronous authoring.

As stated earlier, sometimes this difficulty even extends the perimeter of the usual work team. Information spaces can also be shared with external partners of the team. The collaboration can then suffer from problems concerning compatibility of the digital tools ordinarily used by both parties. Compromises must be found to get past this issue while taking into account organizational constraints and requirements related to data access and digital security. A particularly competent practice addressing the problem of both tool compatibility and document duplication was found in our data and is worth looking into. A worker (MediumTerritory) formed a temporary team with external partners and they needed to share documents. Her partners were used to function with Google Drive whereas she worked with a traditional internal file server. She decided to go with her partners' preference but she knew her organization and team would need an access to the documents on their internal shared server. She identified the risk that duplicating the documents would lead to difficulties, especially regarding the identification of their latest versions. To avoid this, she adopted a method she followed whenever she was confronted with this situation. She created a special folder on her partners' Google Drive online

storage to centralize documents her team would need to access, to facilitate its further duplication on her internal server. But she waited until her project with the partners was completed to guarantee that people had access to the latest versions of documents only. She stuck rigorously to this method and even applied it subsequently to other projects in her own team, working on documents on her individual disk and transferring them only when they were finalized on the shared disk of the internal server. In this context, it turns out that her complex framing of the situation (articulating time, information, people and tool dimensions) and her reflective conduct lead to a successful way of working.

Sharing information in dedicated spaces (list of related actions)

- Finding information
- Informing coworkers of shared information space's update
- Sharing up-to-date versions of documents
- Preventing data loss

Document Production

Authoring documents together without being in the same location, either synchronously or asynchronously, does not represent a widespread activity in our dataset. However, as far as document manipulation is concerned, employees work most of the time individually on documents that support their different tasks and objectives. As we have seen previously, these documents are gathered on information spaces and require specific accesses, operations and management. As far as document production goes, the collective character of work is limited to the compilation of individual achievements. Of course, teamwork isn't actually that fragmented, and includes collective accomplishments that imply the concerted edition of a variety of contents. The conditions of this integrated way of working are specifically at stake in the following section.

Organizing the Collective Authoring of a Document (Coordination Work)

Practices of organizing the collective authoring of documents hardly appear in our data, and are mostly described by our informants through rudimentary technical considerations. These often relate to the workers' adaptation to a digital tool (Microsoft Word, SharePoint, Google Doc, etc.) with identified editing affordances.

The most significant issues we encountered in our data regarding this activity are: issues of access and authoring authorizations for shared documents, working significantly on a document without being able to save changes in the end because someone else has it open on their computer, and not being able to locate the modifications introduced by colleagues within a shared document, which can lead to mistakes. In this regard, we notice the predominance of the technological dimension: if people have difficulties to work together remotely on a document, it is mostly identified as a result of the technical constraints of the tool. Workers often overcome these constraints by working together

face-to-face in front of a computer, with one designated individual editing the document while their colleagues discuss modifications.

When new digital tools dedicated to support collaboration are introduced (e.g. Microsoft SharePoint, coordination can come from external experts in charge of directing the transition. But in general, individual initiatives appear and spread informally (and partly) among work groups. For example, as one team member (MediumTerritory) started using the "track changes" option in her word processing tool to make her modifications visible to others and allow them to validate them, her colleagues left the "track changes" mode activated when they sent these documents back, making their own changes visible. In addition, she finds it an effective way to gain experience and learn from the others as she's also able to see the nature of her colleagues' modifications afterwards.

Such practices only circulate inside restricted groups and can unintentionally mismatch with the habits of other coworkers. An alternative we observed consists in training team members as local experts, who are put in charge of surveying and reporting on the available tools, preferences and skills of their colleagues, in order to help decide on appropriate coordination protocols. But this approach only seems to occur at particular moments, when "new ways of working" and new digital tools are introduced within organizations. This role is generally played by volunteers inside teams and not necessarily by a team leader. This coordination effort fades away in many cases and is being hampered by a variety of difficulties such as conflicting user habits or unclear fears towards digital technology.

The risk of data loss is viewed as a consequence of the "rigidity" of the tools (e.g. not allowing several users to modify and save their work synchronously), or because of the amount and complexity of the information a document can include. As the risk of errors leading to data loss increases with the size and complexity of shared documents, coordination becomes a necessity for the team. In one such instance, a team (BigInsuranceOne) that used a very complex shared Excel sheet had to establish rules for its collective encoding. First, they limited the access to this document to a minimum of team members to reduce the risk of human errors. Correlatively, they met in person to discuss the appropriate way to apply modifications, to unify the procedure and to avoid conflicting personal logics. From then on, when they are face-to-face, only one person can open it and encode new information. When they work remotely and the sheet is open on another computer, two situations can occur: either they just need to read certain parts of the document and can cope with a "read only" authorization, or they need to edit it. In the latter case, they must send an e-mail to the team to notify the others about their need to modify the document and to be warned when it will be available again. The remaining problem is that it is hard to estimate when they will be able to complete the document exactly. This example shows a quite large framing of the problem-situations related to collective document authoring (situated within this team) and a competent (because relatively successful) conduct to face them.

Obviously here, all these precautions come also from a lack of matching between the tool they use and the way they want to work. Tools which offer synchronous authoring begin to spread among organizations to overcome temporality problems and risks of data loss. But adopting such tools is not a panacea for all organizations. These different technical choices imply specific information management strategies and a great coordination support to ensure their appropriation by teams and that they are tailored to fill in teams' objectives. Some workers can function with the mutual sending of successive e-mails to complete a document for example, if they estimate that it let people more hindsight and time to react. Others will find that this way of working is problematic within bigger groups and that it is a source of document versions error and thus will prefer tools that carries multiple users synchronously. These decisions can be supported by the description of specific dimensions teams define as their preference.

Organizing the collective authoring of a document (list of related actions)

- Making a document available for its collective authoring
- Defining the document's authoring roles
- Protecting a document from coworkers' modifications
- Identifying constraints of media apparatus
- Identifying appropriate media apparatus for organizing collective document authoring

Authoring a Document Collectively (Cooperation Work)

Like its coordination counterpart, the activity of authoring a document collectively is greatly linked with the tool use dimension mainly articulated with the people dimension. Document production seems to represent a complex activity in both its cooperation and coordination aspects resulting in a lot of face-to-face moments to adjust everyone's framing and comprehension. As far as mutual understanding is concerned, we note that traces left on digital documents, like comments, tracked changes and explanations cannot all be addressed and understood by colleagues. Complex projects (especially including novel tasks) or newcomers within the team need face-to-face time to be sure people share the same vision of a problem and adjust to each other. To be side by side can help clarify information and help coworkers for their own writing tasks. This activity can also occur in sort of face-to-face "simulation" as in a videoconference, with screen sharing to be able to speak and point out parts of the document several coworkers are interested in.

Distance can also have effects on the coworkers' implication within a project and lead to similar kinds of obstacles or misunderstandings. A team leader (SmallBusiness) experienced it when she asked significant contributions by e-mail to her team members. She received imprecise and vague feedback that, according to her, didn't help the project. She learned through an external expert that her way of working with distant teams and the tool she used implied to formulate more precise requests in order to receive better feedback and contributions. These kinds of misunderstandings can also emerge in very advanced tools allowing synchronous and multiple authoring like Google Docs, with

coworkers leaving comments for their colleagues they need to explain face-to-face to reduce ambiguities and clarify their meaning. These observations reinforce the idea that cooperating at a distance to produce a collective document is a complex task, takes times and requires high level of mutual awareness and sociomatics competences. Articulation work is here contingent to the beginning of a collective writing task and appears only as informal agreement on authoring tasks distribution.

Other challenges when people co-create a document but don't share the same location include identifying the contributions of coworkers, understanding the overall text, identifying the others' progress, and avoiding manipulation errors leading to data loss. Another way of doing it was found in the data: workers (MediumIT) who used to work in team on a Microsoft Word document tried to collectively edit it but met many versioning problems. They decided to work individually on separate documents on their parts and to re-assemble their achievements only in the end. This strategy worked, but on the long run they finally chose to use Google Drive which is, according to this team, even easier for collective authoring. This way of working seemed to be framed as simpler for this team but it is not necessarily the case for every team. It can be highly dependent on the size of the work group for example or on the workers' tool preferences. Another worker (MediumTerritory) from our field of research uses also Google Docs with her team to co-create documents but she claims that she's unable to see clearly others' modification and prefers the "track changes" system of Microsoft Word documents. This example highlights the potential hampering nature of technology and the importance of taking into account the technical dimension when it comes to collective authoring.

Competence related to metacognition and reflexive tool use can help solve these kinds of compatibility uses problems: workers who are aware of their own advanced mastery of a given technology can anticipate difficulties of less skilled coworkers and adapt their conduct, given the shortcomings of others. An example from our data shows a worker (BigInsuranceOne) knowing that track change systems are not easy for everyone on her team. Whenever she works on a collective document, she ponders on her colleagues' preferences and adapts her way of showing her modifications to them (colored highlights in the texts or automatic track change, for example). When appropriate, and if she doesn't know about their usual way of working, she asks them explicitly to avoid bottlenecks.

Generally, tools dedicated to distance collaborative production contain a lot of features supporting the awareness of others' inputs: changes history, changes notifications, comments, instant messaging, etc. Their goal is to provide co-authors with a lot of meaningful information making collective authoring more readable and expand situations framings to direct appropriate editing actions. This process can be taken care of by technology which tries to "speak for itself" and helps by automatizing features (like automatic e-mails when a change occurs for example). In that case, we remark that this process could need support because their "self-evident" and user-friendly character don't seem to allow workers to overcome difficulties of collective authoring at a distance. This activity benefits from very few considerations meanwhile technology-supported

cooperation practices requires habits building and strong concerted communication to be shared and profitable to everyone.

Authoring a document collectively (list of related actions)

- Identifying document's accessibility for collective authoring
- Visualizing coworkers' modifications
- Making one's modifications visible for coworkers
- Managing the progress of collective authoring
- Avoiding versioning conflicts

The Relative Importance of the Dimensions in the Ten Activities

The previous section offers a detailed overview of how our informants conceive their own work practices related to distance collaboration, mapped out as ten activities in five activity areas. Each of these instrumented practices calls upon different aspects of the problem-situation it addresses. As it was explained in the methods section of this paper, these aspects were coded inductively, and the codes were grouped into generic dimensions of activity (tasks, time, space and distance, information, technology and people). In order to further the exploration of our qualitative data, the full list of inductive codes and their corresponding dimensions were tabulated for half of the coded instrumented practices[16], and then aggregated for each action, activity and activity area. The resulting count of codes by practices allowed us to compute different quantitative indicators that approximate the relative prevalence of the six dimensions in each of the ten activities documented by our analyses. Table 2.3 presents the results of this analysis.

Unlike in most quantitative analyses, the results presented in Table 2.3 cannot be fully interpreted on their own. Rather, they need to be interpreted in the light of the qualitative description of instrumented practices that preceded. The validity of their interpretation relies on this contextualization.

[16] These instrumented practices correspond to the data of the five first organizations that were coded as part of our analyses (i.e. SmallBusiness, SmallIT, MediumIT, MediumTerritory and BigHealth). These organizations were coded first because their teams had developed higher degrees of distant collaboration compared to the rest of our sample.

Table 2.3: The Relative Importance of the Six Dimensions of Distance Collaboration in its Ten Activities (Based on 50% of the Coded Data)

Area / Activity	N Pr	Tasks		Time		Space/Distance		Information		Technology		People	
		% Pr	Mean N Dim	% Pr	Mean N Dim	% Pr	Mean N Dim	% Pr	Mean N Dim	% Pr	Mean N Dim	% Pr	Mean N Dim
Interdependent Tasks	71	83 %	3,8	20 %	4,1	35 %	3,8	58 %	4,1	65 %	4,0	93 %	3,6
Collectively allocating tasks (coordination work)	29	90 %	3,7	10 %	4,3	41 %	3,8	59 %	4,1	59 %	3,9	97 %	3,6
Implementing tasks interdependency (cooperation work)	42	79 %	3,8	26 %	4,1	31 %	3,8	57 %	4,1	69 %	4,0	90 %	3,7
Team Meetings	69	62 %	3,6	32 %	3,5	33 %	3,6	38 %	3,8	57 %	3,7	94 %	3,2
Organizing team meetings (coordination work)	38	55 %	3,8	39 %	3,2	34 %	3,4	39 %	3,8	55 %	3,7	95 %	3,3
Meeting with the team members (cooperation work)	31	71 %	3,5	23 %	4,0	32 %	3,8	35 %	3,8	58 %	3,6	94 %	3,2
Remote Communication	78	49 %	3,9	31 %	3,8	45 %	3,9	65 %	3,4	53 %	3,8	79 %	3,6
Organizing means of communication (coordination work)	37	54 %	3,7	24 %	3,4	41 %	3,4	68 %	3,3	51 %	3,7	70 %	3,5
Communicating with coworkers (cooperation work)	41	44 %	4,3	37 %	3,9	49 %	4,3	63 %	3,5	54 %	3,9	88 %	3,6
Information Spaces	51	61 %	3,6	4 %	5,0	2 %	3,0	96 %	3,1	69 %	3,5	67 %	3,5
Organizing shared information spaces (coordination work)	19	42 %	3,8	5 %	5,0	5 %	3,0	95 %	2,8	53 %	3,6	74 %	3,2
Sharing information in dedicated spaces (cooperation work)	32	72 %	3,5	3 %	5,0	0 %	0,0	97 %	3,2	78 %	3,5	63 %	3,7
Document Production	30	83 %	3,8	10 %	4,3	27 %	4,5	73 %	4,0	67 %	4,1	93 %	3,6
Organizing the collective authoring of a document (coordination work)	11	82 %	3,8	9 %	5,0	18 %	4,5	73 %	4,1	73 %	4,1	100 %	3,5
Authoring a document collectively (cooperation work)	19	84 %	3,8	11 %	4,0	32 %	4,5	74 %	4,0	63 %	4,0	89 %	3,6

N Pr Number of instrumented practices documented in 50 % of our data, for each activity and activity area

% Pr Percentage of documented practices that involve a given dimension
The gray gradient indicates the prevalence of a given dimension in each activity (or activity area). Darker shades of gray correspond to dimensions that are present in a higher proportion of (our informants' conceptions of the) practices grouped in the activity (or activity area). In other words, a higher percentage and a darker shade of gray indicate that more informants consider this dimension when they describe practices related to that activity.

Mean N Dim Mean number of dimensions in the documented practices involving the dimension
This indicator corresponds to the average number of dimensions in the conceptions of the practices related to a given activity that include the considered dimension. Lower numbers indicate dimensions that tend to be included into simpler conceptions, with less different dimensions. Higher numbers indicate dimensions that tend to be included only into more complex conceptions, with more different dimensions.

The last two indicators allow us to distinguish between three ways in which the different dimensions may be included in our informants' conceptions of the ten activities. On the one hand, for any given activity, dimensions that are commonly considered by the majority of our informants have higher values for the second indicator (% Pr), and dimensions that tend to be overlooked by most of our informants have lower values for this indicator. On the other hand, the third indicator (*Mean N Dim*) is used to distinguish between dimensions that are only included in the most complex conceptions (i.e. conceptions that include more different dimensions), and dimensions that are included in simpler conceptions (with less different dimensions) held by a minority of informants (who seem to conceive the activity in alternative ways, compared to the majority). Table 2.4 summarizes these three cases.

Table 2.4: Three Ways in which Dimensions are Mobilized into Conceptions

Dimension mobilization	***% Pr***	***Mean N Dim***
Common dimension in most conceptions	*higher*	*lower*
Rare dimension included in complex conceptions	*lower*	*higher*
Rare dimension included in rare alternative conceptions	*lower*	*lower*

If competence lies in the ability to articulate many aspects of a given problem-situation and to act accordingly, these quantitative indicators may allow us to distinguish between dimensions that are apparently part of most workers' conceptions of the different activities related to distance collaboration (i.e. the most competent as well as the least competent) and dimensions that are only articulated by a minority of most workers (which could be considered more competent than others). However, the relative weight of the different dimensions in the conceptions our informants hold of collaborative activities can indicate different things, which must lead us to interpret the indicators used in Table 2.3 with great care. More prevalent dimensions point to aspects of these activities that are central to them and are or should probably be considered by anyone, regardless of their level of competence. Less prevalent dimensions indicate aspects that are considered either only by those informants with more elaborate conceptions of the collaborative activities they engage in, or by informants who think differently from the majority. Depending on context, this can point either to peripheral aspects of the activity that are less worth paying attention to, or to aspects that are neglected by most people, and should be considered with more care.

With this in mind, we will only offer a brief comment on the main trends that Table 2.3 seems to reveal. Of course, the quantitative indicators presented above can only tell us what dimensions the conceptions include. Understanding *how* these dimensions are connected and articulated into any given conception calls for a qualitative description of this conception, as presented earlier in this section.

Table 2.3 lends itself to at least two ways of looking at its indicators: by examining activities (by line), or dimensions (by column). On the one hand, if we compare activity areas, a difference appears in the way they include the different dimensions. For example, the conceptions of practices in the "information spaces" and "document production" activity areas (and to a lesser degree the "interdependent tasks" area) seem less likely to involve all dimensions. Specifically, the "time" and "space/distance" dimensions appear less frequently in these three areas. In comparison, the conceptions of practices in the "team meetings" and "remote communication" activity areas seem to include more diverse combinations of all six dimensions.

On the other hand, irrespective of the activity area, our informants tend to consider some dimensions more frequently than others (e.g. "people" and "tasks", compared to "time", or "space and distance") when they describe their technologically-mediated collaborative practices. In some cases, the prevalence of a given dimension in an activity is tautological ("tasks" in "interdependent tasks", "information" in "shared information spaces"): it is simply the result of the overlap between our activity and dimension categories. Those cases aside, the "people" dimension appears as the most frequently referred to in most activities. This observation is consistent with our qualitative analysis which shows that the (physical or digital) presence of others and social contacts between coworkers are considered as central issues by our informants. Collaborative activities are above all anchored in bringing people together around projects, this fundamental principle resulting in unavoidable and multiple interdependencies between workers.

The "tasks", "information" and "technology" dimensions come next in terms of frequency. Among these, the "tasks" dimension appears less frequently in conceptions of practices related to remote communication activities, and more frequently in document production activities. This seems to indicate a difficulty to consider communication means as the object of specific management that could involve task and role distribution. Communication can be seen as a more instinctive process and therefore can lack collective shared understanding. By contrast, these processes tend to be more significant when it comes to collective document authoring.

The "technology" dimension appears as the most evenly distributed across activities: it is never the most frequently considered dimension, but neither is it the least. This trend can be associated with at least two phenomena. The first one is of methodological nature, and lies in the way we constructed our interviews, in order to bring instrumented activities as an entry point. Our interest in the broader context of such activities, and its actual relevance for our results, explain the presence of the other dimensions, and why "technology" is not a predominant dimension either. The second interpretation could be related to organizational discourses, insisting on the collaborative potential and support of technology, pushing workers to adopt and/or question them through their own discourses on their practices.

The "information" dimension appears less frequently in conceptions of practices related to team meeting activities than in other activities. This is consistent with a

recurring difficulty mentioned by our interviewees to find a balance between the creation of meetings records and the information overload these document may contribute to create. This tension seems to discourage most teams to adopt formalized and systematic strategies to document and keep track of their meetings. This may also be explained by a general lack of time to produce, organize and later use such information.

The remaining dimensions ("time" and "space/distance") are much less apparent in our informants' conceptions. For example: the "time" dimension is practically ignored in activities related to information spaces and document production. When it is considered, it appears to be only part of the most complex conceptions of these activities (as indicated by higher *Mean N Dim* scores). Comparatively, time is most often considered as part of team meeting coordination and use of remote communication. Finally, the "space/distance" dimension appears in less than half of the described practices in all activities. Specifically, it is virtually absent from the conceptions associated with shared information spaces activities. However, compared to time, in the rare cases when it is considered, it seems to be part of simpler "alternative" conceptions held by few informants. This may be partially explained by the fact that information spaces activities and document production activities are emerging practices in some teams, and that they concern a smaller number of workers compared to the other activities. Thus, we could formulate the hypothesis that the reflexivity is monopolized by the other dimensions which seems more easily apprehended by workers, as stated in the table by higher scores for the "tasks", "information", "technology" and "people" dimensions. Moreover, it's also interesting to highlight that these two activities rely heavily on digital spaces and applications which may contribute to tone down time and physical constraints compared to the tangible world. This may be an obstacle for some workers that may experience difficulty to connect these digital spaces and projects with the material world and its constraint. Finally, this may also be explained by a general lack of management strategies of information spaces and of projects of collaborative document production. Once again, this may be explained by a lack of time, but also by a lack of visibility and consideration for these tasks which seems nevertheless crucial in the contemporary world of work.

Conclusion

In this chapter, we presented a qualitative analysis of the work practices of sixty office workers engaged in distance collaboration, based on interview and observational data. This analysis allowed us to propose a competence framework for the digital media literacy of distance collaborative work. This framework takes the form of a matrix, which crosses the types of activities workers have to perform to work together at a distance with dimensions they have to take into account when performing these activities.

The activities listed in the matrix are grouped into five activity areas, corresponding to five distinct objects of competence: the interdependence of tasks within the team, team meetings, remote communication between team members, shared information spaces,

and documents produced collectively. For each of these activity areas, we distinguished between two types of activities, based on the distinction between cooperation (working together) and coordination (collectively producing the organization of the tasks, resources and roles necessary to work together). Each activity thus either points to coordination competences dedicated to the preparation of collaborative work, or cooperation competences mobilized during actual collaborative work situations.

This distinction highlights the active part many workers take not only in actually collaborating in the distance with their teammates, but in setting the stage for collaboration, by designing the procedures, choosing the tools, determining the roles, or preparing the resources that make collaboration possible. Complementarily, the notion of contingent articulation within cooperative activities emphasizes how coordination protocols that are assumed to direct collaborative interactions routinely need to be adapted, modified or circumvented in situ as people cooperate.

The notion that this type of articulatory work is seldom acknowledged as real work, and often invisible in the work arena has long been recognized in academia (Star & Strauss, 1999). Yet, the ability to perform such work does not seem like a common feature of job descriptions or evaluations. We argue that articulating cooperative activities as they unfold corresponds to a form of competence that calls upon the workers' inventivity. It implies to critically evaluate the collaborative situation one is engaged in, and to proceed to the ad hoc selection of knowledge, skills or external resources one has at their disposal to creatively respond to that situation. In that respect, contingent articulation work requires being competent, and not just skilled.

Our findings suggest three types of digital media literacy competence indicators: the degree of complexity of the way workers frame typical distance teamwork situations, the success or failure of one's conduct towards a typical problem-situation, and the match between this conduct and workers' objectives. At all three levels, these indicators point to how the conceptions and conducts of workers integrate different dimensions of the problem-situation they face, which we grouped into six categories: tasks, time, space and distance, information, technology, and people. Although representing our proposed competence framework as a matrix may lead some to consider each cell of the matrix in isolation, this is not its intended use. As a matter of fact, our analyses highlight the deep interconnection between dimensions in each type of activity. Among other things, the examination of how these dimensions appear in the way our informants describe their work reveals the centrality of the "people" dimension, and the fact that, as for any of the six dimensions, technology is but one part of distance collaborative work practices, and it is tightly integrated with all other aspects of it.

Incidentally, and even though we positioned our analyses at the (infra-)individual level, our results show how distance collaboration not only calls for the ability of individual workers to frame a situation in more or less complex ways and to act accordingly, but also for the ability of a team as a whole to do so. In other words, in addition to develop an adequate *personal* understanding of the work situations they are engaged in, teammates

need to develop a collectively *shared* understanding within the team, and consequently develop collective courses of action (that may crystallize into coordination protocols). This topic will be explored more extensively in Chapter 4.

Bibliography

Anderson, J. A. & Meyer, T. P. (1988). *Mediated communication: a social action perspective*. London: Sage Publications.

Barreau, D. & Nardi, B. A. (1995). Finding and reminding: file organization from the desktop. *SIGCHI Bulletin*, *27*(3), 39–43. <https://doi.org/10.1145/221296.221307>

Blandford, A. E. & Green, T. R. G. (2001). Group and Individual Time Management Tools: What You Get is Not What You Need. *Personal and Ubiquitous Computing*, *5*(4), 213–230. <https://doi.org/10.1007/PL00000020>

Boardman, R. & Sasse, M. A. (2004). "Stuff goes into the computer and doesn't come out": a cross-tool study of personal information management. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 583–590). New York: ACM Press. <https://doi.org/10.1145/985692.985766>

Brandtweiner, R., Donat, E. & Kerschbaum, J. (2010). How to become a sophisticated user: a two-dimensional approach to e-literacy. *New Media & Society*, *12*(5), 813–833. <https://doi.org/10.1177/1461444809349577>

Brotcorne, P., Damhuis, L., Laurent, V., Valenduc, G. & Vendramin, P. (2010). *Diversité et vulnérabilité dans les usages des TIC. La fracture numérique au second degré*. Brussels / Gent: Academia Press.

Bruce, C. S. (1997). *The Seven Faces of Information Literacy*. Auslib Press. Retrieved from <http://eric.ed.gov/?id=ED450691>.

Bruce, C. S. (1999). Workplace Experiences of Information Literacy. *International Journal of Information Management*, *19*(1), 33–47. <https://doi.org/10.1016/S0268-4012(98)00045-0>

Buckingham, D. (2006). Defining digital literacy – What do young people need to know about digital media? *Nordic Journal of Digital Literacy*, *1*(4), 263–276.

Carretero Gomez, S., Vuorikari, R. & Punie, Y. (2017). *DigComp 2.1: The Digital Competence Framework for Citizens*. Institute for Prospective Technological Studies – European Commission Joint Research Center. Retrieved from <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/digcomp-21-digital-competence-framework-citizens-eight-proficiency-levels-and-examples-use>.

Collard, A.-S., De Smedt, T., Fastrez, P., Ligurgo, V. & Philippette, T. (2016). How is information literacy related to social competences in the workplace? In S. Kurbanoğlu, J. Boustany, S. Špiranec, E. Grassian, D. Mizrachi, L. Roy & T. Çakmak (eds), *Information Literacy: Key to an Inclusive Society* (pp. 79–88). Prague: Springer. Retrieved from <http://link.springer.com/chapter/10.1007/978-3-319-52162-6_8>.

Curtarelli, M., Gualtieri, V., Jannati, M. S. & Donlevy, V. (2017). *ICT for work: Digital skills in the workplace*. Ecorys Research & Consulting, Danish Technological Institute.

Eshet-Alkalai, Y. (2004). Digital Literacy: A Conceptual Framework for Survival Skills in the Digital era. *Journal of Educational Multimedia and Hypermedia*, *13*(1), 93–106.

Eynon, R. & Geniets, A. (2016). The digital skills paradox: how do digitally excluded youth develop skills to use the internet? *Learning, Media and Technology*, *41*(3), 463–479. <https://doi.org/10.1080/17439884.2014.1002845>

Goody, J. (1977). *The Domestication of the Savage Mind*. Cambridge: Cambridge University Press.

Grant, L. (2007). *Learning to be part of the knowledge economy: digital divides and media literacy*. Bristol: Futurelab. Retrieved from <http://preview.futurelab.org.uk/resources/documents/discussion_papers/Digital_Divides_Media_Literacy.pdf>.

Hargittai, E. (2002). Second-level digital divide: Differences in People's Online Skills. *First Monday*, *7*(4). Retrieved from <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/942/864>.

Hargittai, E. (2010). Digital Na(t)ives? Variation in Internet Skills and Uses among Members of the "Net Generation"*. *Sociological Inquiry*, *80*(1), 92–113. <https://doi.org/10.1111/j.1475-682X.2009.00317.x>.

Hobbs, R. (2010). *Digital and Media Literacy: A Plan of Action* (Communications and Society Program). Washington, DC: The Aspen Institute. Retrieved from <http://www.knightcomm.org/digital-and-media-literacy-a-plan-of-action/>.

Jacques, J. & Fastrez, P. (2018). Pour une approche compétentielle, matricielle et ancrée des littératies. *Education Comparée*, *19*, 209–233.

Jones, W. (2008). *Keeping Found Things Found: The Study and Practice of Personal Information Management*. Burlington, MA: Morgan Kaufmann.

Jones, W. & Teevan, J. (eds). (2007). *Personal Information Management*. Seattle, WA: University of Washington Press.

Kirsh, D. (2001). The context of work. *Human-Computer Interaction*, *16*, 305–322.

Kljun, M. & Dix, A. (2012). Collaboration Practices within Personal Information Space. In *Proceedings of the Workshop on Personal Information Management (PIM) 2012*. Seattle, WA.

Knobel, M. & Lankshear, C. (eds). (2007). *A New Literacies Sampler*. New York: Peter Lang.

Le Boterf, G. (1997). *De la Compétence à la Navigation Professionnelle*. Paris: Editions d'Organisation.

Lejeune, C. (2014). *Manuel d'analyse qualitative : Analyser sans compter ni classer* (1st edn). Brussels: De Boeck.

Ligurgo, V., Philippette, T., Fastrez, P., Collard, A.-S. & Jacques, J. (2018). A Method Combining Deductive and Inductive Principles to Define Work-Related Digital Media Literacy Competences. In S. Kurbano□lu, J. Boustany, S. Špiranec, E. Grassian, D. Mizrachi & L. Roy (eds), *Information Literacy in the Workplace* (Vol. 810, pp. 245–254). Prague : Springer. <https://doi.org/10.1007/978-3-319-74334-9_26>

Limberg, L. (2000). Phenomenography: A relational approach to research on information needs, seeking and use. *New Review of Information Behaviour Research*, *1*, 51–67.

Limberg, L. (2005). Phenomenography. In K. E. Fisher, S. Erdelez & L. McKechnie, *Theories of Information Behavior* (pp. 280–283). Medford, NJ : Information Today.

Litt, E. (2013). Measuring users' internet skills: A review of past assessments and a look toward the future. *New Media & Society*, *15*(4), 612–630. <https://doi.org/10.1177/1461444813475424>

Livingstone, S., Van Couvering, E. & Thumim, N. (2008). Converging Traditions of Research on Media and Information Literacies. In *Handbook of Research on New Literacies* (pp. 103–132). New York: Taylor & Francis.

Marton, F. (1981). Phenomenography – Describing conceptions of the world around us. *Instructional Science*, *10*(2), 177–200. <https://doi.org/10.1007/BF00132516>

Marton, F. (1986). Phenomenography – A Research Approach to Investigating Different Understandings of Reality. *Journal of Thought*, *21*(3), 28–49.

Marton, F. & Booth, S. A. (1997). *Learning and Awareness*. Psychology Press.

Masciotra, D. & Medzo, F. (2009). *Développer un agir compétent. Vers un curriculum pour la vie*. Brussels: De Boeck.

Piette, J. (1996). *Education aux médias et fonction critique*. Paris: L'Harmattan.

Potter, W. J. (2004). *Theory of Media Literacy: A Cognitive Approach*. London : Sage Publications.

Reckwitz, A. (2002). Toward a Theory of Social Practices: A Development in Culturalist Theorizing. *European Journal of Social Theory*, *5*(2), 243–263.

Reder, S. & Schwab, R. G. (1990). The Temporal Structure of Cooperative Activity. In *Proceedings of the 1990 ACM Conference on Computer-supported Cooperative Work* (pp. 303–316). New York: ACM Press. <https://doi.org/10.1145/99332.99363>

Rey, B., Carette, V., Defrance, A. & Kahn, S. (2012). *Les compétences à l'école: Apprentissage et évaluation*. Brussels: De Boeck.

Sandberg, J. (2000). Understanding Human Competence at Work: An Interpretative Approach. *The Academy of Management Journal*, *43*(1), 9–25. <https://doi.org/10.2307/1556383>

Scallon, G. (2004). *L'évaluation des apprentissages dans une approche par compétences* (2e ed.). Brussels: De Boeck Université.

Scheerder, A., van Deursen, A. & van Dijk, J. (2017). Determinants of Internet skills, uses and outcomes. A systematic review of the second- and third-level digital divide. *Telematics and Informatics*. <https://doi.org/10.1016/j.tele.2017.07.007>

Schmidt, K. & Bannon, L. (1992). Taking CSCW seriously. *Computer Supported Cooperative Work (CSCW)*, *1*(1–2), 7–40. <https://doi.org/10.1007/BF00752449>

Schmidt, K. & Simone, C. (1996). Coordination mechanisms: Towards a conceptual foundation of CSCW systems design. *Computer Supported Cooperative Work (CSCW)*, *5*(2–3), 155–200. <https://doi.org/10.1007/BF00133655>

Schön, D. A. (1983). *The Reflective Practitioner: How Professionals Think In Action*. New York: Basic Books.

Scribner, S. & Cole, M. (1981). *The Psychology of Literacy*. Cambridge, MA: Harvard University Press.

Shove, E., Pantzar, M. & Watson, M. (2012). *The dynamics of social practice: everyday life and how it changes*. Los Angeles: Sage Publications.

Smith, L. & McMenemy, D. (2016). Enhancing agency through information: A phenomenographic exploration of young people's political information experiences. In *Proceedings of the ASIS&T 2016 Annual Meeting*. Copenhagen: ASIS&T.

Star, S. L. (1991). The sociology of the invisible: The primacy of work in the writings of Anselm Strauss. *Social Organization and Social Process: Essays in Honor of Anselm Strauss*, 265–283.

Star, S. L. & Strauss, A. (1999). Layers of Silence, Arenas of Voice: The Ecology of Visible and Invisible Work. *Computer Supported Cooperative Work (CSCW)*, *8*(1–2), 9–30. <https://doi.org/10.1023/A:1008651105359>

Stordy, P. (2015). Taxonomy of literacies. *Journal of Documentation*, *71*(3), 456–476. <https://doi.org/10.1108/JD-10-2013-0128>

Strauss, A. (1985). Work and the Division of Labor. *The Sociological Quarterly*, *26*(1), 1–19. <https://doi.org/10.1111/j.1533-8525.1985.tb00212.x>

Strauss, A. (1988). The Articulation of Project Work: An Organizational Process. *The Sociological Quarterly*, *29*(2), 163–178.

Street, B. V. (1984). *Literacy in Theory and Practice*. New York: Cambridge University Press.

Street, B. V. (2006). Autonomous and Ideological Models of Literacy: approaches from New Literacy Studies. *Media Anthropology Network*, *17*, 1–15.

Suchman, L. A. (2007). *Human-machine reconfigurations: plans and situated actions*. New York: Cambridge University Press.

van Deursen, A. J. A. M., Courtois, C. & van Dijk, J. A. G. M. (2014). Internet Skills, Sources of Support, and Benefiting From Internet Use. *International Journal of Human-Computer Interaction*, *30*(4), 278–290. <https://doi.org/10.1080/10447318.2013.858458>

van Dijk, J. (2005). *The Deepening Divide. Inequality in the Information Society*. London: Sage Publications.

van Dijk, J. A. G. M. & van Deursen, A. J. A. M. van. (2014). *Digital Skills: Unlocking the Information Society*. New York: Palgrave Macmillan.

Westera, W. (2001). Competences in education: A confusion of tongues. *Journal of Curriculum Studies*, *33*(1), 75–88. <https://doi.org/10.1080/00220270120625>

Yates, C., Partridge, H. & Bruce, C. S. (2012). Exploring information experiences through phenomenography. *Library and Information Research*, *36*(112), 96–119.

Zhang, H. & Twidale, M. (2012). Mine, Yours and Ours: Using Shared Folders in Personal Information Management. In *Proceedings of the PIM 2012 Workshop*. Seattle, WA: ACM Press.

Chapter 3: Converting Collocated to Virtual Teams: Division of Labor, Coordination and Learning Opportunities

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Introduction

Distance collaboration is no longer an exception in office environments (Dulebohn & Hoch, 2017). Advanced information and communication technologies (ICT) facilitate a shift from traditional office-bound teamwork to time and place independent virtual teamwork (Hertel, Geister & Konradt, 2005). As Dulebohn and Hoch (2017) point out, the recent growth of virtual teams has outpaced theory and research on virtual teams. One question to be addressed is whether a shift from collocated to virtual teamwork requires new skills and competences from the team members, including distance collaboration mediated by ICT. Collard (et al. 2017) describe these skills and competences as digital and media literacy (DML) referring not only to technical but also to social and communication competences, for instance related to collaborative writing or managing personal and shared information. In this chapter we address the question of acquiring such new skills and competences from the perspective of the division of labor of virtual teams. As will be elaborated, the division of labor of teams refers to how the tasks that have to be carried out are divided between teams and between team members within a team. We use the Modern Sociotechnical Systems Theory (MST) as our theoretical approach for this analysis. In this theory, the division of labor determines the opportunities employees have to learn in their job (Kuipers, Amelsvoort & Kramer, 2010; Ramioul, 2012). Achterbergh & Vriens (2009) state in this respect that in order for employees to learn, tasks need to be "sufficiently complex to allow for gaining knowledge about cause-effect relations related to the goals of that job". In other words, when the division of labor in virtual teams is such that the tasks are complex and employees are able to understand cause-effect relations, they can learn new things.

The division of labor between and within teams can take many forms, impeding or fostering team member's learning opportunities. High levels of division of labor not

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only result in simpler tasks, they also lead to high interdependency between tasks and, consequently, to extensive coordination requirements (de Sitter, et al. 1997; Painter et al. 2016). Such a division of labor hampers individuals to gain knowledge from cause-effect relations related to the goals of their job and hence to learn from their work. The division of labor between and within teams is therefore at the center of our analysis.

While the increased complexity of coordinating virtual teams as compared to collocated teams is as such acknowledged in the literature (Bell & Kozlowski, 2002; Gibbs et al. 2017; Painter et al. 2016; Schaubroeck & Yu, 2017), the division of labor and resulting task interdependency to explain coordination requirements are less studied factors. Research rather seems to focus on managerial solutions to address the complex coordination, such as team leadership or team trust (Dulebohn & Hoch, 2017; Ford, et al. 2017; Liao, 2017). More performant technology is another advocated solution (Moser & Halpin, 2009; Schaubroeck & Yu, 2017). Our contribution to the LITME@WORK project, and the virtual team literature in general, is to investigate the impact of the division of labor between and within (virtual) teams, on (1) task inter-dependency and coordination requirements because (2) these will eventually determine the acquisition of competences.

The LITME@WORK study focuses on digital and media literacy (DML) in virtual office teams in private and public companies in Belgium (Collard et al. 2017). By approaching DML competences from different theoretical perspectives, the study aims at a better understanding the changing office work environments, practices and DML requirements and opportunities as they take shape in different kinds of organizations and workplaces. In this chapter the division of labor of eight virtual teams in five different companies is analyzed focusing on the organizational conditions for acquiring (DML) competences in virtual teams.

The chapter is structured as follows. First, our conceptual framework is developed. Second, the methodology section explains how data were collected through document analysis and individual interviews during the eight in-depth case studies. Third, the empirical results section describes the impact of going virtual on the division of labor and learning opportunities in virtual teams. Fourth, the results and their implications for research and practice are discussed. Finally, the main conclusions and recommendations of this study are presented.

Conceptual Framework

(Virtual) Team Definition

A team is a collection of minimum two people working together for a common goal that needs completion through inter-dependent work (Gibson & Cohen, 2003; Mathieu, Heffner, Goodwin, Salas & Cannon-Bowers, 2000). A team is virtual when at least one of the team members works at a different location, organization or at a different time so that

communication and coordination are predominantly based on electronic communication media (Hertel et al. 2005).

Modern Sociotechnical Systems Theory

Learning opportunities in (virtual) teams arise from the task interdependencies a team's division of labor generates. To describe the division of labor and task interdependency, we use the Modern Sociotechnical Systems theory (MSTS) and the organizational model by De Sitter et al. (1997) and Van Hootegem (2000) to conceptualize our research questions.

Virtual teamwork: A Question of Coordination

There are different reasons why coordination in virtual teams is more complex as compared to collocated teams. First, successful coordination favors a unity of place, time and action (de Sitter et al. 1997). The geographical distance between tasks resulting from virtual teamwork breaches this unity which renders coordination more complex. Second, successful coordination requires reliable, actual, complete and relevant information (Kuipers et al. 2010). Such information is more difficult to acquire in a virtual context. When communication and team interaction are mediated by ICT, there is a considerable loss in communication richness compared to face-to face situations (Kirkman & Mathieu, 2005; Schaubroeck & Yu, 2017). Third, distance collaboration requires more coordination because team members experience difficulties acquiring knowledge and resources due to the fact that working together in a virtual team may hamper knowledge sharing (Cramton, 2001; Gibbs et al. 2017; Golden & Raghuram, 2010; Hertel et al. 2005).

Coordination requirements emerge from interdependencies amongst team or team member tasks (Bell & Kozlowski, 2002; Painter et al. 2016). Task interdependencies and coordination requirements are the outcome of choices in the division of labor, in other words: the way the work to accomplish is divided into distinct tasks and how the coordination of these tasks is achieved (Mintzberg, 1979). Organizations transform the tasks of a transformation process into a configuration of often strictly defined jobs with specific relations or interdependencies between them (Van Hootegem, 2000).

Because coordination from a distance is more complex, we expect organizations to adapt the virtual team's division of labor to prevent negative effects of poor coordination of the work.

Division of Labor and Sources of Task Interdependency

Based on the MSTS and focusing on the team's division of labor, we identify three possible sources of task interdependency: (1) the way the production-related tasks are divided between teams and team members (the production structure), (2) the way the regulatory tasks are divided between teams and team members (the regulation structure) and (3) the way technology is implemented and relates to the tasks to be performed. This

latter source of task interdependency refers to the allocation of tasks to either technology or jobs to be carried out by employees (the technical system).

The production structure relates to choices made in the coupling of productive tasks (de Sitter et al. 1997) and is a first source of task interdependency between teams and within teams. From a MSTS perspective, tasks are generically categorized as preparation (planning, provision of tools and materials, etc.), support (quality control, maintenance, etc.) and production (the actual making). These tasks are all necessary and interdependent to finish a product or an order. Integrating preparation, support and production tasks in a single job limits interdependency and coordination requirements. In contrast, coordination requirements are high when these tasks are "decoupled" and divided over different jobs. This generic principle of the division of labor in the production structure, (de)coupling preparation, support and production, can be applied at different levels. In our study, we analyze the division of labor in the production structure between teams, within teams (between team members) and at the level of individual jobs. Between teams, task interdependency arises when tasks to accomplish one product or order are assigned to separate teams such that teams have to collaborate to finish a product or order. This is called functional concentration and it generates extensive coordination requirements between those teams. Within teams, task interdependency arises when the different tasks to accomplish by the team are assigned to separate jobs so that team members have to pass on work to each other before a job can be finished. This is the functional differentiation within a team, and high levels of functional differentiation again create task interdependency and coordination requirements. Finally, at the level of each individual job, tasks can be further fragmented (and further simplified) into small, often short-cycled, tasks with little variation and a limited scope, which is typically exemplified with Taylorist production processes and assembly lines. High task interdependency and extended coordination requirements resulting from functional differentiation and fragmentation in the production structure lead to simple jobs. Complex jobs, in contrast, are created when preparation, support and production are coupled and as much as possible integrated into jobs. Complex jobs are a precondition for learning.

The division of labor in the regulation structure constitutes a second source of interdependencies. This relates to choices made in the (de)coupling and assignment of regulatory tasks, which refer to the decisions to organize the transformation process at different levels (de Sitter et al. 1997). The division of labor in the regulatory structure impacts on the control capacity of employees. Control capacity can be defined as the possibility to autonomously deal with a job's variability. It refers to the ability to deal with all kinds of disturbances that occur during the task execution or in interaction with other teams or team members as well as to the autonomy to organize one's work, this means to plan it and to choose the method, pace and sequence of tasks. When regulatory tasks are divided over different jobs, more coordination is required to organize the work and solve disturbances. The control capacity of team members is limited in such situations because team members have to rely on others to organize their work and solve

disturbances. Because communication and interaction are essential in regulatory tasks, such interdependency is especially difficult in a virtual context. It is easy to understand that in jobs characterized by high levels of division of labor in the production and regulation structure, it is more difficult to gain knowledge about cause-effect relations related to the goals of the work, which is our key factor to predict learning opportunities.

A third and final source of interdependency, specifically relevant to virtual teams, is rooted in the technical system. The technical system consists of a set of standardized procedures or systems which translate tasks of production, preparation, support or regulation into more or less rigid routines (Kuipers et al. 2010). When designing a (virtual) team, organizations choose which technical system will be implemented to support the team's production and regulation structure and what specific functions this system will have, such as structuring the workflow of a team, determining the information available to the team members and/or supporting a communication system (Griffith, Sawyer & Neale, 2003). If the technical system formulates an exhaustive set of rules, it is more difficult to deal with situations that deviate from the norm, generating interdependencies and coordination requirements. Prescribing tasks and how these are to be performed, for example by imposing standardized procedures, or placing physical restraints upon the work process, for instance by restricting access to data, are two clear mechanisms of technical system functions that limit team member's control capacity (Trusson, Hislop & Doherty, 2018). To limit interdependency from the technical system, it should be designed following the so-called "minimum critical specification"-rule: only those procedures that are critical for the work process should be standardized, all others should be left to control by the team members (Herbst, 1974). Finally, the mere possibility of technical errors and system deficiencies implies interdependency from technical systems because such disturbances impede a smooth work flow.

Different Division of Labor Options Resulting in Different Learning Opportunities

To cope with the additional complexity of coordinating virtual teams, organizations basically have two options to (re)design the division of labor: they can try to reduce the coordination requirements by scaling down interdependencies, or they can increase coordination (de Sitter et al. 1997; Van Hootegem, 2000; Ramioul, 2012b). Scaling down task interdependencies implies more integration of preparation, support and production tasks within jobs, hence low levels of functional concentration, differentiation and fragmentation. When combined with sufficient control capacity in the regulatory structure, that is securing autonomy to organize one's work and to deal with all kinds of disturbances, less coordination is required and the risk of disturbances is lower. In these situations, distance collaboration is easier. If designed following the minimum critical specification-rule, also the technical system can offer support and increase the control capacity of team members to adapt the system to task variability. Such options

in the division of labor lead to more complex jobs and more opportunities for gaining knowledge about cause-effect relations, and ultimately more acquisition of skills and competences.

In the second option, in contrast, the functional concentration, differentiation and fragmentation of production tasks in teams is not adapted, and may even exacerbate when a team operates at a distance. The response to the increased complexity of coordinating a virtual team is not to lower the division of labor and increase control capacity of the team members but to increase coordination efforts. In addition, technical systems are installed to support such coordination by imposing an exhaustive set of rules and standardized procedures, which further restrict the control capacity. Such a division of labor is likely to lead to simple jobs with low control capacity and complex coordination requirements (de Sitter et al. 1997; Van Hootegem, 2000; Achterbergh & Vriens, 2009). This implies less opportunity for the team members to gaining knowledge about cause-effect relations and learn new things.

Additional Factors for Learning in Virtual Teams

Team members can also acquire new skills and competences when they receive feedback and can seek support from team colleagues or the team leader. Such social support can strengthen or weaken team members' control capacity: without adequate information, team members will struggle to solve problems or to interpret situations correctly. Hence, a lack of social support can impede understanding cause-effect relations (Karasek & Theorell, 1990; Ramioul, 2012). However, social support can be hampered by the difficulties of sharing and communicating information in a virtual context (Cramton, 2001; Schaubroeck & Yu, 2017). Consequently, working together from a distance may, through its possible negative impact on team member's social support, in itself be detrimental for the team member's learning opportunities (Griffith et al. 2003; Kuipers et al. 2010).

Theoretical Framework and Research Questions

Figure 3.1 summarizes the theoretical framework used to formalize the empirical observation and analysis of the case studies.

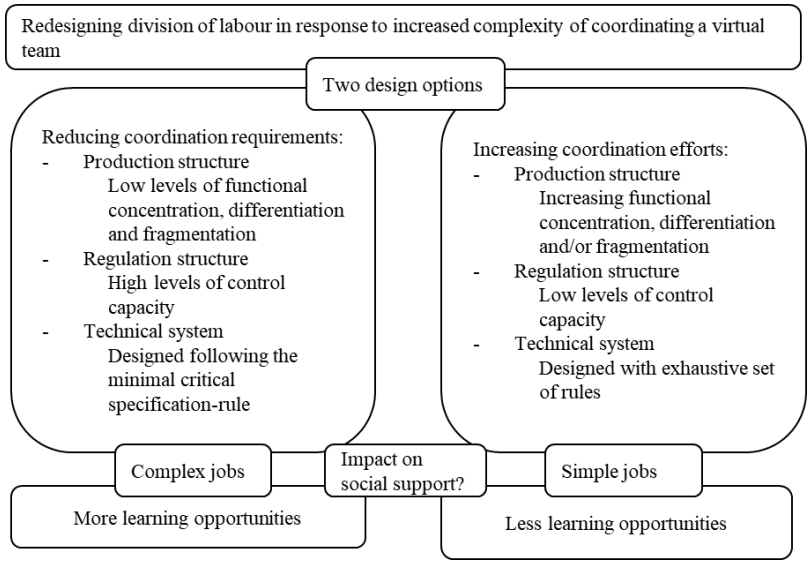

Figure 3.1: Schematic overview of theoretical framework.

We can now formulate the following research questions guiding our analysis:

1) Do organizations consider changing the production structure, regulation structure and technical system of a team when they are confronted with increased coordination complexity related to the shift to virtual teams, and to what extent? More precisely: is re-design required to cope with increased coordination complexity resulting from a shift from a collocated to a virtual team, and if so: is the focus of this re-design on reducing the coordination requirements or on increasing coordination efforts?
2) How do the production structure, regulatory structure and technical system of a virtual team, and possible changes herein (including changes in team member's social support, induced by going virtual) affect the team members' learning opportunities?

Methodology

Our research design is a comparative case study of 10 virtual teams in five organizations, nicknamed: BigHealth, BigEmp, BigInsuranceOne, BigInsuranceTwo and SmallIT. The organizations are selected to maximize diversity in their profiles: they include private and public organizations of medium and large sizes, operating in different fields and with diverse corporate cultures (Collard et al. 2017). For each of the five companies participating in the case study research, two virtual teams have been studied. Our main data source is a set of in-depth interviews with HR-managers as well as with the team leaders and team members of these ten teams (thirty-five interviews in total),

supplemented with document analysis of policy documents on virtual teamwork and expert observations during our visit of the virtual teams' organizations.

After an initial analysis of the available data, we decided to include eight virtual teams in the within-case and the comparative analysis because data saturation was achieved. The two cases of BigEmp did not add more insight and were eventually left out. Deductive category application was used as a qualitative research technique to identify the impact of virtual teamwork on the team's division of labor. Deductive category application means that theoretically deduced categories are applied to the data (Mayring, 2014). Here, data on the team's division of labor were coded using the conceptual framework presented in the previous section.

Empirical Findings

As a first step, a within-case analysis of eight virtual teams is carried out in order to analyze the division of labor of each team and to understand their internal logic of change when going virtual. For this within-case analysis, the two teams of each organization are discussed subsequently. While we intended to order the organizational case studies according to the extent to which they fit into one of the two ideal typical design options presented in Figure 3.1 of our conceptual framework, we did not find one organization where all investigated teams can unambiguously be classified into these two types. Rather, in each organization we encountered variations in division of labor and how this was adapted to distance collaboration. A preliminary observation of the analysis is that the team's division of labor of a single company may differ considerably, leading to the conclusion that the broader company policy regarding virtual teamwork is not necessarily a decisive determinant for their division of labor. We nevertheless keep the teams grouped per organization for the within-case analysis. We start with the company and teams that best represent the described format of high levels of division of labor and its corresponding high task interdependency, coordination requirements and simple jobs. Quickly, we will be describing teams where additional coordination requirements related to virtual teamwork also brought along (sometimes small) changes that grant team members more control capacity to cope with these additional coordination requirements. Conversely, we also observed organizations that seem to better fit into the division of labor format with lower task interdependencies, fewer coordination requirements and more complex jobs. Nevertheless, the introduction of virtual teamwork induced interventions in the division of labor that ultimately confront the increased coordination complexity with more coordination efforts rather than with interventions that would limit coordination requirements.

After the within-case analysis of the eight virtual teams, a synthetic table provides an overview of the division of labor in the production structure, regulation structure and technical system before and after the shift to a virtual team.

BigInsuranceTwo

BigInsuranceTwo is a private insurance company that implemented virtual teamwork as part of a broader digitalization agenda. Digital technologies were introduced to automate as much tasks of the workflow as possible in order to raise productivity. The digitalization facilitated virtual teamwork because files can be accessed from anywhere. But the introduction of virtual teamwork was also prompted by the move of the company to smaller offices, which required a third of the total staff to work from home because it was no longer possible to provide office space for all employees at the same time. The two teams participating in the study process damage claims, based on relatively standardized procedures of sorting incoming claims and assessing these according to criteria before payment of the insurance compensation.

Team 1

Team 1 consists of four team members and a team leader, who is also responsible for three other teams (not included in the study). The team members have three different tasks in processing damage claims: preparation of the paper files, digitalization of those files and labeling/sorting the digital files. These tasks are repetitive and simple:

> Those tasks do not take long. They [the team members] do on average 700 to 800 files a day. That is assembly line work really[18]. (Team leader)

As pointed out, the company has recently restructured the workflow in order to raise productivity and digitized one of the tasks of the workflow. In practice, the reorganization and digitalization lead to more division of labor and fragmented tasks, generating additional interdependencies and coordination requirements in the production structure, the regulation structure and the technical system. In addition, the coordination efforts by the team leader increased and intensified performance control by the technical system was installed. First, the workflow was divided into functional teams with specific and fragmented tasks, generating a long chain of interdependencies between and within teams.

> The whole structure of the company changed. Even within our department, they divided the tasks between a lot of smaller teams. Everyone has his own task, very structured, because they believe that the more you do the same task, the more productive you become. (Team member)

When virtual teamwork was implemented, the team's regulation structure changed limiting the team members' control capacity. Team members are obliged to work from home two days a week on fixed days, as decided by the team leader. Team members cannot choose when to work from home or what to do from home. The team leader takes

[18] All quotes in this chapter are English translations of the Dutch or French transcript that was made of each interview.

care of the planning of the work and is responsible for most support, preparation and regulation tasks.

> Yeah, it's our team leader who decides on who will do what each day. If changes to the planning have to be made, she will do that, unexpected tasks are planned by her as well. In fact, she coordinates everything. (Team member)

The team leader also introduced individual quantitative targets to control the team members' performance. Each homeworking day, these have to send the number of files processed to the team leader and each month they receive an email whether they achieved their targets or not. This email originally compared the results of the different team members, but as this caused too much stress, the team leader eventually did no longer include this comparison. However, each year, new targets are formulated based on the average files processed, requesting higher productivity. At the end of the year, bonuses are given based on the number of files processed.

> Every day you work from home, you have to send your numbers [to the team leader] and she takes the average number each month. (Team member)
>
> Nobody checks the quality of what we are doing. For the moment, the only important thing here is quantity. (Team member)
>
> Last year, I decided that everyone had to achieve that average. I used to send the average to everyone, but that caused too much stress. Some did more, some did less than the average and this created some sort of competition. (Team leader)

The technical system supports this company policy. The digitalization was accompanied by a centralized information system which each team member has to use. This system coordinates the work between the different teams, automatically transferring files from one team to another. However, this system is far from flawless and technical errors frequently occur. As each team member depends on this system, these technical errors cause stress and delays and limit the team members' control capacity.

> Most of the problems we have relate to the IT. The system does not work well. A lot of changes will have to be implemented before this will stop. Now, the system creates the backlog we currently face! (Team member)

The frequent technical errors, and the team members' dependence on the technical system, hamper team members to achieve their targets. But in addition, team members depend on the team leader to handle difficult files, unexpected events or questions of other teams. This generates a lot of emails and causes additional delays.

> My mailbox is never empty. I work one day a week from home to keep up with the emails, but when I return to the office the next day, well yes, a lot of emails are being sent in this team. (Team leader)

Team meetings are held one hour every two weeks. Although these meetings are quite limited in time and frequency, the team leader expresses the importance of these team meetings:

> It is quite performance-oriented here right now. Only the numbers count. Well, I think to myself, sometimes you have to give them a break, stop the machine for a while. […] Some of them will not automatically suggest when work is too much for them. On these moments I can check whether everyone is okay. (Team leader)

On the other hand, the social support of team members decreased since the introduction of virtual teamwork. Communication mainly happens through email or phone. Some team members, who often worked together for years, do not see each other anymore because they are at the office on different days due to the imposed homeworking schemes. In response, some of them meet outside working hours.

In sum, digitalization and the reorganization of the workflow, which accompanied the introduction of virtual teamwork, initiated changes in the production structure, regulation structure and the technical system resulting in more division of labor, higher task interdependency, less control capacity and less communication and interaction opportunities. Such a division of labor required more coordination which was assigned to the team leader and the technical system. The quantitative performance monitoring of the team members, the technical errors, the limited control capacity to organize one's work and to deal with the problems and reduced social support led to high levels of job-related stress among the team's members and limited opportunities to learn as they are not able to solve the problems and disturbances they encounter.

Team 2

Team 2 of BigInsuranceTwo consists of two subteams that each have four team members and a team leader. Both subteams process the payment of different client segments. The company's idea is to merge the two subteams (which was however not yet achieved at the moment of the data collection), and this is why these two subteams were presented as one team to the researchers. Although both subteams operate in the same digital and organizational context, their division of labor also differs in some aspects due to small interventions by one subteamleader.

The introduction of virtual teamwork in both subteams generally led to huge backlogs in the processing of damage claims. As in Team 1 of this company, the digitalization of the workflow was accompanied by more functional concentration, differentiation and fragmentation leading to a similar increase in task interdependency and coordination requirements. As in Team 1 these were solved by assigning additional coordination to the team leaders and the technical system. While team members of Team 2 used to be responsible for both data-entry and payment of claims, when going virtual these tasks were assigned to different groups within the teams. However, the payment is still highly

dependent on correct data-entry, so team members responsible for payment authorization rigorously check the data-entry before authorizing the payment. This situation results in double work, which is a first explanation for the huge backlog.

> I check really everything. I should not do that, I know, I have to trust them [the data-entry team]. […] But if you do the data-entry yourself, at least you're sure that it's done correctly. (Team member)

A second explanation for the backlog is the heavy dependency on the technical system, as already described. Since all the work is steered and monitored by one integrated technical system, the process is vulnerable to technical errors. If these occur, team members have to contact the technical services and can only wait for the problem to be solved.

> I received a little bit of information on the system, but most of the time you just sit before your screen at home [when problems occur] and you just have to wait and wait. (Team member).

The functional differentiation of tasks between the individual team members and the team leader, assigning all preparation, support and regulatory tasks to the latter, is a third explanation for the backlog. In case of difficulties or questions, team members have no other option but to contact their team leader and wait for his or her intervention. In an office environment, this can be done face-to-face, however, in this virtual team most communication is done by email, generating a lot of emails from the team members and corresponding delays in responses by the team leader.

To increase productivity, the company's policy on telework stipulates that team members have to do more files at home compared to when at the office. Linked to the already huge backlog, this means that the work pressure is quite high within both teams, while the control capacity is low as explained.

Although this overall context is similar for both subteams of Team 2, each team leader has organized its team somewhat differently with eventually differences in the outcome for the team members. In subteam 2A, the team leader implemented individual targets based on the number of files each team member has to process daily. The files are allocated randomly by the system, so no distinction is made between big and small files and team members can either be lucky and receive only small files or they have bad luck and receive all files that require a lot of work. As in Team 1, monthly averages are published and each team member can compare one's performance with that of the other team members.

> They send us this kind of report, […], monthly, and in that report I can see what my colleagues process, on a daily basis. So you can see that, you automatically look at those numbers as they are in front of you. I know I shouldn't, but hey, it's normal no? (Team member)

The team leader also instructs which files team members have to process at home (and which in the office) and decides on a daily basis who has to handle the growing number of emergency files which have to be given priority. Because targets are individually set and team members do not really have to collaborate to achieve a common goal, communication between team members is very limited. The team leader organizes a meeting only once a month and some team members only see each other on that occasion because their fixed homeworking days are overlapping.

> There is one colleague that I never meet. (Team member)

The social climate within the team is defined as bad as expressed by the interviewed team member:

> The social climate is very bad at the moment. In fact, there is no ambiance in this group right now. I work 21 years in this company, and I can honestly say that if I'm offered another job tomorrow, I do not hesitate for a moment. (Team member)

Interestingly, during the interviews, team members made clear that they often deviate from the formal rules, creating their own informal solutions in response to dysfunctional formal procedures, all in an attempt to reduce the backlogs and technical and procedural failures. Even with limited control capacity and in a highly structured production environment, team members still find ways to adapt their work practices, often preventing disturbances. In other words, team members themselves find solutions to cope with the interdependencies of the division of labor and the complexity of working in virtual team, despite the coordination mechanisms imposed by the organization.

> Q.: And when you have to collaborate with members of other teams, do you go to them yourself or do you first contact your team leader? (Interviewer)
>
> A.: Well, most of the times I directly contact those colleagues myself.(Team member)
>
> Q.: And that is not a problem…? (Interviewer)
>
> A.: (Laughing) I think, well, let me put it this way, if you are new here, you will probably go to your team leader and he or she will contact that colleague. (Team member)

In contrast to subteam 2A, the team leader of subteam 2B formulates group targets instead of individual targets. In addition, team members can decide in group which files to handle at home and how the work is divided between them. Moreover, the team can jointly decide on who is going to handle emergency files.

> We decide together who will be doing what. As long as the work is done, that's okay [for the team leader]. (Team member)
>
> Even if the client is not yours, if you receive an email of him, you will still try to respond to it. We decided this as a group and it works fine. (Team member)

This autonomy generates additional control capacity as explained by this team member:

> If you encounter a really difficult file and you don't know how to handle it, you just leave it and process it the following day when you're at the office and can ask for help. (Team member)
>
> I adapted my work package to my home working days. What I do better when at the office I do at the office, what I do better at home, I do at home. (Team member)

The team also found a solution for the double-checking of the data entry. They contacted the team members responsible for the data-entry of their files and gave those tips and advice on how to better manage the data-entry. This can also be regarded as an informal solution in order to better cope with the high workload.

> We really found the guy responsible for our data-entry. We trained him and told him what he should check. Now it's going fine. Previously, we had to double check everything, which was time consuming. (Team member)

The team leader organizes a meeting only once a month, similar as in the first subteam. However, in order to better coordinate their work, team members remain in close contact by chat, email and phone. This informal contact also stimulates social support.

> If there is a problem or something, we can always contact each other by telephone or email, even if we work at home. This happens daily, it's easy because we have a telephone with a chat option. (Team member)
>
> I have to say that we have a really good team right now. (Team member)

The interviewed team member expressed less job-related stress compared to the subteam 2A members, thanks to the higher control capacity and especially the social support.

The case of team 2 demonstrates how even relatively small interventions in the division of labor can lead to differences in the control capacity and learning opportunities, even when the overall organizational context in which both teams operate remains unchanged.

BigHealth

BigHealth is a public service department and employs 1,050 people. Teleworking and virtual teamwork have been introduced in 2006 in response to a legal initiative to make telework possible for all civil servants. Due to an upcoming move to a smaller office, the organization also actively supports telework. Virtual teamwork also fits in a broader organizational transformation towards a more result-oriented organization. While the introduction of telework is imposed by the legal regulation for the entire public sector, the organization does not impose strict set rules on how this virtual teamwork should be organized. Instead, team members and especially team leaders can decide on this depending on the tasks to be performed and the general functioning of the team.

> We [from HR] are not going to impose too many rules; common sense and communication with your team leader are important. Conflicts arise when employee and team leader are not on good terms. (HR manager)

Team 3

Team 3 delivers two types of certificates to allow citizens with an educational degree to legally practice their profession. Although the team has two peak moments during the year, the inflow of certification requests is stable and predictable. The team consists of three team members and one team leader. All team members are allowed to work two days a week from home, however, in practice the team leader and two team members only work one day a week from home while the third team member always work in the office. The team members do not have fixed home working days but they have to ask ad hoc permission to the team leader. Each team member is responsible for processing a certification request from start to end which means that the functional differentiation and fragmentation in the production structure is low and task interdependencies between team members are limited. However, regulatory tasks as well as support and preparation tasks such as planning, quality control, method of working, setting priorities or dealing with difficulties, are all assigned to the team leader, which implies high levels of functional differentiation between team leader and team members within the team. This limits the control capacity of team members to organize their work and to solve problems as they occur.

When the team was converted to a virtual team, no obvious changes were made to the production structure. The technical system, in contrast, changed drastically as the introduction of virtual teamwork coincided with a digitalization project that turned paper-files into digital ones and introduced a file management system to follow the workflow more efficiently.

> The situation was a bit double-sided: we wanted to have easier access to the files anyway, but at the same time, it [the file management system] also made teleworking possible, so ultimately both initiatives were linked. (Team leader)

The digitalization of the files was not only a precondition to introduce telework, the file management system also provided a new way of coordinating the team by centralizing information and standardizing procedures. This additional coordination came on top of the coordination by the team leader, generating additional interdependencies and organizational complexity. In other words, while the division of labor in the production structure as such remained unchanged, the new technical system necessary for teleworking (as imposed by the official teleworking regulation of the company) resulted in new interdependencies, affecting the team's control capacity. At the same time, the introduction of the file management system and the corresponding standardization

of procedures reduced to some extent dependency of the team members on the team leader's coordination:

> The team has a history of oral and informal knowledge sharing and sometimes we lack documentation on how things are done. Last year we started to list really everything: this has to be done that way, that task that way ... Now team members can do their job even if I cannot be reached or I'm not present. (Team leader)

In addition, the control capacity of team members increased slightly as they can save up (and couple) those tasks that they consider as most suitable to do at home. This gives them some autonomy over the planning of their work. However, team members also report on regular technical failures, such as a crashing mailboxes or the inaccessibility of the file management system. Hence, the technology on which the team members now depend more to do their work generates new downfalls, causing additional disturbances which they cannot solve. This combination of, on the one hand, more control capacity induced by the technical system and, on the other hand, the loss of control related to technical failures leads to an ambivalent assessment of the technical system.

Finally, team meetings are held once a month, but these have limited impact on the control capacity experienced by the team members.

> In fact, I know little of meetings. There are team meetings where everybody is present, but most of the time nothing is asked from me. (Team member)

As concerns the team leader, coordination of the team became more complex since the introduction of virtual teamwork. First, the team leader observes that communication by email increased since the introduction of virtual teamwork. This requires his constant attention as team members expect an immediate response. The team leader also complains that emails are being sent too fast, with little consideration, which increases his workload.

> Personally, I find that people react too fast on things, making it big and important, while if you think of it, it is not important at all. I have to constantly firefight, but in fact these are no fires but only candles. (Team leader)

Second, the team leader experiences a decrease in control capacity because he can no longer directly supervise team members when they work from home. When at the office, the team leader can easily check what the team members are doing and adjust where needed. However, when the team members work at home, he has to trust them and rely on the information they communicate to him on their own initiative. In response, the team leader stresses the importance of face to face contact and communication with the team members when they are at the office. The team leader tries to organize a weekly meeting with each of his team members to remain on top of things.

> It is my personal opinion, but I think that it is still better to have regular face-to-face contact with my team. It is a matter of giving direct feedback, and you can see at a glance their reaction. (Team leader)

Although the new file management system supports the coordination of the team leader, as it does for the team members, here too the assessment is ambivalent because the increase in emails and also renders the team's coordination more complex.

Team 4

Team 4 is part of the human resource department and responsible for the internal communication and career coaching. The team depends on other teams and departments for the input of regular communications such as the weekly news mail. Moreover, departments can contact the team at any moment in case of urgent messages or communication needs/advice. In other words, the team is dependent for its work flow on other departments beyond its control. The team consists of four people. Three of the four team members work one to two days a week from home. They have no fixed teleworking days and do not have to ask permission. In fact, they have no team leader since he left the team nine months ago. From that moment, the team operates as an autonomous team, without top down control or external coordination. Each team member is responsible for a project from start to end. Each week, they jointly discuss who will be responsible for which task depending on individual interests, competences and agendas. As the functional differentiation and task fragmentation within the team are low, they can all backup for each other.

> Because I like to do internal communication, I will also be the first point of contact for questions related to that subject. But depending on my agenda, time pressure and sometimes the subject ... [I will take up the project], for example, X [another team member] comes by bike to the office, questions relating to the bicycle allowance are maybe more in his field of interest and then it's better that he takes up those questions. Sometimes we also look at the language of the project (to decide who is going to ...). (Team member)

Having no team leader means that team members are not only responsible for the operational tasks, but also for the support, preparation and the organization and coordination of the work. Their control capacity is very high. While they still have to collaborate to accomplish their assignments, each team member is responsible for his/her own projects and experiences a lot of autonomy. In sum, in this team, interdependencies are reduced to a minimum.

> If we do something, we have chosen it ourselves. That way, you feel responsible for that task. (Team member)

The team did not change its division of labor when starting to work virtually. The conversion to an autonomous team was not intentional and happened almost by coincidence when the team leader left.

Regarding the technical system, Team 4 only uses communication tools such as Skype, email, and other chat programs to support the internal communication flow within the team. Crucial for the team's coordination is a weekly team meeting that they all attend face to face in the office. The planning, method of work, distribution of tasks, idea generation and potential conflicts are discussed at that meeting. In addition, team members spent a great deal of their time communicating with each other when working at home.

> Q.: Do you have an idea of how much time you spend on communication with team members at home?" (Interviewer)
>
> A.: If will be fifty-fifty, I spent almost half of my time communicating with the team. But when I'm at the office it is even more. When I'm here it's mostly for meetings. It's less when at home, but still significant. (Team member)

As already mentioned, the team fully depends on other teams for input, projects are unpredictable and require cooperation among the team members to succeed. Although the workflow is complex, team members note that working collocated or virtually does not make any real difference.

> For example, last week we received a request for an urgent communication that had to be send that same day, but we were all working from different locations and that message had to be translated as well. In the end, everything went okay. I cannot say that we experienced any disadvantage from working from a distance. (Team member)

None of the interviewed team members experienced an increase in work pressure with the introduction of virtual teamwork. Their control capacity further increased since the team members can now choose to save complex tasks for their teleworking days. Social support remained stable as well, despite the virtuality, thanks to availability of adequate technology to support the communication, and the fact that the team members organize their telework in such a way that they see each other at least once a week. This offers a possible explanation why the coordination in this team runs smoothly despite their dependency of external input and virtual collaboration.

In sum, the conversion to a virtual team had little impact on the division of labor and the related team members' learning opportunities, which were high due to complex jobs and high control capacity. Without a team leader, with complex tasks, supporting technology and sufficient control capacity to secure the coordination within the team, the team members quickly learned how to collaborate efficiently in a virtual context.

BigInsuranceOne

BigInsuranceOne is a major assurance player with different premises. In 2017 they launched a NWOW (New World of Work) programme called WAW, which stands for Wellbeing At Work. The core message of this program was labeled as "Bricks-Bites-Behavior", referring to the new buildings, the introduction of new digital communication tools and autonomy and flexibility as key behavioral attitudes required to work in a virtual context. The division of labor as a way to realize the programme was not included as a strategy to achieve the WaW programme.

Team 5

Team 5 of the BigInsuranceOne company consists of two subteams within a broader group of four subteams coordinated by one team leader. Team 5 is responsible for the company's internal communication. Subteam 5A is specialized in graphical design and has two team members, subteam 5B is responsible for internal communication and has five team members. Both subteams have to collaborate intensively. The members of both teams are located at different subsidiaries in location 1 and 2. On top, each subteam has both Dutch-speaking and French-speaking team members. All team members are entitled to work from home one day a week but they can also choose to telework up to two days a week, which is the common practice.

The division of labor of both subteams recently changed (see Figure 3.2). Originally, each subteam of respectively location 1 and location 2 was responsible for processing their own orders. Each subteam consisted of team members responsible for the different tasks needed to finish an internal communication order: graphical design, communication and marketing. However, when introducing virtual teams, the company decided to reorganize the subteams in a functional way virtually grouping team members with the same tasks of the two locations and creating functional subteams specialized in respectively marketing, graphic design and internal communication. The latter two were further included in a broader team that already consisted of two subteams. A new team leader was assigned to lead this new large team consisting of four functionally specialized subteams, working from two different locations and using two different languages.

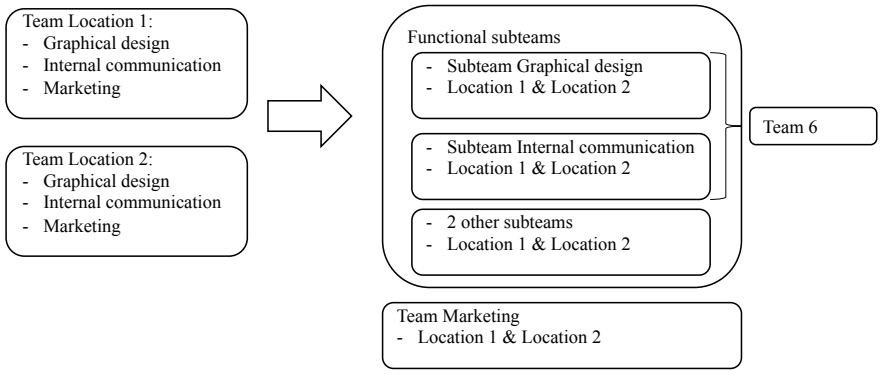

Figure 3.2: Overview of recent organizational restructuring of team 5.

The team leader had no experience with the content or procedures of these subteams. Moreover, the team members indicated that there barely existed formal procedures, methods or technical systems supporting their tasks.

> Standard procedures or formal rules do not really exist, they are certainly not written down. I think they are still working on that. (Team member)

Yet, the tasks to be performed remained rather complex, team members had to deal with an unpredictable workload and had to coordinate with several others teams, which made any strict planning difficult.

The altered division of labor introduced when implementing virtual teamwork generated more task interdependency and required more coordination: team members who had to collaborate frequently were now belonging to separate subteams, and differences in location and language further hindered smooth communication and collaboration within the functionally specialized (sub)team(s). On top of that, the possibility to work from home further increased the distance between the team members which made collaboration even more difficult.

Each subteam organizes a skype meeting every two weeks. The full team meets in real life only once every three months. The opportunities for social support within the team hence seem rather limited too. In a division of labor with high task interdependency, complex coordination, limited face-to-face interaction, no support of a technical system and an unexperienced team leader, we expected that this team would be confronted with a lot of disturbances in their workflow and few possibilities to solve these. Although the team leader confirmed our expectations that the team's coordination was difficult, both interviewed team members did not mention any particular problem in carrying out their daily tasks.

> I have a hard time dividing my attention between the subteams. The different locations aggravate that problem. […] Normally I work very structured, but now I have the feeling I constantly have to firefight. (Team leader)
>
> In our team, I do not really experience any difference from working from a distance. It is certainly not a game changer. It is really working out for us. (Team member)

How can we explain this contrasting assessment? A first explanation is the high level of control capacity team members in the subteams still enjoy. Although the different tasks of a new internal communication order are now functionally concentrated, each team member is still responsible for a (part of an) order from start to end, can autonomously choose one's method to work and decide how it fits in one's planning. Moreover, and this is possibly crucial, the distributed team members use this control capacity to continuously coordinate their work with the colleagues of the other subteams they have to collaborate with.

> Our team leader is present but more or less watching from the side, the real coordination and stuff like that, the reporting with other colleagues, are all organized by me. (Team member)

This is possible because orders are still assigned based on location. So even if the team members work in different subteams, the colleagues of other subteams they have to collaborate with are working on the same location. This means that in practice team members communicate daily with each other and colleagues from the other subteams, virtually or face to face. Standard procedures not formally exist but team members developed their own procedures and technical systems, based on their experiences.

> The people from marketing sit at the same table here. We often have to work together. We are physically close together, however, we belong now to separate teams. (Team member)

In other words, it seems that the geographical proximity and the opportunities this creates to communicate directly with members of other subteams, in addition to the possibility to develop informal and personalized procedures, largely compensate for the functionally concentrated way the teams are organized. This explains the fact that in reality little problems remain unsolved as mentioned by the team members. It also explains why the learning opportunities within the team remained high, despite a functionally re-designed production structure. Eventually, it appeared that the changed coordination requirements primarily (and only) affected the team leader.

Team 6

Team 6 consists of three team members and one team leader. The team is responsible for the recruitment of new staff and is therefore part of the HR department of the organization. All team members can in theory work from home one day a week. In practice, however,

they agreed to work up to two days a week from home. Team members do not have to ask their team leader for permission when they want to work from home but can decide so autonomously. The team is distributed over two different subsidiaries: two team members and the team leader work in location 1 while the third team member works in location 2. Each team member is responsible for a new recruitment from start to end.

> We are responsible to do the recruitment from the first to the last step, and depending on the required profile, we add some steps or remove some. (Team member)

In case of absence of colleagues or high workload, team members can backup for each other. Some additional tasks or specific projects are distributed within the team, depending on expertise or personal interest.

The recruitment of new staff is a complex process. Team members have to collaborate with the organizational department that requests the recruitment, and they have to coordinate their work with multiple other teams such as the legal department, the administration, business partners and the general HR department. While this involves high task interdependency with teams of other units, dependencies within the team are rather limited and the autonomy of the team members to organize their work is high. In addition, the team leader is result-oriented and spends little effort to coordinate or control the team members. As a rule, team members meet their team leader once a week during the team meeting. Overall, we can characterize this team as autonomous.

> The recruitment procedure is more or less the same for everyone. However, how you organize your agenda, at what moment you do things or which tasks you do when, all those things you decide for yourself. (Team member)

Because the team members work two days a week from home, and on the other days from two different locations, the coordination can nonetheless be considered challenging, also because the team members still need to collaborate on the common tasks. However, none of the team members interviewed indicated that the coordination of the team posed any problems (apart from the fact that they pointed out that improving the information flow could be helpful).

> We really have good team and a good collaboration. We divide the work really well within the team. A very good collaboration indeed. (Team member)

A first explanation for this smooth coordination is the high level of control capacity each team member possesses. This enables them to solve the problems autonomously as they occur or to confer with others and seek social support if needed. This is the outcome of the team's division of labor, with low levels of functional differentiation and fragmentation, leading to complex jobs.

A second explanation is the availability of a technical system that is comprised of a set of tools and procedures that standardize the recruitment procedure, which also facilitates coordination. Despite the fact that not all recruitments are similar and requesting

departments often add certain specific requirements to the job profile, the standardized procedures are sufficiently flexible and open to change which enables adaptation to such additional requests. Not least important, the procedures are written by the team members themselves and follow the logic of the minimum criterion specification-rule, only outlying the most important steps, leaving room for personal fine-tuning and variation.

> They [recruitment guidelines] are constantly evolving. At this very moment, X [the team member working in location 2] has revised the checklist for the recruitment of a team leader. She wrote a draft, we discussed it and now she's revising it again. (Team member)

A third mechanism to support coordination within this team is the weekly face-to-face meeting. Although they are not obliged to participate, they all arrange their agendas in order to be present. This is especially important for the team member working in location 2, as she, in contrast to the other team members, cannot meet the other team members during the week.

> I collect all important things and save them for our face-to-face meeting on Monday. Mostly because it's every week. All things I encounter during the week are discussed on that meeting. (Team member in Location 2)
>
> X [the team member working in Location 2] sometimes has the feeling she is missing a lot because she works elsewhere. But we try to tell as much as possible what happened here in the last week during our Monday meetings. (Team member)

During these meetings the team members discuss important aspects of the team's coordination, such as planning or the distribution of common tasks. Apart from these meetings, they have frequent contact about less urgent topics and questions.

> Most of the time, we put smaller issues on email, if they are just questions. If it is really something big, we plan a meeting or wait until Monday. (Team member)

In other words, although the requirements in terms of coordination within this team are high, the team's division of labor offers team members high levels of control capacity which they also effectively use. As a result, team 6 requires limited additional coordination and promotes extended learning opportunities.

SmallIT

SmallIT is a private company in the field of IT services and works from two different locations. Employees can choose where they want to work, which indicates that geographical distance is an accepted reality in this company. Teleworking has been an option for employees from the very start of the organization and is based on mutual agreements between team leader and team member. As SmallIT recruits people in IT, the HR manager assumes that new recruits are familiar with the technology that supports

distance working. Instead, she mainly stresses the importance of certain attitudes of employees, such as self-discipline or result-orientation. To facilitate distance working, the company actively encourages written communication, such as emails. Although the company describes teleworking as successfully implemented, the HR-manager also notes some difficulties.

> Despite having the tools that facilitate communication, we experience still a lot of communication related disturbances, mainly due to our three working locations (two subsidiaries plus the employees' home). (HR Manager)

Team 7

Team 7 consists of thirty team members, grouped in four subteams, and one team leader. The team is responsible for the delivery of IT-services to customers and operates from two different locations. Telework is allowed one to two days a week and most team members make use of this possibility. The team's division of labor is characterized by high levels of functional concentration and differentiation. Each subteam carries out different tasks which together are necessary to complete the final customer order. Three subteams are responsible for the production while the fourth subteam deals with the support and preparation tasks. As a consequence, the team's division of labor generates high interdependencies between the different subteams, as illustrated by one of the team members of one of the production subteams.

> X [Subteam responsible for support & preparation] gathers all the customer information in advance. However, often this information is insufficient or incomplete. We than have to contact X again to ask for additional information. Sometimes we can contact the customer ourselves. (Team member)

Despite its dependency from the other subteams, within the team each team member has his/her own clients – the level of fragmentation is low – and can carry out a more or less complete task from start to end. As a result, team members eventually work rather autonomously as also expressed by the interviewed team members.

Team 7 highly depends on the technical system to achieve the necessary coordination of the work and to communicate with team members of its own subteam and those of the other subteams. A centralized ticketing system is used to tag tasks in the workflow. If one subteam completes its tasks, the system automatically sends the output to the next subteam. The system also provides an overview of all ongoing orders and their progress. Standardization is another strategy to smoothen the interdependencies induced by the division of labor of the team. Each action or solution to a specific problem has to be written down in standardized templates and is stored in the central information system. A final coordination mechanism is the daily five-minute virtual meeting of each subteam to discuss the progress and distribution of work with the team leader. In addition, the team leader tries to organize a weekly face to face meeting with each team member.

In sum, the functional organization of the four subteams implies that interdependencies between tasks are multiple and hence the risks of disturbances are high. The coordination provided by the technical system and the standardization of procedures is an attempt to overcome the high task interdependency, but because the team members are highly dependent on the performance of the technical system, this generates also new interdependencies. The control capacity of team members is considered as high by the team members, but is in fact limited due to the team's division of labor, the technical system's determining role and the use of standard procedures. Although social support does not seem to play a crucial role in the team's division of labor, team members themselves describe it as quite important, as illustrated by the following citation:

> If one of my colleagues has done something and I have to do something similar the next week, I can have a look at how my colleague has solved this problem if he has written down everything correctly. (Team member).
>
> Q.: And how do you know that your colleague has done that task?" (Interviewer)
>
> A.: Well, you know, only if he told me about it. (Team member)

Team 7 was intentionally set up as a virtual team, and its organization has been specifically designed to deal with the additional complexity of distance working. However, SmallIT opted for additional coordination efforts rather than lowering the interdependencies which could have been achieved by revising the functional concentration between the teams. This choice negatively impacted on the control capacity of team members and team leader. The information system implies a further restriction on the control capacity, since numerous examples were given where the team members' autonomy to solve problems was restricted by the central ticketing system. Although team members are in principle free to organize their planning, the ticketing system leaves little room for planning in practice.

> We can choose how we organize our working week. (Team member 1)
>
> In fact, all tasks are in the system. The tasks on top of the list have to be carried out first, so we really have to follow the system and we do not really have to plan anything. (Team member 2)

The standard procedures are a second tool aimed at overcoming the complexity of distance working. However necessary for the coordination, this has a detrimental impact on the control capacity of team members, who have to follow a prescribed code leaving little room for flexibility or unpredictability. The team members experience these tools as a means of control of the team leader.

> If you do not tag enough tasks in the ticketing system, the team leader will notice and ask for an explanation. It is certainly not the case that you can choose to not work at home. There still is control. (Team member)

However, from his perspective all these interventions did not support the team leader in responding to increased coordination requirements, quite on the contrary.

> In fact, the efficiency of the team leader decreases [due to virtual teamwork]. Maybe the organization as a whole benefits, but as a manager, I'm a lot more efficient if I can manage my team members face to face in the same room. Now I constantly have to call or mail to find the required information. (Team leader)

In sum, team 7's division of labor is characterized by high levels of functional concentration and differentiation. This made the introduction of a central ticketing system necessary to coordinate the different virtual teams, generating additional interdependencies instead of reducing them. This lowered control capacity and learning opportunities for the members of these teams.

Team 8

Team 8 has three members, two team members are responsible for sales and one team member is responsible for marketing. The team leader is also responsible for another team (not included in the study). Team 8 can be considered as highly virtual: the team members work from two different locations, one team member responsible for sales is currently working from another country. They all can work up to four days a week from home. The team leader is result-oriented and takes care of the strategy and mission of the team. In such a highly virtual context, the coordination of this team is complex and depends to a large extent on the division of labor.

Both team members of sales are each responsible for a different market segment. Within those segments, they are responsible for acquiring new clients and formulating the client's order. The acquisition of new clients has to follow a predefined procedure with different steps, mediated by a centralized information system. Each step has to be documented. During this procedure the team members can coordinate their work with other teams, such a finance or service delivery. This cooperation is also supported by the information system which registers every step and structures the information flow. The corresponding levels of differentiation and fragmentation in the team are low, as each team member is responsible for preparation, support and the actual execution of the tasks. The jobs of team members integrate both production and regulation related tasks into complex jobs. Such a division of labor implies high control capacity. Sales is supported by the team member of marketing. Although they can operate autonomously in theory, in practice they collaborate a lot. The team's division of labor is also capable to absorb the complexity of working most of the time from a distance. The division of labor confines the task interdependencies to a minimum, hence reducing coordination requirements. The technical system structures the daily work of team members but does not limit their control capacity to organize and choose the method, planning and content of their work nor does it create additional interdependencies such as was the case of

Team 7. The team members decide on their targets themselves but have to weekly report about their progress to the team leader.

> I think it's really important that everyone can plan his own work and learn from their mistakes. (Team leader)

The coordination of the team is achieved during the weekly face to face team meetings and the weekly skype meeting the team leader has with each team member. In addition, team members can communicate using digital communication tools such as skype, videoconferencing or email. Altogether, the team members' learning opportunities are high, with complex jobs and high control capacity.

A disadvantage of working in this virtual team is the lack of social support of colleagues. Team members report missing the informal contacts, as they only see each other once every week.

> You are less able to really learn to know somebody when working from a distance. If you email, chat or call someone, the only thing you talk about is work. If you see each other physically on the work floor, you talk about other issues too. It is pure business now. (Team member)
>
> The most important adaptation for me was the lack of social contact. (Team member)

Overview table

The table below summarizes the within-case analysis.

Table 3.1: Overview of Results Within-case Analysis

	BigInsuranceTwo 1	**BigInsuranceTwo 2A**	**BigInsuranceTwo2b**	**BigHealth3**	**BigHealth4**	**BigInsuranceOne5**	**BigInsuranceOne6**	**SmallIt7**	**SmallIt8**
BEFORE IMPLEMENTATION									
Production structure									
Functional concentration	High	Medium	Medium	High	High	High	High	High	High
Functional differentiation	High	High	High	Medium	Low	Low	Low	Medium	Low
Fragmentation	High	Medium	Medium	Low	Low	Low	Low	Low	Low
Regulation structure									
Control capacity	Low	Low	Low	Medium	High	High	High	Medium	High
Technical system									
MCS					x	x	x		x
Exhaustive set of rules	x	x	x	x				x	
RESULT									
Interdependencies	High	High	High	Medium	Low	Low	Low	High	Low
Learning opportunities	Low	Low	Low	Medium	High	High	High	Medium	High
DESIGN OPTION									
Coordination efforts	x	x	x	x	Limited changes	Limited changes	Limited changes	Started as a virtual team	Started as a virtual team
Coordination requirements									
AFTER IMPLEMENTATION									
Production structure									
Functional concentration	Increase	Increase	Increase					/	/
Functional differentiation	Increase	Increase	Increase					/	/
Fragmentation	Increase	Status quo	Status quo					/	/
Regulation structure									
Control capacity	Decrease	Decrease	Status quo		Increase	Increase	Increase	/	/
Technical system									
MCS								/	/
Exhaustive set of rules	Increase	Increase	Increase	Increase				/	/
RESULT:									
Interdependencies	Increase	Increase	Increase	Increase	Status quo	Status quo	Status quo	/	/
Learning opportunities	Decrease	Decrease	Decrease	Decrease	Increase	Increase	Increase	/	/

Cross-Case Analysis

On the Variety of Virtual Teams' Division of Labor

A first observation is the variety in the virtual teams' division of labor. This ranges from autonomous teams with complex jobs, such as Team 4 in BigHealth, to teams where tasks are highly dependent from other teams or from technical systems, such as in Teams 1 and 2B, the teams in BigInsuranceTwo and Team 7 in SmallIT.

A second observation is that this variety in division of labor also occurs within organizations, despite the often comprehensive organizational NWOW policy that drove the introduction of virtual teams. Companies stimulating employees to work from different locations may have a number of reasons to do so: introducing telework to improve work-life balance and limit commuting time; saving on office space; progress the digitalization of work processes or locate employees in decentralized premises to be closer to their customers and clients. These organizational drivers have implications for the virtual teams' division of labor. This was most clear in BigInsuranceTwo where the move to smaller offices implied that team members did not have a choice of when to come to the office and when to work from home. Also, digitalization accompanying the introduction of virtual teamwork may imply that new technical systems (re)structure workflows and determine how much control capacity team members will have, as will be elaborated below. Finally, implementing an organizational NWOW policy may lead to setting up new virtual teams from scratch, such as was the case in BigInsuranceOne. Nevertheless, such broader company policies apparently do not prevent variations in the way virtual teams are actually implemented and operating. This means that the organization's policy, despite having an influence, should not necessarily be considered as the most important determinant of the outcome of virtual teamwork in terms of division of labor and related learning opportunities for team members.

A third observation is that no single company of the study (pro-)actively reflected on the virtual team's division of labor in the preparation or the implementation process. Critically assessing and adapting a team's division of labor is generally neglected when converting collocated teams into virtual teams. No explicit or deliberate ex-ante re-design of the division of labor was observed to anticipate the additional complexity of coordinating a virtual team. Painter (et al. 2016) found similar results when studying global virtual teams, not using the division of labor in view of coordination complexities other than by chance, by astute leadership or by organizational learning.

On the Division of Labor's Design Space

Looking more closely at the virtual teams from the perspective of their division of labor, that is their production structure, regulation structure and technical system as explained, reveals that it is precisely on these organizational design principles that we observe

variations in virtual teams (even within the same organizations). This means that there seems to be (some) room for organizational design choices when going virtual.

The question then is if these variations in team's division of labor already existed *before* these were converted to virtual teams or whether changes in the division of labor occurred during the implementation process, for instance because of the confrontation with the increased complexity of coordinating distance collaboration. In the first case, this indicates that the conversion to virtual teams does not necessarily impose a re-design of the production structure, regulation structure or technical system. It keeps the option open that teams may already be organized in such a way that the additional complexity of coordination induced by virtual teamwork can be accommodated by the team thanks to the way their tasks are divided. In other words, we should not assume a priori that the team's division of labor needs to be adapted when the team goes virtual. The second case, changes in the division of labor occurred during the implementation process, requires a more careful analysis in what direction such changes take place and with what effects. Based on our theoretical framework, we identified two possible organizational responses to cope with the additional complexity of coordinating virtual teams: either the coordination requirements are reduced by re-designing the division of labor to lower levels of task interdependency, or the coordination efforts are increased.

In short, it appears that the observed variations in the virtual team's division of labor point to the fact that some teams have a production structure, regulation structure and technical systems that enable them to cope with coordination complexity, while other teams have to re-design these to confront the additional coordination complexity induced by distance collaboration.

The Superfluity of Adaptations to a Virtual Context

Based on the within-case analysis of eight virtual teams, we encountered four teams where no fundamental changes in the division of labor occurred in the conversion to virtual teamwork. This was the case for teams BigHealth 4, BigInsuranceOne 5 and 6 and SmallIT 8. If any, team members experienced a certain increase in their control capacity regarding the organization of their work, for instance because they can choose which tasks to do at home. Despite an often complex and unpredictable environment, for instance caused by functional concentration and task interdependency from other units or teams, these teams did not seem to have any specific difficulties to absorb the additional coordination complexity induced by distance collaboration. The analysis of the division of labor in place previous to the conversion to a virtual team reveals why that is the case. With no exception, task interdependencies within these four virtual teams were limited. The division of labor was characterized by limited functional differentiation and fragmentation, resulting in jobs with high levels of control capacity for the team members to organize their work and to solve any occurring disturbances, regardless of where they work. In these jobs, regulation, support, preparation and production tasks

were sufficiently integrated into one job and the team members' control capacity was in line with the coordination requirements.

Moreover, the technical systems did not seem to impede the team members' control capacity either. Technical systems did not prescribe or restrain team members' actions but supported distance collaboration with communication tools and/or information- and knowledge-sharing platforms. In case coordination with others was required, this was often left to the initiative of the team members or it was organized "offline" during regular face-to-face meetings to discuss progress, planning and collaboration, complemented by online communication by phone or chat for daily consultation. In sum, in teams characterized by low coordination requirements due to low levels of task interdependency in the production structure, regulation structure and technical system, the implementation of virtual teamwork generated limited additional interdependencies and the implementation of virtual teamwork did not seem to require major changes in the division of labor.

Virtual Teams Changing their Division of Labor

In the four other teams of our analysis, BigHealth 3, SmallIT 7, BigInsuranceTwo 1 and 2A/B, we observed changes in the virtual team's division of labor that were introduced during the implementation process. The key question, as formulated, was in this case: will changes in the re-design focus on reducing the coordination requirements or, on the contrary, on increasing coordination efforts? Our findings show that all four teams implemented additional coordination, meaning that looking at all cases of the study, no examples were found where changes in the team's division of labor were directed at a reduction of the coordination requirements. The observed effort to increase coordination resulted in changes in both production structure, regulation structure and the technical system, albeit not in all four team to the same extent.

First, the production structure was re-designed in teams BigInsuranceTwo1 and 2A/B. Support, preparation, regulation and production tasks were decoupled and assigned to different jobs. This led to more functional differentiation and task fragmentation, and concentration of regulatory tasks with the team leader and the technical system (rather than with the team members). These changes implied an increase in task interdependencies and less autonomy for the team members. The observed backlog and delays make clear that these changes were not very effective to cope with the increased coordination requirements induced by the geographical distance.

Second, changes were observed in the regulation structure of teams BigHealth 3, SmallIT 7, BigInsuranceTwo 1 and 2A/B. This was most obvious in teams BigInsuranceTwo 1 and 2A, where team members could not choose what to do at home, when to work from home or how many files to process at home. Team members' control capacity decreased and shifted towards the team leader and technical system. The impact on the regulation structure in teams BigHealth 3 and SmallIT 9 mainly stems from the introduction of a

new technical system, standardizing tasks into strict procedures, limiting team members' control capacity and sometimes interfering with the control capacity of team leaders.

Third, all four teams of this group, BigHealth 3, SmallIT 7, BigInsuranceTwo 1 and 2A/B, heavily relied on the technical system to establish coordination. Centralized ICT systems, such as ticketing systems, that manage information and/or organize the workflow were implemented to support the team's operations in a digital context. Although they are expected to secure the team's coordination, we observed multiple examples of technical systems obstructing rather than supporting the team's coordination. Technical errors were a frequently observed liability. These errors had to be forwarded to the technical services, which often caused delays. Technical systems are also likely to limit the team members' control capacity. We found multiple examples of situations where team members were unable to solve problems due to the inflexibility of the technical system, for instance through the use of standardized procedures, an overly strict planning or inability to reorganize work. In line with previous research, we observed team members "fabricating" workarounds, or applying informal solutions that bypass any formal rules, in order to find solutions in response to an inadequate technical system (Maenen, 2010, Ramioul, 2012). Finally, coordination organized by the technical system often interfered with the team leader's coordination. Both team leaders of team BigHealth 3 and SmallIT 9 claimed that coordinating their team became more difficult when they were operating as a virtual team. Where regulatory tasks used to be concentrated with the team leader, the technical system automated at least a part of these coordination-related tasks. Consequently, team leaders had less of an overview of the team's actions, experienced difficulties to remain on top of things and faced a general decrease in control capacity. These examples clarify that the implementation of technical systems, although meant to improve coordination, can equally hinder a team's functioning because of the additional interdependencies it generates. These results seem to be in line with those of Moser and Halpin (2009, cited in Painter, et al. 2016, p. 365) which state that *even though there is a common notion that collaboration technology and bandwidth will allow a virtual team to perform as if co-located […] evidence shows this notion to be a naïve myth*.

Explaining the Role of the Division of Labor

It is important to note that the changes in the division of labor of teams BigHealth 3, SmallIT 7, BigInsuranceTwo 1 and 2A/B were not a result of a deliberate re-design of the division of labor. Rather, they were consequences of an attempt to digitalize (parts of) the workflow in those organizations. Teams introduced virtual teamwork in the wake of digitalization, combining virtual teamwork with the implementation of new technical systems with a clear objective of coordinating the team's operations. Despite changes in the production structure, regulation structure and technical system, our results show that these teams kept struggling with the complexities of coordinating a virtual team. Hence, the (difficult) coordination of teams BigHealth3, SmallIT 7, BigInsuranceTwo 1 and 2A/B stands in sharp contrast with the (smooth) coordination of the teams

BigHealth 4, BigInsuranceOne 5 and 6 and SmallIT 8. These results are in line with our theoretical expectations. Increasing coordination efforts implies increasing the functional differentiation and fragmentation within a team, limiting team member's control capacity and introducing technical systems to standardize the workflow. Such a division of labor generates additional coordination requirements in a context of already increased coordination complexity. This makes distance collaboration difficult. The (limited) existing research on the role the division of labor in virtual teams relates required coordination to the complexity or unpredictability of the tasks a team has to process (Bell & Kozlowski, 2002; Painter et al. 2016). Opposite to this, our findings show that even the coordination of simple, predictable tasks such as in teams BigHealth 3, SmallIT 7, BigInsuranceTwo 1 and 2A/B, proved difficult to coordinate in a virtual team context, and disturbances in the workflow were frequent. This observation seems to confirm the coordination complexity of distance collaboration, and stresses the importance of taking the division of labor into account when introducing virtual teamwork.

Another observation in this context is that efforts to increase coordination took place in those teams where coordination requirements were already high previous to the introduction of virtual teamwork. This implies that teams with a division of labor that already generates extensive task interdependencies, are likely to evolve towards yet more coordination requirements when implementing virtual teamwork. Indeed, we did not observe teams where the division of labor was deliberately lowered with the explicit aim to face the increased coordination requirements. As concluded, our results bear little proof that this road leads to success in coordinating virtual teams.

Existing literature on virtual teamwork identified a multitude of coordination-related challenges, such as knowledge barriers (Painter et al. 2016; Purser, Pasmore & Tenkasi, 1992), a failure to build up mutual knowledge (Cramton, 2001) or a loss in communication richness (Schaubroeck & Yu, 2017). Our findings seem to suggest that in office environments such challenges relate to a team's division of labor. If a team's coordination requirements are kept to a minimum, distance working is less likely to cause any of the problems described above. In contrast, if task interdependencies are high, virtual teamwork is likely to aggravate those interdependencies leading to negative outcomes such as backlog, informal solutions or communication disturbances. In light of these findings, it is unfortunate that organizations by default do not seem to take a team's division of labor explicitly or pro-actively into account when converting collocated teams to virtual teams.

Team Members' Learning Opportunities in Virtual Teamwork

Let us now turn to the question of how the production structure, regulation structure and technical system of a virtual team, and possible changes herein induced by going virtual, affect the team members' learning opportunities. Our results show that the team members' learning opportunities in teams BigHealth3, SmallIT 7, BigInsuranceTwo 1

and 2A/B decreased, while staying status-quo or increased slightly in teams BigHealth 4, BigInsuranceOne 5 and 6 and SmallIT 8.

No cases were found where a team's division of labor changed towards more complex jobs, as explained. However, teams BigHealth 4, BigInsuranceOne 5 and 6 and SmallIT 8 already had complex jobs and no profound changes to their division of labor were observed. Hence, the conversion to a virtual team did not affect the team members' learning opportunities negatively. If any, learning opportunities grew as new requirements were added to the job (e.g. the requirement to use online communication and collaboration) and their control capacity increased slightly due to the more possibilities to plan and organize their work. In those teams, the introduction of virtual teamwork implied new opportunities for gaining knowledge about cause-effect relations and learn new things.

In contrast, our results show that teams altering their division of labor, such as teams BigHealth3, SmallIT 7, BigInsuranceTwo 1 and 2A/B, had learning opportunities restricted further and thus offered limited learning opportunities. Both the technical system as well as direct changes to the regulation and production structure resulting in more task interdependency and simpler jobs, restrained team members' ability to solve problems and learn about cause-effect relations. Even more, increasing workloads combined with declining control capacity caused work-related stress among the team members of BigInsuranceTwo 1 and 2A/B, which further jeopardize learning.

In sum, converting collocated teams into virtual ones seems to reinforce the existing learning opportunities within these teams. A division of labor facilitating complex jobs is more likely to foster additional opportunities to acquire new DML competences. The observed changes in the division of labor, in contrast, resulted in less control capacity and related limited learning opportunities when team members' control capacity was already limited, and vice versa.

With regard to the impact of team members' social support on their learning opportunities, we observed a notable decrease in the social support of teams BigHealth 3, SmallIT 7, BigInsuranceTwo 1 and 2A. Face-to-face contact among team members decreased, most extremely in team BigInsuranceTwo 1 and 2A where fixed home working days resulted in team members not seeing each other anymore, and online communication mainly addressing the team leader. In addition, face to face meetings with the whole team became less frequent in those teams compared to when functioning as a collocated team, all leading to reducing possibilities to learn through feedback or social support. Social support in teams BigHealth 4, BigInsuranceOne 5 and 6 and SmallIT 8 remained stable. Team members with extensive control capacity seem to opt to coordinate work with each other during face-to-face meetings which avoids the difficulties of virtual communication and interaction (Cramton, 2001). In addition to face-to-face communication, they also use diverse and information-rich media, for instance chat or Skype, when communicating over distance (Dennis et al. 2008). Such technologies allow team members to interact in real time, offering sufficient support and feedback from team members and team leader

even though spatial and temporal distances might separate them. Collard (et al. 2017) distinguishes between low-level and high-level DML competences. Low-level DML competences are based on compliance with the organizational rules and enables team members to operate technology at a basic level, while high-level DML competences refer to inventivity and team members' autonomy to creatively shape their work and collaborate with others in a virtual team context (Collard et al. 2017). Our results suggest that a division of labor generating simple jobs may offer team members the opportunity to acquire low-level DML competences. On the other hand, complex jobs offer the control capacity and job requirements to acquire high-level DML competences (Huys et al. 2013).

These findings seem to indicate that the division of labor rather than the spatial and/or temporal distance as such, is an important factor explaining and predicting social support and learning opportunities within a virtual team.

Conclusion

Virtual teamwork in office environments is not restricted to a particular type of teams, that is, teams with a specific division of labor. Our analysis illustrates that collocated teams are converted to virtual teams independently of their existing division of labor. Nevertheless, we clearly demonstrate that the division of labor has far-reaching consequences in terms of the team's coordination and team members' learning opportunities. Without ex-ante reflection, assessment and deliberation of its division of labor, organizations are likely to consolidate a team's existing production structure, regulation structure and technical system. In view of the increased coordination complexity in a virtual environment, a neglect of the division of labor's effect means that this complexity is likely to either be absorbed or be reinforced by a team's division of labor, depending on the task interdependencies. Hence, absorption seems to lead to new learning opportunities – which are already high in those teams, while reinforcement, caused by extensive task interdependencies, seems to diminish team members opportunities to understand and manage cause-effect relations even further. Despite these important consequences, we found that critically assessing and adapting a team's division of labor is a neglected option in the NWOW toolbox. Therefore, the following recommendations are proposed:

- Coordinating teamwork in virtual environments is more complex compared to collocated collaboration. A team's division of labor determines the coordination requirements and also the opportunities to respond to these. Organizations should at least reflect on and preferably deliberately consider re-designing a team's division of labor when introducing virtual teamwork to cope with this additional complexity.
- In response to the increased complexity of coordination in virtual environments, organizations have two options to re-design the division of labor: they either increase coordination efforts or they decrease coordination requirements. Our results show that decreasing coordination requirements is more likely to facilitate distance

collaboration. Therefore, we advise organizations to (I) integrate tasks of preparation, support, production and regulation into jobs of the team members instead of separating them, (II) increase team member's control capacity to a level that they are able to deal with the problems they are confronted with and to organize their work, and (III) implement a technical system based on the minimal critical specification principle, which minimally interferes with team members' control capacity, and only standardizes those procedures that are crucial in the workflow.

- Organizations should not assume a priori that the division a labor of a team should be adapted. Teams which are already designed following the above recommendations, such as autonomous teams, do not seem to require major changes of their division of labor when going virtual.
- Half of the teams studied introduced virtual teamwork in the wake of digitalization including the implementation of a comprehensive technical system spanning the entire workflow. We found that organizations tend to overestimate the ability of these systems to achieve effective coordination. Our results may warn organizations that technical systems are prone to technical errors and can hinder rather than support coordination. We advise organizations to carefully consider the fit between a team's division of labor and its technical system. The other option, altering the division of labor to fit a determined technical system, seems to increase the risk of coordination-related difficulties and disturbances.
- The opportunities to learn DML competences are related to the division of labor of a virtual team. To optimize learning opportunities, organizations are advised to (I) integrate tasks such that challenging task packages are created, and (II) bring team members' control capacity to a level where they can solve the disturbances they encounter themselves and to organize their own work. Finally, we recommend paying attention to the support and feedback team members enjoy in their team, as a possible source of learning opportunities.

Bibliography

Achterbergh, J. & Vriens, D. (2009). *Organisations: social systems conducting experiments*. New York: Springer.

Bell, B. S. & Kozlowski, S. W. J. (2002). A Typology of Virtual Teams. *Group & Organization Management*, *27*(1), 14–49. <https://doi.org/10.1177/1059601102027001003>

Collard, A.-S., De Smedt, T., Dufrasne, M., Fastrez, P., Ligurgo, V., Patriarche, G. & Philippette, T. (2017). Digital media literacy in the workplace: a model combining compliance and inventivity. *Italian Journal of Sociology of Education*, *9*(1), 122–154.

Cramton, C. D. (2001). The Mutual Knowledge Problem and Its Consequences for Dispersed Collaboration. *Organization Science*. INFORMS. <https://doi.org/10.2307/3086013>

de Sitter, U., den Hertog, J. F. & Dankbaar, B. (1997). From complex organizations with simple jobs to simple organizations with complex jobs. *Human Relations*, *50*(5), 497–534.

Dennis, A. R., Fuller, R. M. & Valacich, J. S. (2008). Media, Tasks, and Communication Processes: A Theory of Media Synchronicity. *MIS Quarterly*, *32*(3), 575. <https://doi.org/10.2307/25148857>

Dulebohn, J. H. & Hoch, J. E. (2017). Virtual teams in organizations. *Human Resource Management Review*, *27*(4), 569–574. <https://doi.org/10.1016/J.HRMR.2016.12.004>

Ford, R. C., Piccolo, R. F. & Ford, L. R. (2017). Strategies for building effective virtual teams: Trust is key. *Business Horizons*, *60*(1), 25–34. <https://doi.org/10.1016/J.BUSHOR.2016.08.009>

Gibbs, J. L., Sivunen, A. & Boyraz, M. (2017). Investigating the impacts of team type and design on virtual team processes. *Human Resource Management Review*, *27*(4), 590–603. <https://doi.org/10.1016/J.HRMR.2016.12.006>

Gibson, C. B. & Cohen, S. G. (2003). Virtual teams that work: Creating conditions for virtual team effectiveness. San Francisco: Jossey-Bass.

Golden, T. D. & Raghuram, S. (2010). Teleworker knowledge sharing and the role of altered relational and technological interactions. *Journal of Organizational Behavior*, *31*(8), 1061–1085. <https://doi.org/10.1002/job.652>

Griffith, T. L., Sawyer, J. E. & Neale, M. A. (2003). Virtualness and Knowledge in Teams: Managing the Love Triangle of Organizations, Individuals, and Information Technology. *MIS Quarterly*, *27*(2), 265. <https://doi.org/10.2307/30036531>

Herbst, P. G. (1974). Socio-technical design: strategies in multi-disciplinary research. London: Tavistock Publications.

Hertel, G., Geister, S. & Konradt, U. (2005). Managing virtual teams: A review of current empirical research. *Human Resource Management Review*, *15*(1), 69–95. <https://doi.org/10.1016/J.HRMR.2005.01.002>

Huys, R., Ramioul, M. & Van Hootegem, G. (2013). High Performance Workplaces: Background Paper for the Third European Company Survey. Dublin.

Karasek, R. & Theorell, T. (1990). Healthy work. Stress, productivity and the reconstruction of working life. New York: Basic Book.

Kirkman, B. L. & Mathieu, J. E. (2005). The Dimensions and Antecedents of Team Virtuality. *Journal of Management*, *31*(5), 700–718. <https://doi.org/10.1177/0149206305279113>

Kuipers, H., Amelsvoort, P. & Kramer, E. H. (2010). *Het nieuwe organiseren : alternatieven voor de bureaucratie*. Leuven: Acco.

Liao, C. (2017). Leadership in virtual teams: A multilevel perspective. *Human Resource Management Review*, *27*(4), 648–659. <https://doi.org/10.1016/j.hrmr.2016.12.010>

Maenen, S. (2010). Organizations in the offshore movement. A comparative study on cross-border software development and maintenance projects. KU Leuven.

Mathieu, J. E., Heffner, T. S., Goodwin, G. F., Salas, E. & Cannon-Bowers, J. A. (2000). The influence of shared mental models on team process and performance. *Journal of Applied Psychology*, *85*(2), 273–283. <https://doi.org/10.1037/0021-9010.85.2.273>

Mayring, P. (2014). Qualitative content analysis: theoretical foundation, basic procedures and software solution. Retrieved 9 January 2019, from <https://www.ssoar.info/ssoar/handle/document/39517>

Mintzberg, H. (1979). The structuring of organizations: a synthesis of research. Englewood Cliffs, NJ: Prentice-Hall.

Moser, B. & Halpin, J. (2009). Virtual teams: the design of architecture and coordination for realistic performance & shared awareness. In *PMI 2009 Global Congress Proceedings, Orlando, 10-13 October, Project Management Institute*. Newton Square: PA.

Painter, G., Posey, P., Austrom, D., Tenkasi, R., Barrett, B. & Merck, B. (2016). Sociotechnical systems design: coordination of virtual teamwork in innovation. *Team Performance Management: An International Journal*, *22*(7/8), 354–369. <https://doi.org/10.1108/TPM-12-2015-0060>

Purser, R. E., Pasmore, W. A. & Tenkasi, R. V. (1992). The influence of deliberations on learning in new product development teams. *Journal of Engineering and Technology Management*, *9*(1), 1–28.

Ramioul, M. (2012). *The map is not the territory. The role of knowledge in spatial restructuring processes*. KU Leuven. Retrieved from <https://lirias.kuleuven.be/bitstream/123456789/357283/1/doctoraat_Ramioul.pdf>.

Schaubroeck, J. M. & Yu, A. (2017). When does virtuality help or hinder teams? Core team characteristics as contingency factors. *Human Resource Management Review*, *27*(4), 635–647. <https://doi.org/10.1016/J.HRMR.2016.12.009>

Trusson, C., Hislop, D. & Doherty, N. F. (2018). The role of ICTs in the servitization and degradation of IT professional work. *New Technology, Work and Employment*. <https://doi.org/10.1111/ntwe.12109>

Van Hootegem, G. (2000). De draaglijke traagheid van het management: tendensen in het productie- en personeelsbeleid. Leuven: Acco.

Chapter 4: Technical Literacy, Communication Literacy and Skill Development in Virtual Teams: Validating a Scale and Finding Facilitating Conditions

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Introduction

Thanks to advances in information and communication technologies, teleworking and virtual communications among team members have become ubiquitous in today's organizations (Martins, Gilson & Maynard, 2004; Welz & Wolf, 2010). In other words, many work teams have increased in their level of virtuality, which is defined as the degree to which team members (1) are geographically dispersed and (2) coordinate their activities by means of virtual communication channels (Gibson & Gibbs, 2006; Gibson & Cohen, 2003). This trend towards more virtuality seems to be a double-edged sword (Gilson, Maynard, Jones Young, Vartiainen & Hakonen, 2015). On the one hand, under the right conditions, employees can enjoy a variety of positive outcomes from virtuality in teamwork. They experience more autonomy and less work-family conflict (see the meta-analysis by Gajendran & Harrison, 2007), they are more satisfied with their job, encounter less stress and experience more positive affective well-being (Anderson, Kaplan & Vega, 2015; Gajendran & Harrison, 2007), and they have more opportunities to broaden their skill set (Peñarroja, Orengo, Zornoza, Sánchez & Ripoll, 2015). Organizations may benefit as well, since virtual team members are also less exhausted, perform better and are less likely to leave the organization (Golden, 2006; Harker Martin & MacDonnell, 2012). Moreover, they do better on creative tasks (Vega, Anderson & Kaplan, 2015) and they deliver higher quality products faster (Coenen & Kok, 2014).

On the other hand, there are still challenges attached to virtual teamwork, most of which relate to communications with colleagues and professional relationships (Greer & Payne, 2014), and thus, by extension, to informal learning opportunities within teams

(Edmondson, 1999). Because virtual communication channels are usually less rich (i.e., slower, poorer in non-verbal cues, etc.; Dennis & Kinney, 1998) than traditional face-to-face interactions, virtual team members sometimes have to deal with more cumbersome communications and misunderstandings (Lockwood, 2015). This may have a negative impact on relationships with colleagues, particularly in case of high-level virtuality (e.g. teleworking for more than two-and-a-half days per week; Gajendran & Harrison, 2007). As a consequence, virtual team members may start to feel professionally isolated and lonely (Golden, Veiga & Dino, 2008), and may experience an undersupply of information from their colleagues (Weinert, Maier & Laumer, 2015). Perhaps this is why some scholars report a negative impact of virtuality on both job satisfaction and work-life balance (e.g. Morganson, Major, Oborn, Verive & Heelan, 2010) – the opposite of what the meta-analysis shows (Gajendran & Harrison, 2007). Moreover, the organization may be harmed by virtuality as some virtual team members put in less work effort than their colleagues in more traditional teams (i.e., collocated teams in which members mainly communicate face-to-face; Caillier, 2014). Finally, the teleworking of an employee has potential adverse consequences for his/her colleagues who keep working at the office alone. Employees report a lower satisfaction with colleagues and higher turnover intentions when a colleague engages in a lot of teleworking (Golden, 2007), and lower job satisfaction, higher turnover intentions, and more negative perceptions of the organizational climate when their supervisor engages in a lot of teleworking (Golden & Fromen, 2011).

From this overview, it becomes apparent that the effects of virtuality in teams are not automatically and invariably positive or negative. In reality, certain conditions have to be met for virtual teamwork to be implemented without damaging communications and professional relationships, two aspects of teamwork that are crucial for creating learning opportunities (Edmondson, 1999). In the seminal work by Gibson and Cohen (2003), the following possible key conditions are proposed: Shared understanding, mutual trust and consistency. Although this work has been highly influential in shaping the virtual team literature, these conditions are yet to be tested empirically in a single study to determine their relative importance. Moreover, to date, research addressing learning outcomes in teams of varying degrees of virtuality remains scarce. In the current chapter, we therefore seek to investigate how the three proposed conditions could lead to learning outcomes in teams of varying degrees of virtuality. We hereby highlight which factors in particular should receive extra attention to ensure learning opportunities in teams ranging from exclusively collocated to exclusively virtual.

Defining Virtuality in Work Teams

Before scrutinizing which conditions could create learning opportunities within the context of virtual teamwork, we first have to specify what it is exactly that makes a work team a *virtual* team. This is an essential process, since the term “virtual team” is bandied

about a great deal, being used to describe a wide range of organizational phenomena, often undeservedly so. According to the strict definition, work teams only qualify as virtual teams when they meet three conditions (Gibson & Cohen, 2003; Gibson & Gibbs, 2006). First, like in more traditional work teams (e.g. Gersick, 1988; Hackman, 1987), it should be a group of individuals who are working together to reach the same goal. These individuals should be dependent on each other's tasks to a certain degree, and share the responsibility of outcomes. They are viewed by themselves and others as one social entity. A second condition is that team members are to a certain degree geographically dispersed, working from different locations. Third, team members should rely on virtual communication channels to stay in touch with each other and coordinate their (interdependent) activities. A group of individuals who subscribe and contribute to the same online forum to share knowledge is therefore not considered to be a virtual team (because there is no common goal, task interdependence or shared responsibility), and neither is a collocated work team (because there is no geographical dispersion) or a team with teleworking members who do all their coordinating on face-to-face team meetings (because there is geographical dispersion but no reliance on virtual communication channels).

It is important to note that virtuality is not viewed as being dichotomous in nature (i.e., a team is either virtual or it isn't), but rather as a continuum (Gibson & Cohen, 2003). In other words, work teams can range from being not virtual at all (see earlier examples), to slightly virtual (e.g. a work team with a couple of members who telework one day a week and coordinate with colleagues by means of instant messaging), to extremely virtual (e.g. an international work team that spans continents and never meets face-to-face but communicates through videoconferencing, instant-messaging and e-mail). Although such an extreme virtuality is not represented in the sample of our study (since the participating organizations are all situated in the same country), we are still able to report a sufficient variability in the degree of virtuality of the participating teams (see descriptive analyses below).

Like mentioned in the introduction, the growing popularity of technologies such as instant messaging, videoconferencing and file sharing software in the workplace have made today's work teams increasingly virtual (Martins et al., 2004; Welz & Wolf, 2010). Indeed, these technologies provide people with the opportunity to do their job without being physically present at the workplace, an opportunity they seem to embrace (i.e., more geographical dispersion). Because of this, they are more dependent on virtual communications to stay in touch with colleagues. These trends often provide employees with opportunities but also have the potential to create problems (Gajendran & Harrison, 2007), which suggests that the outcomes of virtuality are partly determined by context. Specifically, according to Gibson and Cohen (2003), three broad categories of conditions should be met to provide a solid basis for virtual teamwork and increase the chance of learning outcomes, i.e., shared understanding, mutual trust and consistency.

Conditions for Learning Outcomes in a Virtual Team Setting

First, teams that have a certain degree of virtuality should arrive at a *shared understanding*, i.e., a sufficiently large cognitive overlap of beliefs, expectations and knowledge (Bjørn & Ngwenyama, 2009; Hinds & Weisband, 2003). In other words, they should be on the same page regarding what the current goals are, how they would try to attain those goals, and what each team member's specialty is (Cohen & Gibson, 2003). This condition is necessary for success in virtual teams because it gives team members a clear image of what their tasks are and how these tasks fit the bigger picture (Hinds & Weisband, 2003), and thus prevents task conflicts from emerging (Hinds & Mortensen, 2005). Having clear goals and knowing the necessity of attaining them, in turn, gives one a sense of direction, importance and purpose, which is rewarding in itself (Locke & Latham, 1990, 2002). Moreover, the process of striving for a shared understanding expands the knowledge of individual team members (Ardichvili, 2008; Hendriks, 1999; Wang & Noe, 2010). Indeed, when two people go from not having a shared understanding to having a shared understanding, at least one of them learns something new. Finally, knowing each other's specialties makes it easier to select the right person for each task, which allows for an efficient allocation of team resources (Postrel, 2002). The most direct way towards a shared understanding is through knowledge sharing, which is simply defined as the "degree to which team members share information with each other" (Johnson et al., 2006, p. 106). The logical explanation for the effectiveness of knowledge sharing is that once information is shared, it may become a shared understanding between the narrator and the listener (Huber, 1991).

Information sharing and reaching a shared understanding has proven to be an important factor in all kinds of work teams, both collocated and virtual (Hinds & Weisband, 2003; Mathieu, Heffner, Goodwin, Salas & Cannon-Bowers, 2000). However, virtual teams may have more trouble reaching a shared understanding, because they operate in a work context in which knowledge sharing takes effort, more so than in collocated teams (Cohen & Gibson, 2003). Indeed, when teams increase in virtuality, initiating conversations becomes more of a deliberate action. Sending an e-mail or an instant message usually happens in a more thought-out fashion than striking up a conversation at the coffee machine, for example. As a consequence, spontaneous information sharing is likely to wane in virtual teams, which hampers reaching a shared understanding (Weinert, Maier & Laumer, 2015). We expect that, the more teams with a certain degree of virtuality find ways to overcome this and maintain a constant sharing of knowledge, the more positive the learning outcomes.

> Hypothesis 1: Team knowledge sharing leads to learning outcomes in teams, both collocated and virtual.
>
> Hypothesis 2: Team virtuality (geographical dispersion, H2a, and virtual communications, H2b) hampers team knowledge sharing.

Second, virtuality in work teams is said to lead to positive outcomes when there are high levels of *mutual trust* (Gibson & Manuel, 2003; Holton, 2001). This is defined as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (Mayer, Davis & Schoorman, 1995, p. 712). Team members do not deny each other the opportunity to hurt and do damage because they believe that everyone has each other's best interests in mind and thus that no-one will act on this opportunity. This potentially creates a psychologically safe climate, in which everyone can be him/herself (Edmondson, 1999; Edmondson, Kramer & Cook, 2004). In this kind of climate, team members are not afraid to experiment, admit their mistakes, ask for help, and seek feedback. They do not waste any time freezing up when they have to take interpersonal risks or when they are assigned difficult tasks with a risk of mistakes (Edmondson, 1999). Moreover, the experience of trust embodies positive affect (Jones & George, 2010). When we trust someone, we feel comfortable and we are able to dedicate our energy to performing our tasks well, being creative, learning new skills, etc. (Fredrickson, 2001). When we do not trust someone, on the other hand, we experience negative emotions and waste our energy being suspicious about that person's motives, watching his/her every move, needlessly protecting our own resources, etc.

Like shared understanding, mutual trust is important in virtual teams and collocated teams alike (De Jong & Elfring, 2010), yet it may be more deserving of attention in virtual teams because the characteristics of that particular work context tend to complicate the process of building trust (Gibson & Manuel, 2003). Specifically, virtual team members occasionally converse through virtual communication channels, and when they do, they may have trouble reading each other's interpersonal cues. Indeed, in e-mail, instant messages and discussion forums, messages are often presented without the proper emotional context. Even in videoconferencing, subtle cues like gestures or voice inflections are not picked up to the same degree as in face-to-face conversations, and interactions feel less personal and warm (e.g. because of the absence of eye contact; Andres, 2002; Kayworth & Leidner, 2000). These interpersonal cues, in turn, are essential for the development of trust. In short, virtuality creates difficult circumstances for team trust. We expect that, the more teams with a certain degree of virtuality find ways to overcome these difficult circumstances and build trust, the more learning outcomes they enjoy.

> Hypothesis 3: Team trust leads to learning outcomes in teams, both collocated and virtual.
>
> Hypothesis 4: Team virtuality (geographical dispersion, H4a, and virtual communications, H4b) hampers team trust.

The final important condition for the successful implementation of virtual teamwork, is *consistency* (also labeled "integration"; Gibson & Cohen, 2003). Consistency refers to

the matching of policies, structures and systems among virtual team members (Mohrman, Klein & Finegold, 2003). Without consistency, a variety of policies, structures and systems are likely to emerge within a virtual team, which makes it difficult to coordinate the actions of different team members (Cohen & Gibson, 2003; Hinds & Bailey, 2003) and foster a psychologically safe virtual team environment (Jarvenpaa & Leidner, 1999). For example, when team members are not using the same communication channels (e.g. some are using instant messaging while others stick to e-mail), coordination and trust building are evidently arduous. Also, policies, structures and systems shape people's behaviors and beliefs, so a lack of consistency may interfere with reaching a shared understanding (Hinds & Weisband, 2003; Zakaria, Amelinckx & Wilemon, 2004). For example, when some team members believe they are being rewarded for learning new skills and others do not, the former will integrate "learning new skills" in their list of goals and the latter will not, so an alignment of goals is no longer attainable.

Of the three conditions necessary for successful virtual teamwork, consistency is probably the condition that has the strongest ties to the specific work context of virtual teams. A shared understanding and mutual trust are important in both collocated and virtual teams, but consistency specifically refers to actions taken to prevent or revert dissimilarities within a team that are the result of virtuality (Cohen & Gibson, 2003). As such, consistency becomes more important as virtuality increases (unlike shared understanding and mutual trust).

Consistency is also the condition that has received the least research attention. This forces us to make our own predictions about the areas in which consistency may be desired. A first area in which we believe team members should match is in their use of virtual communication channels (Cohen & Gibson, 2003). Consistency in the use of communication channels is vital to make sure that everyone can be contacted when needed (Hinds & Bailey, 2003). Indeed, a lack of consistency hampers communications because people first have to consider through which communication channel their colleague can be reached. Moreover, it is possible that inconsistencies lead to the formation of subgroups (e.g. the subgroup that only uses e-mail and the subgroup that uses instant messaging). People that don't use a certain communication channel miss out on the information shared on that channel, which may give them the feeling that they do not belong to the "in-group" (Cramton, 2001).

> Hypothesis 5: Team-level consistency in use of communication channels facilitates the effects of virtuality (geographical dispersion, H5a, and virtual communications, H5b) on learning outcomes.

Moreover, we argue that it is valuable to push for a consistency in the amount of hours that team members telework per week. Like the consistency in the use of communication channels, this kind of consistency works because of its link with predictability: In case of a consistency in the amount of teleworking per week (i.e., when each team member does the same amount of teleworking), it is easier to predict when team members will

be working on site and therefore are available for face-to-face communications (Lautsch & Kossek, 2011), which makes it easier to coordinate team actions (Golden et al., 2008; Nardi & Whittaker, 2002). Moreover, since teleworking is still occasionally viewed as a privileged working condition, a consistency may be perceived as a fair distribution of privileges (Lautsch & Kossek, 2011; Morganson et al., 2010), which is an important condition for team members' job satisfaction (McFarlin & Sweeney, 1992).

> Hypothesis 6: Team-level consistency in hours of telework per week facilitates the effects of virtuality (geographical dispersion, H6a, and virtual communications, H6b) on learning outcomes.

Third, we expect that a within-team consistency in learning climate would facilitate learning outcomes of virtuality. There are three different variations of a learning climate: A rewarding climate, in which employees receive praise or financial compensations in exchange for their learning efforts, a facilitating climate, in which employees have easy access to learning opportunities, and an avoiding climate, in which employees are afraid to experiment because they do not want to make any mistakes (Nikolova, Van Ruysseveldt, De Witte & Van Dam, 2014). If the learning climate is consistent within a team, all team members share the same ideas about learning and are likely to set similar learning goals (Hinds & Weisband, 2003; Zakaria et al., 2004). This, in turn, typically makes it easier to aggregate individual-level goals into realistic team-level goals and to organize a team effort to reach those (learning) goals (DeShon, Kozlowski, Schmidt, Milner & Wiechmann, 2004).

> Hypothesis 7: Team-level consistency in learning climate facilitates the effects of virtuality (geographical dispersion, H7a, and virtual communications, H7b) on learning outcomes.

Learning Outcomes: Skill Development, Technical Literacy and Communication Literacy

For the purpose of this chapter, the outcomes of interest all relate to learning in the workplace. General skill development is an important antecedent of competence and performance in work teams, especially in inherently turbulent industries (Ng, Eby, Sorensen & Feldman, 2005). Virtuality in teams has the potential to hinder skill development, unless certain conditions are met (Peñarroja et al., 2015). These conditions may be shared understanding, mutual trust and consistency.

Second, we look into development opportunities for skills that are crucial when communicating virtually, i.e., technical literacy and communication literacy (Gibson & Cohen, 2003). Indeed, for smooth virtual communications, employees should not only be able to launch the software and use its options to full potential, but they should also have experience with the slightly different way of conversing in a virtual context. If, under the

right circumstances (i.e., shared understanding, mutual trust and consistency), virtuality increases the development of these types of literacy, we can expect an upward spiral to occur, in which communicating leads to learning, which leads to more communicating, which leads to more learning, etc.

Sample and Method

To test the proposed hypotheses, we conducted a two-wave online survey study in nine Belgian organizations from a variety of industries (i.e., public sector, insurance, manufacturing, etc.), with a six-month gap between the two waves. Data collection started in June 2016 and lasted until April 2018 (see Table 4.1 for an overview). Invitations to complete online the survey were sent via e-mail, which also included a link and an informed consent form. A reminder was sent about one month after the original invitation.

Table 4.1: Participating Organizations

Nickname	Start data collection	N_{T1}	N_{T2}	$Teams_{T1}$	$Teams_{T2}$
BigManufacturing	2016 June	61	34	16	14
SmallBusiness	2016 September	7	4	3	3
MediumTerritory	2017 July	67	27	10	9
BigInsuranceTwo	2017 July	175	90	36	26
BigTransport	2017 February	424	140	208	98
BigHealth	2017 February	469	189	130	88
MediumIT	2017 May	11	8	5	4
SmallIT	2016 September	22	10	5	3
BigEmp	2017 February	61	23	6	6
TOTAL		1297	525	419	251

1297 employees from 419 teams participated in the study in wave 1, 564 employees from 251 teams also completed wave 2. There were no discernable differences between the composition of the wave 1 sample (M_{age} = 43.93, SD_{age} = 10.45, 48.9% women, 74.6% degree in higher education) and the composition of the wave 2 sample (M_{age} = 43.86, SD_{age} = 10.11, 47.5% women, 71.1% degree in higher education), which means that the drop-out between the two waves was most likely not selective. For most analyses, we have this entire sample at our disposal. For analyses testing the effects of within-team variance (i.e., the consistency hypotheses), however, we can only use teams that have a representative sample, i.e., that have at least 50% of all team members among the participants. When we apply this rule, we have 113 suitable teams in wave 1 and 17 suitable teams in wave 2. Since the latter is not sufficient, we shall only conduct team-level analyses on the wave 1 data. 642 employees participated in wave 1 and belonged to a team with a representative sample, 261 of which also participated in wave 2.

Questionnaire

In this study, the same extensive questionnaire was used in both waves. Participants provided information about sociodemographic variables (age, gender, nationality and level of education), their workplace (organization name and team name), their employment contract (experience in current workplace, type of job, hierarchical position, temporary versus permanent position and part-time versus full-time), their virtuality habits (hours of telework per week, years of telework experience, reasons for teleworking and use of virtual communication channels while teleworking), the characteristics of their jobs (job demands, job control and social support), the characteristics of the team (team age, team size, team trust, team knowledge sharing, task interdependence and team efficacy), the organizational climate (learning climate) and finally the outcome variables of our interest (skill development, technical literacy and communication literacy).

Knowledge sharing. Knowledge sharing was assessed with seven items (e.g. "I share factual knowledge from work with my team members", $\alpha = .92$; Chennamaneni, Teng & Raja, 2012). These items were scored on a five-point Likert scale (1 = "strongly disagree", 2 = "disagree", 3 = "undecided", 4 = "agree", 5 = "strongly agree"). Since we are interested in knowledge sharing as a contextual variable, the results were aggregated at the team level.

Team trust. In the survey, team trust was assessed with three items (e.g. "I trust my fellow team members", $\alpha = .75$; Jehn & Mannix, 2001). A five-point Likert scale was used for this variable (1 = "strongly disagree", 2 = "disagree", 3 = "undecided", 4 = "agree", 5 = "strongly agree"). Team trust was also aggregated at the team level.

Consistency. In the literature review, consistency was viewed from three different angles, i.e., as consistency in use of communication channels, as consistency in hours of teleworking per week, and as consistency in learning climate. First, consistency in use of communication channels was assessed by calculating the within-team variance in the answers on the following questions: "How often do you use X?" (with "X" being e-mail, discussion forum, instant messaging, audioconferencing or videoconferencing; large variance = team members use different communication channels). Second, for consistency in hours of teleworking per week, we calculated the within-team variance of the answers on "How many hours a week do you work from a distance?" (i.e., large variance = some team members telework a lot more than others). Finally, consistency in learning climate was assessed by looking at the within-team variance of the answers on the ten items of the Learning Climate Scale with its three subscales, i.e., appreciation learning climate (e.g. "In my organization, employees who make effort to learn new things, earn appreciation and respect"), facilitation learning climate (e.g. "In my organization, one receives the trainings he/she needs") and error avoidance learning climate (e.g. "In my organization, one is afraid to admit mistakes", Nikolova et al., 2014; large variance = team members have different beliefs about the learning climate). In each of these measures, a low variance represents a high consistency.

Outcomes. For the purpose of this chapter, we investigated the effects of team virtuality on three outcomes: skill development, technical literacy, and communication literacy. Skill development was assessed with four items (e.g. "I have acquired new knowledge about how to perform my work tasks better", α = .95; Van Ruysseveldt & Taverniers, 2010), technical literacy with three items[19] (e.g. "I am able to make optimal use of technology to communicate virtually", α = .91), and communication literacy with three items (e.g. "I can easily explain my point of view on work-related issues during virtual communications", α = .87). All these items were scored on a five-point Likert scale (1 = "strongly disagree", 2 = "disagree", 3 = "undecided", 4 = "agree", 5 = "strongly agree").

Control variables. In all analyses, we controlled for participants' age and level of education (secondary education versus higher education)

Results: Scale Validation of Technical and Communication Literacy

As mentioned, the scales of technical literacy and communication literacy were composed specifically for the purpose of this research. As a consequence, we first have to validate these scales.

Confirmatory factor analysis. First, we conducted a CFA on the data collected at time 1 to check the factor structure of our scales. A model is typically deemed fitting for the data when the following conditions are met: RMSEA < .08 and both CFI and TLI > .90 (Byrne, 2010). The results from the CFA show that our two-factor model (with factors technical literacy and communication literacy, see Table 4.2) meets these conditions and is therefore a satisfactory fit for the data (see Table 4.3). Moreover, the fit of this two-factor model is significantly better than the model with all items loading on a single factor (i.e., the one-factor model).

Table 4.2 presents the items of both scales and their factor loadings, which varied between .75 and .88. Moreover, the internal consistency was sufficiently high for both the technical literacy scale and the communication literacy scale, i.e., .91 and .87 respectively. Together, the CFA, factor loadings and internal consistency demonstrate that the two-factor structure of technical and communication literacy is supported by the data collected at time 1.

[19] The items of technical literacy and communication literacy were created by the authors for the purpose of this research.

Table 4.2: Items of the Technological Literacy and Communication Literacy Scale (N = 1297)

Dimensions and items	Factor loadings	
Technological literacy		
I possess the necessary technical skills to set and carry out virtual communication.	0.79	
I can optimally utilize technology for the purposes of virtual communication.	0.88	
I am able to select the most appropriate media channel (including software) to facilitate my virtual communication.	0.86	
Communication literacy		
I can contribute to solving work problems while interacting at a distance.		0.78
I am able to use virtual communication efficiently for managing unexpected troubles at work.		0.82
During virtual communication I can easily explain my point of view regarding work issues.		0.75

Table 4.3: Fit Indices of Competing Nested Factor-models, Standardized Maximum Likelihood Estimates (N = 1297)

Model	χ^2	*Df*	*RMSEA*	*CFI*	*TLI*	$\Delta\chi^2$
1-Factor model	737.61	9	0.29	0.83	0.72	
2-Factor model	45.34	8	0.07	0.99	0.98	692.27***

*** Significant at the .001 level.

Cross-validation. To make sure that the factor structure can be invariant across different subsamples, we conducted a multi-group comparison. We split the T1 sample randomly into three different subsamples (N_1 = 433, N_2 = 432, N_3 = 432) and assessed whether the factor structure was the same across these subsamples (Byrne, 2010). For this purpose, we tested the fit of four increasingly constrained measurement models (i.e., each time an additional statistic was held constant across subsamples) and subsequently tested if the fit significantly worsened because of the constraints. The chi square statistics for the models were: $\chi^2(24) = 77.16$ for the unconstrained model (model 1), $\chi^2(32) = 89.39$ for the model with invariant factor loadings (model 2), $\chi^2(40) = 100.31$ for the model with invariant factor loadings and intercepts (model 3), and $\chi^2(44) = 107.87$ for the model with invariant factor loadings, intercepts and means (model 4). The difference tests for these models yielded no significant results[20], so evidence suggests that the two-factor structure has the potential to remain invariant across different subsamples.

[20] Model 1 versus model 2: $\Delta\chi^2(8) = 12.23$, $p = .14$
Model 2 versus model 3: $\Delta\chi^2(8) = 10.91$, $p = .21$
Model 3 versus model 4: $\Delta\chi^2(4) = 7.53$, $p = .11$

Convergent, divergent and predictive validity. First, convergent validity was established by testing the links between technical / communication literacy and a digital literacy scale (Ng, 2012). The correlations showed significant and strong convergence between our scales and digital literacy ($r = .58$, $p < .01$ and $r = .54$, $p < .01$, respectively). Second, to test divergent validity, we tested the correlations between technical / communication literacy and vagueness of work tasks, which were moderate and significant ($r = -.10$, $p < .01$ and $r = -.13$, $p < .01$, respectively). Finally, to assess predictive validity, we tested whether technical and communication literacy predicted the use of videoconferencing (i.e., the more advanced virtual communication channel) six months later. Indeed, the correlations between technical and communication literacy at T1 and the use of videoconferencing at T2 were significant and in the expected direction ($r = .10$, $p = .03$, $r = .13$, $p < .01$, respectively).

In conclusion, this study provides ample evidence for the reliability and validity of our scales assessing technical literacy and communication literacy.

Results: Descriptive and Correlational Analyses

First, we scrutinized participants' individual teleworking habits and use of communication channels. On the question of how many hours per week they spent working from a distance, participants indicated on average a little over one working day ($M = 10.69$ hours/week, $SD = 9.49$, $Mdn = 8.00$ hours/week). Moreover, the distribution of the answers on this question was quite skewed. Most of the participants (i.e., 88.5%) answered between zero and sixteen hours a week, but there were several exceptions that indicated much more hours of telework per week (up to sixty hours per week). When working from a distance, participants seemed to be using a variety of communication channels to stay in touch with their colleagues. The most popular channel was still e-mail (used every day by 82% of participants), followed by audioconferencing (e.g. telephone; used every day by 37% of participants). These channels have been around for quite a while and remain firmly in use. A relatively new communication channel that was used daily by 31% of participants, was instant messaging. This is in line with the trend that text-based messaging is taking over long-distance communications in other areas of life as well, particularly in adolescents and young adults (Battestini, Setlur & Sohn, 2010). Surprisingly, the communication channels of videoconferencing and discussion forums were used daily by a mere 2% of participants. Moreover, they were never used by more than half of participants (66% for videoconferencing, 78% for discussion forums).

Besides looking at individual habits, we also investigated if there were differences regarding teleworking and virtual communication habits between teams, as well as between team members (i.e., within teams). Regarding differences between teams, the team mean in hours of teleworking per week ranged from zero to forty-six, and the team mean in hours of virtual communication per week ranged from zero to forty. Regarding within-team differences, 16% of participants were part of a team in which there were no

differences in teleworking, i.e., in which everyone engaged in exactly the same amount of teleworking. For these participants, teleworking was probably strictly regulated by team supervisors or mutual agreements. In contrast, 84% of participants did have to deal with some degree of within-team differences in teleworking.

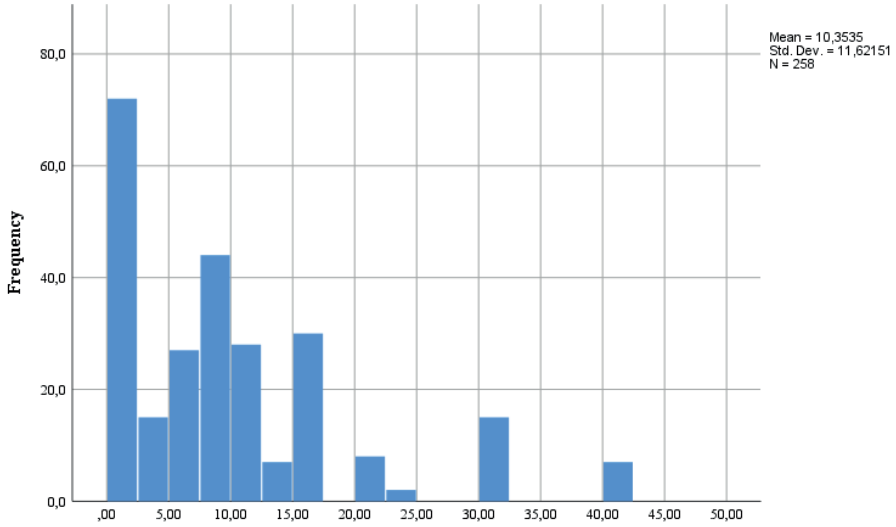

Figure 4.1: Distribution of the differences in hours of teleworking per week between the most homeworking team member and the least homeworking team member.

Naturally, some teams were characterized by bigger differences than others: Sometimes the difference between the most homeworking team member and the least homeworking team member was a mere half an hour, and sometimes it was forty hours (an entire work week, see Figure 4.1). Likewise, regarding hours of virtual communication per week, sometimes the difference between the most communicating team member and the least communicating team member was zero hours, and sometimes it was forty hours.

We find a first indication for the effects of virtuality and the proposed conditions in the correlation table (Table 4.4). Here, we can see that virtuality in itself does not relate to outcomes six months later. In other words, people who telework a lot (engage in a lot of virtual communication) have the same skill development, technical literacy and communication literacy as people who telework little (engage in little virtual communication). What does seem to matter, is team trust and inconsistency in hours of telework within a team. Specifically, team trust is positively linked to skill development six months later and inconsistency in hours of telework within a team is negatively linked to technical literacy six months later.

Table 4.4: Correlations between Aspects of Virtuality Measured at T1 and Outcome Variables Measured at T2

T1 Aspects of virtuality	Skill development	Technical literacy	Communication literacy
Hours of telework per week	0.10	0.09	0.10
Hours of virtual communication per week	0.02	0.10	0.07
Knowledge sharing	-0.01	-0.02	0.09
Team trust	0.15*	0.09	0.08
Inconsistency in use of communication channels	-0.12	0.07	0.04
Inconsistency in hours of teleworking	-0.02	-0.15*	-0.06
Inconsistency in learning climate perceptions	-0.08	-0.09	0.05

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Results: Hypothesis testing – The perfect conditions for virtuality

Shared understanding. First, we expected team knowledge sharing to have a positive impact on skill development, technical literacy and communication literacy (Hypothesis 1). To test this hypothesis, we regressed the outcomes measured at T2 onto knowledge sharing, control variables (age and level of education) and the outcome measured at T1 (see Table 4.5). In this analysis, none of the effects of knowledge sharing was significant ($B_{\text{Skill development}} = -0.12$, $p = .08$; $B_{\text{Technical literacy}} = -0.09$, $p = .10$; $B_{\text{Communication literacy}} = -0.02$, $p = .69$). Hypothesis 1 was therefore not supported.

Second, we hypothesized that team virtuality would hinder knowledge sharing (Hypothesis 2). Knowledge sharing measured at T2 was therefore regressed onto the team mean of hours of teleworking (i.e., geographical dispersion), the team mean of hours of virtual communication, and knowledge sharing measured at T1 (see Table 4.6). The results show that hours of teleworking within a team indeed have a negative effect on knowledge sharing ($B = -0.05$, $p < .01$). Hours of virtual communication in a team, however, has a weak positive impact on knowledge sharing ($B = 0.04$, $p = .05$). We therefore consider Hypothesis 2 to be partly supported.

Table 4.5: Results of Regressing T2 Outcomes onto T1 Knowledge Sharing and T1 Team Trust, Controlling for Age, Level of Education and Outcome at T1

	Skill development	Technical literacy	Communication literacy
Constant	3.42	2.47	2.45
Age	-0.01	-0.01	-0.01
Level of education	-0.17	-0.04	-0.11
Knowledge sharing	-0.12	-0.09	-0.02
Team trust	0.21**	0.08	0.04
T1 outcome	-0.03	0.47**	0.49**
R^2	0.04	0.28	0.31

*. Significant at the 0.05 level.

**. Significant at the 0.01 level.

Table 4.6: Results of Regressing T2 Knowledge Sharing and T2 Team Trust onto T1 Team Teleworking and T1 Team Virtual Communication, Controlling for Outcome at T1

	Knowledge sharing	Team trust
Constant	4.08	3.77
Team mean hours of teleworking	-0.05**	-0.04*
Team mean hours of virtual communication	0.04*	0.01
T1 outcome	0.04**	0.01
R^2	0.03	0.01

*. Significant at the 0.05 level.

**. Significant at the 0.01 level.

Mutual trust. Moving on to the second condition for successful virtual teamwork, we expected team trust to have a positive effect on skill development, technical literacy and communication literacy (Hypothesis 3). We ran an analysis similar to that of Hypothesis 1 (see Table 4.5) and found that team trust indeed increased skill development ($B = 0.21$, $p < .01$) but not technical literacy ($B = 0.08$, $p = .12$) and communication literacy ($B = 0.04$, $p = .43$). Hypothesis 3 was therefore only partly supported.

Moreover, we were interested if team virtuality impeded team trust (Hypothesis 4). To this end, team trust measured at T2 was regressed onto the team mean of hours of teleworking and the team mean of hours of virtual communication, controlling for team trust measured at T1 (see Table 4.6). The results evidence that hours of teleworking within a team indeed have a negative impact on team trust ($B = -0.04$, $p = .04$), but hours of virtual communication did not ($B = 0.01$, $p = .82$). We thus find a partial support for Hypothesis 4.

Consistency. For the final condition, we considered the effects of consistency in use of communication channels within teams, consistency in hours of teleworking per week within teams, and consistency in learning climate within teams (Hypotheses 5, 6 and 7). Since we expect these consistencies to become more important as team virtuality increases (Cohen & Gibson, 2003), we included interaction effects in the statistical models.

For the following hypothesis tests, the outcomes measured at T2 were regressed onto team virtuality measured at T1 (i.e., team mean hours of teleworking per week and team mean hours of virtual communication per week), inconsistencies measured at T1, and (in a second step) the interaction effects of virtuality and consistencies, controlling for age, level of education and outcomes measured at T1 (Table 4.7). Since within-team variances were included in these statistical models, we only used the subsample of teams that have a representative sample participating in the study (see "sample" section).

The results were clear: None of the considered inconsistency factors had a moderating effect on the relationship between team virtuality and the outcomes, not when predicting skill development, not when predicting technical and communication literacy. In short, we cannot consider Hypotheses 5, 6 and 7 supported. However, interestingly, the results did show significant main effects of inconsistency in hours of teleworking on technical literacy (B = -0.21, $p < .01$) and communication literacy (B = -0.18, $p < .01$). In other words, in situations of inconsistency in hours of teleworking, developing individual technical and communication literacy was hampered.

Table 4.7: Results of Regressing T2 Outcomes onto T1 Virtuality, T1 Inconsistency and (in a Second Step) their Interactions, Controlling for Age, Level of Education and Outcomes at T1

	Skill development		Technical literacy		Communication literacy	
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
Constant	3.09**	3.22**	2.39**	2.31**	2.36**	2.28**
Age	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Level of education	0.01	-0.08	-0.04	-0.03	-0.01	-0.01
T1 outcome	0.09	0.08	0.50**	0.50**	0.49**	0.49**
Team mean hours of TW	-0.03	0.47	0.12	-0.17	0.16*	0.02
Team mean hours of VC	0.03	-0.11	0.09	0.18	0.01	0.21
Inconsistency comm channels	-0.08	-0.18□	0.05	0.09	0.07	0.10
Inconsistency TW	0.01	0.03	-0.21**	-0.22**	-0.18**	-0.20**
Inconsistency learning climate	-0.20	-0.27	-0.15	-0.05	0.15	0.19
TW x Inconsistency comm channels		-0.08		0.05		0.03
TW x Inconsistency TW		0.06		-0.06		-0.03
TW x Inconsistency learning climate		-0.94		0.59		0.32
VC x Inconsistency comm channels		-0.20		-0.02		-0.04
VC x Inconsistency TW		0.01		0.02		0.07
VC x Inconsistency learning climate		0.27		-0.23		-0.41
R^2	0.02	0.07	0.39	0.40	0.37	0.38
ΔR^2		0.05		0.01		0.01

□. Marginally significant (p = .06)
*. Significant at the 0.05 level.
**. Significant at the 0.01 level.
Note. TW = teleworking, VC = virtual communication, Inconsistency comm channels = Inconsistency in the use of communication channels.

Discussion

This chapter served two purposes, i.e., (1) to validate a scale that measures two facets of digital literacy (i.e., technical and communication literacy) and (2) to investigate the influence of the conditions of shared understanding, mutual trust and consistency on learning outcomes in virtual teams (see Gibson & Cohen, 2003). Regarding the first purpose, the results of the validation procedure ticked all the validity and reliability boxes (i.e., Cronbach's alphas, CFA, cross-validation on random subsamples, and convergent, divergent and predictive validity). Moreover, importantly, we evidenced that digital literacy is best viewed as a concept that has two subscales, rather than as one single scale (Ng, 2012). In other words, there are two sides to digital literacy: Technical literacy and communication literacy.

Regarding the second purpose of this chapter, we found some evidence for positive outcomes of the proposed conditions for teams with a certain degree of virtuality, but not for all the considered outcomes, and not always in the ways we expected. The most striking exception is knowledge sharing within teams with a certain degree of virtuality, which did not lead to skill development, technical literacy or communication literacy. This is surprising, as many authors have stressed and evidenced the importance of knowledge sharing in learning outcomes (Hinds & Weisband, 2003; Mathieu et al., 2000). A possible explanation for this is that most teams in our sample introduced a degree of virtuality fairly recently (i.e., in the last decade), but have existed for a lot longer. In other words, they also have a history of working collocated exclusively. It is therefore possible that these teams already reached a shared understanding – a shared identity even – prior to switching to a more virtual work arrangement, which would render later knowledge sharing less essential (at least under the assumption that "the way of doing things" does not change drastically, which could happen when increasing virtuality; Hinds & Weisband, 2003).

In line with expectations, as team members started engaging in more teleworking, knowledge sharing decreased. This is probably because spontaneous conversations are more scarce when teams are geographically dispersed (Weinert et al., 2015). Indeed, in such a situation, team members can only initiate conversations deliberately, which could create a threshold. In our study, this decline of knowledge sharing because of an increasing virtuality was not really an issue, because knowledge sharing was not necessary for learning outcomes. In organizations that are active in more turbulent industries, however, knowledge sharing may be essential for innovation and therefore survival (Zhou & Li, 2012). Managers in these organizations may therefore want to beware when implementing teleworking practices and take measures that facilitate knowledge sharing in situations of geographical dispersion (Hinds & Weisband, 2003). Contrary to geographical dispersion, however, virtual communications *increased* the amount of knowledge sharing. This is not what we expected, and could be an indication that virtual communications are becoming a worthy alternative to face-to-face meetings

when it comes to sharing information (Zakaria et al., 2004). Having a good system for communicating virtually (that is being used by all team members) could therefore be a way to restore the negative effect of geographical dispersion on knowledge sharing.

Team trust was found to increase skill development. This result was in line with our expectations, because when team members trust each other, they experience a psychologically safe work environment which allows them to explore, be creative and learn new skills (Edmondson, 1999; Fredrickson, 2001). Contrary to expectations, however, team trust did not increase the specific skills of technical literacy and communication literacy. Presumably, people took advantage of the psychologically safe environment to develop skills other than technical and communication literacy. If managers would like their subordinates to develop these skills anyway, they will probably have to stress their importance so that subordinates have a clear goal about where to direct their energy (Locke & Latham, 1990, 2002).

Moreover, the results showed that team trust decreases as geographical dispersion increases. In other words, when team members telework more, it becomes more difficult to build a psychologically safe work environment. These results were expected, since members of a team with a certain degree of virtuality tend to communicate less frequently (Weinert et al., 2015), and when they do, they often use virtual communication channels that lack interpersonal cues (Andres, 2002). Both communication frequency and richness, in turn, are needed for building trust. Unexpectedly, virtual communication did not damage team trust. It is possible that virtual communication channels have evolved and surpassed the stage that they would cause misunderstandings (which are known to hamper trust; Lockwood, 2015), but also that they are not yet realistic enough to actually contribute to trust building.

Regarding consistency, we did not evidence the expected moderating effects of consistency within teams (in use of communication channels, in hours of teleworking per week, and in learning climate) on the relationship between virtuality and learning outcomes. In other words, integrating practices did nothing to counter the potentially unfavorable learning climate resulting from virtuality (i.e., difficult communication and coordination, no shared social identity, feelings of inequity, etc.; Cramton, 2001; Hinds & Weisband, 2003; Lautsch & Kossek, 2011). This could have been a power issue, since the sample to test these interaction effects consisted of only 261 participants. Instead, we found that inconsistency in hours of teleworking had a negative main effect on technical literacy and communication literacy. In other words, the more team members differed in their frequency of teleworking, the less they learned how to use virtual communication software and talk to colleagues virtually, regardless of the level of team virtuality. A possible explanation that fits for both high-level virtuality and low-level virtuality is that such an inconsistency leads to perceptions of inequity (see Lautsch & Kossek, 2011), which makes people avoid their colleagues and therefore decreases opportunities to practice technical and communication skills. We found no main effects for consistency in use of communication channels and consistency in learning climate.

Conclusion

Based on the results from this study, we conclude that in teams with varying degrees of virtuality, trust and consistency in hours of teleworking are needed to ensure learning outcomes such as skill development, technical literacy and communication literacy. Knowledge sharing, consistency in use of communication channels and consistency in learning climate, on the other hand, did not show the expected results.

Bibliography

Anderson, A. J., Kaplan, S. A. & Vega, R. P. (2015). The impact of telework on emotional experience: When, and for whom, does telework improve daily affective well-being? *European Journal of Work and Organizational Psychology*, *24*(6), 882-897.

Andres, H. P. (2002). A comparison of face-to-face and virtual software development teams. *Team Performance Management: An International Journal*, *8*(1/2), 39-48.

Ardichvili, A. (2008). Learning and knowledge sharing in virtual communities of practice: Motivators, barriers, and enablers. *Advances in Developing Human Resources*, *10*(4), 541-554.

Battestini, A., Setlur, V. & Sohn, T. (2010). A large scale study of text messaging use. In M. de Sá, L. Carrico & N. Correia (eds), *Proceedings of the 12th International Conference on Human Computer Interaction with Mobile Devices and Services (MobileHCI'10)* (pp. 229–238). New York: ACM Press.

Bjørn, P. & Ngwenyama, O. (2009). Virtual team collaboration: building shared meaning, resolving breakdowns and creating translucence. *Information Systems Journal*, *19*(3), 227-253.

Byrne, B.M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming (2nd ed.)*. New York: Routledge/Taylor & Francis Group.

Caillier, J. G. (2014). Do role clarity and job satisfaction mediate the relationship between telework and work effort? *International Journal of Public Administration*, *37*(4), 193-201.

Chennamaneni, A., Teng, J. T. & Raja, M. K. (2012). A unified model of knowledge sharing behaviours: Theoretical development and empirical test. *Behaviour & Information Technology*, *31*(11), 1097-1115.

Coenen, M. & Kok, R. A. (2014). Workplace flexibility and new product development performance: The role of telework and flexible work schedules. *European Management Journal*, *32*(4), 564-576.

Cohen, S. G. & Gibson, C. B. (2003). In the beginning: Introduction and framework. In Gibson, C.B. and Cohen, S.G. (eds), *Virtual Teams that Work: Creating Conditions for Virtual Teams Effectiveness* (pp. 17-20). San Francisco: Jossey-Bass.

Cramton, C. D. (2001). The mutual knowledge problem and its consequences for dispersed collaboration. *Organization Science*, *12*(3), 346-371.

De Jong, B. A. & Elfring, T. (2010). How does trust affect the performance of ongoing teams? The mediating role of reflexivity, monitoring, and effort. *Academy of Management Journal*, *53*(3), 535-549.

Dennis, A. R. & Kinney, S. T. (1998). Testing media richness theory in the new media: The effects of cues, feedback, and task equivocality. *Information Systems Research*, *9*(3), 256-274.

DeShon, R. P., Kozlowski, S. W., Schmidt, A. M., Milner, K. R. & Wiechmann, D. (2004). A multiple-goal, multilevel model of feedback effects on the regulation of individual and team performance. *Journal of Applied Psychology*, *89*(6), 1035-1056.

Edmondson, A. C. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, *44*(2), 350-383.

Edmondson, A. C., Kramer, R. M. & Cook, K. S. (2004). Psychological safety, trust, and learning in organizations: A group-level lens. *Trust and distrust in organizations: Dilemmas and approaches*, *12*, 239-272.

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, *56*(3), 218-226.

Gajendran, R. S. & Harrison, D. A. (2007). The good, the bad, and the unknown about telecommuting: Meta-analysis of psychological mediators and individual consequences. *Journal of Applied Psychology*, *92*(6), 1524-1541.

Gersick, C. J. (1988). Time and transition in work teams: Toward a new model of group development. *Academy of Management Journal*, *31*(1), 9-41.

Gibson, C. B. & Cohen, S. G. (2003). *Virtual teams that work: Creating conditions for virtual team effectiveness*. San Francisco: Jossey-Bass.

Gibson, C. B. & Gibbs, J. L. (2006). Unpacking the concept of virtuality: The effects of geographic dispersion, electronic dependence, dynamic structure, and national diversity on team innovation. *Administrative Science Quarterly*, *51*(3), 451-495.

Gibson, C. B. & Manuel, J. A. (2003). Building trust: Effective multicultural communication processes in virtual teams. In Gibson, C.B. and Cohen, S.G. (eds), *Virtual Teams that Work: Creating Conditions for Virtual Teams Effectiveness* (pp. 59-86). San Francisco: Jossey-Bass.

Gilson, L. L., Maynard, M. T., Jones Young, N. C., Vartiainen, M. & Hakonen, M. (2015). Virtual teams research: 10 years, 10 themes, and 10 opportunities. *Journal of Management, 41*(5), 1313-1337.

Golden, T. D. (2006). Avoiding depletion in virtual work: Telework and the intervening impact of work exhaustion on commitment and turnover intentions. *Journal of Vocational Behavior*, *69*(1), 176-187.

Golden, T. D. (2007). Co-workers who telework and the impact on those in the office: Understanding the implications of virtual work for co-worker satisfaction and turnover intentions. *Human Relations*, *60*(11), 1641-1667.

Golden, T. D. & Fromen, A. (2011). Does it matter where your manager works? Comparing managerial work mode (traditional, telework, virtual) across subordinate work experiences and outcomes. *Human Relations*, *64*(11), 1451-1475.

Golden, T. D., Veiga, J. F. & Dino, R. N. (2008). The impact of professional isolation on teleworker job performance and turnover intentions: Does time spent teleworking, interacting face-to-face, or having access to communication-enhancing technology matter? *Journal of Applied Psychology*, *93*(6), 1412-1421.

Greer, T. W. & Payne, S. C. (2014). Overcoming telework challenges: Outcomes of successful telework strategies. *The Psychologist-Manager Journal*, *17*(2), 87-111.

Hackman, J. R. (1987). The design of work teams. In J. Lorsch (Ed.), *Handbook of Organizational Behavior* (pp. 315-342). New York: Prentice-Hall.

Harker Martin, B. & MacDonnell, R. (2012). Is telework effective for organizations? A meta-analysis of empirical research on perceptions of telework and organizational outcomes. *Management Research Review*, *35*(7), 602-616.

Hendriks, P. (1999). Why share knowledge? The influence of ICT on the motivation for knowledge sharing. *Knowledge and Process Management*, *6*(2), 91-100.

Hinds, P. J. & Bailey, D. E. (2003). Out of sight, out of sync: Understanding conflict in distributed teams. *Organization Science*, *14*(6), 615-632.

Hinds, P. J. & Mortensen, M. (2005). Understanding conflict in geographically distributed teams: The moderating effects of shared identity, shared context, and spontaneous communication. *Organization Science*, *16*(3), 290-307.

Hinds, P. J. & Weisband, S. P. (2003). Knowledge Sharing and Shared Understanding in Virtual Teams. In Gibson, C.B. and Cohen, S.G. (eds), *Virtual Teams that Work: Creating Conditions for Virtual Teams Effectiveness* (pp. 21–36). San Francisco: Jossey-Bass.

Holton, J. A. (2001). Building trust and collaboration in a virtual team. *Team Performance Management: An International Journal*, *7*(3/4), 36-47.

Huber, G. P. (1991). Organizational learning: The contributing processes and the literatures. *Organization Science*, *2*(1), 88-115.

Jarvenpaa, S. L. & Leidner, D. E. (1999). Communication and trust in global virtual teams. *Organization Science*, *10*(6), 791-815.

Jehn, K. A. & Mannix, E. A. (2001). The dynamic nature of conflict: A longitudinal study of intragroup conflict and group performance. *Academy of Management Journal*, *44*(2), 238-251.

Jones, G. R. & George, J. M. (1998). The experience and evolution of trust: Implications for cooperation and teamwork. *Academy of Management Review*, *23*(3), 531-546.

Johnson, M. D., Hollenbeck, J. R., Humphrey, S. E., Ilgen, D. R., Jundt, D. & Meyer, C. J. (2006). Cutthroat cooperation: Asymmetrical adaptation to changes in team reward structures. *Academy of Management Journal, 49*(1), 103–119.

Kayworth, T. & Leidner, D. (2000). The global virtual manager: A prescription for success. *European Management Journal*, *18*(2), 183-194.

Lautsch, B. A. & Kossek, E. E. (2011). Managing a blended workforce: Telecommuters and non-telecommuters. *Organizational Dynamics*, *40*(1), 10-17.

Liden, R. C., Wayne, S. J. & Bradway, L. K. (1997). Task interdependence as a moderator of the relation between group control and performance. *Human Relations*, *50*(2), 169-181.

Locke, E. A. & Latham, G. P. (1990). *A theory of goal setting & task performance*. Englewood Cliffs, NJ: Prentice-Hall.

Locke, E. A. & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, *57*(9), 705-717.

Lockwood, J. (2015). Virtual team management: what is causing communication breakdown? *Language and Intercultural Communication*, *15*(1), 125-140.

Martins, L. L., Gilson, L. L. & Maynard, M. T. (2004). Virtual teams: What do we know and where do we go from here? *Journal of Management*, *30*(6), 805-835.

Mathieu, J. E., Heffner, T. S., Goodwin, G. F., Salas, E. & Cannon-Bowers, J. A. (2000). The influence of shared mental models on team process and performance. *Journal of Applied Psychology*, *85*(2), 273-283.

Mayer, R. C., Davis, J. H. & Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of Management Review, 20*, 709-734.

McFarlin, D. B. & Sweeney, P. D. (1992). Distributive and procedural justice as predictors of satisfaction with personal and organizational outcomes. *Academy of Management Journal*, *35*(3), 626-637.

Mohrman, S. A., Klein, J. A. & Finegold, D. (2003). Managing the global new product development network: A sense-making perspective. In Gibson, C.B. and Cohen, S.G. (eds), *Virtual Teams that Work: Creating Conditions for Virtual Teams Effectiveness* (pp. 37-58). San Francisco: Jossey-Bass.

Morganson, V. J., Major, D. A., Oborn, K. L., Verive, J. M. & Heelan, M. P. (2010). Comparing telework locations and traditional work arrangements: Differences in work-life balance support, job satisfaction, and inclusion. *Journal of Managerial Psychology*, *25*(6), 578-595.

Nardi, B. & Whittaker, S. (2002). The role of face-to-face communication in distributed work. In P. Hinds & S. Kiesler (eds), *Distributed work: New ways of working across distance using technology* (pp. 83–110). Cambridge, MA: MIT Press.

Ng, T. W. (2012). Can we teach digital natives digital literacy? *Computers & Education*, *59*(3), 1065-1078.

Ng, T. W., Eby, L. T., Sorensen, K. L. & Feldman, D. C. (2005). Predictors of objective and subjective career success: A meta-analysis. *Personnel Psychology*, *58*(2), 367-408.

Nikolova, I., Van Ruysseveldt, J., De Witte, H. & Van Dam, K. (2014). Learning climate scale: Construction, reliability and initial validity evidence. *Journal of Vocational Behavior*, *85*(3), 258-265.

Peñarroja, V., Orengo, V., Zornoza, A., Sánchez, J. & Ripoll, P. (2015). How team feedback and team trust influence information processing and learning in virtual teams: A moderated mediation model. *Computers in Human Behavior*, *48*, 9-16.

Postrel, S. (2002). Islands of shared knowledge: Specialization and mutual understanding in problem-solving teams. *Organization Science*, *13*(3), 303-320.

Van Ruysseveldt, J. & Taverniers, J. (2010). Al werkend leren? De actief leren-hypothese van Karasek revisited. *Gedrag en Organisatie, 23,* 1-18.

Vega, R. P., Anderson, A. J. & Kaplan, S. A. (2015). A within-person examination of the effects of telework. *Journal of Business and Psychology*, *30*(2), 313-323.

Wang, S. & Noe, R. A. (2010). Knowledge sharing: A review and directions for future research. *Human Resource Management Review*, *20*(2), 115-131.

Weinert, C., Maier, C. & Laumer, S. (2015). *Why are teleworkers stressed? An empirical analysis of the causes of telework-enabled stress*. (Unpublished doctoral dissertation). Bamberg: University of Bamberg, Germany.

Welz, C. & Wolf, F. (2010). *Telework in the European Union*. Retrieved from Eurofound:<https://www.eurofound.europa.eu/publications/report/2010/telework-in-the-european-union>.

Zakaria, N., Amelinckx, A. & Wilemon, D. (2004). Working together apart? Building a knowledge-sharing culture for global virtual teams. *Creativity and Innovation Management*, *13*(1), 15-29.

Zhou, K. Z. & Li, C. B. (2012). How knowledge affects radical innovation: Knowledge base, market knowledge acquisition, and internal knowledge sharing. *Strategic Management Journal*, *33*(9), 1090-1102.

Chapter 5: Re-shaping the Managerial Logics of Office Work: Discourse and Subjectivity in Office Cultures Applying New Ways of Working (NWOW)

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Introduction: A Changing World of Work

The world of work has undergone significant changes under the influence of globalization, flexibilization, individualization and digitalization in recent decades (Taskin, Ajzen & Donis, 2017). In this chapter we investigate the way office workers discursively make sense of the so-called *New Ways of Working* (NWOW) and the kind of competences required to operate in such settings. By conducting a discourse analysis of the logics office workers rely on to structure their sense of self and other in changing work environments, we will also answer the question to what extent there is room for critique and resistance to what is usually a rather celebratory discourse. Considering the scale and speed with which traditional office environments are being restructured in public and private office environments one needs to consider the experiences and the voices of those who are supposed to realize and undergo these changes. In order to give due respect to both supporters and critics of NWOW we will treat notions such as "NWOW", "autonomy" and "trust" as signifiers whose meanings can only be understood if one considers the way they are being articulated with each other by the social actors in question. As such we steer clear not only of a normative stance that assumes that NWOW *ought* to be developed further but also of a functional stance that asks *how* this might best be realized. Rather, we ask the more open question how the meaning of these changes is *discursively constructed, understood and negotiated by office workers* in the first place.

Even though we do not seek to impose our own definition of NWOW onto the way office workers understand this term, it is important to get some idea of the way this term is usually understood in academic and professional contexts. Within the context

of organization studies and HR there is a general consensus that NWOW include more than a mere integration of information and communication technologies (ICT) into an organization. As Taskin, Ajzen & Donis (2017) point out, the notion usually refers to (1) "flexible" spatial and temporal work arrangements such as teleworking, shared offices and coworking, (2) "participatory" management strategies, (3) organizational reconfigurations such as self-managing teams, and (4) the integration of enabling ICT in everyday work practices. It should be noted, though, that many practices linked to NWOW are not "new" at all when viewed in isolation and are not necessarily understood as being part of NWOW by the social actors themselves. Even though they were far from mainstream, early references to and experiments with mobile offices, desk sharing, landscape offices and videoconferencing can be traced back to the sixties and seventies of last century or before (see van Meel, 2011). Homeworking and decentralized production systems were already in place in the nineteenth century with centralized factories being the more recent innovation. The number of employees – often referred to as "digital nomads" – working on the basis of NWOW is nevertheless on the rise (Popma, 2013, p. 7). In this sense, the newness of NWOW is in part a matter of scale: the spread of NWOW related practices in office work across the globe is indeed unprecedented.

According to their more holistically oriented advocates, NWOW involve a complete overhaul of existing work-related infrastructure, a reconfiguration of the way work is organized in time and space, as well as a substantial change of organizational cultures. For Taskin, Ajzen and Donis (2017), the novelty of NWOW does not reside so much in the techniques deployed as in the underlying "managerial philosophy" that seeks to democratize work regimes through a reformation of the worker her- or himself into a more autonomous, collaborative, flexible and trusting entity. According to these authors the implementation of "truly" New Ways of Working should be guided by democratic ideals in a participatory bottom-up manner incompatible with exclusively coercive or top-down forms of hard managerial power. They argue for a "smart power" approach that allows for a strategic use of top-down and bottom-up procedures in the implementation of NWOW, and warn that an eclectic implementation of isolated NWOW practices such as teleworking does not in itself realize the philosophy of NWOW. All too often management adopts a functionalist approach whereby social and managerial innovations such as NWOW are "perverted and instrumentalized to maximize economic and financial performances". In such cases, economic justifications (e.g. productivity, efficiency, profit) are valued over organizational (e.g. flexibility, turnover), social, (e.g. work-life balance) and environmental (e.g. less pollution) justifications related to NWOW "philosophy" (Taskin et al., 2017).

Rather than focusing on actual NWOW practices or on the associated competences, this chapter focuses on the sense-making processes through which office workers in public and private organizations understand such practices and competences in relation to NWOW as a whole. Thus, we will not treat NWOW as a fully coherent "philosophy" grounded in democratic ideals – as in Taskin, Ajzen and Donis (2017) – but rather

as an organizational *discourse* that comes in many guises. Discourse is defined here as an articulatory practice through which social actors link identities, norms, values, metaphors, narratives, practices and other semiotic elements with each other in order to fix their meanings in particular ways. NWOW discourse shifts and changes depending on the specific ways in which social actors articulate it according to specific logics that allow them to make sense of changing work cultures. This implies that the meaning of signifiers such as "autonomy", "trust" and "participation" shifts and changes depending on the other discursive elements they are articulated with. It follows that we do not define these terms – or any other NWOW term – in an a priori way. Instead, we consider them as discursive constructs whose meaning is fixed through their articulation with other semiotic elements in communicative acts according to specific interpretive logics. In order to study the discursive practices of NWOW, we analyze a series of in-depth interviews with managers and office workers conducted in eight Belgian public and private organizations of different sizes and sectors.

In the first section of this paper we will outline our theoretical framework and our reasons for analyzing NWOW from a discursive perspective. This section contains a discussion of NWOW discourse as an articulatory practice, an explanation of what we mean by the interpretive logics structuring NWOW discourse, a discussion of what we mean by the managerial logics of NWOW discourse specifically, and a problematization of the notion of critique. In a second section, we will discuss the matter of data collection and analysis. The third section of this chapter contains a discussion of our analytical results. These results are discussed under the header of interpretive managerial logics of NWOW discourse. We thereby use the notion of "culture" as an entry point into the material. Then we proceed to a discussion of the core neoliberal logic that lies at the heart of celebratory NWOW discourse. This is followed by a discussion of the logics that provide alternative ways of understanding NWOW. These "alternative" logics are often articulated in ways that support the core neoliberal logic of celebratory NWOW discourse. In this sense, "alternative" does not necessarily mean oppositional or antagonistic to NWOW discourse. Nevertheless, office workers also rely on some of these alternative logics in order to articulate different types of critique. Thus, we examine, for each type of logic, *how* they are used by the employees to make sense of NWOW – from the more celebratory uses to the more critical ones. In the fourth section of this chapter we reflect explicitly on the question of office worker subjectivity. We thereby devote specific attention to the binary oppositions constructed through celebratory NWOW discourse but also seek to identify critical modes of subjectivity articulated by our interviewees.

Theoretical Framework: A Discursive Perspective on New Ways of Working

Our theoretical framework draws on Critical Discourse Analysis (CDA) and Poststructuralist Discourse Theory (PDT), with an emphasis on the latter. In doing so,

we adopt PDT's radical constructivism and reject the critical realism of the type of CDA advocated by Norman Fairclough (see Fairclough & Chouliaraki, 1999). Yet we are inspired by CDA's stress on discourse as a social practice that is both socially constituted and socially constitutive. Even though we deviate from versions of CDA that understand discourse predominantly in terms of spoken or written language use (see Fairclough, 1992), we do accept the idea that language and text are the most accessible entry points for the empirical analysis of discourse and subjectivity (see Verschueren, 2011; Zienkowski, 2017a). Moreover, PDT and CDA converge in their view on power, stressing that the study of discourse involves a focus on the way social relationships are configured, reproduced and challenged in struggles over meaning and power. Power should thereby not be understood in a mere restrictive or coercive sense. It is not merely that which rejects, denies and enforces, it is also that which creates and produces knowledge and subjectivity (Foucault, 1976; 1982). Texts and verbal interactions such as interviews often carry observable traces of the power relationships within which they are generated and distributed (see Verschueren, 2011). At the same time, we deviate from classical operationalizations of PDT and CDA in devoting an atypical amount of attention to the way(s) in which social actors articulate critique with some degree of reflexive awareness. Lastly, we use PDT's approach to subjectivity, which we define as involving "an imperfect awareness of the aspects, processes and practices constitutive of our sense of self. It can be described in terms of large-scale interpretive logics that articulate subject positions, discourse and practices with each other" (Zienkowski, 2017a, p. 407). Selves should thereby be understood as decentered and process-based frameworks or assemblies:

> The self operates as a reification of the processes that allows us to act reflexively upon ourselves and upon others. It is a reification of the processes that allow us to position ourselves as more or less coherent mind/bodies in relation to spatial, temporal, social and (inter-textual aspects of contextual reality). Selves are ideas we ride and objects that can be shaped through historically contingent self-techniques. The self is only as stable as the performances we enact in order to give ourselves the semblance of substance. Our selves may be relatively unified and centred, but only to the extent that our interpretive logics and self-techniques allow us to be. (Zienkowski, 2017a, p. 407)

In order to specify further our discursive perspective on NWOW, we will outline the key components of our theoretical framework in four steps: (1) we will define NWOW discourse as a practice of *articulation*; (2) we will introduce the concept of *interpretive logics* structuring NWOW discourse; (3) we will explain how we approach *neoliberalism* as one *managerial logic* – among others – that informs a celebratory NWOW discourse; and (4) we will also address the issue of *critique* and *resistance* to/in NWOW discourse.

Based on this theoretical framework, this chapter will address the following research questions (RQ's):

- RQ1: What are the interpretive logics that structure the NWOW related discursive practices of actors working in office work environments?

- RQ2: How do these logics shape the possibilities for critique and resistance to different aspects of NWOW?
- RQ3: How does the subjectivity of the office worker get (re-)articulated in a changing office environment by actors in private and public organizations?

NWOW Discourse as a Practice of Articulation

Our definition of discourse draws heavily on PDT. From that perspective, discourse cannot be reduced to a mere collection of symbols, metaphors, sentences, arguments, narratives, texts and/or genres. Even though discourse can be studied at each of these analytical levels, it cannot be reduced to either of them. Discourse is a multi-layered, context-dependent and socially constitutive practice of articulation that leaves traces in linguistic and nonlinguistic modes of communication (see Foucault, 1969; Marttila, 2016; Zienkowski, 2017a; Glynos & Howarth, 2007). Moreover, according to PDT, discourse can be understood as a practice of generating meaning by linking semiotic elements to each other in concrete communicative acts that structure the way we interpret reality and configure our relationships to ourselves, to others and to the socio-semiotic contexts through which we move. Put differently, discourse only exists by grace of practices of articulation. When we write about "NWOW discourse" we refer to verbal or written discourse that explicitly mentions this term as well as to discourse that deals with one or more of its constitutive elements (e.g. teleworking or participatory management techniques) (see Taskin et al., 2017). If we want to understand the meaning of a particular signifier such "flexibility", "autonomy", "competence" or "NWOW", we need to understand how social actors articulate such terms with each other and with other signifiers in concrete sentences, arguments and narratives, according to specific interpretive logics. This does not mean that individuals find themselves at the origin of the meaning-making process. Discourse is inherently social and transcends individualized language use and communication. At the same time, it is important to keep in mind that communication always involves making choices out of a range of linguistic, textual and multimodal options at our disposal. These options are provided by discursive structures that can be analyzed at different levels of abstraction – for example, lexis, grammar, narrative, genre, order of discourse, and so on. Choices are always made in function of an imperfect awareness of the physical, social, cultural and political contexts through which we move. In fact, in order to engage in struggles over meaning, we need to select and adapt semiotic objects provided by discursive structures. Once again, this does not mean that meaning is located within the individual, but it does mean that in order to communicate, human beings need to draw on an always limited form of reflexive awareness regarding their environment and the communicative options for generating meaning. In that sense we deviate from the typical Essex-style focus on large-scale structures of discourse by considering the partially individualized use of signifiers by interviewees (see Zienkowski, 2017a).

To identify how a particular discourse functions, where its boundaries lie and how it can be distinguished from other competing discourses that seek to define reality, is part and parcel of what it is to conduct a critical discourse study. Distinctions between competing discourses are never easy to draw because different types of discourse tend to intersect, contaminate and define each other. For instance, it is not possible to separate technocratic and neoliberal discourses completely, or to draw closed circles around the different strands of discourse informing the way contemporary transformations in office work are being understood. It is therefore important to realize that *any* "discourse" is always a reification, an artificial construct named by a researcher, and an ideal-typical way of constructing relationships between the objects and subjects of power-knowledge relationships.

Interpretive Logics Structuring NWOW Discourse

In order to analyze the different ways in which NWOW are understood by and impact on the subjectivities of office workers, we will identify the *logics* that structure the NWOW discourse (re-)articulated by our interviewees. The concept of logic plays a key role in PDT (see Laclau & Mouffe, 1985; Glynos & Howarth, 2007; Zienkowski, 2017a). Logics structure the way we discursively articulate semiotic elements with each other. As we will see, the same signifiers – for example, "autonomy", "trust" – can be articulated in discourse according to different logics. The meaning of these signifiers shifts accordingly. This means that such terms cannot be taken at face value and that we need to focus on the way they get linked to each other in concrete instances of verbal and textual discourse.

Glynos and Howarth (2007) distinguish between three types of logic: political, fantasmatic and social logics. Together these logics inform the self-interpretations of subjects, as well as the way they engage with themselves, with each other and with discursive reality in general.

First, political logics operate through equivalence and difference. They structure all hegemonic struggles and processes of identity formation. The logic of equivalence makes identities equivalent to each other and allows for the construction of political alliances. The logic of difference dis-articulates such alliances. Second, discourse also operates through a fantasmatic logic that allows us to negate the contingent and arbitrary nature of the particular ways in which we discursively make sense of the world and of our own identities. Fantasmatic logics imbue our sense-making processes with an affectively charged sense of necessity. They explain why certain discourses exert an affective hold on particular subjects whereas others do not. Thirdly, Glynos and Howarth write about social logics. These logics are more concrete in the sense that they refer to the operation and dispersion of normalized rules informing everyday social relationships and practices. Social logics structure the self-interpretations of subjects as they constitute a specific "relational network" of signifiers and practices. For instance, the social logic of the marketplace operates through the construction of subject positions (e.g. buyers

and sellers), objects (e.g commodities and means of exchange), practices, and a system of relations that articulates objects and subjects with each other (e.g. a legal system). Moreover, the concept of social logic designates the conditions that make the continued operation of such practices, discourses and subject positions possible (Glynos & Howarth, 2007, pp. 136-140).

One might argue that Glynos's and Howarth's social logics are not dissimilar to Foucault's notion of political rationality, in the sense that a social logic is "not timeless or universal, but always comes in a particular form, secures and circulates specific norms, and posits particular subjects and relations" (Brown, 2015, p. 115). Moreover, social logics have an interpretive dimension in the sense that they structure the self-interpretations of individuals. The more hegemonic a particular social logic becomes the less it will be named, problematized and criticized by those whose self-interpretations it informs. At the same time, human beings have a capacity for reflexivity that enables them to name, objectify, problematize and criticize dominant social logics if they become politically aware of the contingent nature of their social reality. Subjects can relate to social logics in at least three ways: (a) they may tacitly or explicitly support the operation of specific social logics in their everyday discursive practices; (b) they may name, discuss, objectify, criticize and problematize aspects of social logics that negatively define their sense of self and/or ideal-typical social reality; and (c) they may attempt to articulate counter-logics that positively inform a preferred sense of self and may form the basis for an alternative to the dominant social logics that structure their lives.

We will use the label social logic interchangeably with the label interpretive logic. We will mostly use the latter term in order to highlight the degree of reflexivity through which social logics operate. In our study of NWOW discourse we will focus first and foremost on the interpretive logics that structure the way office workers in private and public organizations articulate relationships to themselves, to each other and to the discursive elements of NWOW. It is thereby of key importance to analyze how these logics inform their sense of self negatively or positively – that is, how they inform a distinction between preferred and rejected mode of subjectivity in office environments. Glynos and Howarth point out that the description of logics is an analytic task for the social scientist who seeks to investigate how norms, values, practices, identities and other discursive elements are being articulated together in temporally stable discursive and material assemblages or configurations (Glynos & Howarth, 2008; Zienkowski 2017a, p. 404). Such assemblies are at once discursive and material (see Laclau & Mouffe, 1985; Carpentier, 2017). They constitute an apparatus that is meant to reshape the subjectivity of office workers in line with the goals and interests of those in control of the organization at large.

The Managerial Logics of Celebratory NWOW Discourse

In this chapter we argue that celebratory NWOW discourse is constituted through multiple managerial logics. In order to clarify our notion of managerial logic, we need to

explain the notion of organizational culture. We will then move on to a brief discussion of the way NWOW discourse has been treated in critical management studies. Authors in this field have frequently pointed at the neoliberal character of NWOW (e.g. Hambye et al., 2013). In order to answer the question if we can indeed identify a neoliberal managerial logic in the NWOW discourse of our interviewees, we need to clarify the notion of neoliberalism used in this paper. This is a necessary preparatory step in order for us to answer the question what other managerial logics might be structuring the way office workers make sense of the NWOW techno-managerial dispositive.

Let us start with a discussion of organizational culture. Contemporary managerial literature tends to stress that the implementation of new ways of working should be a holistic endeavor not limited to matters of infrastructure and technology. In other words, the process of change should first and foremost be a matter of organizational *culture*. The concept of organizational culture can be traced back to a paradigm shift that occurred in the late 1970s and early 1980s, whereby organizations came to be viewed as structures of meaning created through everyday symbolic acts (Mumby, 2013, p. 133). Within this cultural paradigm it is possible to distinguish between two broad approaches. Firstly, there is the purist approach defining organizations *as* cultures. This view entails that organizational culture can never be controlled fully by managers and that culture is constitutive of organizations. Here, culture evolves spontaneously, reflecting lived needs and experiences. Culture is not seen as unitary. Rather, complex organizations function through a complex array of often competing subcultures. Secondly, there is a more pragmatic and managerial approach to organizational culture that considers culture to be one variable among many others *within* an organization. This approach implies a functionalist and instrumental concept of culture as something that can be managed to generate identities, employee commitments, organizational stability and sense-making processes in function of larger organizational goals and interests (Mumby, 2013, pp. 137-142; on the instrumental approach to organizational culture, see also Olivesi, 2006).

NWOW is often inserted into organizations as part of an organizational overhaul. It should therefore not come as a surprise that officially sanctioned talk about NWOW related changes usually entails an instrumental, managerial view on organizational culture. As we understand it, managerial discourse is not the sole property of managers. Managerial discourse is rather rearticulated at all levels of the organizational hierarchy, from team members over team leaders to HR managers and/or CEO's. This is not surprising since the NWOW concept includes a cultural/behavioral component. This can be exemplified with reference to NWOW's "bricks, bytes and behavior" slogan. The managerial logics structuring NWOW discourse specifically aim to align the identities, values and cultural practices constitutive of organizations with the goals set out by those who are in control of the organization's mission, goals, resources and/or profits.

In critical management studies and other critical literature, managerial discourse in general and NWOW discourse specifically is often examined through the lens of neoliberalism. The idea that NWOW discourse is inherently neoliberal is particularly well

elaborated by Hambye, Mariscal and Siroux (2013). Based on an analysis of managerial best practice manuals, the authors outline the structure of a neoliberal managerial utopia wherein employees in both private and public organizations voluntarily engage in a management of the self that serves corporate interests through a "happy mobilization" fostered by values such as "autonomy", "flexibility" and "result-orientation". Employees are not only expected to reach targets set at higher levels in the hierarchy but are supposed to do so freely and authentically by subscribing to these values. Hambye et al. summarize the three basic principles supported by this neoliberal project and the associated managerial utopia:

> (a) employees will be all the more efficient and ready to meet expected results (b) if they are motivated, flexible, autonomous, innovative, and working together with their network, (c) which they would do all the more if they would make this a moral and personal ideal, and find satisfaction therein. (Hambye et al., 2013, p. 98, translated from French)

The managerial philosophy on the management of the self works in tandem with a managerial stress on values and on the cultural dimension of organizational life in general. An entire consultancy industry teaching organizations to instill this new culture has been growing since the eighties:

> By means of their emphasis on "motivation", "flexibility", "de-hierarchization", "individual performance", "projects", "self-entrepreneurship", "job fulfillment" and "responsibility", a new generation of consultants has set the management of the self as a new horizon for management. The rise of coaching in business over the last fifteen years or so testifies to this: in most cases we are dealing with support for managers to organize themselves, to fix their objectives, to surveil themselves, to evaluate themselves, to control themselves, to punish themselves, to award themselves, to motivate themselves, to better their performances and manage their careers. (Le Texier, 2015, p. 76, translated from French)

According to Hambye et al., the neoliberal project in mainstream managerial discourse has a celebratory and positive tone because its core values (e.g. autonomy, creativity, trust) are articulated with happiness, self-fulfilment and well-being. Writing from a critical perspective, Hambye et al. consider that this articulation functions ideologically in the sense that it serves to pre-empt any inclination to resisting managerial changes:

> How can one refuse to invest oneself so much and more in one's work if it is presented as a source of fulfillment? How could one reject a vision such as the improvement of life quality at work? And how could one stand up against the "humanism" that businesses boast of? (Hambye et al., 2013, p. 98, translated from French)

Autonomy, for instance, is almost presented as a favor granted to the employees who can thereby improve their well-being, instead of as a requirement that goes with the

increased demand for flexible skill sets. In mainstream managerial discourse, say Hambye et al., autonomy does not imply that the employee can set his or her own objectives and decide on the rules themselves. Being autonomous merely implies that one has to be "creative" (i.e. solve your own problems) but remains "responsible" for reaching the targets set by the organization (Hambye et al., 2013, pp. 94-96). This implies that many executive decisions on how to reach these targets can be delegated to individuals and/or teams consisting of individuals who are expected to manage themselves. The point is that employees' autonomy and flexibility are only valued to the extent that they contribute to their ability to reach organizational goals "efficiently".

Existing critical literature often argues that the neoliberal logic has become hegemonic in the way people make sense of themselves and others and focuses on the ideological mechanisms through which the neoliberal discourse constructs itself as "obvious", "natural" or "non-problematic". It is thereby often suggested that alternatives to neoliberal managerial discourse are extremely rare. In fact, terms such as "neoliberal discourse" and "managerial discourse" are frequently used interchangeably in this type of literature (see Hambye et al., 2013; Olivesi, 2006). A brief clarification of what we mean by neoliberalism in the context of this chapter and how we relate it to NWOW discourse is therefore necessary.

We will not discuss neoliberalism as a state form associated political-economic policies and programs. Neither do we focus on the way neoliberal ideologies displace bargained rights of employees or on the impact of the way neoliberal policies impact on hiring and firing practices (Springer, 2013, pp.136-137). We recognize that these are valid approaches to neoliberalism but for the purposes of this chapter we will limit ourselves to a discussion of the extent to which neoliberalism restructures the practices and subjectivities of office workers whose organizations transition to or practice new ways of working. We will therefore limit ourselves to a discussion of the extent to which the discourse on NWOW is shaped by a neoliberal logic and illustrate how "workers are encouraged to see themselves as entrepreneurs and to regard employment as a chance to develop skills enhancing their marketability and leverage in securing *the next* in a series of jobs not bound by organizational structure or hampered by firms' commitments to underachieving employees" (Crowley & Hodson, 2014, p. 93).

In doing so, we follow Brown in considering neoliberalism in Foucauldian terms as a "a distinctive mode of reason, of the production of subjects, a 'conduct of conduct' and a scheme of valuation" (Brown, 2015, p. 21). The operative definition of neoliberalism at play in this chapter is one of neoliberalism as a mode of governmentality. This means that we consider neoliberalism as a form of power/knowledge that operates through "the ensemble of rationalities, strategies, technologies, and techniques concerning the mentality of rule that allow for the de-centering of government through the active role of auto-regulated or auto-correcting selves who facilitate 'governance at a distance' (Foucault 1991 cited)" (Springer, 2012, p. 137).

While we recognize that a neoliberal logic is at play in much NWOW managerial discourse, we argue that a more nuanced approach is required. It is necessary to name and identify the alternative managerial logics office workers rely on when making sense of NWOW, to recognize varieties in NWOW discourse and to avoid lumping all NWOW related statements together under the header of neoliberalism, even if the neoliberal logic is indeed the core of the NWOW techno-managerial dispositive. In the context of this chapter "alternative" does not necessarily mean oppositional. When we label a logic as alternative we only mean that it provides an interpretive framework that is different from the neoliberal logic structuring NWOW discourse. Where such alternative logics occur, we will examine how they relate to each other and to the core neoliberal logic and discuss how they are used in order to celebrate or criticize (aspects of) NWOW. By doing so, we can sketch a nuanced picture of how NWOW are embraced, criticized or opposed by office workers.

In this chapter we will see that celebratory NWOW discourse typically articulates four main types of managerial logics: a neoliberal logic, an expressive/consultative logic, a team-oriented participatory logic and a humanizing logic, with the latter considering happiness, self-fulfilment and well-being as the ultimate horizon of NWOW. In NWOW celebratory discourse, these logics are articulated in such a way that they are compatible with each other and provide an overall positive tone to NWOW. In such a configuration, the neoliberal logic is largely left intact, even legitimized through its articulation with the other three logics. Yet, as we will see office workers do not always take celebratory NWOW discourse at face value. They sometimes rely on these or other alternative logics in order to criticize NWOW, to legitimate micro-resistances or to argue for exceptions to the implementation of orthodox NWOW policies in public and private organizations.

Possibilities and Varieties of Critique

In order to understand the logics that (re-)structure office practices, environments and subjectivities where NWOW are being implemented, we need a bottom-up approach that does not take officially sanctioned NWOW discourse at face value. It is important to keep in mind that workers should not be understood as institutional dupes who are predominantly or necessarily passive objects of managerial discursive techniques (see Alvesson, 2002; Mumby, 2013). As we will see, the celebratory NWOW discourse does meet with some critiques and (micro-)resistances in office environments. An inductive approach is necessary in order to discuss the extent to which people make use of alternative logics to articulate critique and legitimate (micro-)resistances to the implementation of the NWOW dispositive. In adopting a critical perspective, we do not argue against NWOW as such. But we do want to provide a space where the voices of employees critical of the way this techno-managerial apparatus is structured can be heard. As such, we aim to contribute to a democratic discussion about the NWOW techno-managerial apparatus.

When identifying and naming alternative interpretive logics it is important to take the self-interpretations and reflexive awareness of those whose discourse we investigate into account (Glynos & Howarth, 2007; Zienkowski, 2017a). As we will see, office workers often identify the features of the neoliberal logic informing managerial NWOW discourse, even if they never name it as such. This does not entail that they accept this logic as their own though. In fact, our analyses show that office workers voice different types and degrees of critique with respect to multiple aspects of NWOW. Full endorsements of the celebratory NWOW framework devoid of any critical note are actually the exception rather than the rule in public and private organizations alike. This being said, we should notice that not all forms of critique attack the core neoliberal managerial logic of NWOW. Neither do all forms of critique attack the *raison d'être* of NWOW. As we will see, in most cases critique consists of calls for mitigation, of pleas to take other values than autonomy and flexibility into account and/or to re-articulate such signifiers in alternative ways. Critique can also consist of expressions of fear for the potentially perverse effects of specific NWOW practices.

In order to understand how such different types of critique are being voiced we will investigate the interpretive logics in which they are embedded. Whatever type of critique we are dealing with, its articulation always implies a reflexive objectification and problematization of the way social, cultural and/or political discourses, practices or power relationships are represented, structured and/or legitimized at any given point in time (Zienkowski, 2018, p. 57). As such, critique can be understood as a discursive inoculation against the crystallization of standpoints, positions, identities, boundaries and social structures into rigid and limiting patterns of control and domination (Zienkowski, 2017b, p. 10). The operational definition of critique proposed by Liebes and Katz in their discussion of the way viewers assess TV programs such as *Dallas* might be useful here in order to clarify further what we mean by "being critical":

> (…) the operational definition of "critical" coincides with an ability to discuss programs as constructions, that is, to recognize or define their genres, formulae, conventions, narrative schemes, etc. We would give equal credit for critical ability to viewers who are able to perceive a theme or message or even an issue in a fictional narrative (…) We would also credit as critical viewers who are aware that they are using analytic criteria – such as schemas, scripts, frames, roles, and other notions of viewer processing and involvement in their responses to the program. (Liebes & Katz, 1990, p. 115)

Applied to NWOW discourse we might say that office workers can be said to be critical to the extent that they problematize the dominant tropes, schemes, practices and identities that constitute celebratory NWOW discourse. As we will see, our informants are indeed critical. Awareness of the key features of celebratory NWOW discourse is shared among all interviewees, with signifiers such as autonomy, flexibility and trust popping up in similar configurations in the interviews with office workers. Our interviewees also frequently engage in a critique of specific aspects of the NWOW dispositive and the

associated celebratory discourse. At the same time, it is important to recognize that not all types of critique are equally complex, effective or thorough (Zienkowski, 2018, p. 57). Moreover, explicit calls for resisting and rejecting NWOW all together are almost entirely absent from the discursive practices under investigation. Being aware of the key components of NWOW discourse does not automatically entail an oppositional stance with respect to the underlying rationality of NWOW and not all forms of critique lead to practices of resistance.

In order to explain this, Hall's classic distinction between dominant-hegemonic, negotiated and oppositional decoding is quite useful. Even though Hall developed his framework in order to understand the construction and reception of television programs we can also use it for understanding the way office workers make sense of NWOW. In Hall's model, when receivers interpret messages in terms of the intended reference code of senders along with the intended connotations, we are dealing with dominant-hegemonic decoding. As we will see, where office workers rely on a celebratory managerial discourse – with a more or less explicit neoliberal accent – in order to understand the cultural transition towards NWOW, they usually make sense of it in line with the hegemonic expectations of those who decided to implement this techno-managerial apparatus in the first place.

Hall talks about negotiated decoding when receivers of messages acknowledge "the legitimacy of the hegemonic definitions to make the grand significations, while, at a more restricted, situational level, it makes its own ground-rules, it operates with 'exceptions to the rule'" (Hall, 2001, p. 131). The resulting "negotiated" readings are therefore "shot-through with contradictions" he writes. Moreover, in an earlier version of his paper he added that "negotiated codes operate through what we might call particular or situated logics that arise from the differential position of those who occupy this position in the spectrum, and from their differential and unequal relation to power" (Hall, 1973, pp. 17-18). As we will see, many office workers rely on alternative logics in order to legitimize their micro-resistances to NWOW policies and practices. By relying on alternative logics, at least some degree of resistance with respect to the situated meanings and practices of NWOW in particular organizations can become thinkable.

Hall's oppositional decoding implies a radical rejection of the most fundamental definitions of "the reality" encoded in a message. It is through oppositional decoding that the hegemonic definitions of reality are actually contested:

> Oppositional decoding threatens to disrupt power relations. If a large group of people refuse to decode the intended message of the encoder, and that oppositional decoding is backed up by other economic, social and cultural resources, it may be the sign of a hegemony breaking apart, or losing its legitimacy. (Carah & Louw, 2015, p. 29)

While Hall's model seems to suggest that individuals usually rely on a single code at any given moment, we will show that subjects usually rely on several interpretive

logics simultaneously in order to make sense of their world. This frequently results in the articulation of contradictory statements in a single interview.

We will show how office workers engage in negotiated and oppositional forms of decoding when talking about NWOW. Both types of decoding imply critique as we defined it. Yet the question is what aspect of discursive reality is being problematized. Several issues present themselves here. First of all, it is perfectly possible to objectify and discuss aspects of NWOW discourse without problematizing them. In such a case we would consider that the logics of celebratory NWOW discourse are used in a dominant-hegemonic way. Second, being critical of a particular program – be it a TV program or a NWOW program – does not necessarily mean that one opposes or even rejects it *as a whole*. It is indeed possible to problematize aspects of NWOW – for example, its rhetoric, its technologies, the way it is (not) implemented, its contradictions, its perverse effects – without challenging the logic(s) legitimating its *raison d'être* and the celebratory statements that surround it. In such a case we would say that the employee performs a negotiated decoding of NWOW. Only when problematizations are aimed at undermining the dominant logics – neoliberal or other – structuring NWOW discourse we will consider the office worker to be engaged in oppositional decoding. Critique can only be truly oppositional when it attacks the dominant logics constituting the phenomenon under discussion. It is only at this level that critique can lead to a destabilization of existing hegemonies. The question whether oppositional critique also leads to *acts* of resistance is an empirical question that requires ethnographic observation, although there are some traces of these in the discursive practices of our informants.

In the upcoming analyses we will identify different forms of critique. Not all of the critiques articulated in the context of NWOW involve a negotiated or oppositional decoding of the neoliberal logic that informs much NWOW discourse and/or practices of micro-resistance. As we will see, many interviewees leave this core logic intact while formulating "constructive critiques" that merely problematizes the *lack* of NWOW culture, the *lack* of communication surrounding the project, or *inadequacies* in the implementation of NWOW technologies and managerial policies on the work floor. For instance, throughout our corpus, interviewees complain about people not adapting to the necessary behavioral etiquette in open office environments. Others point at a lack of training modules for working in NWOW environments, at technological problems and limitations, or at managers not leading by example. Part of these office workers may even engage in concrete practices of resistance on the basis of these critiques. While every one of these problems may be a genuine source of conflict, in isolation, none of these critiques imply a negotiated or oppositional decoding of celebratory NWOW discourse. In isolation, such complaints leave the core neoliberal logic informing much NWOW discourse intact. These forms of critique basically generally work in sync with the dominant-hegemonic celebratory NWOW discourse while operating as a type of positive feedback for those in charge of the transition to the NWOW techno-managerial dispositive. Moreover, it is interesting to note that where managers recognize that some

office workers criticize some aspects of this dispositive, they often suggest that any resistance might be overcome by better communication or transition programs.

When an office worker leaves the logics constitutive of celebratory NWOW discourse intact while pointing at real, imagined or potential perverse effects of the neoliberal logic associated with dominant understandings of what NWOW mean, we are dealing with a form of critique based on negotiated decoding of orthodox NWOW discourse. This type of discourse says "yes, but …" to those who argue in favor of the implementation of NWOW practices in the office. It is a type of critique that allows for a problematization of existing problems or issues that might arise as a result of what is considered to be an otherwise laudable shift in the techno-managerial organization of office work. In contrast, a truly oppositional decoding of NWOW discourse attacks the basic principles of celebratory NWOW discourse. It forms the basis for a critique that targets its very *raison d'être*. An office worker that articulates an oppositional critique of the NWOW dispositive may point at perverse effects of NWOW discourse but will problematize the logics that constitute NWOW as a desirable framework for reshaping the practices, environments and subjectivities of office workers.

Data Collection and Analysis

Even though our notion of discourse is not reducible to text and talk our main entry point into the discourse of NWOW as discussed in this chapter does consist of transcriptions of spoken material. The dataset for this research project consists of interviews collected in eight Belgian public and private organizations of different sizes and sectors. In total, twenty-eight interviews were conducted with twenty-nine people. These people include seventeen management-level employees (four NWOW managers, four HR managers, four IT specialists, three communication managers and one facility manager). In addition, three team leaders, five team members, one prevention advisor, one external consultant and three union representatives have been interviewed. All thirty hours of interview data have been transcribed. The result is a maximally diverse sample of people (re)articulating discourse concerning changing office practices and environments from a multiplicity of positions within public and private organizations. All the interviewees have been carried out and analyzed in French but the excerpts from the interviews provided in this chapter have been translated into English.

A first step of the analysis consists of organizing the data. Interview data have been introduced in the CAQDAS (Computer Assisted Qualitative Data Analysis) program NVIVO for Mac in order to facilitate the analysis. Discourse analysis does not require coding but coding can be a useful preparatory step in order to structure the data in line with discourse analytical research questions. The interview data have been coded *in vivo* for discourse topics and for values expressed through the discourse. These codes allow for a quick identification of relevant interview segments for answering operational research questions that deal with the way the subjectivity of office workers is being rearticulated

in public and private organizations through a variety of interpretive logics (Zienkowski, 2017a, p. 272).

The second step of the analysis consisted in the creation of an analytic memo for each interview. In addition to overall observations about the interviewee's understanding of NWOW, these memos explore how the subjectivity of the office worker gets articulated in a changing office environment. Special attention was paid to the way interviewees talked about the cultural dimension of the transition towards NWOW. Excerpts of the interviews themselves were also included in the memos. The following sub-questions were used to guide the analysis:

1) How do work-related values get articulated in relation to the ideal of the office worker in changing work environments?
2) What subject positions define the subjectivity of the office worker positively, negatively or partially?
3) How does the subjectivity of the office worker get articulated with discourse on knowledge, skills, capacities and/or competences?
4) How do different social actors position the office worker in wider interactional, organizational and/or socio-political contexts?

In order to ascertain what interpretive logics are at play, we had to take a third, comparative step. The analytic memos were compared on the basis of four axes: the notion(s) of organizational culture underpinning the informant's interpretation of NWOW; the forms of critique about NWOW related policies, practices and communications; the interviewee's understanding of the ideal-typical office worker and related competences; and the way NWOW related techno-managerial changes did or did not reconfigure existing power relationships. The resulting analytic grid served as an aid in order to identify the logics that structure NWOW related discourses articulated by office workers (RQ1), the way these logics shape possibilities for critique and resistance with respect to different aspects of NWOW (RQ2), and the way subjectivities of office workers get (re-) articulated in these changing office cultures (RQ3).

Interpretive Managerial Logics of NWOW Culture: Analytical Results

NWOW discourse is usually characterized by a stress on values such as autonomy, flexibility and trust. These values pop up with a remarkable regularity in the discourses of employees and managers alike. Most interviewees discussed the cultural changes in organizational culture linked to the implementation of the NWOW in these abstract terms, no matter whether they criticized the managerial articulation of these notions or not. Talk on corporate values is deeply intertwined with notions of organizational culture. In fact, the notion of culture is so central to most of our interviewees that it proves to be

an ideal starting point for understanding the way different interpretive logics structure the new "world" of work.

After a discussion of the cultural dimension of NWOW discourse, we will move on with the analysis of the different interpretive managerial logics that structure the NWOW discourse of our interviewees in general. In doing so, we will first address the neoliberal logic and then the alternative logics, examining not only how these logics are used to support NWOW but also whether and how they can provide a basis for (negotiated or oppositional) forms of critique (RQ1 and RQ2). Finally, we will look more specifically at the ways in which the subjectivities of office workers are (re-)articulated through those different managerial logics (RQ3).

Talking about the "Culture" of NWOW

The cultural dimension of NWOW discourse crystallizes most clearly in a binary opposition created between "old" and "new" worlds of work. The notion of culture thus functions as a nodal point in the creation of two opposed chains of equivalence. On the one hand we have a chain of equivalence articulated around the notion of the "old" world of work. Within this articulatory chain this old world is equated with bureaucracy, paperwork, distrust, lack of autonomy, top-down modes of control and other stereotypical features associated with twentieth century administrations. On the other hand there is the "new" world of work that equates values such as autonomy, flexibility, teamwork, well-being and trust in a hegemonic claim on the future of organizational culture.

This discursively constructed opposition serves to legitimize the transition to NWOW. In many statements, the notion of "world" serves as a spatial metaphor for a notion of culture. Interestingly, the old and new worlds seem to coexist in some institutions, be it in different degrees. References to the uneasy (co-)existence of two "worlds" or "cultures" support a hierarchically ordered distinction between two management styles. This opposition is closely intertwined with a binary opposition between two types of subjectivity identified by Hambye et al. in their analysis of a campaign celebrating the ideal-typical employees organized by Selor, the federal Belgian recruitment agency. The campaign constructed the image of a "WOW employee" who practices NWOW and is also described as a "WOW-person: a nice colleague who develops her network and who informs herself about the latest trends, and who is deeply engaged with her work". Moreover, it is "someone for whom the values of her employer are not merely words" (Selor cited in Hambye et al., 2013, p. 97, translated from French). The WOW civil servants are supposedly dynamic, enthusiastic, engaged, active, sympathetic, sociable, creative, flexible, passionate and networked. They are supposed to replace non-WOW civil servants who are described as static, disillusioned, demotivated, distant, passive, sour, closed, creatures of habit, rigid, indifferent and stuffy (Hambye et al., 2013, p. 97). This binary opposition also plays a key role in the discourse of the office workers we interviewed.

Even in organizations where there is no modus vivendi for both worlds, cultures, managerial styles and subjectivities, an outmoded administrative or bureaucratic culture negatively defines a more modern and more efficient world of work characterized by a celebratory NWOW discourse.

Let us start with a brief discussion of an organization in which old and new worlds are said to co-exist. The NWOW manager of BigHealth frames the presence of two cultures as the result of a managerial choice not to opt for radical change – "there is no revolution" – but for a more gradual transition – "everything proceeds smoothly". Another interviewee (Unions 2 at BigHealth) explained this situation as the outcome of a weak management style, but whatever the reasons for this choice may be, there is a general agreement that the implementation of NWOW in the BigHealth did not completely wipe out pre-existing cultural patterns and modes of organization.

The NWOW manager of BigHealth sees his organization as an enormous laboratory for testing digital technologies and new management techniques. Even though other interviewees working in his institution claim the opposite, he clearly stated that "our primary goal is to change the culture": "a NWOW project is not a cost reducing project". For him, the entire discourse about the economic and efficiency-related benefits that NWOW supposedly bring is a way to sell a new managerial culture to higher management: "if one says that 'actually, a NWOW project will generate savings', they are yuppies really. Well, that's just in order to sell the thing". Increased efficiency and cost reductions are mere selling points for a more important cultural agenda. He does admit that NWOW may indeed be implemented as part of a cost-saving policy but considers such a strategy to be far from ideal: "giving good tools to people, good technological tools as well as space related tools, that costs a lot of money". This is quite an exceptional stance as most other interviewees do identify an efficiency-oriented goal as the main driver for transitioning to NWOW.

The NWOW project manager of the same organization provides us with a nice rearticulation of the NWOW "bits, bytes and behavior" slogan. He explains how he has been working on the three components of the transition to NWOW: the cultural change; changes having to do with the physical aspects of the work environment; and everything that has to do with digitalization. The cultural component crystallized around managerial work on values:

> We have done much work on values, uh, we wanted to animate… we have defined the values at the center of the federal public service and afterwards we wanted to animate these values that are uh one of our values, it's innovation, because that is a value but well, there is innovation, it's a set [of values], uh, it's respect, uh, it's integrity, uh, well you see, a whole series of things. (NWOW project manager of BigHealth)

The non-revolutionary, slow and gradual transition to a new office culture is systematically legitimated with references to soft values such as naturalness, softness, and calmness. The new culture itself is characterized by "trust" put in employees doing

distance work. At the same time, the "old" culture of "bureaucratic dinosaurs" managing employees through top-down monitoring and control still exists. There is a clear hierarchy between both cultures whereby the trust-based management style is interpreted as more "mature".

The NWOW project manager of BigHealth identifies maximal autonomy as the key value underpinning NWOW philosophy but other values such as openness, development, innovation and horizontalism play a role as well. This can be clearly illustrated with respect to the NWOW program called DARWIN. He explains this acronym as follows:

> And so uh, so the D that's for durability, the A autonomy, the R result because of result orientation, the W that's wellness, well-being, uh, the I that's innovation, and the N that's network, so that's all that has to do with collaboration. So that's to say that these five words or I don't know what correspond really to what we want. We want to function like that in our federal public service, we already function a bit like this and we will crystallize all of that through NWOW. (NWOW project manager of BigHealth)

Moreover, the acronym itself has an undeniably evolutionary ring to it. The NWOW project manager is fully aware of this and clarifies that this new culture is not meant to stimulate a survival of the fittest that eliminates those who cannot adapt to the new culture: "we don't want that, we want that everyone can come with us and move to this uh this new world that is getting more and more complex etcetera, more agile, more flexible". At the same time, he stresses the fact that his organization is a public organization in which certain departments act like "bureaucratic dinosaurs" whereas others are more innovative: "in our federal public service, there are really two worlds that live parallel to each other". The co-existence of these two worlds is perhaps best illustrated with reference to the simultaneous operation of two check-in systems. Employees can either opt for the "old" system where they check in every morning and check out every evening, or for a system without checking in that allows for teleworking and a greater degree of flexibility in terms of working hours.

The two cultures trope is also to be found in private organizations. The distinction between an old "administrative" culture and a new world based on principles such as trust and autonomy appears in the discourse of BigInsuranceOne for instance. Like many other interviewees, the external consultant hired to guide BigInsuranceOne through the transition process stresses the importance of "result orientation" as linked to trust: "it's trust and results, eh", or "it's not because we are doing NWOW that we suddenly became Club Med, eh". For her, trust and result orientation form "something of a duality that is complementary". The new result- and trust-based culture is explicitly contrasted with outmoded management styles characterized by a hierarchic and non-transparent mode of organization. At the same time, she points out that not only managers are attached to the old culture. For too long employees found themselves in "a hierarchical mode" that fostered an attitude that can be summarized as follows: "I don't do anything without my

manager telling me what I should do". According to the BigInsuranceOne consultant, this led to the following situation:

> All of a sudden they don't take any responsibility anymore, so even if you can have a manager who is very transparent, who lets go, who delegates uh there are people who say "no, no, no, it's not me, it's not up to me to do it". (BigInsuranceOne external consultant)

The HR manager of BigInsuranceOne makes a similar distinction when describing her first impressions in this company: "wow it's archaic, it's uh pencil pushing, it's very much like uh federal administration". According to her, "at BigInsuranceOne the big challenge is that from the eighties to today there is practically nothing that has changed". There are "files, mountains of paper and bulging closets everywhere") alongside a general reluctance and refusal to go digital: "they are super recalcitrant of the idea of doing differently".

Both the BigInsuranceOne HR manager and the BigInsuranceOne external consultant agree that the decision to implement NWOW was first and foremost informed by "rationalization" efforts. Accordingly, in the beginning, "all thought on cultural change, the change in the field, has been completely neglected" (HR manager of BigInsuranceOne). This "human aspect" was neglected and it was only after exerting HRM pressure on higher management that the choice for a more "humane" and "serene" cultural approach to the implementation NWOW was made. This implied a change in perspective. In the new cultural perspective, NWOW were no longer a goal in themselves, but merely a "lever" to install a new corporate culture. As the external consultant put it: "for me, NWOW is a lever for changing a culture or for encouraging a new culture I would say". Whereas most interviewees talked about culture being an aspect of NWOW, the BigInsuranceOne consultant associates NWOW first and foremost with "the side 'one lets go of private desks, uh, one practices clean desk all of the time, one has a more varied job offer'". For her, these are "the great principles of the new world of working". The question whether these "principles" or practices can be implemented is a different question altogether and cannot be answered without taking the "culture of the organization into account":

> That depends on the culture of the organization. One has to see what type of management they have in order to introduce that. If coworkers want to take responsibility and so on. That depends on the culture, well, on the maturity of an organization for doing that. That's why one can see enormous differences between different countries, and then there is also the budget of resources that one wants to invest eh, so that's very important nonetheless. (BigInsuranceOne external consultant)

It is at this cultural level that we once again see a similar articulation of values such as maturity, responsibility, trust, and a shift from management by presence to management by objectives. The BigInsuranceOne HR manager describes the presence-based culture as follows: "while here we are very much in this culture of uh 'I see my staff, my coworkers

who are all around me, so I see what they do, I see how much time they spend on the toilets, I see how many times they go for a smoke', and there one says to oneself 'my God, at a distance, how am I going to know if they are working?'".

The external NWOW consultant of BigInsuranceOne emphasizes the importance of well-being at work. This notion plays a central role in the transition to a new culture in this company. It serves the double objective of providing more comfort to employees while also adopting durable policies. At the same time there is nevertheless "an economic reality" demanding that available office space, maintenance and energy costs are to be reduced. The cultural component of NWOW and the stress put on the importance of a "humane" approach to restructuring the workplace serve as a way to align the interests of high management with those of employees at all levels of the organization. The HR manager of BigInsuranceOne, for instance, pleads for a transition that is at once "humane" and "serene" and that does not affect "productivity" negatively:

> If we would have let it start just like that it would have been a human catastrophe, it would have been a very bad experience for the majority of coworkers and potentially a source for a dip in productivity also because if people get lost they don't know how to proceed, so they work less as well. (HR manager of BigInsuranceOne)

There is of course a highly idealized dimension to a great deal of this discourse related to the cultural dimension of/in NWOW projects and interviewees demonstrate to be aware of this to varying degrees. The IT manager of BigInsuranceOne sees NWOW as a materialization of the type of company an organization wants to be.

As BigInsuranceOne implements NWOW department by department and floor by floor, this culture has not materialized everywhere to the same extent. On those floors where the "hard" material part of NWOW has been implemented already "you enter in a new world, you know, physically". Nevertheless, he too states that "the real stake" lies in changing the "soft" part, in management styles and cultural mentalities of coworkers, in the image of the company's ideal-typical culture. Once again this is a culture populated by the usual suspects: result-orientation, autonomy, flexibility, trust, transparency:

> Me, I think it is a very good thing because that actually materializes the real issue of the culture of an organization. Personally, I think that in there, there is a way of working together that represents who we are and who we want to become. That is, working together, being open, there are values behind this that I think are important for anyone who walks in this mode. Trust, well, yes, because if there is no trust how can one manage people at a distance, eh. (IT manager of BigInsuranceOne)

We are dealing with an almost ideal-typical rearticulation of classic NWOW discourse on trust, transparency and productivity. NWOW are welcomed because the associated values allow for a "positive circle" that not only leads to more trust and motivation but also to more productivity.

> I sincerely believe that this increases productivity but more importantly we succeed better at reaching our objectives because we are much more transparent, so we are much more proactive, so we avoid real problems. (...) So more and more we are not just transparent but more proactive, so we avoid problems, so more success, so more motivation. That's it and it's really a circle. When everyone is motivated, we are more transparent, well it's a positive circle. (IT manager of BigInsuranceOne)

This positive circle also has a negative equivalent whereby a lack of trust, transparency and result-orientation leads to less productivity and vice versa. The BigInsuranceOne IT manager identifies a positive shift from a culture marked by a negative circle of distrust and demotivation to a culture marked by a positive circle of trust and motivation installing the classic NWOW value system.

Organizations differ quite a lot in terms of where they are in the transition process. Whereas BigInsuranceOne was tackling the transition department by department when the interviews were conducted, MediumIndustry was already in the phase of dotting the i's. MediumIndustry was finishing an enormous organizational overhaul that included a move to a brand-new building specifically designed to facilitate new ways of working. The former MediumIndustry NWOW manager explicitly stated that "collaboration, efficiency, flexibility and feel-good" put together lead to situations in which "people are more happy and people work better". She also claims that these values are "translated physically in space". Nevertheless, even in an organization that went as far as MediumIndustry in adopting a holistic approach to NWOW, the implementation process is marked by inconsistencies. She explains that the "implementations" of the "pure NWOW doctrine" are "very variable". Whereas some departments have become very "flexible" in dealing with office space, applying the clean-desk principle as a matter of routine, workers in other departments leave "all of their stuff in place". This is not deemed to be too problematic though: "the essential thing is that people feel good and that there are dynamics per cluster that correspond to their needs". In one institution, some interviewees even complain about the *lack* of NWOW culture. For instance, an office worker of BigTransport (team member 2) explains how NWOW principles such as open spaces and clean desks have been put into place, facilitating spontaneous conversations among employees. At the same time, he complains that "the simple basic principles" of NWOW culture are not being practiced: "you don't go shouting in the middle of your colleagues, you can reserve a meeting room for instance like 'hey, head of services, can you come over to talk with me'… That has never happened", it is "not at all part of the culture". The communication manager of BigTransport explains this with reference to a high turnover at the management level:

> When we started with [the BigTransport NWOW project] we had bosses who were really very, uh, they pulled the project, supported the project and uh little by little they have disappeared, and now they have been replaced by other people who have never really lived the project in the spirit, all of that, and uh well it's more difficult. It's a bit of

> a pity because well this is a personal feeling but I think we are going a bit backwards, downhill, well uh there were these big ideas, philosophies, and vows, well… but I don't know perhaps they should re-read the vision text again, the basis, the real basis and relaunch it again a bit. (Communication manager of BigTransport)

For several interviewees transition problems can also be explained culturally. They talk about office workers experiencing "culture shocks". As an illustration, the IT manager of MediumIndustry explains that for some employees "it takes years to change culturally". For instance, many MediumIndustry employees keep on using their smartphones as phones only. Nevertheless, even though the use of technologies is framed as a cultural issue, the IT manager holds individuals responsible for the way they deal with availability and connectivity: "we don't manage it", "it manages itself". In order to avoid a situation where mobile technologies become a drug, "it is necessary that people learn to see a certain limit". Most of the culture shocks discussed by our interviewees pertain less to the use of technologies as such, than to the transition from presence-based to "trust"-based modes of managerial control.

Even though many interviewees recognize the fact that there is a cultural component to NWOW related organizational innovations, they evaluate the specifics of this cultural shift in different ways. At the same time, most interviewees are able to distinguish the main features of celebratory NWOW discourse. The extent to which managers and employees are able to challenge this discourse depends on the extent to which they are able to identify and challenge the logics constitutive of celebratory discourse structuring the NWOW dispositive. In order to describe the varieties of discourse about NWOW culture we will therefore identify the interpretative logics articulated by office workers.

A Neoliberal Logic at the Core of Celebratory NWOW Discourse

Our literature review already showed that managerial NWOW discourse often informs an organizational utopia where employees are incited to engage in an arguably neoliberal management of the self that serves the interests of the organization through a "happy" mobilization of employees (Hambye et. al., 2013). Signifiers such as "autonomy", "flexibility", "responsibility" and "result-orientation" are thereby articulated as values allowing for a government of employees at a distance.

Much of the celebratory NWOW discourse performed by our interviewees is indeed structured by a neoliberal managerial logic. This logic informs statements and practices that construe a subject who can be trusted to device optimal strategies for reaching objectives set by management and to auto-regulate themselves both within the company and at a distance, facilitated by trust-based managerial strategies and the use of information and communication technologies allowing for collaboration and surveillance at a distance. Usually this managerial logic is welcomed by office workers as it is seen to increase flexibility, producing a greater degree of freedom with respect the way organizational objectives are supposed to be met.

The neoliberal logic holds workers not only responsible for results, they are also held at least partially responsible for the way they organize their own practices. The associated celebration of "happy" values such as transparency, proactiveness and trust allows for a convergence of organizational interests with the interests of employees while simultaneously delegating much of the responsibility, monitoring and control to office workers themselves. Much of this can be observed in the discourse on the "positive circle" of NWOW discussed by BigInsuranceOne IT manager in the previous section or in statements that show that individuals are held responsible for setting limits on the way they use digital and mobile technologies for teleworking in their private time and private spaces.

Moreover, as the excerpt below shows, the neoliberal logic also seeps through in the way office workers are held accountable for the development of their own competences and careers. For instance, the HR manager of BigInsuranceOne stresses the importance of competences or values such as mental and organizational flexibility conceptualized as an ability to break with old habits. According to her, this ability is a key condition for people to become a "master" of one's own "career". After having stressed the importance of flexibility and a greater degree of adaptability in NWOW contexts, the HR manager continues as follows:

> For me it's uh it's also a capacity to take one's responsibilities so uh also at the level of the coworker, to retake ownership, so being responsible for the deliverable, and to not be in a context like "I am there from nine to five and I do what my boss tells me to do" anymore, but rather "I take initiatives as well and I become sort of the master of my own career". The same thing for the manager, it requires a responsabilization in terms of "I let go and uh I let go uh I give power to my coworker". For me, these are the main points one has to work on in order to be able to work here in this type of environment. (HR manager of BigInsuranceOne)

The notion of mastering one's own career, "to take up ownership" and "responsibility" with respect to "the deliverables" goes hand in hand with the demand for office workers to embrace agency and to take initiatives on their own. This process is conceptualized as a mode of empowerment enabled through a greater degree of trust on the part of management and/or coworkers. The above excerpt thus illustrates how governmentality enables the exercise of power "at a distance" through reflexive acts of self-monitoring and through the reflexive agency on the part of office workers usually conceptualized in terms of "trust" and "responsibility".

In its pure form the neoliberal logic discussed here holds individuals responsible for the management of their own self in function of the organizational goals of efficiency and productivity. Where the neoliberal managerial logic dominates instrumental rationality prevails. Values such as autonomy and flexibility thereby transfer responsibility for results to individual employees. This is not to say that autonomy and flexibility are the only values at play in discourse constructing NWOW culture. As we will see, many

interviewees also articulate values – such as participation, well-being and social contact – traditionally associated with more democratizing and humanizing managerial logics. Hence we do not claim that the neoliberal logic is the only logic at play in NWOW discourse or that this logic exclusively determines the subjectivities of all employees. Nevertheless, the neoliberal managerial logic structuring NWOW discourse is highly adaptable and can articulate signifiers from competing logics, instrumentalizing them in its own value hierarchy. This means that where neoliberal logics dominate, values such as "humanity", "solidarity" or "participation" pop up but tend to be subordinated to principles such as autonomy, flexibility and self-management in function of productivity-oriented goals, both in private and public organizations.

The neoliberal managerial logic plays a key role in the discursive construction of NWOW organizational culture, ideal-typical worker subjectivities and the way digital and collaborative distance work is usually conceptualized and organized. However, this does not mean that this logic is always accepted without question. It rather means that our interviewees usually acknowledge the existence of its main constituents no matter whether they support it or not. Neither does it mean that the neoliberal logics is more present in our corpus than the "alternative" logics. In fact, our analyses show that humanizing elements are at least as common in the discourse of our employees. However, the neoliberal logic does remain dominant in the sense that without its stress on self-management an NWOW discourse would be almost unthinkable.

Alternative Logics for NWOW Culture

The neoliberal value system and its underlying logic are rarely articulated in their most "pure" form in the discourse of our interviewees. Quite often other logics can be shown to be at play as well. These logics are "alternative" in the sense that they provide subjects with different ways to understand and assess the discursive practices constitutive of NWOW. Alternative logics are analytically distinct but can co-occur in the discourse of a single interviewee. In such cases, an informant's discourse is likely to be marked by contradictions and tensions informed by this articulation of different interpretive logics.

It is important to point out that the alternative logics discussed below can operate as a basis of critique but may just as well end up legitimizing the core neoliberal logic structuring NWOW discourse. Moreover, where interviewees are critical of NWOW discursive practices it remains to be seen what the exact object of critique is. As explained in our theoretical framework, it is possible to rely on these alternative logics in order to engage in a dominant-hegemonic "reading" of NWOW but also to engage in negotiated and oppositional forms of critique (see Hall, 1973; Hall, 2001). For example, an interviewee may rely on what we will call a humanizing logic in order to objectify and problematize the very *raison d'être* of the neoliberal logic of celebratory NWOW discourse (oppositional) but may also rely on such a logic in order to warn against potential excesses of NWOW (negotiated). Alternatively, (s)he might draw on a humanizing logic

in order to make sure that NWOW policies are carried out to the fullest by arguing that it is the *lack* of NWOW culture that causes problems (dominant-hegemonic). Yet in other cases the critique is targeted not so much at NWOW as a techno-managerial dispositive or *ensemble*, as at the way the transition to NWOW was communicated, or at the way employees were involved in this process (dominant-hegemonic).

In addition to (1) the neoliberal managerial logic identified above, we will identify (2) an expressive/consultative managerial logic, (3) a participatory managerial logic applied to the level of the team, (4) a pseudo-participatory logic operating across hierarchical levels, (5) an authoritative managerial logic, (6) a humanizing managerial logic, and (7) a managerial logic of qualitative public service. This being said, the neoliberal logic does remain the main point of reference for talking about new ways of working, for critics and adepts alike. Each of the following sections contains an illustrated description of the alternative logics and reflections on the way these logics do or do not inform particular modes of critique on the NWOW techno-managerial dispositive and its core neoliberal managerial logic.

The Democratic Aura of NWOW: Expressive/consultative, Participatory, Pseudo-participatory and Authoritative Managerial Logics

NWOW discourse is not structured through a neoliberal logic alone. The techno-managerial dispositive of NWOW is also constituted by logics that provide it with a democratic aura, valuing at least some degree of "participation" in the management of work. This idea of a more "participatory" management style has actually been concomitant with the development of Human Resources Management as a new way of structuring communicative control in organizations since the sixties. Participatory management can be traced back to Likert's *New Patterns of Management* (1961). In this work, Likert stressed the importance of participation as a structuring principle for organizational life by advocating employee involvement in organizational decision making and goal setting (see Mumby 2013, pp. 100-101). The HRM approach is also known for considering the meaning given to work by employees to be an important motivational factor. Moreover, in HRM there is a stress on the importance of informal and horizontal modes of communication and decision-making processes (Mumby, 2013, pp. 100-103).

While the rhetoric of "participatory management" is constitutive of NWOW discourse (Ajzen et al., 2015), it should be noted that there remains a significant tension between the NWOW promise of a democratization of office work and the instrumental rationality and functionalism that often motivates the implementation of NWOW policies in the first place. Ajzen, Dozin and Taskin (2015) ask themselves the following question:

> (...) in the specific case of these NWOW, it is the instrumental rationality, the logic of the tool, that empties this innovation of its social significance. If management is nothing

> but an instrument, how can we expect to change a company and its governance from within? (Ajzen et al. 2015, p. 139, translated from French)

The tension between the democratic promise of official NWOW rhetoric and the functional instrumentalization of NWOW related practices for organizational purposes becomes clear when we analyze the ways in which our interviewees make sense of NWOW's democratic potential. Moreover, so-called participatory management in itself does not mean that NWOW practices and policies necessarily constitute a democratizing force in organizations. In order to make this point, we will identify and discuss two interpretive logics that provide NWOW with a democratic aura: an expressive/consultative logic on the one hand, and a more democratic participatory logic operating at the level of team management on the other hand. In addition, several interviewees criticized a pseudo-participatory logic with which NWOW were introduced. In such cases interviewees did not oppose NWOW as such but rather the fact that management does not practice the participatory ideals it preaches when transitioning to an organizational culture of NWOW. Several interviewees problematized the associated pseudo-participatory logic and its rather superficial democratic aura. At the same time, we were also able to identify an authoritative logic that allows informants to argue for a more top-down and arguably non-democratic mode of management as a necessity for a successful transition to NWOW culture.

When people talk about NWOW, the same managerial strategies and decisions can either be legitimized through an authoritative logic that advocates leadership and at least some degree of hierarchy, or they can be be problematized as examples of a pseudo-participatory logic that reduces the signifier participation to a mere rhetorical and autocratic device for reaching the goals set by management.

In order to distinguish between these logics it is important not to take the notion of participation at face value. Carpentier (2011) warns us not to conflate the concept of participation with the concepts of access and/or interaction. He discusses the notion of participation in the context of debates about participatory media but his insights are relevant for our discussion of the NWOW dispositive as well. Carpentier points out that a truly democratic form of participation implies a "process where the actors involved in decision-making processes are positioned towards each other through power relationships that are (to an extent) egalitarian" (Carpentier, 2011, p. 31) – whatever the sphere of decision-making is. He argues that democratic participatory processes do not imply a complete evaporation of hierarchies and inequalities but do imply a move towards more balanced power relationships in decision-making processes. From a critical perspective, it is therefore important not to conflate participation with access and/or interaction, as this would contribute to depoliticizing "participation", turning it into – and legitimizing it as – mere *presence* (access) or s*ocio-communicative relationships* (interaction). While the signifier "participation" can mean virtually anything in most of the participatory management discourse, we will take Carpentier's point seriously in our analysis of the interpretive logics structuring NWOW discourse.

The first interpretive logic providing NWOW discourse with a democratic aura is actually in line with the conceptualization of "participation" as mere socio-communicative relationships. We call it an expressive/consultative managerial logic. Several interviewees testified to managerial efforts to ask employees about their wishes, fears, concerns and experiences related to NWOW before, during and/or after the transition process. Many also stressed the importance of listening to and consulting with office workers in the transition to and evaluation of NWOW. At the same time, there is considerable ambiguity with respect to the extent to which self-expressions of employees and consultation processes were seen to inform democratic decision-making in organizations. We have to keep in mind Carpentier's lesson that participation – understood in terms of a democratized decision-making process – cannot be reduced to expressive and consultative practices alone.

The second logic infusing NWOW discourse with a democratic aura is a team-oriented participatory logic. The main feature of this logic is that it legitimizes the agency of team members in co-deciding how they organize their work in concertation with their team leaders. This participatory team-oriented logic often works in tandem with the expressive/consultative logic but it is different in that it allows employees to have an actual say in multiple aspects of work organization at the team level. At the same time, we should notice that this participatory logic almost never applies to decisions made at higher levels in the organizational hierarchy.

As noted above, the participatory team-oriented managerial logic has a history that precedes the development of NWOW discourse. Moreover, the participatory team-oriented logic can work in tandem with other logics. All this can be observed in an interview conducted with a team leader of BigTransport who explicitly describes himself as a leader practicing "participatory management": "I really try to install a participatory management". Even though he considers this management style to be highly compatible with NWOW, participatory management remains his guiding concept: "I would say that the new ways of working find themselves a bit in the same logic, in the same philosophy to put it more precisely". For him the ultimate goal of participatory management is a "humane management" that – as in celebratory NWOW discourse – is strongly focused on values such as autonomy and trust. For him, participatory management is based on an egalitarian and democratic take on work whereby people are treated as intelligent adults: "I start from the principle that there is as much intelligence in the heads of my team as there is in mine". Moreover, "I involve the entire team in more or less all of the decisions that I take", except for decisions on new recruitments. Participatory management is also considered to be humane because it stimulates people to express feelings and to engage in discussions on shared values and expectations meant to stimulate trust. Put differently, participation is about making collective decisions on the daily functioning of the team but also about discussing shared values and expressing feelings. The team-oriented participatory logic is usually articulated with the expressive logic described above, which is made possible because of the (empty) signifier "participation" that can mean both

things at the same time (Carpentier, 2011), but also with a humanizing logic that instills NWOW discourse with values such as well-being and self-fulfilment. We can summarize the resulting model of participatory management as follows: in order to be autonomous one needs trust; in order to trust one requires participation; participation combined with responsibility lead to more autonomy understood as a capacity for self-development. For the BigTransport team leader, the shift towards trust is where NWOW and participatory management converge: "there is kind of the same philosophy behind it, in the sense that teleworking presupposes a loss of control on the part of the hierarchy and an increase in trust, so one has to be trusting".

As the rather open attitude of BigTransport team leader with respect to NWWO discourse demonstrates, the expressive/consultative and/or team-oriented participatory logics as articulated in so-called "participatory management" are not necessarily antagonistic to the neoliberal managerial logic described above. In his personal value system, "being humane" is the main value infusing work with meaning but there is nothing in his discourse that poses an antagonistic threat to the neoliberal logic constitutive of celebratory NWOW discourse. Moreover, when interpreted in terms of mere expression and/or consultation, the stress on involvement and more horizontal modes of organization in "participatory management" discourse can be used to support the primary goals of increased efficiency and productivity rather than a fuller realization of human values by doing meaningful work. At the same time, an integration of the expressive/consultative and/or team-oriented participatory logics on the one hand, and the neoliberal logic on the other hand, can mitigate the radicalness of neoliberal modes of organization and responsibilization.

Do the expressive/consultative and participatory team-oriented managerial logics simply reinforce the neoliberal dogma or do they provide a potential basis for critique and even contestation? As far as our interview data are concerned, we would say that the logics of so-called "participatory management" tend to work in tandem with the neoliberal logic. In this sense, it is interesting to return to the question how the BigTransport team leader thinks about the impact of NWOW related digitization processes on the value of responsibility. He explains how new modes of communication go hand in hand with a higher involvement of employees in the worries of work: "I think one has to be more involved in the worries of work, and make them a bit worries of your own". In spite of its progressive and democratic appeal, this understanding of "participation" is completely in line with the idea that "participatory management" operates through subtle communicative practices that align and subordinate employee interests with overall organizational goals.

When dissociated from actual decision making processes taking place at higher levels of organizational hierarchy than the team, the open discussion of feelings, emotions and experiences in relatively horizontal power structures can be interpreted as a mere therapeutic venting of feelings that has little to do with a political empowerment of employees at higher levels of decision-making within the organization. From that point

of view, the team-oriented participatory logic does not provide a solid basis for an oppositional decoding of neoliberal NWOW discourse. It rather provides the basis for a "constructive" type of critique with respect to NWOW policies that usually operates in tandem with the neoliberal logic in stressing the importance of autonomy and (self-) government for office workers doing distance work. It may also offer space for a negotiated reading of celebratory discourse as it stresses the importance of social contacts at the team level. As such it may be used as a basis for legitimating concern over individualizing effects of NWOW, as we will see in our analysis of the humanizing logic.

A third interpretive logic to be mentioned in our discussion of the democratic aura of NWOW is of a pseudo-participatory kind. Among the organizations studied we did not find examples of organizations that implemented a participatory logic across all levels of the organizational hierarchy. Moreover, some critics of NWOW-related discursive practices and policies explicitly dissociated between the expressive/consultative claims and practices articulated by the management on the one hand, and an actual participation in decision-making processes beyond the team level on the other hand. Interestingly, we find two types of stances with respect to the role of autocratic decisions and leadership in the transition to NWOW culture. On the one hand, we find people who reflexively *problematized* definitions that reduce "participation" to a mere expression and/or consultation of employees about the implementation of NWOW. Such interviewees pointed at contradictions between the democratic participatory promise of NWOW and the limited decision-making power employees enjoy in office work environments transitioning to and practicing NWOW. This pseudo-participatory logic can be exemplified with a reference to a unionist who complains about a management engaging in a politics of the fait accompli and acting like a "bulldozer" when organizing the shift to NWOW. Interestingly, this union leader is not so much opposed to NWOW itself as he is to the fact that consultation often serves as window dressing for a rather unidirectional decision-making process. He criticizes one of the main managers pushing for the shift to NWOW as follows:

> He pushes a bit like a bulldozer, that's to say, he gives the impression to consult with us but he does not really consult. He asks questions, he gives information but… but he has his goal and he knows where he's headed. (Unions 1 of BigHealth)

As pointed out above, Taskin and co-authors highlight that there is indeed often a mismatch between the horizontalist conceptualization of NWOW culture and the way this culture and its practices are implemented (Taskin et al., 2017, pp. 73-74). Nevertheless, even those who do identify and problematize the elements constitutive of a pseudo-participatory logic in the transition to NWOW culture did not call the *raison d'être* of NWOW into question. For instance, the abovementioned unionist critical of pseudo-participation stated that his public service department is known for being "*une emmerdeuse constructive*" (a constructive troublemaker). According to him, the people working there "make claims, don't agree, contest", but do so in function

of the organizational goals. He states that, "we think" and "propose solutions" without being "destructive". Put differently, even those who objectify and criticize a pseudo-participatory logic in the way NWOW are implemented tend to restrict their critique to a form of dominant-hegemonic decoding that leaves the core neoliberal logic intact. This sort of critique does not address the logics constitutive of celebratory NWOW as such but rather the way and the extent to which these logics are applied.

Not everyone is negative about autocratic managerial decisions and strategies in the transition process to an NWOW culture. A few interviewees argued *in favor* of reducing "participation" to a matter of mere expression and consultation because of a perceived need for leadership by example and some degree of authoritative decision-making. Such people can be said to actually embrace pseudo-participation through what we will call an authoritative logic that positively reduces participation to a matter of limited consultation and expression. Usually this can be explained with reference to the fact that people supporting policies and practices informed by such an authoritative logic tend to occupy managerial positions that include a degree of responsibility for the successful implementation of the NWOW dispositive. The associated discourse tends to stress the necessity of at least a minimal degree of hierarchy and leadership. It should be noticed that those who rely on this logic in order to legitimate hierarchical decision-making are not necessarily opposed to celebratory NWOW discourse but they do tend to take a more skeptical (or negotiated, as Hall would say) stance with respect to the NWOW stress on the importance of horizontal power structures at all times.

As an example of someone embracing this authoritative logic we can refer to the NWOW manager of MediumIndustry who explained how prior to the move to the new building employees were consulted about their wishes for the new workplace. At the same time, the MediumIndustry NWOW manager acknowledges that resistance to digitalization and the associated cultural overhaul did exist. Like many other employees, he stressed the importance of leading by example in the transition to NWOW. Where some people resisted digitalization saying that "this thing is stupid, it's not at all in line with our culture", he laughs this stance away. He pointed out that one has to rub the message in softly but that at some time an authoritative decision needs to be taken: "one has to rub it in intelligently during a while and then at a certain moment one has to stop rubbing and one has to say 'listen, we have talked enough, now the pool is there, we jump'". Put differently, at some point the CEO had to say "I do it, I don't care how but you do it as well". What these statements show is that consultation over the modalities of implementing the NWOW process are not the same as involving employees in the actual decision to switch to a culture of NWOW. The point is that this lack of decision-making power on the part of employees does not constitute a problem at all for this interviewee. In the same interview, he also points out that there was a strong strategic motivation behind the decision to create a network for consulting and communicating with selected employees about the NWOW transition. This network of "NWOW links" was not only meant to facilitate communication between management and workers,

but also to stimulate the latter to "appropriate the NWOW transition process": "one needs an appropriation uh and it is in these exchanges with the NWOW links that one notices these objections or very concrete reactions". For this interviewee the point of the consultation process is to deal with such "objections" and "reactions" pre-emptively and to safeguard the transition itself.

A Humanizing Managerial Logic

Many interviewees stressed the value of a humanizing approach to work in general and to NWOW in particular. NWOW related discourse frequently draws on a humanizing logic constitutive of a holistic view of human subjectivity that values non-economic dimensions of social life. To the extent that this humanizing logic operates as a managerial logic, it informs a work-related discourse that stresses the importance of social, psychological and/or physical well-being at work. In its undiluted form, the humanizing logic places different forms of well-being at the top of the organizational value hierarchy prioritizing non-economic dimensions of social life in organizational environments.

In principle this humanizing logic could provide a basis for a radical oppositional critique of NWOW. However, this never happened in the data under investigation. As we will see, it rather forms the basis for a mode of critique that problematizes and counters avoidable side-effects of the introduction of new ways of working. In this sense, the humanizing logic rarely undermines celebratory NWOW discourse. It is usually deployed as a basis for a form of critique based on a negotiated decoding that provides arguments for making exceptions or mitigations to the application of the neoliberal logic in the implementation of the orthodox NWOW techno-managerial dispositive.

Moreover, by stressing the supposedly positive impact of NWOW on human well-being within and outside of work contexts, it contributes to the discursive arsenal for those who seek to justify the introduction of NWOW. Like the expressive/consultative and team-oriented participatory logics discussed above, the humanizing logic even contains many elements that end up reinforcing the neoliberal logic of the NWOW agenda. Below, we will therefore focus, on the one hand, on the way this humanizing logic justifies the introduction of NWOW, thereby contributing to the celebratory NWOW discourse, and, on the other hand, on how it may form a basis for criticizing the perverse effects of NWOW on different aspects of human well-being.

Certain interviewees value the impact of NWOW on human well-being positively. In such cases, the humanizing logic provides a basis for embracing the neoliberal logic of NWOW discourse as it stresses multiple benefits to autonomy, flexibility and trust. When this happens the "alternative" humanizing logic ends up supporting a decoding of NWOW discourse along dominant-hegemonic lines. For instance, team member 1 of BigTransport explicitly states that he is "rather satisfied" with the way NWOW have been implemented and impact on his well-being. He states that the new "flexibility" in terms of working hours leads to less stress: "one is less stressed and one has more time,

sometimes to devote at a task". He points out that the possibility of completing tasks at home combined with the ability to leave earlier for family related purposes allows him to produce more qualitative work: "So, for me it's perhaps positive, positive at the level of quality". Moreover, "it is clear that at the level of the organization of one's work-life balance, and at the level of commuting as well, this is very very positive". Team member 1 of BigTransport experiences the increased flexibility in terms of time management and teleworking as having contributed to a better balance between work and private life, even though this means that he does work at home from time to time. The material NWOW infrastructure at the level of "bricks" is also evaluated positively. The fact that there is more light and nice furniture as well as the fact that there is more interaction between colleagues are interpreted as contributing to his overall sense of well-being. The only drawback of NWOW mentioned by this interviewee is the increase in noise but he does not consider this to be "extremely worrisome" either since it is possible to isolate oneself if necessary. Team member 1 does not problematize NWOW and actually values them because of their positive effects on well-being. He does notice that there are some behavioral issues in the sense that "it's true that there are places where things are perhaps too lively" and where there may be a lack of *savoir-être* and "discipline". Nevertheless, there is clearly a humanizing managerial logic informing his positive evaluation of the effect NWOW have on his personal life as this new culture allows for a higher degree of self-management *and* well-being.

Several interviewees go as far as to place the concern with well-being on a par with other drivers for implementing NWOW. For instance, the former NWOW manager of MediumIndustry claims that cutting expenses was not *the* main driver for implementing NWOW. He claims that the idea was rather "to dynamize, to do something cool, to mobilize people around something better, so that people would feel better". This interviewee puts well-being at the same level in his value hierarchy as economic and functional motivations informing the decision to switch to a NWOW culture. The fact that this manager celebrates the NWOW dispositive because of its contribution to well-being shows us that a humanizing logic does not necessarily end up as a basis for criticizing celebratory NWOW discourse and the associated neoliberal logic. It may as well inform an experience of NWOW along celebratory dominant-hegemonic lines.

Even employees who recognize that NWOW environments based on principles of flexibility and horizontalism may not work for all office workers tend to emphasize that these principles do impact positively on their personal well-being. For instance, team member 1 of MediumIT enjoys the sense of responsibility that comes with the degree of autonomy in decision-making given to him at the team level. Outside the workplace, he stresses that this type of autonomy combined with a flexibility in terms of working hours and the ability to apply for holidays on short notice impact positively on his family life. This being said there is a major condition he articulates for NWOW to have a positive impact on well-being: one needs to have the ability to adapt oneself to open space environments. This includes a whole series of capacities such as the ability to concentrate,

to filter out noise, to focus and disconnect psychologically without letting this impact on one's efficiency. Nevertheless, he believes the advantages of open space environments and the type of collaboration and communication that come with NWOW outweigh any negative effects that issues such as increased noise might have on the well-being of employees. Because of the abovementioned caveats for a successful implementation of NWOW we are dealing with a negotiated reading of celebratory NWOW discourse. As such, the humanizing and neoliberal logics end up supporting and reinforcing each other.

Not all interviewees are equally enthusiastic about the effects of NWOW on physical, psychological or social well-being though. Many office workers express reservations with respect to at least some of the effects of NWOW. In such cases, interviewees can often be shown to draw on a humanizing managerial logic in order to problematize real or potential perverse effects of NWOW on the way people live their lives. In principle the humanizing logic could trump the value hierarchy of the neoliberal logic structuring much of NWOW discourse, thereby providing the basis of an oppositional critique of NWOW's neoliberal orientation. Nevertheless, this never happened in our interviews. NWOW policies and discursive practices themselves are not called into question. What is being problematized is a series of undesired but avoidable and manageable problems linked to the implementation of the NWOW techno-managerial dispositive. In order to make this point, it is useful to take a closer look at the way office workers problematize potentially negative effects of NWOW on physical, psychological and social well-being.

Let us start with the perceived perverse effects of NWOW on the physical well-being of office workers. For instance, team member 2 of BigTransport describes three types of NWOW related discomfort: auditory, ergonomic and visual obstacles to well-being. At the auditory level he mentions noise-related issues commonly mentioned by many other interviewees as well. Noise results from the more informal interaction patterns in the new open space environment practiced by office workers who have not adapted to the new office culture by taking their extended conversations elsewhere. Also linked to the open office environment is the issue of team member 2's sensitivity to light and the problems caused by the brightened open office desk environment. In the consultation process preceding the final choice of office furniture for the new NWOW environment, he was promised desks with separations that would block some of the light for his sensitive eyes. In the end no such desks were ordered. Moreover, having adopted preventive measures against desk injuries by making use of an ergonomic support for his laptop, he complains about the inflexible clean-desk policy that forces him to mount and dismount this device every day. He refuses to compromise on this issue. All of these discomforts impact on team member 2's personal well-being. Even though the other interviewees did not articulate any similar concerns with light sensitivity or ergonomy, the noise-related complaints are widely shared. But what is perhaps more relevant for our current discussion is the fact that the team member 2's stress on physical well-being legitimates some micro-resistances to NWOW: because of the light issue his colleagues allow him

to return to the same desk in the back of the office room every day – partially ignoring the flexdesk principle that has been put into place. Moreover, his refusal to give up on preventive ergonomic measures informs a daily routine of mounting and dismounting his laptop support, no matter the work pressure at any given point in time. He proceeds to express his general attitude with respect to NWOW:

> Either one accepts the game or one doesn't, I have accepted it but … I fight a bit. And now I really fight, well, it's kind of my personal rebellion. No, I don't want a system that forces me to abandon this thing. (Team member 2 of BigTransport)

By relying on a humanizing logic that values well-being team member 2 of BigTransport is able to legitimize his micro-resistance against some of the perverse effects of NWOW on his physical well-being without calling the overall system into question. This explains his more or less reluctant acceptance of the NWOW environment. We are dealing here with a case of negotiated decoding of NWOW based on a humanizing logic.

Closely associated with physical well-being but perhaps more accurately labeled a psycho-physical phenomenon is stress. Even though all of the abovementioned sources of irritation can be sources of stress for employees, most of the office workers we interviewed discuss stress as a result of the increased availability and flexibility facilitated by NWOW teleworking tools. For instance, the IT manager of BigHealth explains that such technologies carry with them "the fact of always being able to work" – a perverse effect of NWOW that can be countered by an explicit recognition of the right not to work in the evening and/or during weekends. The IT manager of BigHealth explicitly underscores the importance of a humanizing mode of subjectivity in his discussion of the way one should manage one's relationship with teleworking tools: "at our place we are not robots yet, perhaps this will come later but right now we are still human beings". Relying on a humanizing logic, the IT manager explicitly recognized that teleworking might cause stress. He points out that there is a discrepancy between asynchronous tools such as email and the expectations projected upon human beings in teleworking contexts within some teams: "Mails, Skype For Business and so on, the thing is that these are tools that are asynchronous but one expects the human being to react in a synchronous way". Consequently, such tools often end up dictating the work rhythm of people.

> And so, it's the exterior that decides for you how or when to react, but, well, me, I try always to argue by saying "look, close this down and take a look three times per day", because if not, there is always something that's there in the back of your head. (IT manager of BigHealth)

The IT manager does not claim that these issues are ignored within his organization. He points out that such issues are addressed in sensibilization campaigns and in seminars focusing on topics such as "the right not to respond during the weekend or the night". Ultimately it is up to individuals to regulate their own ICT use though. The same attitude can be observed in the discourse of the IT manager of MediumIndustry. He recognizes

that there are some legitimate issues linked to matters of increased connectivity and availability in NWOW environments, but here too, the way people deal with digital work-related intrusions in the private sphere is framed as a matter of self-regulation and "personality". As such we end up once again with a usage of the humanizing logic that works very well in sync with the neoliberal logic constitutive of celebratory NWOW discourse:

> So there is this kind of intrusion but that, uh, one is not obliged to respond, you know. But see, that's a question of personality, of telling oneself, uh, "it's me who draws the line, I can also choose to activate *do not disturb*". But there is this perverse effect, if I activate *do not disturb* the entire day, every day, there is a problem as well. (IT manager of MediumIndustry)

As such, we can see clearly how even the humanizing logic is not necessarily incompatible with the neoliberal managerial logic we discussed before. In the excerpt above humanizing and neoliberal logics of office work connect. Again, the humanizing logic forms the basis for a negotiated decoding of classic NWOW discourse and not for an oppositional stance towards the neoliberal logic structuring the NWOW techno-managerial dispositive.

This being said, the HR manager of MediumIndustry draws on a humanizing logic recognizing the fact that "hyperconnectivity" can be a problem. She points out that the organization has put stress-preventing programs into place and explicitly states that people have the right to disconnect. For her, the problem of hyperconnectivity is intimately tied to the issue of finding a work-life balance. The example of the HR manager shows that the responsibility for countering perverse effects of NWOW practices does not necessarily need to be placed on the shoulders of individual employees alone. Drawing on a humanizing logic that values well-being she states that managers need to learn to respect the private time of employees. As such, this HR manager interestingly articulates an oppositional critique to the neoliberal idea that it is ultimately the individual who is responsible for his or her relation to work.

Not only technologies can lead to increased work-related stress. The same goes for organizational innovations such as the introduction of more horizontal forms of management. Several office workers focused on the way such organizational reforms can have a negative impact on interpersonal relationships in the private sphere. For instance, the team leader of MediumIT provides a personal account of the way increased flexibility impacts on his private life. He embraces the trust-based management style that comes with NWOW. He also values "autonomy" understood as the capacity of not remaining "attentive in the face of a difficulty". Flexibility, increased social contact and related values are positively valued by this office worker. However, we also see a critique linked to the fuzzy distribution of responsibilities in the relatively horizontal organizational structure at MediumIT. He explains how "certain kinds of vagueness at the level of responsibilities" often lead to unreasonable demands from management: "I have

the impression of being permanently overburdened because of this since many years". Among the positive points of teleworking he counts the fact that he does not have a boss continually asking him what he is doing: "I would say I have my freedom which is a very positive factor". He especially values "the feeling of being trusted". On the negative side, he problematizes the way objectives are set in the organization: "the objectives they give us are not determined in consultation with us and so we find ourselves having to accomplish unrealistic tasks in certain circumstances". Moreover, because the autonomy he is given implies relatively ill-defined responsibilities, he has no real way to "hide" from such demands. All of this often leads to situations where "we work hours in the weekend" even though this is mentioned nowhere in the contract. His personal way of dealing with excessive work pressure is to dissociate himself from his emotions. This often impacts on his relationship with his girlfriend:

> Everyone deals with the pressure differently, I would say. I cut myself off emotionally and I get more tetchy, and so, when I see my girlfriend in the weekend, when I am more tetchy and emotionally cut off, and even if I know it is not her fault, this is kind of difficult, because she notices that I am not in a good mood so to say, and sometimes, I explode all of a sudden over tiny things, and I even know it myself. And all I can tell her is "it has nothing to do with you" and that I am in a bad mood and that I am more sensitive and uh, I apologize, but in the long run this is not possible because I want to spend quality time with her and she should not be subjected to, I would say, how to put it, ideally I would like to compartmentalize as much as possible, to say like "if I'm not good at my work, I put this aside when I'm with her, I am there for her, and everything goes well", you know. But I also want that, well, another benefit is that everything goes well in the other direction as well. If I have a good time with family and friends, well, I arrive in a better mood at work, that's for sure. (Team leader of MediumIT)

As the excerpt above shows, human well-being is among other things a social matter. Also, we can see that a lack of radical participation at levels higher than that of the team links up with the humanizing logic as it threatens the value of well-being.

One other social issue that was frequently discussed in the interviews was the potentially negative effect of teleworking on social life and social isolation more specifically. Even though some interviewees recognize the risk of social isolation in environments that allow for total freedom in terms of the amount of time people can spend working at home, none of our interviewees admitted having experienced feelings of social isolation oneself. It could be the case that our interviewees simply provided socially desirable answers trying to save face. However, it should also be noticed that all companies investigated put limits on the amount of teleworking allowed. Also, most teams investigated in this project have put procedures in place to make sure that all team members are physically co-present at the workplace on a regular basis. Moreover, where teleworking is practiced regularly, some office workers chose not to make use of this possibility because of their need for social contact.

The humanizing logic provides a powerful legitimation for employees who problematize the perverse effects NWOW have on social well-being as it constructs face-to-face interaction and group membership as a basic human need. It is a potentially powerful basis of critique. At the same time, it should be noted that the negative consequences of NWOW on social life are almost always considered in terms of avoidable excesses. Quite often, office workers claim that such issues can be avoided by more self-discipline. Thus the neoliberal logic structuring much NWOW discourse is again left largely intact. Similarly, even though Unions 1 of BigHealth criticizes the "pseudo-listening" and the pseudo-consultative logic deployed by management in the transition process to NWOW in general, he does not challenge NWOW as such. He too accepts and values the trust-based culture while arguing for a "humane" approach to "flexibility", providing a clear example of the way a humanizing logic can mitigate the excesses of a purely neoliberal application of NWOW policies. Commenting on the depersonalized office spaces that come with the empty desk principle, he states the following: "Me, I think we lose the human side in this kind of arrangement, because people like feeling at home". Unions 1 argues for a humane approach to flexibilization that takes certain potentially perverse effects of NWOW on social life at work into account. According to him, management attempts to "make the workplace as flexible as possible" by introducing teleworking and other measures. Teleworking can be valued by those who need a certain measure of isolation in order to concentrate. However, he also adds that "what one obviously does not mention is all the side effects such as de-socialization, lack of contact with colleagues". For Unions 1, a humane approach to flexibility that avoids social isolation and allows for a personalization of office spaces is key to an acceptable implementation of NWOW principles.

The potentially negative socio-psychological impact of teleworking is also addressed by the other unionist interviewed at BigHealth. He specifically problematizes the risk of "anonymization" that comes with distance work and dynamic office principles where people no longer have their own desks. He believes such managerial policies may give people the feeling of being replaceable and/or exchangeable. Note that negative experiences with NWOW on social life tend to be attributed to third persons. For instance, none of our interviewees claimed to have experienced feelings of social isolation or anxiety over the possibilities of technological surveillance themselves. This being said, being more radically negative in relation to the open-space principle, Unions 2 of BigHealth states that "in general, the public sector makes the same stupid mistakes as the private sector with six years of delay". He associates spaces where such principles have been implemented with the totalitarian environment depicted in the film *Brazil*: "it's a bit totalitarian". Here, we may be seeing the beginnings of a more oppositional form of critique but in the end this interviewee does not challenge the legitimacy of the overall NWOW framework either.

It may be useful to summarize some of the basic features of the humanizing managerial logic. The humanizing logic provides a basis for critiques that problematize real and/or

potential risks that come with the introduction of NWOW practices structured through the technological rationality of flexibility and efficiency that is an inherent part of the neoliberal logic discussed above. As such, it provides a basis for micro-resistances to what are to be considered excesses or perverse effects of NWOW. Moreover, the humanizing logic provides a legitimation for those employees who seek to safeguard a barrier between the world of work and their private spheres of activity. In a humane managerial logic a partial non-alignment between company values and objectives and the employee's value system is legitimated. As such it provides a good basis for negotiated decodings of celebratory NWOW discourse and its core neoliberal logic. At the same time, we found no example of office workers who relied on this humanizing logic in order to challenge the *raison d'être* of the neoliberal logic structuring the rationale for introducing NWOW. To the extent that a more humanizing managerial logic informs NWOW critical statements, we are dealing with a discourse that problematizes an unrestrained reorganization of the way a neoliberal logic restructures the organization of office work in time and space without calling the *raison d'être* of NWOW into question.

A Managerial Logic of Qualitative Public Service

The managerial logic of qualitative public service is not inherently linked to the concept of NWOW. However, its articulation in a concrete individual's discourse can problematize elements of celebratory dominant-hegemonic NWOW discourse. It is useful to recall that NWOW discourse opposes the "new" world of work to an "old" administrative culture of top-down control and Taylor-like modes of bureaucratic organization. At the same time, the different logics identified so far are found in the discourse of interviewees working in both private and public organizations. The logic of public service discussed here is only found in some of the interviews conducted with office workers active in public organizations but it is highly significant considering the many NWOW claims of superiority *vis-à-vis* administrative culture.

The logic of qualitative public service shows that it is possible to think outside of the "bits, bricks and behavior" paradigm when conceptualizing office work. Within this logic, delivering qualitative public service is placed on the top of the value hierarchy structuring discourse of office work. This valuation goes hand in hand with a valuation of "citizens" over "clients" or "users". The public servant is expected to respect citizens who have a right to qualitative public service. Citizens are thereby distinguished from clients in that a client buys this service but cannot lay claim to it. The logic of public service can most clearly be distinguished in the discourse of team member 2 working at BigTransport.

Team member 2 claims that he is "lucky enough" to be "part of a team" that comes to work "in order to service the public and out of a love for the subject matter and public service" in general. For him, the "mode of working", the "bricks" or the technologies used, do not fundamentally change the way public servants relate to the citizens they are supposed to serve. He considers that the outdated image of contemporary public services is first and foremost linked to a more general problem of work ethics. When

faced with the fact that other interviewees see NWOW as a way to "dust off" public administration, he embarks on a discourse countering the presuppositions embedded in such a statement:

> (...) the image problem of administration is not a consequence of civil servants and their work environment, because that has already been dusted off. The people who come here, "wow, this is perfect, it's modern". (Team member 2 of BigTransport)

According to team member 2, neither the work environment nor the technologies deployed explain the continuing image problems of public administration. According to him, the real problem resides in the way public servants deal with those they are meant to serve: "one basic thing that is needed, is that if you are there to work, you are there to work well". In order to deal with the "dysfunction" that lies at the basis of the dusty image of public administration, team member 2 suggests that one has to answer the question "does one take the time to give the citizen the time he deserves or not". For instance:

> No, dusting off the image of the administration, that is for instance: one calls a service that is not the right service. This service either does or does not look into what the right service actually is. It's, for instance, I get a person on the phone: "ah, mister, you are the seventh person that I get on the phone, that makes for a call of one hour and a half, I hope that you can help me". That's the difference between saying "I will try" and to tell him "no, mister, I cannot help you but I will make an inquiry about the right service", and "I will send you back to the reception". This is service to the citizen. Serving the citizen, that is, if one replies to an email, making the effort to read his question, to reply to his question, to understand that the question he is asking is not the real question, and to reply to the real question, the one that he has not even asked because he does not know the content matter. That is service to the citizen. It is not "I have replied to your question", to await his response saying that "I don't understand, this is not what I wanted to know" and to tell him "but this was the question you asked". Mocking the citizen, no, that's not serving the citizen. (Team member 2 of BigTransport)

This valuation of public service also translates in an oppositional critique directed at an arguably neoliberal hegemonic managerial discourse that has constructed the receivers of public service as "clients" rather than "citizens". There is even a "humanizing" component linked to this valuation of citizenship and public service since the main function of a public servant is to provide help to others: "this starts by being human". According to team member 2, providing quality public service does not begin "as a worker" but "as being human" since the main function of public service is "to be there" in order "to help" others:

> If one is there in order to help someone, does one help that person or not? A public administration is there in order to help people. Be it by making good rules, be it by helping people to understand the rules, be it by giving the citizen something he is entitled to because of these rules. (Team member 2 of BigTransport)

Interestingly, team member 2 points out that one has to realize that "perhaps all of the Belgian administrations call citizens clients":

> When there are meetings, "the client has to be satisfied". I fight against this since the beginning in order to say "no, it's not clients, it's citizens". There is a difference: a client is someone who buys. Yet we are supposed to produce a service, and this service has to be of good quality. Already when one talks about clients, it shocks me. This is just to say that this drips down from the highest level, eh, "clients"! No, they are not clients. From the moment that you consider a citizen to be a client, it's messed up. It's messed up. (Team member 2 of BigTransport)

According to team member 2, the treatment of citizens as if they were mere clients is the opposite of a discourse that stimulates respect for the former's right to quality help, the reason being that in a client-centered logic the citizen becomes someone who buys help rather than having an inalienable right to it.

As we wrote before, the logic of qualitative public service is not inherently linked to NWOW discourse. We already saw that the work environment and the technologies used for generating a new way of working are considered to be of little importance here. At the same time, the public service logic is rather incompatible with some of the managerial principles articulated within hegemonic NWOW discourse. This becomes clear when team member 2 discusses one of the main managerial techniques of the NWOW managerial dispositive: the stimulation of productivity via a quantified management by objectives.

Team member 2 considers the discourse on management by objectives to originate in the private sector and labels its un-reflexive application in the public context as "plain stupidity". The problem lies in the fact that "already at the level of administration, the term productivity does not really make sense since we don't produce anything, we react". Recall that rendering public service is conceptualized by team member 2 as a matter of helping citizens or the public in general. To put a number on this in advance amounts to "complete absurdity". The attempts to implement a quantified measurement of productivity and management by objectives was met with skepticism by team member 2 and his colleagues:

> We laughed because it is so inapplicable, but we had to do it because it had been foreseen in I don't know what stuff that my head of department had to do. (Team member 2 of BigTransport)

He concludes that "administration and productivity, that's plain stupidity", and explicitly states that he is therefore "incapable of responding" to the question whether he beliefs that NWOW techniques have increased productivity in public administration. Team member 2 of BigTransport was without a doubt exceptional in the way he explicitly and reflexively articulated a discourse marked by a logic of qualitative public service that de-legitimized some key elements of the NWOW managerial dispositive. Yet the mere

possibility of this discourse should alert us to the fact that it remains possible for office workers to think outside of the NWOW box. The logic of qualitative public service does provide a potential basis for an oppositional critique of some of the key elements of the neoliberal managerial logic, namely the idea of self-management via a management-by-objectives. It allows subjects to ridicule the very possibility of management by quantified objectives in the public sector as well as the associated management styles. Moreover, team member 2's attack on the opposition between an outdated "dusty" administration and a more modern private sector constitutes a direct attack on one of the main arguments for implementing NWOW as a techno-managerial dispositive in the first place. At the same time, it should be pointed out that other elements of NWOW are not problematized at all. For instance, team member 2 does not take issue with information and communication technologies as such. Instead, he argues that the contemporary dusty image of public administrations is a result of problematic work ethics rather than outdated technologies and management styles.

Rearticulating the Subjectivities of Office Workers

In this section we examine the ways in which the interpretive managerial logics identified above inform the sense of self of individuals by allowing them to articulate a multiplicity of discursive elements in a way that provides at least some degree of coherence to their (self-)interpretations (cf. RQ3). As we will see, these logics inform a binary opposition between an ideal-typical NWOW worker and his or her antagonistic counterpart.

As we noticed before, a self can be thought about as a reification of the processes that allow individuals to position themselves as more or less coherent entities in relation to ever changing environments. This means that the self is only as stable as our self-techniques and interpretive logics allow us to be. The notion of subjectivity used in this chapter is closely associated with this concept of the self. It refers to the reflexive ways in which we engage with discursive reality. It involves an imperfect awareness of the practices, processes and logics that constitute our sense of self and can be described in terms of the logics that people rely on in order to articulate subject positions, norms, values, practices and other discursive elements with each other (Zienkowski, 2017a, p. 407). It is impossible to access human subjectivity directly as reflexivity is inherently an opaque phenomenon. However, human beings can use discourse reflexively in order to cast a porous and amorphous semiotic net that temporarily and partially fixes meaning. Doing so, human beings can leave traces of reflexive awareness through empirically observable discursive practices. A minimal degree of reflexive awareness is necessary for human beings to distinguish between the voices, arguments, narratives and identities of social actors and to make critical judgements about the associated meanings. As social actors make such distinctions in discourse, they leave observable traces of their subjectivity for others to pick up and interact with (Zienkowski, 2017a; Zienkowski, 2017b, pp. 9-10).

In order to understand the ways in which the techno-managerial apparatus of NWOW does or does not shape the subjectivities of office workers it is useful to consider the ways in which the interpretive logics discussed above impact on the way office workers articulate relations with themselves, with each other and with their environments with different degrees of critical awareness. We will do so by focusing specifically on the ways our interviewees discursively construct ideal-typical office workers and their polar opposites through the interpretive logics discussed above. In this process, special attention will go to the "competences" (which we will consider as work-related values) office workers attribute to these ideal-types, as well as to the extent to which workers are (un)able to articulate a more or less oppositional stance towards the NWOW techno-managerial apparatus.

The Ideal Office Worker in NWOW Culture: Binary Oppositions

The discourse through which our interviewees construct an image of the ideal-typical NWOW employee and his or her undesired counterpart is often articulated through a discourse on values, "competences" and "soft skills". In this section we will be writing first and foremost about values as most of our interviewees do not make a strong distinction between these categories. Indeed, when responding to questions about the *competences* coworkers are supposed to have or develop in NWOW environments, our interviewees often respond by stressing the importance of values such as "autonomy" and "flexibility". They also tend to highlight the importance of so-called "soft skills" or *savoir-être* that refer to "aspects of self and social interaction (chief among these, communication, teamwork and leadership) conceptualized as aspects of tasks, transferable techniques, and productive contributions" (Urcioli, 2008, p. 212). It happens only occasionally that our interviewees refer to job-specific *know-how* when talking about ideal-typical coworkers. This does not mean that such knowledge is considered to be irrelevant. It may be argued that such practical know-how is simply not mentioned because it is taken for granted. It might also be the case that the questions asked in the interview situation itself did not make it easy to verbalize the practical know-how required in NWOW contexts. Nevertheless, it does show that mere know-how is considered to be an insufficient criterion for evaluating office workers in NWOW environments. It even confirms the point made by Olivesi (2006) that *savoir-être* – defined as norms of behaving, of communicating, of socializing, etc. – is widely considered across all levels of organizations as a constituting element of the organizational culture and hence of the managerial take on it.

It is indeed through the different managerial logics presented above that our informants fix the meaning of "competences" and the associated work-related subjectivities. We therefore do not provide a working definition of competences other than the fact that we consider this category of competences as well as specific competences such as "being social" or "autonomous" to be discursively constructed values. The way office workers make sense of competences as values by relying on potentially overlapping interpretive logics is relevant to our discussion of NWOW. Devos and Taskin point out that concerns

with "autonomy" and "control" lie at the heart of HRM discourse about competence management on the one hand, and management discourse about NWOW on the other hand:

> The driving force of practices such as teleworking or competence management is often associated with an increase in responsabilization and/or autonomy. What is an evaluation of competences but a way to responsibilize the person by drawing a picture of what she brings to the organization in terms of what is expected of him? The very fact of developing individualized human resource practices implies an increase of responsibilization. Symmetrically, the possibility of managing one's time and to work at a distance is perceived as an honor, a proof of trust placed in the employee by the employer (Bailey & Kurland, 2002), and announces an autonomous management of his work. (Devos & Taskin, 2005, p. 99)

Both HRM discourse and the discourse on competence management contribute to a mode of individualization that fits well with the neoliberal logic identified above. Holmes writes that the objectification of "competences" "enables judgements to be made about individuals": "the term acts as a linguistic device to legitimate decisions about granting or withholding some desirable good, that is, a qualification, a job, etc." (Holmes, 1995, p. 37). Although most office workers we talked to deal with such "competences" as values rather than objectifiable targets linked to concrete behavioral indicators, they do refer to "competences" as a way to judge themselves and each other as being part of the new work culture (see Olivesi, 2006). In our interviews we can clearly see that office workers know what sort of competences as values they are supposed to embody in order to be compatible with NWOW culture. This should not be surprising as CV's, portfolio's and interviews often operate as confessional self-techniques through which individuals shape a particular form of subjectivity in line with organizational expectations (Holmes 1995, p. 46).

In the following we will be talking about signifiers such as "autonomy" and "being social" as values rather than competences and focus on the question how these values get articulated into NWOW discourse via the logics identified above. It should not come as a surprise that there is no way of bypassing the neoliberal managerial logic as its key function lies precisely in the sort of individual responsabilization discussed by Devos and Taskin (2005). However, the humanizing and democratizing logics leave there traces as well.

We already saw that NWOW are constructed in binary opposition with an outmoded administrative culture of bureaucratic dinosaurs. In addition, we noticed that the discourse of NWOW culture values signifiers such as autonomy, flexibility, teamwork, well-being and trust in a hegemonic claim on the future of organizational culture. In order to install this culture, organizations install NWOW transition programs that often include a strong value-oriented component meant to transform the relations managers and office workers have towards themselves, each other and their daily practices.

The associated values acquire meaning through the logics within which they get articulated. One recurring set of values tends to be produced through the neoliberal managerial logic. It is here that we find the very common articulation between result-orientation, autonomy and trust. We saw that a neoliberal logic informs discursive practices that construe office workers as subjects that can be trusted to reflexively device optimal strategies for reaching objectives set by the management. These subjects are expected to auto-regulate themselves and to work with coworkers and managers through ICTs that allow for collaboration and surveillance at a distance. We are dealing with a logic that is often happily accepted by office workers as it tends to be interpreted as allowing for a type of flexibility that allows for greater freedom on the part of office workers with respect to the ways in which organizational objectives are supposed to be met. It is for this reason that NWOW discourse is often celebrated as giving "responsibility", "ownership" and a degree of "empowering" entrepreneurial agency to employees.

Other "happy values" enter into NWOW discourse via logics that provide NWOW discourse with a democratic aura. The specific ways in which signifiers such as "communication", "consultation", "participation" and "horizontality" acquire value and meaning depend on the relative importance of the expressive/consultative and team-oriented participatory logics discussed above. Examples of competences as values related to these logics include taking initiatives, being able to express oneself, and being able to work in a team. Moreover, we should not lose track of the way the humanizing logic injects NWOW discourse with a valuation of physical, psychological and social well-being. From that perspective, the competent worker is someone who behaves in a way that does not impact negatively on the well-being of his or her coworkers. "Being social", "being adaptable" and "being respectful" are examples of competences as values frequently articulated through a humanizing logic.

The logics that provide NWOW discourse with a democratic and humanizing aura explain why competences such as the ability to express one's feelings or to listen to coworkers (being communicative), to adapt oneself to a changing office culture (being adaptable), to be a nice person with a small ego (a "soft" or "social" competence), are so central to the image of the idea-typical office worker. The ideal-typical office worker of celebratory NWOW discourse is not a pure product of the neoliberal logic alone. The ideal NWOW subject is constituted through a close articulation of the neoliberal, expressive/consultative, participatory team-oriented and humanizing logics. The non-neoliberal logics mentioned here are almost never deployed in order to articulate an oppositional critique of the core neoliberal logic of celebratory NWOW discourse. Consequently, values understood in terms of these logics do not provide a sufficient basis for critique either.

At any rate, in order to understand the ideal-typical NWOW subject we must not only focus our attention on the logics that structure its constitutive discourse but also consider its "constitutive outside". Our interviewees are rather consistent in the type of behavior, attitudes and competences they associate with people fit or unfit for organizations with

a NWOW culture. Throughout our discussion of the logics of celebratory NWOW discourse we already identified the values that define NWOW office workers positively. Now it is time to consider the other side of the coin, that is, the anti-values of celebratory NWOW discourse.

First and foremost, the ideal-typical NWOW office worker is constructed in opposition to the competences as values associated with the so-called old administrative culture. This idea is expressed by multiple interviewees whenever they problematize managers who are seen to "police" employees via top-down forms of "control". This type of binary opposition can also be identified whenever interviewees problematize strong hierarchies, "pencil pushing administration" and even "patriarchy" in organizations. Moreover, as we just noticed, "resistance" understood as an unreasonable adherence to the "old" culture and a lack of "adaptability" with respect to the new techno-managerial dispositive plays a role in this type of opposition as well. All of this is very much in line with the binary oppositions defining "WOW" and "non-WOW" workers analyzed by Hambye et al. (2013).

As a case in point we can refer to the HR manager of BigInsuranceOne who argues that people can be quite stubborn in resisting the transition to NWOW. She refers to people who are "resisting change" and explains that it is "really difficult" and "takes a lot of energy to take people along in this movement because they are not used to change". This suggests the presence of an oppositional logic. However, according to her we should first and foremost understand this resistance as a more general predisposition against change anchored in administrative organizational culture:

> There are files everywhere, mountains of paper, storage cabinets filled to the brim, and they are like "my God they are going to take away my files and paper and what are they going to ask me to do here uh, to work digitally, uh, no way", and they are resisting the idea of doing differently from the way they have been doing so far extremely hard. And the phrase that I heard most often since I started working here is "yes, but we have always done it like that". Well, let's not change anything then if we have always done it like that. And so, that's really, the thing we need is, the people that really don't want it, not even after explanation, after positioning, after coaching, who still don't want to change, at a certain point we don't know what to do anymore. (HR manager of BigInsuranceOne)

Secondly, interviewees frequently articulate personality traits, needs and/or practices incompatible with one or more of the logics that fix the meaning(s) of NWOW culture. Some of the most commonly mentioned needs and traits that are considered to be incompatible with NWOW undermine the type of team-oriented coordination, communication and participation commonly associated NWOW culture. Multiple interviewees problematize "introvertedness", a need for "social isolation" and "individualism" understood as putting one's own needs before those of the team and/or the organization. Arrogance is considered to be a potential problem as well. Likewise, the inability to ask colleagues for

help and having an "inflated ego" are deemed to be problematic. All of these discursive elements operate as antagonistic anti-values in relation to the logics and subjectivities of celebratory NWOW discourse. For instance, the anti-value of "introvertedness" is difficult to integrate in the consultative/expressive and team-oriented participatory logics. Both of these logics are constitutive of an office worker that is ideally a subject that favors easy and interactive forms of social interaction. Values such as social isolation or individualism are problematic to celebratory NWOW discourse and the associated form of office worker subjectivity for similar reasons.

Articulating an Oppositional Mode of Subjectivity

The fact that office workers are able to identify the features of the ideal-typical worker of celebratory NWOW discourse as well as its polar opposite does not necessarily mean that they identify fully with either construct. We saw that many people criticized specific elements of celebratory NWOW discourse in order to legitimate micro-resistances that nevertheless kept the key logics of the NWOW techno-managerial dispositive intact.

We saw that most forms of "critique" were actually supporting dominant-hegemonic or celebratory understandings of NWOW as they were meant to facilitate the further deployment of the NWOW techno-managerial apparatus. Other critiques informed a negotiated reading of NWOW and problematized supposedly avoidable perverse effects of NWOW in organizations. Both categories of critique left the *raison d'être* of NWOW intact. Only negotiated readings of NWWO allowed for a usage of alternative logics that legitimizes micro-resistances to the NWOW techno-managerial dispositive.

It is useful to recall that we adopted a relatively broad notion of critique conceptualized as an ability to problematize the dominant tropes, schemes, practices and identities that constitute NWOW discourse. At the same time, we distinguished between dominant-hegemonic, negotiated and oppositional forms of critique. This was necessary because not every form of critique amounts to an outright rejection of NWOW and its constitutive logics. As we noticed before many interviewees limit their critique to a problematization of a *lack* of NWOW culture and communication or to a discussion of the inadequate implementation of the NWOW program. Such critique is completely in line with a dominant-hegemonic understanding of the neoliberal, expressive/consultative, team-oriented participatory and humanizing logics constitutive of celebratory NWOW discourse.

It is probably no coincidence that one of the rare interviewees that manages to articulate an arguably oppositional form of critique regarding celebratory NWOW discourse is a unionist who stresses solidarity as a key work value and who believes that civil servants still take a measure of "pride in working in a public function". His own preferred mode of subjectivity is clearly articulated around the values of public service and solidarity. He claims that this collective sense of "pride" allows for the formation of group identities

that may serve as a basis for resisting the individualizing effects that inherently come with NWOW.

Unions 2 of BigHealth does welcome the increased mobility and goal-orientation that comes with NWOW programs "on a personal level". However, talking about NWOW "as a union representative" himself, he states that "the majority of the representatives here" are "no dupes of the ideology that is behind all of that". His oppositional decoding of celebratory NWOW discourse rests on a particular use of a humanizing logic and a logic of public service. Even though he does recognize some advantages of NWOW at a personal level he rejects celebratory NWOW discourse because of the way its individualizing effects undermine relationships of solidarity among public servants.

According to Unions 2 there are basically two possible modes of subjectivity in organizations where NWOW are introduced. Either we have isolated or atomized individuals that merely undergo managerial change, or we have office workers believing in solidarity with each other, who value social contact, and who develop a strong group identity that allows for micro-solidarities and even resistance to managerial discursive practices.

Occupying the subject position of a unionist representative, this interviewee articulates a discourse that is oppositional to celebratory NWOW discourse. He attacks elements of the core neoliberal logic constitutive of celebratory NWOW discourse. His own preferred mode of subjectivity is clearly articulated around the values of public service and solidarity. Taking pride in his identity as a civil servant himself, he relies on an interpretive logic of public service that serves as a basis for solidarity with other civil servants, and even as a basis for resistance. Unions 2 claims that "at the governmental level" one pushes for an "individualization" of work. According to him, this policy poses "a great challenge for the syndical organizations":

> They push individualization, but at the same time, this leads to anonymization. Perhaps it sounds completely stupid but it's true, the fact of not having a specific desk or space anymore, well, gives the impression of being replaceable. (Unions 2 of BigHealth)

Even though Unions 2 accepts the increased mobility and result-orientation that comes with NWOW he does not believe in the "open spaces" that come with it. Neither does he believe in the rhetoric of "flexibility" legitimating teleworking. He problematizes the notion of "flexibility" by pointing out that if a lot of people announce they are going to do distance work other people might feel obliged to stay at home as well, thus paradoxically limiting the flexibility of the latter group. He can see some potential benefit in working with "satellite offices" but only if these desks are not as "impersonal" and "inhumane" as those in clean-desk contexts.

In itself this partial acceptance or rejection of specific NWOW elements does not imply that we are dealing with an oppositional mode of subjectivity. What does matter is the fact that this interviewee explicitly problematizes key aspects of the core neoliberal logic structuring celebratory NWOW discourse. In this sense, we need to point out that Unions

2 explicitly calls the classic celebratory NWOW articulation of flexibility, autonomy and trust into question:

> Does one need to go towards more autonomy and flexibility? Should one not go perhaps for more efficiency and effectiveness? Is efficiency even compatible with flexibility? This is a nice debate. Me, I would be inclined to answer no. (Unions 2 of BigHealth)

Unions 2 believes that flexibility will always be limited in public services because these institutions need to work with budgets decided on in Parliament. Clearly relying on a logic of qualitative public service, he argues that it makes more sense to invest in the betterment of administrative culture than to invest in individualizing NWOW programs that aim to flexibilize office work and that supposedly make individuals more autonomous. We are thus dealing with a rare instance of someone who actively embraces terms such as "public service" and "administration". Unions 2 does not place these terms in a past to be replaced by so-called new ways of working, but instead imagines a project that could strengthen public administrations: the creation of a specific institute responsible for the training of civil servants. We are clearly dealing with a public service logic that informs an oppositional decoding of celebratory NWOW discourse.

Moreover, relying on a humanizing logic, this interviewee values social contact, solidarity and humanity. According to Unions 2 these values are under threat because of the mode of individualization that is being pushed for from above by high level civil servants who advocate NWOW for their own sake. He explains how unions therefore try to inform workers while valuing worker solidarities in order to resist individualizing NWOW related changes. He believes that "micro-solidarities" and resistances are possible in an organization where several office cultures co-exist because of "weak management". Either it is "everyone for themselves" and "all do as they like", or "one creates small so-called pockets of resistance" against an NWOW policy he considers to be "a bit totalitarian".

At the same time, Unions 2 does value the "rather participatory" spirit with which NWOW were introduced in his work environment. He did not identify and problematize a pseudo-participatory logic in the discourse of managers seeking to implement NWOW. He believes that management has started the process on a good footing by involving labor unions in the implementation process. But whatever happens in the future, he considers it to be important not to lose track of the "human" factor and the importance of "solidarity".

In spite of this interesting case, oppositional modes of subjectivity that move beyond a reluctant acceptance or negotiated decoding of celebratory NWOW discourse remain highly exceptional among the office workers we interviewed.

Conclusion

In this chapter we focused on the ways employees make sense of "New Ways of Working". We did not approach the NWOW techno-managerial dispositive as a fully coherent philosophy inherently grounded in democratic ideals but as an organizational discourse structured by multiple overlapping logics. We argued that the acronym NWOW captures a heterogeneous set of discursive practices and technologies structured into a techno-managerial apparatus whose implementation transforms the subjectivities and discursive realities of office workers. The way office workers relate to their colleagues, to their practices and to themselves continually shifts as the architectural, organizational and communicative environments of office work are being reconfigured. From that perspective, the newness of NWOW resides not so much in the innovative nature of their technological or managerial elements as in the logics used to connect relatively heterogeneous elements – for example, values, identities, practices and narratives – in a more or less coherent discourse structuring workers' subjectivities.

Authors approaching NWOW from a critical perspective tend to discuss and problematize this techno-managerial *ensemble* as a decidedly neoliberal way of organizing work regimes. This neoliberal mode of working involves a new relationship of the individual towards him- or herself and towards his or her work. It implies that one is ever more responsibilized for one's modus operandi, for one's results and for one's career in general. Individuals are expected to manage and control themselves with a minimum of top-down control exercised by trusting team leaders and/or managers. This mode of (self-)management at a distance is often argued for in terms of a closely articulated set of values such as trust, autonomy, responsibility and flexibility.

At the same time, celebratory NWOW discourse is not merely about self-management and values such as autonomy. Even though we do agree that it is possible to identify a neoliberal logic structuring much celebratory discourse on NWOW, other logics are at play as well. Even though other critical authors consider the "happy" values linked to well-being and humanity to be part and parcel of this neoliberal logic, we believe it makes sense to disentangle a core neoliberal logic from a set of alternative logics that provide alternative ways of understanding the shift towards new ways of working. We therefore aimed to answer the following research question (RQ1): What are the interpretive logics that structure the NWOW related practices of actors working in office work environments? While answering this question, we made a distinction between the celebratory (or dominant-hegemonic) uses of the logics constitutive of NWOW discourse on the one hand, and the negotiated and oppositional understandings of the NWOW techno-managerial apparatus on the other hand. Let us start with the way celebratory NWOW discourse is structured.

Celebratory NWOW discourse is constituted by several interpretive logics that grip into each other and provide each other with legitimacy. For instance, in addition to the core neoliberal logic that is always present in celebratory NWOW discourse, we identified

several logics that provide the NWOW apparatus with a democratic aura: an expressive/consultative logic and a team-oriented participatory logic often crystallize in celebratory NWOW discourse as well. Whereas the expressive/consultative logic celebrates the expression and exchange of feelings and ideas, as well as communicative processes whereby management "listens" to concerns voiced by employees, the team-oriented participatory logic grants some degree of decision making at the team-level. In addition, celebratory NWOW discourse is often marked by a humanizing logic that places physical, psychological and/or social well-being at the top of the work-related value hierarchy. It is this logic that accounts for the fact that much celebratory NWOW discourse contains statements on the positive impact NWOW are supposed to have on human well-being. These neoliberal, expressive/consultative, team-oriented participatory, and humanizing logics work in sync in celebratory NWOW discourse as they tend to reinforce each other in a way that leaves little room for critique. They explain why NWOW discourse is often articulated with reference to so-called "happy values" identified by Hambye et al. (2013).

Several interviewees strongly argued in favor of implementing the principles and practices of NWOW. This group of office workers tends to interpret NWOW along the lines of the celebratory logics mentioned above, thereby engaging in a dominant-hegemonic reading of NWOW. In such a discourse, the "critiques" problematize a *lack* of NWOW culture, the insufficient speed with which NWOW are implemented, and/or the way management has communicated about NWOW. None of these critiques problematize the underlying logics and presuppositions of celebratory NWOW discourse. Many interviewees showed high degrees of awareness of the fact that a celebratory NWOW discourse exists. At the same time, they hardly ever questioned the *raison d'être* of NWOW while engaging in a truly oppositional discourse.

This brings us to our second research question (RQ2): How do interpretive managerial logics shape the possibilities for critique and resistance to (aspects of) NWOW? The different logics identified in this chapter combine in different ways in the discourse of office workers. Depending on the way these logics are being articulated with each other they inform either dominant-hegemonic understandings of NWOW that take celebratory NWOW discourse at face value, negotiated interpretations that allow for micro-resistances and problematizations of perverse effects, or oppositional stances with respect to the NWOW techno-managerial apparatus. This last category of critiques proves to be extremely rare, though. Oppositional critique was indeed the exception rather than the rule. However, this does not mean that office workers accept all aspects of NWOW at face value. Even though the vast majority of interviewees does not call the *raison d'être* and the constitutive logics of the NWOW techno-managerial apparatus into question, office workers often discussed perverse effects of NWOW and sometimes did argue in favor of micro-resistances to specific aspects of the NWOW techno-managerial apparatus. When criticizing real or potential perverse effects of NWOW, office workers often rely on one or more alternative interpretive logics in order to articulate a negotiated understanding of the term.

For instance, even though celebratory NWOW discourse is often couched in a humanizing discourse stressing well-being, many interviewees relied precisely on this humanizing logic in order to discuss actual or potential perverse effects of NWOW on well-being. For instance, many interviewees complained about the negative impact that noise has on well-being as a consequence of open space policies. Others deplored the lack of personal work spaces and/or the prohibition to personalize their work environments in office spaces ruled by the clean-desk principle. Precisely because the logic of well-being is present in celebratory NWOW discourse as well, office workers find in it a source for legitimizing their critiques and resistances. However, in almost all cases, these critiques take the form of a problematization of supposedly avoidable perverse effects of NWOW. They do not attack the core neoliberal logic as such or any of the other logics constitutive of celebratory NWOW discourse.

Some interviewees criticized the discourse legitimating the implementation of NWOW as being marked by a pseudo-participatory logic. This logic allowed them to problematize their lack of decision-making power regarding the implementation of NWOW programs in their organizations. Doing so they criticize those who reduce participation to a question of mere expression and/or consultation. Office workers engaging in this sort of critical discourse do not challenge NWOW as such but do point at the contradiction between the democratic participatory promise of NWOW on the one hand, and the rather limited decision-making power employees actually enjoy in the implementation process. Other take the opposite stance by embracing an authoritative logic that values this limited decision-making power positively. Those who embrace this authoritative logic stress the importance of some degree of hierarchy and leadership in certain circumstances. In our data we found no examples of people who relied on this logic to undermine the NWOW techno-managerial dispositive. Overall, none of these two logics challenge NWOW as such. They merely inform two different ways of implementing the NWOW apparatus.

The closest thing to an oppositional logic encountered in our interviews is probably the managerial logic of qualitative public service. Even though this logic is not inherently linked to NWOW, it does inform a discourse that problematizes key tenets of celebratory NWOW discourse. It does so by undermining the relevance of values such as result-orientation and productivity. Moreover, it informs a valuation of public service that undermines the binary opposition between old and new worlds of work that is so central to those who celebrate NWOW. This does not happen through a direct attack on NWOW. It rather provides a basis for questioning the applicability of NWOW principles and the associated core neoliberal logic to public administration.

The issue of critique brings us to questions of subjectivity. Our third research question (RQ3) asked how the subjectivities of office workers get (re-)articulated in environments transitioning to NWOW. In order to answer this question we demonstrated that celebratory NWOW discourse does indeed construct an ideal-typical office worker as well as an undesired counterpart. This binary opposition maps onto the binary opposition between old and new office cultures. In both (overlapping) binary oppositions a neoliberal

managerial logic articulates the values result-orientation, autonomy and trust, fixing their meanings in relation to each other. This logic is often happily accepted as it supposedly allows office workers to organize themselves with a greater degree of freedom and a higher degree of responsibility.

The subjectivity of the ideal-typical office worker is also fixed by means of values that acquire meaning through the other logics we find in celebratory NWOW discourse: "soft skills" such as communication, consultation, and participation acquire value through the expressive/consultative and team-oriented participatory logics. Likewise, the humanizing logic injects NWOW discourse with a valuation of physical, psychological and social well-being. Ideal typical office workers active in NWOW cultures are supposed to be social, adaptable and respectful.

The antagonistic other is of course the very opposite: a rigid pencil pusher with an inclination to reproduce hierarchic modes of interaction, organization and control. Every logic constitutive of celebratory NWOW discourse produces its own anti-values. As we saw before, a value such as introvertedness acquires a negative connotation in discourses marked by expressive/consultative and/or team-oriented participatory logics.

The fact that celebratory NWOW discourse informs an ideal-typical image of office culture and office workers does not mean that no critique or resistance is possible. To the extent that office workers manage to articulate negotiated or even oppositional forms of critique, they shape and perform a particular sense of self marked by a particular form of critical (self-)awareness. However, in spite of the fact that we did find some examples of office workers who were critical of the core neoliberal logic constitutive of celebratory accounts of the NWOW techno-managerial dispositive, oppositional modes of subjectivity that amount to more than a dominant-hegemonic acceptance or a negotiated decoding of NWOW remain highly exceptional. Celebratory NWOW discourse enjoys a relatively high degree of hegemony in office environments.

At the same time, our research results show that there is a significant amount of different – although not necessarily conflicting, as we have seen – interpretations within public and private organizations regarding the effects of NWOW on the relationships of colleagues towards each other and themselves. There are also differences in the way office workers (partially) reproduce and/or challenge company-supported discursive practices regarding new ways of working. Even if people occupying different positions in the organizational hierarchy rely on the same signifiers (e.g. "flexibility", "change", "autonomy", "trust") in order to make sense of NWOW, this does not mean that they necessarily develop a similar attitude regarding new work practices and/or the policies that put them into place. What matters more is the specific ways in which people link such notions to each other, to a variety of social identities and processes according to specific interpretive logics. Such differences materialize in the way interviewees articulate their social identities, the values they accept or reject, and the aspects of reality they identify as key contexts for understanding the how's and why's of organizational change.

Bibliography

Ajzen, M., Donis, C. & Taskin, L. (2015). Kaléidoscope des nouvelles formes d'organisation du travail: l'instrumentalisation stupide d'un idéal démocratique et collaboratif. *Gestion 2000: management & prospective, 31*(3), 125-148.

Alvesson, M. & Willmott, H. (2002). Identity regulation as organizational control: Producing the appropriate individual. *Journal of Management Studies, 39*(5), 619-644.

Bailey, D. E. & Kurland, N. B. (2002). A review of telework research: findings, new directions and lessons for the study of modern work. *Journal of Organizational Behavior, 23,* 383-400.

Brown, W. (2015). *Undoing the demos: neoliberalism's stealth revolution*. Cambridge: MIT Press.

Carah, N. & Louw, E. (2015). *Media & Society: production, content & participation*. London: Sage Publications.

Carpentier, N. (2011). The concept of participation: if they have access and interact, do they really participate? *CM: Communication Management Quarterly/Casopis za upravljanje komuniciranjem* (21), 13-36.

Carpentier, N. (2017). *The discursive-material knot: Cyprus in conflict and community media participation*. New York: Peter Lang.

Crowley, M. & Hodson, R. (2014). Neoliberalism at work. *Social currents, 1*(1), 91-108.

Devos, V. & Taskin, L. (2005). Gestion par les compétences et nouvelles formes d'organisation du temps et de l'espace. *Revue française de gestion, 2005/3* (156), 93-104.

Fairclough, N. (1992). *Discourse and social change*. Cambridge: Blackwell Publishers.

Fairclough, N. & Chouliaraki, L. (1999). *Discourse in late modernity*. Edinburgh: Edinburgh University Press.

Foucault, M. (1969). *The archaeology of knowledge* (2007 edn). London: Routledge.

Foucault, M. (1976). Truth and power. In J. Faubion (ed.), *Michel Foucault: power* (pp. 111-133). London: Penguin Books. (Reprinted in 1994).

Foucault, M. (1982). Technologies of the self. In P. Rabinow (ed.), *Michel Foucault: ethics: subjectivity and truth* (Vol. 1, pp. 223-251). London: Penguin Books.

Foucault, M. (1991). Politics and the study of discourse. In G. Burchell, C. Gordon & P. Miller (eds), *The Foucault effect: studies in governmentality* (pp. 53-72). London: Harverster Wheatsheaf.

Glynos, J. & Howarth, D. (2007). *Logics of critical explanation in social and political theory*. London: Routledge.

Hall, S. (1973). *Encoding and decoding in the television discourse*. Paper presented at the Council of Europe Colloquy on "Training in the critical reading of televisual language", University of Leicester.

Hall, S. (2001). Encoding/decoding. In C. L. Harrington & D. D. Bielby (eds), *Popular culture: production and consumption* (pp. 123-132). Oxford: Blackwell Publishers.

Hambye, P., Mariscal, V. & Siroux, J.-L. (2013). Le capitalisme néo-libéral et la réalisation de soi par le travail. In H. Buclin, J. Daher, G. Christakis & P. Raboud (eds), *Penser l'émancipation: offensives capitalistes et résistances internationales* (pp. 87-109). Paris: La Dispute.

Holmes, L. (1995). HRM and the irresistible rise of the discourse of competence. *Personnel Review, 24*(4), 34-49.

Laclau, E. & Mouffe, C. (1985). *Hegemony and socialist strategy: towards a radical democratic politics*. London: Verso.

Le Texier, T. (2015). Le management de soi. *Le Débat* (183), 75-86.

Liebes, T. & Katz E. (1990). *The export of meaning: cross-cultural readings of Dallas*. New York / Oxford: Oxford University Press.

Likert, R. (1961). *New patterns of management*. New York: McGraw Hill.

Marttila, T. (2016). *Post-foundational discourse analysis: from political difference to empirical research*. Basingstoke: Palgrave Macmillan.

Mumby, D. K. (2013). *Organizational communication: a critical approach*. London: Sage Publications.

Olivesi, O. (2006). *La communication au travail: une critique des nouvelles formes de pouvoir dans les entreprises*. Grenoble: Presses Universitaires de Grenoble.

Popma, J. (2013). The Janus face of the "New Ways of Work": rise, risks and regulation of nomadic work. *ETUI Working Papers,* (Working Paper 2013.07). <https://www.etui.org/Publications2/Working-Papers/The-Janus-face-of-the-New-ways-of-Work-rise-risks-and-regulation-of-nomadic-work>

Springer, S. (2012). Neoliberalism as discourse: between Foucauldian political economy and Marxian poststructuralism. *Critical Discourse Studies, 9*(2), 133-147.

Taskin, L., Ajzen, M. & Donis, C. (2017). Chapter 5: New Ways of Working: from smart to shared power. In V. Muhlbauer & W. Harry (eds), *Redefining management: smart power perspectives* (pp. 65-79). Cham: Springer.

Urcioli, B. (2008). Skills and selves in the new workplace. *American ethnologist, 35*(2), 211-228.

van Meel, J. (2011). The origins of new ways of working: office concepts in the 1970s. *Facilities, 29*(9), 357-367.

Verschueren, J. (2011). *Ideology in language use: pragmatic guidelines for empirical research*. Cambridge: Cambridge University Press.

Zienkowski, J. (2017a). *Articulations of self and politics in activist discourse: a discourse analysis of critical subjectivities in minority debates*. Cham: Palgrave Macmillan.

Zienkowski, J. (2017b). Reflexivity in the transdisciplinary field of critical discourse studies. *Palgrave Communications, 3* (17007).

Zienkowski, J. (2018). Challenging nationalist definitions of racism: critical discursive interventions in the Flemish debates about racism's relativity. *Zeitschrift für Diskursforschung / Journal for Discourse Studies* (1), 51-72.

Chapter 6: Digital Media Literacy in Collaborative and Distance Work: Building Bridges to Key Organizational Dimensions and Challenges

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In this chapter we address key organizational dimensions and challenges for digital media literacy (DML) in collaborative and distance work. Starting from the insights developed in the LITME@WORK project from a variety of research approaches on DML in collaborative and distance work, we build bridges between the different chapters that cover the following themes: (1) digital media competences in collaborative and distance work; (2) the concept of "newness" in discussions of DML and new ways of working (NWOW); (3) DML as a social construct; (4) implications of collaborative and distance work for well-being; (5) the issue of digital (social) inclusion; (6) the role of technology; and (7) management in team- and distance work. These issues were selected on the basis of their salience in contemporary debates on office work and their relevance for the different theoretical and empirical approaches applied in the project.

In the previous chapters we have approached the issue of DML and collaborative distance work from four angles:

- a comprehensive qualitative analysis of worker practices resulting in the competence matrix, detailed in Chapter 2;
- a qualitative analysis focusing on the way the division of labor in virtual teams and use of technology impact on learning opportunities, based on Modern Sociotechnical Systems Theory (MST), discussed in Chapter 3;
- a quantitative two-wave survey focusing on factors that may impact on learning opportunities within teams (e.g. team trust, consistency in teleworking of virtual teams), presented in Chapter 4;

- a discourse analysis focusing on the way NWOW discourse transforms the practices and subjectivities of office workers, discussed in Chapter 5.

Each of these chapters approached DML from a particular theoretical and methodological vantage point entailing a particular analytical focus. This variety of perspectives generated a multiplicity of insights into the realities of DML in NWOW environments. At the same time, it is important to identify where the analyses align and diverge.

Rather than offering a synthetic conclusion that glosses over the different vantage points articulated in this book, we opted for a concluding chapter addressing seven key issues relevant to each analysis. As such, this chapter builds conceptual and interdisciplinary bridges between Chapters 2 to 5, while recognizing the specificity of each contribution. The resulting discussion is meant to shed light on core issues relevant to contemporary discussions on DML, teamwork and distance work captured under NWOW.

Digital Media Competences in Collaborative and Distance Work

Within the LITME@WORK project, the issue of DML was approached from a variety of complementary disciplinary, theoretical and methodological angles. Such a combination of perspectives is useful to understand competences one needs, to understand what people do *as well as* how they reflect on it. People's ways of thinking and acting are highly context dependent and need to be explained by considering situated practices, organizational structures and factors, as well as the discursive logics at play in organizations.

Defining Competences Anchored in Everyday Practices

The qualitative analysis outlined in Chapter 2 deals with competences from the point of view of office workers. The units of analysis in this approach are positioned at the infra-individual level: the chapter focuses on the practices of individual workers relying on digital tools for collaborative purposes. Inspired by grounded theory principles, this analysis results in a matrix that crosses the activities workers have to perform in collaborative distance work with the dimensions of the work situations they have to take into account. Three types of DML competence indicators were identified on the basis of this matrix:

- the degree of *complexity* in the way workers frame typical distant teamwork situations,
- the *success or failure of one's conduct* towards a typical problem-situation,
- the (*mis*)*match between* this *conduct* and workers' *objectives*.

Five main activity areas were identified as core elements of DML involved in collaborative and distance work: interdependent tasks, team meetings, remote communication, information spaces and document production. Each of these activity areas was then divided into two activities related either to coordination work (preparation

of the tasks) or cooperation work (achievement of the tasks) to emphasize the importance of these two complementary types of work. These two categories of work both involve articulation work, where workers have to develop a mindful posture towards the role played by technology in their work and have to exceed the routine application of technological know-how. Finally, the actions involved in each activity were listed (see details in Chapter 2).

In the matrix, the six dimensions of activities workers have to take into account when collaborating at a distance are identified as follows: tasks, time, space and distance, information, tools and people. Each dimension relates to a set of activity characteristics (e.g. task complexity, task recurrence), grouped under an overarching issue (e.g. task management) workers perceive and reflect on in order to take action when they collaborate. The matrix thus reveals the complexity and diversity of digital media competences involved in collaborative and distance work. It shows that these competences should not be reduced to a particular activity area (e.g. meetings) or dimension (e.g. technology). Instead, the matrix proposes an integrated definition of competences, where different activity areas and activities may be articulated with different dimensions, depending on context specific work-related situations, practices and objectives.

The analysis presented in Chapter 2 offers a comprehensive point of view, grasping the full complexity of work situations from the point of view of workers. Competences are in essence "relational", in the sense that they can only be understood in relation to worker practices, to objectives, and to the opportunities and constraints of specific work situations. Singling out a particular solution, tool or method adopted in a particular context without taking the whole complexity of the work situation into account could even be counterproductive as this might encourage workers or organizations to adopt such a solution blindly, without a deep comprehension of its meaning and how it may or may not be suitable to their particular context.

However, the observation of competences remains a challenge for researchers and practitioners alike. Efforts should be made to connect evaluation initiatives to worker and team practices in specific work situations. As mentioned in Chapter 2, competences are only observable in concrete performances. A careful analysis of worker practices (what they are doing) as well as of the way workers relate to these practices (what they are saying about what they are doing) is therefore needed. This approach seems to be most promising when trying to embrace the complexity of competences without denying their situated nature.

Competences, Organizational Design and Learning Opportunities

The matrix of DML has been designed to acknowledge the reflexivity of office workers. It puts their capacity to reflect on collaborative work practices at the core of the analysis. This reflexivity should not be seen as an intrinsic characteristic of individuals only, but also refers to the characteristics of the work itself. For example, high work pressures and/

or poor tool design could make it difficult for workers to take a step back and to dedicate cognitive resources to reflections on their practices, even though such reflections are necessary if they are to develop their competences further.

This is where the analysis of worker's practices outlined in Chapter 2 connects with the analysis of their work organization and job content. In the qualitative analysis of virtual teams reported in Chapter 3, the question of acquiring new skills and competences is addressed by considering the division of labor within teams. Based on Modern Socio-technical Systems Theory, the point of departure is that in order for employees to learn, tasks need to be "sufficiently complex to allow for gaining knowledge about cause-effect relations related to the goals of that job" (Achterbergh & Vriens, 2009). When the division of labor in virtual teams is such that the tasks are complex and workers are able to understand cause-effect relations, they can learn new things. This means that the perspective adopted is essentially a *conditional* perspective focusing on the structure of jobs and on the characteristics of tasks, rather than on the people who execute these. The conditions for learning in teams are addressed by analyzing the way the jobs in these teams have been designed and the way technology is used, and not by analyzing the effective use, acquisition and development of competences by the team members.

We observed that the organizational design of teams, analyzed as the division of labor within and between teams, as well as the use of technology, are key determinants that may either foster or hinder the use of knowledge and learning. In teams that are characterized by high levels of division of labor, with fragmented tasks and a lot of control and surveillance by superiors and/or technology, team members have little autonomy and are dependent on others (team members or the team leader) to organize their work and to solve problems that occur during their work. Such a lack of autonomy reduces learning opportunities because it hampers individuals to gain knowledge from cause-effect relations related to the goals of their jobs. Similarly, technology may hinder team members' performance, instead of supporting it, which in turn will limit learning.

In the quantitative analysis of the longitudinal employee survey organized in the case study companies (as reported in Chapter 4) it was concluded that both trust and consistency in hours of teleworking within a team are needed to ensure learning outcomes such as skill development, technical literacy and communication literacy. However, contrary to our initial hypothesis, knowledge sharing within teams as such appeared not a sufficient condition for the development of these literacy dimensions.

Competences in/as Discourse

It is equally important to understand how the notion of competence is understood and mobilized in the discourse of workers and managers themselves. The discourse analysis presented in Chapter 5 did not proceed with an *a priori* definition of (digital media) competence(s) but many interviewees did discuss (interpretations of) ideal-typical competences in NWOW environments. Chapter 5 focused on *accounts about*

worker practices, situations and competences in order to give voice to the office workers themselves and to point at differences between academic and non-academic discourse on competences.

The chapter shows that workers articulate varying degrees and modes of reflexive awareness with respect to (aspects of) NWOW. All contributions to this book recognize the importance of reflexivity to worker subjectivities, practices and discourses but this reflexivity is explored in different ways. In Chapter 2, reflexivity was considered first and foremost as the "capacity to reflect" on "collaborative work practices". In Chapter 5, reflexivity refers more broadly to the capacity of social systems, discourses, languages and subjects to bend back, act upon and (re-)shape themselves. Even though reflexivity remains a rather opaque phenomenon, social actors may leave traces of subjectivity in language use and communication for others to pick up and engage with. Reflexivity is what enables people to objectify, problematize and criticize patterns in language, discourse and social practice. It allows people to distinguish different meanings given to specific terms and practices, and to recognize and even reshape the interpretive logics informing the meaning of a term such as "competence" (Zienkowski, 2017).

As explained in Chapter 5, both the category of "competence" itself and the labels used for specific competences (e.g. "adaptability" or "being social") play an important role in the way office workers make sense of themselves, of their work practices and of their work environments. There were principally three ways in which the topic of competence(s) was breached in the discourse analytical interviews. Firstly, the issue of competence(s) was discussed in response to questions that focused specifically on talk about ideal-typical NWOW workers. Secondly, competence(s) popped up during discussions of topics such as hiring practices or the need for additional training. Thirdly, the interviews contain many statements on abstract categories such as "autonomy", "flexibility" or "productivity". It was pointed out that such abstractions often operate as competences *and* values simultaneously. The interviews analyzed in Chapter 5 did not include questions focusing on digital media competences specifically.

Most office workers did not discuss competence(s) in terms of concrete abilities. They discussed competence(s) in rather fuzzy terms whose meanings oscillate between concrete know-how on the one hand and broad descriptors for a kind of *savoir-être* on the other hand. It is striking how often interviewees conflated the notion of competence with a limited number of rather abstract work-related values. For instance, office workers frequently stressed that NWOW require them to be flexible, adaptable and/or social but hardly ever discussed such competences in terms of concrete abilities or conduct. Secondly, even when people did talk about more technical know-how or to their jobs in general, they would assess and evaluate the worth of such technicalities in terms of abstract categories. For instance, ICT personnel would point out that even though basic know-how is required, it is at least as important for team members to be "autonomous" in the sense that they should try solving problems on their own, first. At the same time, the ideal-typical coworker should be humble, non-pretentious and sociable enough to ask

for help whenever (s)he cannot solve the issue on her own. Thirdly, our interviewees tend to conceptualize competences as cultural constructs and abstract categories that operate as work-related *values* rather than as descriptors for practical abilities or professional norms. In contemporary office work, the notion of competence operates as a fuzzy term where different non-contradictory meanings are transposed onto each other. Being competent may mean that one has technological know-how, that one has the ability to learn, to adapt oneself, to know how to be a team-player, to be humble, flexible *and/or* to be adaptable.

The different interpretations of the term "competence" are also informed by the interpretive logics office workers rely on in order to articulate themselves. For instance, those who rely heavily on a humanizing logic in order to discuss an ideal-typical NWOW environment are likely to interpret competence in terms of soft skills and *savoir-être* (e.g. "being open", "being nice"). Those who rely more heavily on a neoliberal discourse might stress the need for people to meet their targets autonomously by regulating their own behavior at a distance. But the meaning of "competence" in these two examples are not incompatible. Such meanings may even co-occur in the discourse of office workers. In fact, the discourse analytical dataset does not contain any traces of struggles over the meaning of "competence". This observation is already a strong indication of the fact that celebratory NWOW discourse has achieved a rather high degree of hegemonization.

In spite of the fuzziness of "competence", nobody wants to be seen as *in*competent. It is here that the socio-political significance of the term resides. The term "competence" carries a legitimizing function for whatever other projects or initiatives it is associated with. In a world of work where results have become the yardstick of success and where management-by-objectives has become a hegemonic mode of governance, competence understood broadly as the competence to meet managerial objectives partially fixes the meaning of a whole set of terms including flexibility, autonomy and trust.

What is Really New in Contemporary Collaborative and Distance Work?

Are the digital media competences involved in collaborative work "new"? Are they connected to "new" practices? Are any of the digital tools used in team and distance work "new"? When observing contemporary office work practices and discourses, the idea of "newness" is central, as reflected in the label "New Ways of Working' (NWOW). In this section, we will interrogate this alleged newness in terms of continuity and change.

Firstly, it is important to stress that distance work is not really new. The first studies on home teleworking appeared in the 1980s (i.e. Pratt, 1984) and show that the issue of distance work has been around for more than thirty years. These studies discussed the implications of teleworking for time flexibility (e.g. its impact on the balance between private and professional time) and productivity. Nowadays, teleworking has spread across

organizations and affects an increasing number of workers. There has also been an evolution in the conceptualization of distance work away from mere home teleworking. Today, distance work encompasses a great variety of work situations, including the use of coworking spaces by employees, internal mobility between sites of a same organization, and work practices of international teams.

Secondly, using digital tools to collaborate is not completely new either. Since the 1980s, the community of Computer Supported Cooperative Work (CSCW) (Schmidt & Bannon, 1992) studied how digital technology and computers can be designed to support team collaboration. Digital tools offer more opportunities to communicate, share information, create documents, etc. Digitalization has had an impact on all aspects of office work. Digital technology has now become so ubiquitous that it is seldom experienced as new. In Chapters 3 and 4, the interviews indicate that most virtual team members do not often consider their communication channels to be new or innovative. The large majority of employees has been well acquainted with these technologies before their teams became virtual. Neither the qualitative analysis of Chapter 3, nor the quantitative survey presented in Chapter 4, contain examples of employees for whom unfamiliarity with new technologies seems to pose considerable problems. At most, technical skills required to work with some of these communication channels, such as video chatting, become more problematic for collaboration with colleagues or superiors over distance. Moreover, office workers sometimes point out that technology related problems often originate in the fact that the technical systems are either malfunctioning or inflexible (see section What is the Role of Technology in Collaborative and Distance Work?, below).

Thirdly, the fact that organizations aim at stimulating teamwork is not a new phenomenon either. The analyses presented in Chapter 2 show that collaboration is strongly encouraged in some organizations that re-organize themselves, adopt new digital tools and rethink their work spaces. At the level of work practices, we see that a significant part of *articulation* work, which was traditionally allocated to team leaders and administrative staff, is now placed on the shoulders of team members. Employees become responsible for organizing tasks because their team is organized virtually: for example, they have to make arrangements to meet team members face-to-face or they have to collaborate with colleagues over distance using ICT. These specific tasks call for a deeper and complex mastery of competences for articulation work by the employees. In other words, collaborative work practices lean towards a greater complexity in a changing work environment where the roles of coworkers, the nature of the tasks, and the tools used are constantly evolving. This situation calls for the development of workers' digital and media competences related to collaborative distance work. These competences will help individuals to adapt to the realities of contemporary office work and to be creative actors in these evolving environments.

Regarding the organizational design of virtual teams and the learning opportunities it might offer, the issue of "newness" may refer to what extent the shift from a collocated to a virtual team (distance collaboration with the use of ICT) requires n*ew ways of coordination*

and of collaboration between and within teams, which in turn may change the conditions for team members to learn from their work. In this respect, it is first of all essential to stress that the focus of Chapters 3 and 4 was on ICT-mediated distant *team*work, which implies a more complex working environment as compared to individual ICT-mediated telework, be it at home or from coworking spaces. A team is a group of individuals who are working together to reach a common goal, are dependent on each other's tasks, and share the responsibility for outcomes. They are viewed by themselves and others as one social entity. In addition, Chapter 3 considered the *degree of virtuality* as a core characteristic of the teams under investigation, defined as the degree to which team members (1) are geographically dispersed and (2) coordinate their activities by means of virtual communication channels.

In research on virtual teams, the additional complexity of virtual teamwork as compared to (individual) telework is acknowledged. This additional complexity refers to increased coordination requirements that emerge when teams shift to distance collaboration. However, mainstream literature seems to focus chiefly on managerial solutions that address this coordination complexity, such as team leadership or team trust, and on technological solutions. The main contribution of the analysis of the case studies presented in Chapter 3 resides in its focus on the extent to which the organizational design of teams enables team members to cope (or not) with the additional coordination requirements that result from virtuality and distance. In this analysis presented in Chapter 3, the organizational design refers to the division of labor, understood as the way operational (productive) and regulation (controlling and decision-making) tasks are divided between and within teams and the allocation of tasks to either technology or jobs within teams.

In the discourse analysis presented in Chapter 5, it was argued that the NWOW techno-managerial apparatus[21] can be thought of as an *assemblage* that combines a variety of technological and managerial concepts, practices and technologies in a new way (see Foucault, 1977). As we saw before, the constitutive elements of NWOW are not really new. They can often be traced back in one form or another decades before the first texts on New Ways of Working were published. At the same time, one could argue that the novelty of NWOW resides in the unprecedented *scale* and in the coherence with which the elements of NWOW – flexible spatial and temporal work arrangements, participatory management strategies, organizational reconfiguration and enabling ICT's (Ajzen, Donis & Taskin, 2015) are being introduced across organizations, sectors, regions and countries (see Chapter 5). Different kinds of techno-managerial innovations (e.g. distance work,

[21] In this book, the notions of "apparatus" and "dispositive" have been used interchangeably. Foucault used the term dispositive (sometimes translated as "apparatus") in order to refer to the "heterogeneous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions – in short, the said as much as the unsaid". For him, "the apparatus itself is the system of relations that can be established between these elements" (Foucault, 1977). In the analysis presented in Chapter 5, we proposed to approach NWOW as a Foucaultian dispositive or apparatus that reshapes the subjectivities as well as the practices of office workers.

participatory management, ICTs, etc.) are now articulated with each other in more or less coherent managerial programs that proclaim for specific work-related values. We already pointed out that in a great deal of talk about NWOW, competences function as social values and vice versa. Moreover, in Chapter 5 we have shown that the relative position of competences/values in relation to each other is highly dependent on the interpretive logics social actors rely on in order to make sense of the changing realities of office work.

For instance, in celebratory NWOW discourse the neoliberal logic introduces a notion of "autonomy" understood in terms of self-regulation and management-by-objectives. However, celebratory NWOW discourse also includes a team-oriented participatory logic that values social interaction and decision-making at the team-level. Celebratory NWOW discourse even relies on a humanizing logic valuing competences linked to the realization of social well-being. However, the core logic of celebratory NWOW discourse remains neoliberal. Soft values linked to well-being and participation (e.g. "being open", "being communicative") are therefore conditional upon the question whether productivity related goals are met through self-management or not.

The discourse analysis presented in Chapter 5 shows that "newness" operates as a value performing a key ideological function: it allows for the construction of a binary position between old and new worlds of work that maps onto parallel oppositions between distrustful, coercive, hierarchical, administrative/bureaucratic modes of organization on the one hand, and "new" trust-based, autonomy-based, flexible and result-oriented modes of organization on the other hand. The "new" world of work is thereby clearly valued over the old world of bureaucratic "dinosaurs". The suggestion being that these dinosaurs are relicts of the past bound to disappear over time, even where they are not antagonistically opposed to new ways of working but rather agonistically tolerated. Even though there is a clear tendency to get rid of the "old" ways of working, proponents of NWOW prefer to talk about soft transitions, about evolution rather than revolution. In some public sector organizations where NWOW were being introduced there was a lot of talk about the uneasy coexistence between old and new cultures or worlds of work.

In sum, the different contributions to the LITME@WORK project identify key tensions regarding the concept of newness in relation to DML and NWOW. NWOW discourse proclaims its own newness while valuing it as a selling point that legitimizes a wide array of actors and policies. At the same time, the literature review and the analyses presented in this book highlight the need to consider the historical dimension of contemporary collaborative and distance work.

The Social Construction of Digital Media Literacy

Competences are social constructs but equally inform the social construction of work-related identities, relationships and environments. The four analyses presented in this book have considered the social dimension of DML and New Ways of Working (NWOW) from different theoretical and methodological angles.

The critical discourse study of the managerial logics that reshape the world of office work presented in Chapter 5 was based on radically constructivist principles. Social reality was thereby seen as an outcome of social and political decisions and articulatory practices that may or may not crystallize into institutionalized or sedimented social practices. According to the radically constructivist framework outlined in Chapter 5, social actors engaging in competing practices of articulation attempt to fix (the meanings of) social identities, norms, practices, narratives, subjectivities, social boundaries, and entire societies. As social actors articulate discursive elements with each other they aim to temporarily fix the never-ending play of shifting meanings, of signifieds sliding under signifiers, in order to come to terms with the inherently contingent nature of social reality. Discourse and social reality are mutually constitutive. The idea is that "*our cognitions and speech acts only become meaningful within certain pre-established discourses, which have different structurations that change over time*" (Torfing, 1999).

In Chapter 5 we discussed how NWOW discourse shifts and changes depending on the particular combination of interpretive managerial logics articulated by office workers and managers in order to make sense of changing work cultures. The meaning of signifiers such as "autonomy", "trust" or "participation" gets socially constructed as social actors articulate these signifiers with other semiotic elements according to specific interpretive logics. Even though individuals are able to become at least partially aware of the discursive patterns they may or may not reproduce, they need to adopt and adapt pre-existing discursive constructs in order to engage in meaningful communication. For this reason, all discourse – both linguistic and non-linguistic – is socially constituted as well as socially constitutive.

From a discursive perspective then, competences are by definition social constructs. They operate as abstract categories that value work-related traits, abilities, practices or categories. A discursive element can only acquire a particular value or meaning in function of its social and communicative use. This goes for the signifier "competence", but also for specific values/competences such as "productivity", "flexibility" or "well-being", and for the actual practices associated with these terms. Such notions therefore operate as *social* values. Like all elements of discourse, competences are both socially constitutive as well as socially constituted.

Interpretative use of competence related terms structures the social practices and social relations of concrete individuals, groups and organizations. Value is always social because it is always relative to the positions and resources of actors positioned in a social field. This means that the valuation of specific competences is highly dependent on the position(s) the supposedly competent person occupies in a specific social field, on the social actors and institutes valuing particular competences, and on the overall constellation of the social field in question. What it means to be competent may also be dependent on one's specific position in an organization. Moreover, competences need to be co-constructed intersubjectively in concrete work practices. Both the deployment and the recognition of competences are unthinkable in a social vacuum.

Critical discourse theorists consider "normal" social reality to consist of sedimented or crystallized social relationships whose political origins have been all but forgotten. To the extent that the logics constitutive of celebratory NWOW discourse are taken at face value and contribute to a hegemonic sense of normalcy, they are likely to support an associated set of "competences". Celebratory NWOW discourse does not only celebrate a "new" world of work but also a "new" office worker that has competences that were supposedly not central to office work in the bygone age of a more "administrative" or "bureaucratic" world of work. For instance, the celebratory discourse supports an old/new distinction and a "happy" discourse (Hambye et al., 2013) that legitimizes an entire consultancy industry as well as an entire class of managers and managing practices.

Because celebratory NWOW discourse is not always embraced by all office workers, it is nevertheless useful to distinguish between three groups on the basis of their critical stances with respect to NWOW as noticed in Chapter 5. The first group consists of workers who embrace and rearticulate celebratory NWOW discourse. Doing so, they also reproduce the image of the ideal-typical office worker of celebratory NWOW discourse and the competences that go with it. Among other things, this means that office workers are usually expected to be autonomous, responsible, trusting and result-oriented. The second group of office workers is more critical with respect to specific features of the NWOW project but does not call the overall legitimacy of a transition to NWOW culture into question. Rather, we are dealing with a group that warns against actual or potential perverse effects of implementing NWOW programs. This group tends to display a greater sensitivity to issues and problems that arise in relation to the management of the self. For instance, there is quite a lot of talk on problems linked to the work-life balance, potential burn-outs and other dangers to well-being. This category of office workers tends to be relatively tolerant of colleagues who may not completely fit the image of the ideal typical office worker constructed through celebratory NWOW discourse. Finally, the third group of office workers does challenge key aspects of the logics constitutive of celebratory NWOW discourse. Here, we can think of the office worker discussed in Chapter 2 who articulates a set of competences for public servants as an alternative to the type of competences called for in celebratory NWOW discourse. The notion of "*serving the citizen*" is constructed as a competence or value that is more important and more relevant to public service then a key NWOW value such as result orientation. Nevertheless, as values and competences are social constructs the question remains to what extent radical alternatives for celebratory NWOW discourse exist in public and private organizations. The discourse analytical chapter shows that such alternative ways of conceptualizing the world of work remain relatively rare.

The analyses of work practices and organizational design conducted in Chapters 2, 3 and 4 also considered the social dimensions of practices and organizational structures but did not operationalize the radically constructivist perspective on discourse outlined in Chapter 5. Nevertheless, Chapters 2 to 4 do share the assumption that teamwork and the digital media competences required to practice it are fundamentally "social".

These competences can indeed only be actualized in contexts where the tasks and the responsibilities of individuals are intertwined with those of other team members. Competences and teamwork get co-constructed in concrete practices. For instance, the analyses of Chapter 2 show that work practices are intertwined with team decisions that are made with respect to the protocols required by the organization, the artifacts team members are supposed to use, and the rules team members have to live by. Moreover, teamwork requires constant collective adjustments throughout the work process. It should also be noticed that digital media competences are not only characteristics of individuals but also of teams. Competences require a shared framing of the situation by individual team members if a collective response is to be formulated. Moments for collective articulation of work and coordination are therefore important in order to co-construct collective framings and responses.

Chapters 3 and 4 consider organizational structures to be the outcome of decisions made by managers, team leaders and team members. The authors recognize that any socially constructed division of labor within an organization or team implies a co-construction of numerous interdependencies and complex coordinative tasks. At the same time, the analysis of the organizational design and learning opportunities in virtual distance work environments was not based on a socially constructivist take on discourse. Rather, team and teamwork were considered as social constructs in the sense that all interdependencies require at least some degree of social coordination. By definition, teams are individuals dependent on each other's tasks. A collective framing and a shared understanding of task-interdependence needs to be co-constructed if principles such as collaboration, trust and collective decision-making are to be realized in virtual teams. This co-constructed interdependence takes a great deal of highly reflexive work. Team members need to recognize recursively that they are interdependent and act accordingly. There is therefore a need for an explicit construction of shared understandings as part of the trust-building and decision-making procedures necessary for successful collaborative practices.

Implications of Collaborative and Distance Work for Well-being

Although competences are often linked to ideas of efficiency and performance, they also touch upon issues of well-being. Well-being at work is studied sometimes in connection with positive elements, such as the motivation to work or the achievement of a certain satisfaction through task performance (Deci et al. 2001), sometimes in connection to the question of how to avoid situations that may increase stress (Edwards, 1992). The literature notes that it is necessary to take rational organizational factors into account – for example, job demand or job control – , but also intermediate (affective) factors related to the personal situation and/or intrinsic psychological motivation of subjects (Mauno, Kinnunen & Ruokolainen, 2006; Page & Vella-Brodrick, 2009). As such, our research can

only address this issue in an incomplete way, because we do not have extensive personal information about the interviewees. Nevertheless, several elements extracted from our work seem interesting to develop here.

From the perspective of organizational design outlined in Chapters 3 and 4, collaborative distance work in virtual teams entails learning opportunities but also comes with psycho-social risks to well-being. Karasek's seminal "job demand-control-support" model (Karasek & Theorell, 1990) posits that job demands, such as the requirement to work under pressure against tight deadlines, to solve complex problems or to interact with colleagues or clients, as well as the job resources required to meet these demands need to be assessed in order to identify risks to well-being. The key job resources for meeting the mentioned job requirements are autonomy at work and support provided by colleagues and superiors. Psycho-social risks emerge from an imbalance between job demands and job resources. In other words, risks emerge when jobs do not provide workers with the means to meet the job demands and do not allow them to solve the problems they encounter during their work.

From a similar line of reasoning, learning opportunities occur when job demands and resources are well balanced and when the job demands can be solved by employees because their jobs provide them with sufficient resources to do so. Karasek's approach to the analysis of psycho-social risks and learning opportunities is essentially a conditional one. This means that the analysis focuses on risks and opportunities of collaborative distance work in virtual teams rather than on effective outcomes. As indicated, the perspective of psycho-social risks at work can be regarded as relevant in research on NWOW. Using the conceptual framework and conditional approach applied to identify learning opportunities for workers, such as reported in Chapter 3, can also enable to identify potential risks for the well-being of workers. The hypothesis guiding such analysis is that those teams that provide team members with ample learning opportunities as well as sufficient support from supervisors and colleagues, will be confronted with less psycho-social risks, while those teams that are characterized with poor learning opportunities and support, will be confronted with higher psycho-social risks.

Additional analyses on the dataset presented in Chapter 4 show that many team members use virtualization as a means of increasing job satisfaction via a greater feeling of independence and a better work-life balance. However, one has to keep in mind that excessive teleworking activities (i.e. more than two-and-a-half days per week; Gajendran & Harrison, 2007) tend to drastically reduce well-being at work. There is no simple explanation for this, as several factors were observed in our study. This can indeed be due to a lack of competence in the management of teams working (partly) at a distance (see Chapter 2). Reductions of well-being in excessive teleworking contexts may also be due to a lack of consideration of the division of labor in the implementation of organizational transformations. It may also be caused by inadequate technical systems obstructing team coordination (see Chapter 3).

The discourse analysis presented in Chapter 5 includes an analysis of the way concerns with well-being get articulated during discussions of NWOW. Celebratory NWOW discourse assumes that the introduction of new techno-managerial techniques will contribute to more well-being at work. The "happy" values articulated in this discourse – for example, transparency, trust, adaptability, participation – can all be interpreted as being informed by a concern and valuation of well-being at work. Such values are often grounded in a humanizing managerial logic. This logic informs a discourse that stresses the importance of social, psychological and/or physical well-being at work. In the humanizing logic, well-being is a top organizational value. In isolation, this logic prioritizes non-economic dimensions of social life in organizational environments. In celebratory NWOW discourse the neoliberal logic remains the core logic though. This means that concerns with well-being can be articulated as long as they do not challenge key neoliberal assumptions.

In the discourse analytical chapter, well-being appeared as a key value among informants who relied on a humanizing interpretative logic in order to make sense of NWOW. In celebratory NWOW discourse it ends up legitimizing NWOW programs. However, many office workers relied on the humanizing logic and its valuation of well-being in order to problematize and mitigate certain perverse effects of NWOW without calling the entire NWOW framework into question. On the bright side, many interviewees stated that increased flexibility in terms of sliding working hours and self-management can lead to less stress and a better balance between work and private life. In addition, many interviewees welcomed NWOW related architectural and/or ergonomic improvements to the work environment. Nevertheless, interviewees also reported negative effects of NWOW related practices and policies on well-being. By relying on a humanizing logic that values well-being, many office workers problematize actual or potential perverse effects of NWOW. For instance, they frequently complained about the way the new office structure leads to ambient noise which creates a degree of auditory discomfort that impacts negatively on concentration, productivity and well-being. Moreover, many office workers expressed a concern with social well-being and a fear that excessive telework might lead to social isolation as well as to problems with the coordination of collaborative tasks. Other concerns related to well-being pertain to feelings of depersonalization in office spaces where the clean-desk principle rules. Similar concerns with well-being can also be observed in Chapter 3. The shift from managers exerting control over office workers to a situation where office workers are expected to monitor themselves is generally welcomed as having a positive impact on stress and psychological well-being. Still, this acceptation is sometimes countered by a feeling of having to be permanently available because of increased demands of flexibility and responsiveness that come with the introduction of ICT systems.

Throughout this book many factors that impact positively and/or negatively on well-being have been pointed out. However, it should be reminded here that well-being was not addressed directly in our research. We therefore suggest that it should be addressed

further and more specifically in other research. For instance, elucidating the relationship between well-being and complexity – that is, the openness of work environments and policies to some forms of adjustment and "*bricolages*" (de Certeau, 1990) – or the effects of consistency on well-being (see Chapter 3) offers interesting avenues to explore further.

Including Workers in NWOW

In the context of discussions on the world of work and digitalization, the notion of inclusion usually appears in the context of discussions on diversity, inequality and vulnerability as they relate to the digital divide(s) in our societies (Brotcorne et al. 2010). In the context of this project we did not focus on the emancipatory effects of collaborative and distance work for one's inclusion and/or participation at large. We rather focused on the processes whereby office workers get included into the New Ways of Working. This was perhaps most clearly visible in the discourse analytical chapter that examined the way office workers have been recruited into the cultural and techno-managerial apparatus of NWOW through a set of interpretive or managerial logics (see Chapter 5) but the other chapters allow for some observations regarding the inclusion of workers in NWOW as well (see Chapters 2, 3 and 4).

Generally speaking, celebratory NWOW discourse orients itself to office workers who are supposed to include themselves in the new techno-managerial environment of NWOW. It aims to recruit the largest possible number of office workers in managerial transition programs. It is a discourse that aims to interpellate office workers in such a way that they actively inscribe themselves in NWOW culture so that they will identify with its identities, values and modes of working. By zooming into the way office workers relate themselves to celebratory NWOW discourse, to the associated techno-managerial changes, as well as to the interpretive logics underpinning them, we were able to show that most of our interviewees were interpellated by (or "included in") NWOW. Only a very limited number of office workers engaged in a truly oppositional discourse challenged its key tenets and logics. The vast majority of interviewees accepted celebratory NWOW discourse at face value or engaged in a type of constructive critique on avoidable real and/or potential perverse effects of NWOW. The extent to which office workers are called upon to include themselves with(in) NWOW can also be illustrated with reference to the manifold workshops, conferences and congresses devoted to the subject, events through which a large community of practice has already constituted itself.

To the extent that we can think of the transition to NWOW in cultural terms, the adoption of this new culture implies the development of new forms of subjectivity or savoir-être. Office workers have to demonstrate this *savoir-être* in order to communicate the extent to which they have embraced values and/or so called "competences" such as autonomy, flexibility and trust. These modes of being thus become important criteria for deciding if someone does or does not fit with(in) the "new" NWOW culture. The constitutive outside of NWOW is constructed first and foremost in relation to a supposedly

outdated bureaucratic or administrative mode of working. At first sight, the construction of a boundary between two worlds or cultures hinges on a distinction between old and new ways of working (see the section What is Really New in Contemporary Collaborative and Distance Work? earlier in this chapter). However, as several public servants we interviewed recognized, the "old" and the "new" cultures and their associated ways of working can and do co-exist within a single organization. Even in some of the private companies where NWOW were (being) introduced, interviewees remarked that there was at least some resistance to change coming from employees who got "stuck" in old ways of doing things.

As there are different logics structuring celebratory and non-celebratory NWOW discourse, we should consider what these logics imply for the notion of inclusion. Before we do so, it is important to notice that NWOW discourse addresses employees and managers through a particular combination of managerial logics. The hallmark of a managerial logic is that it aims to align the interests, identities and values of office workers with those of the organization at large. Consequently, the different managerial logics informing celebratory NWOW discourse potentially provide different rationalizations for inclusive practices and policies. Let us illustrate this with reference to some of the managerial logics structuring NWOW discourse: the neoliberal, the humanizing and the expressive/consultative logics.

Firstly, even though the notion of neoliberalism is often associated with social fragmentation, individualization and competition, it is also a logic informing a discourse that seeks to interpellate and recruit subjects. As we saw before, a *neoliberal logic* structures celebratory NWOW discourse whenever it holds individual office workers responsible for their autonomous self-management and collaboration in function of reaching the objectives set by management. It informs a discourse that is often happily embraced by employees who interpret this logic in terms of an increased *flexibility* that provides them with a relatively high degree of freedom in the way they organize their work and private life in time and space. As such, even the neoliberal logic can be said to allow for an *inclusion* of diverse work-life balance arrangements, even though such arrangements have never been discussed in terms of inclusion by any of our interviewees.

Secondly, within celebratory NWOW discourse, a *humanizing logic* emphasizes the positive effects of the NWOW techno-managerial dispositive to human *well-being*. However, office workers also draw on a logic of well-being in order to point at potentially perverse effects of the neoliberal managerial logic were it to operate alone. By stressing the importance of physical, psychological and/or social well-being, it offers an argument for adapting orthodox celebratory NWOW discursive practices to the needs of particular (groups of) employees. Ultimately, the humanizing logic allows for an inclusion of a diversity of individuals and groups that might be excluded from the new world of work if the neoliberal logic would be left to operate on its own. Within the humanizing logic, inclusion is implicitly understood in terms of a recognition of particular human

needs and vulnerabilities and the need for an organization to adapt to these needs and vulnerabilities in order to keep everyone on board in a changing work environment.

Thirdly, the *"democratic" team-oriented participatory logic* can also be discussed in terms of inclusion. As we noticed before, this is a logic that values autonomous and collaborative *decision-making* processes at the team level. Put differently, employees are incited to include themselves in decision-making processes where decisions on how to reach organizational objectives set by management are to be reached. Whereas some interviewees problematized the lack of inclusion in decision-making processes at higher organizational levels (see our analysis of the pseudo-participatory and authoritative logics in Chapter 5). At any rate, because of its stress on participation, NWOW discourse potentially links up with inclusion in the sense of involvement in democratic decision-making processes and empowerment. The extent to which the techno-managerial apparatus of NWOW actually empowers employees and leads to more equality with(in) organizations very much depends on the overall organizational structure and politics of the organization in question.

The issue of including workers in the new ways of working was addressed in some of the other chapters as well, although more indirectly. For instance, in Chapter 2, the concept of *engagement* refers to the idea that DML must enable workers to engage in meaningful work activities for themselves, their employers and their coworkers. This idea was further developed by introducing the concept of *awareness* in order to emphasize the importance of developing activities that allow for "mutual understanding" in order to guarantee team cohesion. At the team level, inclusion therefore refers to the necessary conditions to be integrated into a work group, even though it is known that distance work involves more individualization (Rosanvallon, 2007).

In addition, it was noted in Chapter 3 that mutual trust and consistency are necessary to ensure learning outcomes. This concept of consistency is interesting in relation to the issue of inclusion of workers in teams. It refers to a good correspondence between the policies, the working structures put in place and the technical systems supporting teamwork, as a condition for the emergence of cohesion within a team. Results show that team members require a certain degree of autonomy for their tasks when they are distance working. This is essential in order to ensure conditions for learning and to avoid negative effects of virtual teams. Also, and this is the counter-side of autonomy, a company culture and organizational practices based on tight control and performance monitoring were identified as leading to poor learning opportunities.

What is the Role of Technology in Collaborative and Distance Work?

The Determinist Discourse on Technology in NWOW

At the outset of the LITME@WORK project, we expected that much NWOW discourse would be marked by technological determinism, understood as a reductionist explanative framework whereby technology is considered to determine social structures and cultural values. This sort of technological determinism is often articulated with(in) a technologically optimist discourse, presupposing that a rapid and unobstructed technological advancement leads to societal progress. A typical example of this type of technological determinism can be found in the discourse on the "information highways" and the "information society" of the nineties. This discourse celebrated technology as a driver for social, economic, political and/or cultural change (see Lemire, 1999). Considering the importance of ITCs for NWOW, we expected at least a partial reproduction of this optimism and determinism. Instead we observed a high degree of awareness among both managers and employees of the cultural implications and embeddedness of such technologies with(in) the "new" world of work. Moreover, we were able to identify many shared experiences of technological fallibility. Many office workers were also aware of barriers for a successful implementation of collaborative distance work and explicitly discussed the limitations of enabling technologies for NWOW.

This does not mean that technology and digitalization are irrelevant to NWOW programs. Rather, many office workers are at least partially aware of the complex entanglement of culture and technology at the organizational level. With different degrees of explicitness, most of them recognize that NWOW can best be understood as a techno-cultural and/or techno-managerial apparatus. Many office workers recognize that technology is an important enabling factor in the reorganization of work practices and subjectivities but almost none of them put their hopes in technology alone. In fact, when asked explicitly about "competences" required of employees and managers in NWOW environments, most office workers did not talk about technology at all.

In part, the absence of explicit discussions of technological competences in the interviews examined in Chapter 5 might be the result of interviewees and interviewers establishing common ground, with interviewees assuming that the interviewers are either knowledgeable about the technologies used or simply disinterested in the technicalities of everyday work. However, the relative absence of unprompted discussions of concrete ICT usage in these discourse analytical interviews might also be explained with reference to the degree to which these technologies have been normalized in office work. It appears that in most teams, ICT use was already commonplace when NWOW programs were implemented. Whatever explanation might be the correct one, it is important to observe that the competences mentioned are usually formulated in abstract terms. As we

saw before, interviewees often reply with talk about abstract values and *savoir-être* when asked about the competence of the ideal-typical office worker in office environments.

Celebratory NWOW discourse projects a hopeful fantasy, myth or utopia into the future, but our study shows that most office workers do not believe that technology alone will establish an "ideal" NWOW environment. Technology may be an enabling factor to realize a "new" world of work, but in order for change to occur, a broader cultural change is advocated by most proponents of NWOW at all hierarchical levels of the organizations we investigated. In celebratory NWOW discourse we see a core neoliberal logic, often articulated with consultative/expressive, team-oriented participatory, and humanizing logics. But even where aspects of celebratory NWOW discourse are being mitigated and criticized, we see that most interviewees consider culture and technology to be two sides of the same coin. In short, in celebratory NWOW discourse we can observe a shift away from the typical media-determinism that marked much discourse on ICTs in the nineties.

Technology as an Enabler or as a Hindrance: The Role of Organizational Design

The analysis of the organizational design of virtual teams (see Chapter 3) gives further support for a rejection of a technological determinist perspective on NWOW because the impact of the technological system in the different virtual teams under investigation did not lead to uniform, predictable outcomes. Rather, the way technology impacts on teamwork seems to be highly dependent on the organizational design of the teams and the actual division of labor within the teams, including the allocation of tasks to either technical systems or to jobs. Choices in technology use are related to, and even subjected to, organizational choices rather than the other way around as would be assumed from a technological determinist perspective. In organizations where team members enjoyed sufficient autonomy before they became virtual teams, technical systems such as communication tools and/or information and knowledge-sharing platforms, were introduced with the aim to support distance collaboration. In contrast, in organizations where the shift to a virtual team was accompanied by changes in the division of labor leading to less autonomy and control capacity for the team members, technical systems reduced the team members' autonomy even further. In these latter team settings, management typically assigned a controlling, surveillance and structuring function to the technical system to secure team performance, such as centralized ICT systems, ticketing-systems, and systems that structure information flows and/or workflows.

In addition, the analysis presented in Chapter 3 supports a rejection of technological optimism. Indeed, while technology is typically advocated as a solution for distance collaboration and coordination, numerous interviewees indicated quite the contrary: technology was often identified as an obstructing factor, generating new problems and disturbances that could not easily be solved by the (less autonomous) team members. As such, technology was often a source of stress. Frequently indicated technological

problems included technical errors, inflexibility of the technical system to enable a quick repair of problems, technical systems imposing highly standardized procedures and an overly strict planning. This view may be echoed in the quantitative analysis of Chapter 4 as well, which evidenced a decrease in communication as teams became increasingly virtual, hinting that team members are reluctant to use technology, possibly because of inconveniencies and problems.

Technology as Constitutive Part of Instrumented Practices

In the survey of the employees (see Chapter 4) the use of technology was investigated in relation to the concept of "consistency", defined as the matching of policies, structures and systems among virtual team members. Consistency can be identified as a key factor for learning outcomes. The use of the same communication channels by all team members was put forward as a key dimension of consistency. The hypothesis was that consistency in the use of communication channels, for instance when all team members use visual chatting, is a condition for coordination and trust building, but also for achieving a shared understanding. However, the analysis did not confirm that inconsistency in communication channels within a team had a moderating effect on the relationship between team virtuality and learning outcomes. The practical consequence of this observation is that team members can indeed use different technological tools to communicate and that such a variety will not impact on their learning.

This being said, tools and technology remain an important issue when collaborating at a distance. Technology changes the nature and characteristics of some tasks (e.g. booking a room by sending an email to a coworker compare to using an online dedicated and shared interface). It may also require additional tasks or render certain tasks unnecessary. In doing so, technology influence the work that has to be done as well as the way it may be done. Workers therefore need to reflect on their (use of) tools. They need to perceive their affordances, to understand how tools might be used in function of specific tasks and objectives, as well as to configure and adapt these tools accordingly. All of this takes up significant work time and these tasks should therefore be recognized as work. In spite of efforts made by designers to develop "natural" interactions with tools, technology is never obvious and requires a certain degree of appropriation by the users. This appropriation work is a condition for a meaningful and reflexive use of those tools. It goes beyond the simple use of the tools as planned by their inventors. Appropriation work also implies that workers should be able to criticize (the way they are supposed to use) tools and to use these tools creatively while integrating them into their own work as well as in the work of the team. If workers have to be able to use tools and adapt themselves to new technologies, they should also be able to adapt the tools and make them usable. Creativity and adaptation are particularly important when tools are not functioning well. In such circumstances, workers need to be able to identify problems and drawbacks as much as they need to be able to find solutions.

In Chapter 2, digital media competences are defined on the basis of an analysis of collaborative work practices as they are developed and experienced by workers. This analysis resisted to define competences on the basis of the tools used to work collaboratively at a distance and their functionalities. Such an approach would have led to a definition aligned with the functionalities of software which are constantly evolving. Instead, an interpretive approach was adopted in order to guarantee the relevance of our results on the long term and to grasp the complexity of collaborative work practices. This approach did not focus on the tools and their functionalities but rather on the ways workers develop and perceive collaborative work practices mobilizing those tools, with an interest for the broader context, their objectives, opportunities and constraints of the work situations. In the DML matrix, "tools" is only one of the dimensions to be taken into account when collaborating. As every dimension listed in our matrix, tools have to be connected to the other dimensions it is important to reflect on how tools might be used differently by coworkers ("people dimension") or how tools might increase the awareness of deadlines ("time dimension"). Such an approach is different from many other approaches adopted by practitioners and companies. For the same reasons as those explained above (i.e. avoiding the risks of oversimplification and fast obsolescence), a complex approach to collaborative digital media competences seems a stronger option on the long term as it is not tools-dependent and as its encompasses a wider range of issues (social, informational, spatial, temporal). Tools are an easy entry point to those complex topics but may also prevent practitioners and researchers to take a step back and address the "big picture" of collaborative distance work.

Managing Teamwork at a Distance

The analyses presented in this book all focus on the issue of managing teamwork at a distance in different ways and to different degrees. The DML matrix presented in Chapter 2 focused specifically on the digital media competences required for engaging in collaborative and distance work. The issue of management at a distance was treated as an aspect of distance work but was not a key focal point for the authors. The resulting DML matrix allowed for an identification of key competences required for the management of teams at a distance in terms of *coordination work*: collectively allocating tasks; organizing team meetings; organizing means of communication; organizing shared information spaces; and organizing the collective editing of a document. These competences have always played a role in collaboration, but we are now witnessing a shift in the type of actors held responsible for these tasks.

The discourse analysis presented in Chapter 5 showed that the "old" world of work is mostly associated with a manager responsible for these tasks. In the "new" world of work, these tasks are distributed among office workers across the organizational hierarchy. In organizations that transitioned to NWOW, these competences are no longer the exclusive prerogative of team leaders but have become key features of the ideal typical

office worker. For example, the allocation and coordination of tasks through technology is increasingly endorsed by team members, which increases their level of responsibility. This results in an overlap of competences between workers and managers. In this type of work setting, an important issue seems to be the feeling of "trust" workers may or may not enjoy. Trust was frequently mentioned in their descriptions of collaborative practices. The redistribution of the tasks, the competences associated to them, and the experience of "trust" have to be analyzed in light of organizational design choices (e.g. organization of team, degree of collaboration) and discourses that circulate both within and outside the organization.

In the analysis of the organizational design of virtual and distance work presented in Chapter 3, the role of the team leader was addressed as a potential source of tangible and intangible support for team members. Social support refers to the opportunities of team members to receive assistance and advice from their team leader. Social support can strengthen or weaken team members' control capacity because team leaders can help to solve the problems team members are confronted with, for example through the provision of information. However, social support can be hampered by the difficulties of sharing and communicating information in a virtual context (Cramton, 2001; Schaubroeck & Yu, 2017). The analysis in Chapter 3 (based on Modern Socio-Technical Systems Theory) shows that the role assigned to team leaders can also be counterproductive for team members' performance. More precisely, the division of labor in *regulatory* tasks (such as planning and coordination of work) is a central element in this respect. In those teams where regulatory tasks were assigned and concentrated with the team leader rather than with the team members, this implied less control capacity for the workers. In such organizational settings, a key role of team leaders is to control team members and to solve the problems they are confronted with during their work. This hampers a smooth workflow because it creates detours, implies loss of time, planning complications and a limited overview of the workflow progress. Interestingly, in teams where we observed such a concentration of regulatory tasks with the team leader, this was often accompanied by an introduction of a technical system that automated at least a part of these coordination related tasks. In turn, team leaders had less of an overview of the team's actions, experienced difficulties to remain on top of things and faced a general decrease in control capacity as well.

The discourse analysis conducted in Chapter 5 focused on the issue of management at a distance as part of a wider discussion about the cultural transition to new ways of working. Distance work was thereby considered as an organizational technology, part and parcel of an overarching techno-managerial NWOW apparatus. Managing people at a distance is often seen to require the mastery of a trust-based management style that supposedly incites employees to develop and practice their autonomy. Abstract categories such as "trust" and "autonomy" appear in our interviews as valued competences or competence related values.

Most office workers associate distance work with the principle of self-management. But not all discourse about managing teamwork at a distance is the same. Whereas some office workers welcome it as an enabling factor for the construction of a good balance between the world of work and private life, others point rather cynically at the organizational drivers for introducing such changes. The latter group of interviewees tends to explain the introduction of office work in terms of an organizational attempt at rationalization, externalizing the costs of office space, heating and so on to office workers themselves.

If we take a closer look at the way office workers discuss issues related to the management of teams at a distance, we see that most interviewees hold rather negative attitudes towards managers who engage in hierarchical, disciplinary, top-down management styles. Most of them prefer managers who adapt their management style to the NWOW values of result-orientation and autonomy. Of course, this binary opposition between enabling and constraining management styles corresponds perfectly to the binary opposition between new and old ways or worlds of working.

Bibliography

Achterbergh, J. & Vriens, D. (2009). *Organizations: social systems conducting experiments*. New York: Springer.

Ajzen, M., Donis, C. & Taskin, L. (2015). Kaléidoscope des nouvelles formes d'organisation du travail: L'instrumentalisation stupide d'un idéal démocratique et collaboratif. *Gestion 2000 : management & prospective*, 31(3), 125-148.

Brotcorne, P., Damhuis, L., Laurent, V., Valenduc, G. & Vendramin, P. (2010). *Diversité et vulnérabilité dans les usages des TIC. La fracture numérique au second degré*. Brussels / Gent: Academia Press.

de Certeau, M. de. (1990). *L'invention du quotidien, tome 1 : Arts de faire* (new edn). Paris : Éditions Gallimard.

Cramton, C. D. (2003). The Mutual Knowledge Problem and Its Consequences for Dispersed Collaboration. *Organization Science*, 12(3), 346–371.

Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J. & Kornazheva, B. P. (2001). Need Satisfaction, Motivation, and Well-Being in the Work Organizations of a Former Eastern Bloc Country: A Cross-Cultural Study of Self-Determination. *Personality and Social Psychology Bulletin*, 27(8), 930-942. <https://doi.org/10.1177/0146167201278002>

Edwards, J. R. (1992). A Cybernetic Theory of Stress, Coping, and Well-Being in Organizations. *The Academy of Management Review*, 17(2), 238-274. <https://doi.org/10.2307/258772>

Foucault, M, (1977). "The Confession of the Flesh" interview. In *Power/Knowledge Selected Interviews and Other Writings* (ed. Colin Gordon), 1980: pp. 194-228.

Gajendran, R. S. & Harrison, D. A. (2007). The good, the bad, and the unknown about telecommuting: Meta-analysis of psychological mediators and individual consequences. *Journal of Applied Psychology*, 92(6), 1524-1541.

Hambye, P., Mariscal, V. & Siroux, J.-L. (2013). Le capitalisme néo-libéral et la réalisation de soi par le travail. In H. Buclin, J. Daher, G. Christakis & P. Raboud (eds), *Penser l'émancipation: offensives capitalistes et résistances internationales* (pp. 87-109). Paris: La Dispute.

Karasek, R. & Theorell, T. (1990). *Healthy work. Stress, productivity and the reconstruction of working life*. New York: Basic Book.

Lemire, M. (1999). Les représentations sociales dans le discours public sur les autoroutes de l'information. *Politique et Sociétés*, 18(2), 83.

Livingstone, S. & Helsper, E. (2007). Gradations in digital inclusion: children, young people and the digital divide. *New Media & Society*, 9(4), 671-696. <https://doi.org/10.1177/1461444807080335

Mancinelli, E. (2008). e-Inclusion in the Information Society. In *Coursebook. Information Society: From Theory to Political Practice* (NET-IS Network for Teaching Information Society, p. 171-182). Budapest: Gondolat – Új Mandátum.

Mauno, S., Kinnunen, U. & Ruokolainen, M. (2006). Exploring work- and organization-based resources as moderators between work–family conflict, well-being, and job attitudes. *Work & Stress*, 20(3), 210-233.

Muracciole, M. & Massé, D. (2018). L'inclusion sociale numérique : le cas de trois dispositifs numériques améliorant l'accès aux droits. *Terminal. Technologie de l'information, culture & société*, (122). <https://doi.org/10.4000/terminal.2442>

Page, K. M. & Vella-Brodrick, D. A. (2009). The "What", "Why" and "How" of Employee Well-Being: A New Model. *Social Indicators Research*, 90(3), 441-458.

Pratt, J. H. (1984). Home teleworking: A study of its pioneers. *Technological Forecasting and Social Change*, 25(1), 1-14.

Rosanvallon, J. (2007). *Le travail de coordination à distance : éclatement des collectifs de travail et transformations du travail collectif* (Thesis, Université de Marne-la-Vallée).

Schaubroeck, J. M. & Yu, A. (2017). When does virtuality help or hinder teams? Core team characteristics as contingency factors. *Human Resource Management Review*, 27(4), 635–647.

Schmidt, K. & Bannon, L. (1992). Taking CSCW seriously. *Computer Supported Cooperative Work (CSCW)*, 1(1-2), 7-40.

Torfing, J. (1999). *New theories of discourse: Laclau, Mouffe and Žižek*. Oxford: Blackwell Publishers.

Valenduc, Gérard & Vendramin, Patricia. (2016). *Le travail dans l'économie digitale : continuités et ruptures*. Working Papers.

van Deursen, A. J. & van Dijk, J. A. (2014). The digital divide shifts to differences in usage. *New Media & Society*, 16(3), 507-526.

Zienkowski, J. (2017). Reflexivity in the transdisciplinary field of critical discourse studies. *Palgrave Communications*, 3(17007).

Chapter 7: How can Digital Media Literacy be Further Integrated in Team and Distance Work Structures and Practices in Order to Support Effective, Stimulating and Meaningful Ways of Working?

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Based on the analyses conducted in the LITME@WORK project we will now turn to the question of how digital media literacy (DML) can be further integrated in team and distance work structures and practices in order to support effective, stimulating and meaningful ways of working. In this chapter, we therefore provide a range of recommendations for policy and practice. The recommendations formulated here are in the first instance meant for those who seek to foster DML at work – no matter whether they inscribe themselves in a classic celebratory NWOW discourse or not. These recommendations are:

1) treat competences as abilities to perform particular practices rather than abstract values;
2) use the DML matrix in a reflexive way;
3) (re)consider the organizational design of teams as a strategic factor for organizations;
4) acknowledge the value of articulation work in hiring and career development;
5) focus the team leader's role on facilitating a shared understanding of teamwork and supporting distributed articulation work;
6) re-design training and evaluation initiatives beyond individual practices, operational skills and digital tools;

7) integrate the development of DML in a more balanced discourse about organizational change.

In formulating our recommendations on how to integrate DML in team and distance work, we will also consider the voices of those who take issue with actual or imagined perverse effects of transitioning to NWOW culture. Doing so, we seek to give voice to our more critical interviewees as well. Critique is part of a meaningful and reflexive stance on work-related competences. In fact, the introduction and elaboration of digital media competences can only be meaningful if integrated into wider interpretive logics.

1.Treat Competences as Abilities to Perform Particular Practices rather than Abstract Values

Our first recommendation for those who seek to develop DML further is to make a clear distinction between competences conceptualized as abilities to perform particular work practices on the one hand (see Chapter 2) and competences conceptualized as work-related values such as autonomy, flexibility or sociability on the other hand (see Chapter 5). A clear definition and understanding of competences as abilities enabling specific practices is important to a HRM policy that values DML. The matrix developed in Chapter 2 provides a sound basis for developing such an understanding.

The fact that many managers and/or employees talk about competences in abstract rather than concrete terms can lead to confusion. We therefore suggest that HRM should work with clear definitions of competences that allow for measurement and evaluation of concrete abilities and practices. Notions such as “autonomy” and “trust” will continue to play a role in organizational culture but as long as these values are not linked to a more concrete set of indicators they will remain a potential source of confusion.

Unqualified use of such terms can lead to contradictions in job descriptions and job requirements because it hinders an objectified account of what a job entails. It may also lead to an inconsistent division of responsibilities between individual and collective levels of organization. For instance, what does it mean to work autonomously if one is asked to collaborate at the same time? Also, hiring based on competences understood in terms of values rather than unambiguous job descriptions are more likely to lead to arbitrary evaluations of employees as well as to inaccurate expectations on the part of job seekers.

2.Use the DML Matrix in a Reflexive Way

In order to face the current developments in work practices and environments – for example, more teamwork, more distance work supported by digital tools and more cooperative tasks – digital media competences required for distance and collaborative work need to be defined more precisely. They should also be taught to improve

employability, effectiveness and creativity. The DML matrix proposed in Chapter 2 provides an exhaustive and precise understanding of digital media competences. It identifies the range of activities involved in *articulation* and *cooperation* work as well as their constitutive dimensions, which can be used to take on contemporary collaboration challenges in their full complexity.

The main advantage of this matrix is its complex and integrated representation of digital media competences implied in teamwork and distance work. It veers away from approaches that focus solely on digital tools and functionalities, as well as from approaches that associate competences exclusively with ill-defined concepts such as flexibility, digital health, trust – where "competences" are often disconnected from the tasks and work situations that workers engage in on a daily basis.

At the same time, by stating that the DML matrix should be used in a reflexive way, we mean that managers and policy makers should use it as a map rather than as a recipe. It is a map that can help to plan for training or evaluation purposes, but it also implies that workers, teams and management should create their own itineraries, adapt the matrix to their specific work contexts and objectives. This adaptation should prevent three pitfalls: a reductionist, a context-blind, and a compartmentalized application of the matrix. First, the matrix can help identify aspects of competences that are not fully covered in theory and practice and that may need particular attention. We do not propose a "one size fits all" approach which would assume that in every situation, every worker or team should be able to perform all the activities listed in the matrix and integrate all six dimensions in the way they frame the associated work situation. Second point, we suggest that the adequacy of these activities and dimensions should be assessed on a case-by-case basis, taking the specific work situations and the objectives of the workers into account. Third, in adapting the matrix to specific work situations, one should not adopt a compartmentalized approach that considers each cell in the matrix as disconnected from the others. Competences are by nature integrative and rely on connections between multiple activities and dimensions. Higher levels of competence translate in the ability to combine different activities and dimensions in a meaningful way. In any case, this matrix should be used as a tool for both practitioners and co-workers to increase their reflexivity with respect to collaborative work situations. Creating this shared reflexivity is a key factor in the process of developing DML at work.

3. (Re)consider the Organizational Design of Teams as a Strategic Factor for Organizations

In order to support learning in virtual teams, and to foster an effective, meaningful and stimulating working environment, it is essential to assess the tasks of team members explicitly and critically. It is also important to consider the design and assignment of tasks to team members. Our detailed analysis of the division of labor in a range of virtual teams (see Chapters 3 and 4) demonstrates a high variety in the organizational design of virtual

teams. This variation leads to a similarly high variation in the learning opportunities and psycho-social risks for the workers involved. The communication about their work, the execution of their tasks, the sharing of knowledge, the trust building and the mutual support all become more complex when workers have to collaborate over distance. Due to the division of labor between and within teams and the use of ICT at a distance, the risk of disturbances in the workflow increases. At the same time the scope and means to solve these disturbances decrease. In other words, the *coordination* of the work of virtual teams becomes more important as well as more complex. Our analysis showed that the coordination requirements and the possibilities to respond to these are determined by a team's division of labor.

In addition, it appeared that technology used to enable distance collaboration is not by default supportive, but can also add to the complexities of coordinating work. Technical systems are indeed prone to technical errors and can hinder rather than improve a team's coordination. This seems to be an underestimated problem. To go further, it appeared that it is important to discuss the tools to be used when settling down a team, and the roles (access, ownership, function) gravitating around the tools. It is an illusion to think that implementing tools will automatically create team spirit and collaborative work. It could even be the opposite: unadapted tools can create tension and hinder collaboration. It is thus crucial to implement meaningful tools, with a careful coordination that considers workers practices, work situations and contexts. Within such conditions, tools might support team construction and collaborative work. Tools need humans to work, humans need coordination of the tools with people in mind.

In spite of the obvious role of both the division of labor and the actual function and use of technology for learning opportunities, management as a rule does not consider these factors when introducing virtual teams. In other words, as argued earlier, management should take a more reflexive stand towards the development of new teamwork practices. The recommendations stemming from our analysis in Chapters 3 and 4 can be formulated rather unambiguously on that basis. First, it is necessary to take the time to critically assess the actual division of labor between and within teams and to reconsider it if necessary. Two questions should play a key role in this assessment: (1) Who does what, and (2) Who needs to collaborate when with whom? Low levels of division of labor are most conducive to support team members in coping with the increased complexity and coordination requirements. We therefore advice to grant team members sufficient autonomy to organize their work and to deal with the problems they are confronted with. This can be achieved by integrating tasks of preparation, support, production and regulation into the jobs of the team members instead of separating them and distributing these tasks over teams or between team members and team leaders. Based on the objective to increase the autonomy of team members, technical systems should be designed on the basis of the "minimal critical specification" principle. This principle stipulates that one should interfere only minimally with team members' control capacity. It also suggests a standardization of the procedures crucial to the workflow. Further, we

recommend paying attention to the support and feedback team members enjoy in their team, both from colleagues and superiors, as this is also an important source of learning opportunities. Finally, the analysis presented in Chapters 3 and 4 showed that trust and knowledge sharing benefit when teleworking arrangements are fairly consistent within a team.

4. Acknowledge the Value of Articulation Work in Hiring and Career Development

Chapter 2 introduced the distinction, within collaborative work, between *production work* (working together towards the production of goods or services) and *articulation work* (establishing the conditions of collective production work by meshing together the tasks, the actors and the resources involved), which includes *coordination work* and *contingent articulation work*. *Coordination work* is dedicated to designing (or redesigning) coordination mechanisms (typically ahead of the time of the production work) that set stable rules and procedures for collective production work (and materialize them into technological artifacts). *Contingent articulation work* is about adapting the procedures in context, as work unfolds, to get work "back on track".

The results presented in Chapter 2 show that *articulation work* is an important part of collaborative work, which is not necessarily recognized as such. While work is often reduced to "productive" work, the importance of articulation work is neglected. We especially noted that even if team leaders continue to play an important coordination role, articulation work is increasingly, implicitly or explicitly, expected to be performed by team members as well, especially in its contingent form. A consequence of the relative invisibility of such articulation work is that the value of the competences to perform it is seldom acknowledged. Hence, we argue that it is important to take into account articulation work for all HRM strategies and practices, from job descriptions to hiring processes, to career development initiatives.

5. Focus the Team Leader's Role on Facilitating a Shared Understanding of Teamwork and Supporting Distributed Articulation Work

The role of the team leader is another key factor for integrating DML further in team and distance work environments and practices. Our research suggests that team and distance work requires team leaders who (1) foster a shared understanding of teamwork among team members and implement the required conditions for it, (2) support the distribution of articulation work among the team members, and (3) play an active role in the adoption and implementation of ICTs within the team.

Concerning the issue of fostering a shared understanding of what teamwork entails, the analysis of team members' NWOW discourse suggests that office workers may have different understandings of what it means to be a team, depending on the interpretative logics at play (see Chapter 5). To put it differently, the meaning of "being a team" is likely to change depending on the logic used to make sense of NWOW. Different and even contradicting logics can coexist within a team, creating misunderstandings in what it means to do teamwork. Each logic also creates specific expectations regarding the "ideal" team leader. As a recommendation, we therefore suggest that team leaders should take potential misunderstandings into account and allow team members to negotiate a shared understanding of what it means to work as a team.

Furthermore, the role of the team leader has changed as remote teamwork cannot be coordinated and controlled using the same processes and tools as those of the past (see Chapters 2, 3 and 4). The responsibility of effective collaboration has evolved to a distributed phenomenon where team members have gained autonomy and participate in the definition of their collaborative framework (see recommendation 4 in this chapter). We observed a porosity between leaders and team members in doing *articulation work*. In this context, control has not disappeared, rather it has changed to the way members work together, with trust becoming a key component in task assignments, feedback to colleagues, collective awareness, etc. The role of team leaders is therefore to support coordination, secure consistency within the team (e.g. in terms of teleworking arrangements), identify problems (e.g. the issues of disconnection and work/life balance) and foster the collective construction of solutions.

Team leaders also have an important role to play regarding the tools used by team members. They have to be able to assess the usefulness of the tools in relation of the team and to organizational functioning more generally, assessing the social impact of the adoption of a particular tool. One has to keep in mind that individuals might adopt a tool in different ways depending on their specific competences, backgrounds and preferences. In fact, technology and its uses require explicit reflection and should be acknowledged as a potential problematic factor rather than as an uncriticized solution.

6. Re-design Training and Evaluation Initiatives beyond Individual Practices, Operational Skills and Digital Tools

Contrary to the myth of the digital native, the digital media competences identified in our matrix (see Chapter 2) are not automatically mastered by younger generations. Youngsters are not necessarily more competent than their elders when we talk about collaborating through digital media. The development of digital media competences for collaboration should not be seen as a generational issue, but as a matter of dedicated

training and/or education that is not necessarily provided at school today, although it affects everyone.

Our results provide some insights as to how such a training should be designed. First, digital media competences implied by collaboration have a social dimension (see Chapters 2, 4 and 6). Training and evaluation initiatives should therefore not be designed for individuals alone but also for teams as a whole. Teams need to demonstrate their ability to understand situations and organize team work collectively. Although training team leaders and managers is important, attention should be paid to team members as well.

A second implication of our research (see Chapter 2) is that evaluation and training initiatives should be based on a definition of digital media competences as *observable* performances (see also recommendation 1). In that sense, digital media competences differ from "soft skills" defined as values, mindset or personality traits (see Chapter 5).

A third implication of our research is that collaborative digital media competences should be reduced neither to operational skills, nor to mere technical abilities. Indeed, training programs all too often focus on digital tools and the technical ability to operate them. As stated in Chapter 2, skills are only one aspect of the resources mobilized when being competent, and technical skills are also only one part of these skills. Hence trainings should focus on competences and on their multiple dimensions. Our results (see Chapter 2) show that tools constitute only one of the six dimensions of the ten activities implied in distance collaboration. It is therefore necessary to develop training programs firmly anchored into activities and practices, which include (digital and non-digital) tools but are not reduced to this dimension. In addition, training programs also need to consider collaboration in relation to team structure (see Chapter 3). This is why we recommended to design teams *before* tools rather than choosing tools first and structuring and training teams afterwards (see also recommendation 3 in this chapter). In addition, training programs should strike a balance between integrating organizational rules (e.g. meeting schedules, file sharing protocols, etc.) and encouraging forms of inventivity in the development of collaborative practices, which could lead to organizational innovation.

Another point relates to the risk of identifying and recommending so-called "good practices" conceived as general guidelines that could be properly applied to all situations. As all practices are situated and contextual, such an approach could result in an oversimplified representation of collaborative practices and competences. "Good practices" should rather be seen as resources that can be used in certain contexts and should therefore be adapted depending on the context. From our perspective, a good practice should be defined as an adequate framing of the situation or as a relevant conduct, rather than as an operational skill that can function in any situation. To put it differently, rather than aiming at good practices, we recommend that training and evaluation initiatives focus on *reflexive* practices that allow for an adequate framing of specific situations. In turn, this allows the identification of relevant responses to specific problem situations.

7. Integrate the Development of DML in a more Balanced Discourse about Organizational Change

Celebratory NWOW discourse projects a very positive image of the objectives and consequences of team and distance work (see Chapter 5). As such it glosses over critiques and worries commonly expressed by office workers and managers. For instance, many office workers point at potential or actual negative effects of NWOW measures on social, psychological and physical well-being, as well as on the realization of public service values. Likewise, some interviewees are critical about the actual contribution of NWOW to a more participatory work culture. Nevertheless, such critiques and worries are part of the way people give meaning to their work. Ignoring them could lead to discontent in organizations. We therefore recommend that managers and policy makers who seek to foster DML develop a more balanced discourse about organizational change.

In a more balanced discourse the critiques and worries about the perverse effects of NWOW are explicitly recognized. This recognition of critiques and worries should not only show in HRM and management rhetoric but also inform the actual implementation of organizational change. If management persists in a 100 per cent celebratory NWOW discourse without engaging dialogically with the concerns, worries and problems articulated by critics of NWOW, and if management does not adopt a more pragmatic stance in response, chances are that it will be accused of wielding a pseudo-participatory discourse.

There is also an organizational risk that comes with a disconnect between high management ideals and the realities of day-to-day work. From a managerial point of view, it is important not to consider micro-resistances to specific NWOW principles as a matter of bad will and/or resistance to NWOW as a whole. Quite often these resistances rest on ways of thinking that people rely on in order to make sense of their work. In environments where critique circulates, it is important to allow for debate, for a problematization of NWOW practices, as well as for a diversity of standpoints.

Critique has to be taken seriously. If not, management and policy making risk being inconsistent with the participatory ideals that are supposedly part and parcel of NWOW. From the perspective of Chapter 2, it can even be argued that being critical is actually *a competence*. Criticizing implies an ability to frame situations adequately and to consider alternative scenarios – be it for maintaining the status quo and/or (re-)imagining organizational change.

Appendix I : Instrumented Practices

Cautionary statement about the list of instrumented practices presented here:

The described instrumented practices are extracted from our data and are not meant to represent an exhaustive image of all possible practices. They rather show potential and alternative ways to operationalize the actions to which they relate. Furthermore, these practices may reflect both fruitful and problematic uses, depending on the context in which they appear. The brand names mentioned here are not meant to endorse any commercial product, but serve as indications to help the reader, who might be unfamiliar with these kinds of tools, to better understand our point.

1. Interdependent Tasks

Interdependent tasks
Collectively allocating tasks (coordination work)
Identifying coworkers working time and work responsibilities
Sharing a text document on an internal server listing everyone's working time and role
Sharing a text document on an internal server listing tasks and their deadlines
Sharing a spreadsheet listing tasks on an online file storage system (e.g. Google Sheets)
Collectively authoring one's job description
Identifying the nature of tasks
Sharing a text document specifying the nature of tasks (e.g. Word document)
Reading the content of tickets in a ticketing tool (e.g. Track)
Display tasks in a digital Kanban board
Presenting a project on a corporate digital social network
Sharing a spreadsheet listing tasks on a shared server (e.g. Excel sheet)
Collectively checking tasks in a project management software (e.g. Odoo)

Making the team's tasks and deadlines visible
Recording tasks in one's shared calendar (e.g. Outlook)
Recording tasks in a colleague's shared e-calendar
Sending an e-mail to team members
Using shared spreadsheets (e.g. Excel sheets)
Identifying the workload related to tasks treatment
Indicating the duration of a project in a shared spreadsheet
Indicating the amount of needed work hours in a ticket
Ensuring a balanced collective workload
Collectively completing a shared spreadsheet during team meetings
Automatically filtering tickets order of appearance
Sending an automatic e-mail from a ticketing tool to the team leader
Ensuring one's individual balance toward collective workload
Listing one's tasks in an online project management tool (e.g. Trello)
Listing one's tasks in one's shared calendar (e.g. Outlook)
Identifying constraints of media apparatus for interdependent tasks allocation
Working successively in a shared spreadsheet
Accessing a shared spreadsheet
Using 2 different task management tools (e.g. Google Sheets and Track)
Using a shared spreadsheet on an online collaborative platform (e.g. SharePoint)
Using a project management software (e.g. Odoo)
Implementing tasks interdependency (cooperation work)
Making content of tasks available for team members
Sharing a spreadsheet on a common server (e.g. Excel)
Maintaining one's shared calendar up-to-date concerning tasks

Sharing tasks lists on an online collaborative platform (e.g. SharePoint)
Tagging one's coworkers on tasks in a project management tool (e.g. Odoo)
Inquiring about collective progress on tasks
Sending each other's messages concerning tasks by mail or by instant messaging
Collectively checking a spreadsheet (e.g. Excel)
CCing one's coworkers with e-mails concerning tasks
Indicating when a task has been done and its duration in a ticket
Creating a shortcut in one's internet browser linking to the tickets of a colleague
Sending a report by e-mail to the team leader listing carried out tasks
Displaying digital task management boards on screens
Sending a recap of carried out tasks during a given period by e-mail to team members
Simultaneously displaying one's coworkers shared calendars (e.g. Google Agenda)
Checking a ticketing service's homepage (e.g. Track)
Collectively checking a tasks' list on a shared online spreadsheet (e.g. Google Sheets)
Collectively checking a project management system (e.g. Odoo)
Identifying changes in a collective task progress
Adding a comment on a shared online spreadsheet to receive a notification by e-mail
Creating a new ticket containing the nature of the task to receive a notification by e-mail
Dating tasks' statuses in a Kanban task management board
Identifying other's degree of availability to exchange about tasks progress
Identifying unavailability of others through their IT equipment (e.g. headphones)
Checking one's colleague status on an instant messaging system (e.g. Skype)
Receiving an automatic "out-of-office" e-mail from one's coworker
Informing other on one's own availabilities to exchange about tasks progress
Sending an automatic "out-of-office" e-mail

	Indicating one's tasks in a shared calendar (e.g. Outlook)
Collectively evaluating tasks progress	
	Collectively filling in an online shared team evaluation form (e.g. Google Forms)
Identifying daily collective work load	
	Sharing a common mailbox
Identifying coworkers' work overload	
	Collectively checking a shared spreadsheet listing everyone's tasks
	Dating tasks' statuses in a Kanban task management board
Balancing time dedicated to collective and individual tasks	
	Identifying the priority of a collective task through e-mail exchanges
	Indicating one's tasks in a shared calendar (e.g. Outlook)
Making oneself localizable for coworkers	
	Sharing one's activities through a shared calendar
Identifying a convenient moment to work together at a distance	
	Identifying other's location in their shared calendars
Identifying constraints of media apparatus to work synchronously	
	Modifying parameters of a digital accounting tool (e.g. Winbooks)
	Keeping track verbally about coworker's carried out tasks

2. Team Meetings

Team meetings
Organizing team meetings (coordination work)
Scheduling team meetings
Creating a meeting and inviting participants in a calendar (e.g. Outlook)
Recording a meeting in one's colleagues' shared calendar (e.g. Outlook)
Limiting coworkers' write permission to one's shared calendar (e.g. Outlook)
Sending each other's a message in an instant messaging system (e.g. Slack)
Identifying coworkers availabilities
Checking team's shared calendars (e.g. Outlook)
Filling in an online meeting planner (e.g. Doodle)
Using a meeting planner from one's calendar (e.g. FindTime plugin for Outlook)
Defining one's status in an instant messaging system (e.g. Skype)
Informing coworkers about one's own availabilities
Indicating busy time slots in one's calendar (e.g. Outlook)
Making information available for the meeting participants
Sending documents to the participants of the meeting by e-mail
Using the meeting planner to update the agenda of the meeting (e.g. Outlook)
Posting information on a corporate online social network (e.g. Yammer)
Sharing a standardized spreadsheet on a shared server (e.g. Excel sheet)
Sending an e-mail to the colleague in charge of the agendas of meetings
Identifying appropriate media apparatus for team meetings
Using a videoconference system (e.g. Skype)
Selecting a suited room for a remote meeting

Using an instant messaging system (e.g. Slack)
Adapting oneself to coworkers media preferences
Avoiding videoconferencing systems for remote meetings (e.g. Skype)
Meeting with the team members (cooperation work)
Recalling the chosen moment to meet
Recording team meetings in a calendar (e.g. Outlook)
Keeping meeting's invite at sight in a mailbox
Interacting with coworkers
Using videoconferencing systems for remote meetings (e.g. Skype)
Distributing collective tasks and workload
Sharing a document on an online file storage system (e.g. Google Docs)
Sharing a spreadsheet on a shared internal server (e.g. Excel sheet)
Sending a recap e-mail to team members after the team meeting
Collectively checking a project management system (e.g. Odoo)
Checking an online project management system (e.g. Trello)
Scheduling team's collective tasks
Writing a shared backwards scheduling (e.g. Excel sheet)
Sharing a spreadsheet on an online file storage system (e.g. Google Sheets)
Collectively checking a team's calendar (e.g. Outlook)
Collectively checking a digital task management board (e.g. Kanban, Odoo)
Establishing collective authoring processes
Creating a shared slideshow (e.g. PowerPoint)
Inquiring about each other's progress
Collectively checking a shared spreadsheet listing the team members' tasks (e.g. Excel)

Collectively checking a spreadsheet on an online file storage system (e.g. Google Sheets)
Collectively checking a digital accounting tool (e.g. Winbooks)
Collectively checking an online digital task management board (e.g. Kanban, Odoo)
Collectively filling in an online evaluation form for collective tasks (e.g. Google Forms)
Managing interruptions
Putting on hold one's distant coworkers
Warning verbally one's colleagues about the meeting's conduct
Keeping track of shared information during the meeting
Writing personal notes in a digital notepad (e.g. OneNote)
Sending e-mails including the information about the team meeting
Writing reports following the team meeting

3. Remote Communication

Remote communication
Organizing means of communication (coordination work)
Accessing one's communication tools
Activating the sound of one's messaging applications notifications
Connecting remotely to one's company network through one's laptop
Avoiding interruptions
Physically isolating oneself from others by teleworking
Setting up one's instant messaging status (e.g. Skype)
Filling in one's shared calendar (e.g. Outlook)
Keeping one's mailbox continuously open
Identifying an e-mail overload in one's mailbox

Controlling information load to be treated
Keeping a low rate of unprocessed e-mails in one's mailbox
Keeping a low number of groups and information to follow on a corporate social network
Writing an automatic "out-of-office" e-mail
Segmenting private and professional life
Avoiding telework
Using 2 different internet browsers
Digitally clocking in
Limiting phone deviation (e.g. Skype)
Avoiding sending e-mails outside of office hours
Identifying appropriate media apparatus for communication means organization
Using a messaging mobile application
Using an instant messaging system (e.g. Skype, Slack)
Using the e-mail
Meeting in a room with specialized equipment for remote meetings
Interacting with one's coworkers through a webcam
Communicating with coworkers (cooperation work)
Identifying coworkers availabilities
Checking a coworker's shared calendar
Checking a coworker's instant messaging status (e.g. Skype)
Locating one's coworkers
Identifying a coworker's instant messaging status (e.g. Skype)
Making one's activity visible for coworkers
Using instant messaging systems (e.g. Skype)
Setting up one's instant messaging status (e.g. Skype, Slack)

Filling in one's shared calendar (e.g. Outlook)
Avoiding disturbing others' work
Avoiding remote meetings supported by videoconferencing systems (e.g. Skype)
Using instant messaging systems (e.g. Slack, Skype)
Turning off the sound of one's messaging applications on one's laptop
Looking for information on one's own before asking coworkers
Forwarding information to coworkers
Sending coworkers e-mails with content that may be of interest to them
Posting information on a corporate social network (e.g. Yammer)
Filing documents on online collaborative platforms (e.g. SharePoint)
Identifying information coming from coworkers
Sorting out e-mails automatically with filters selecting e-mails coming from coworkers
Sorting out one's e-mails automatically with assigned colors
Checking discussions of one's workgroup on an instant messaging system (e.g. Slack)
Checking contributions to a common project on a collaborative development platform (e.g. Github)
Checking messages on a corporate social network
Avoiding coworkers' information overload
Avoiding answering to e-mails with multiple recipients
Separating private and professional information in a shared calendar (e.g. Google Agenda)
Setting up an automatic "out-of-office" e-mail
Relying on the competent e-mail management of coworkers
Avoiding sending e-mails out of office hours
Avoiding sending unnecessary e-mails containing attached documents
Communicating with coworkers to find information
Using the telephone

Sending an e-mail
Posting a message on an instant messaging system (e.g. Slack)
Working in co-presence with coworkers
Sending a message on an instant messaging system (e.g. Skype)

4. Information Spaces

Information spaces
Organizing shared information spaces (coordination work)
Adopting procedures for collective file management
Sharing rules for using shared information spaces
Sorting documents according to coworkers access to the shared information space
Identifying people who need access to documents in an intranet database
Placing all documents indiscriminately on an online storage space (e.g. Google Drive)
Sharing task lists on an online collaborative platform (e.g. SharePoint)
Avoiding coworkers' information overload
Using common and individual information sharing spaces differently
Reminding team members of the common rules for managing shared document storage spaces
Limiting the access of the information space to coworkers strictly concerned by a document on an online storage space (e.g. Google Drive)
Identifying constraints of media apparatus for information spaces organization
Lacking criteria to access a document through the research function of a database
Identifying competing documents sorting logics among coworkers
Lacking a pleasant presentation of the files on an online collaborative platform (e.g. SharePoint)
Facing a too complex files classification
Using competing file storage spaces

Not being able to understand technical requirements of shared file storage spaces
Identifying appropriate media apparatus for information spaces organization
Adapting one's use of file storage spaces to have a compatibility between different kinds of users
Collectively deciding on the folder structure to adopt on an online collaborative platform (e.g. SharePoint)
Adopting a systematic file naming system in a file storage space (e.g. Windows File Explorer)
Sharing information in dedicated spaces (cooperation work)
Finding information
Sending each other the links of shared documents (e.g. Outlook, Slack)
Recording information on a personal storage space on one's computer
Creating shortcuts from one's file explorer, web browser or desktop
Searching information on an online collaborative platform (e.g. SharePoint)
Creating a folder in one's mailbox containing the answers of coworkers
Sorting one's e-mails into sections (e.g. Outlook)
Searching information in one's mailbox
Classifying one's e-mails in the folders of an internal shared database
Downloading shared information from an corporate social network to one's personal storage space
Informing coworkers of shared information space's update
Posting a message on a corporate social network
Sending an automatic e-mail after sharing a document on an online collaborative platform (e.g. SharePoint)
Sending an instant message to coworkers (e.g. Slack)
Sending an e-mail to coworkers with the document's link
Sharing up-to-date versions of documents
Creating a local folder and only sharing it at the end of the project

Designating different types of storage space for work in progress and for finalized documents
Sharing documents on an online file storage space allowing synchronous authoring (e.g. Google Drive)
Avoiding sending attached documents in e-mails
Systematically naming document versions in a file storage space
Preventing data loss
Saving data on an internal shared server

5. Document Production

Document production
Organizing the collective authoring of a document (coordination work)
Making a document available for its collective authoring
Placing a document in an intranet folder accessible by all team members
Requesting the sharing of a document in an online storage space (e.g. Google Drive)
Defining the document's authoring roles
Agreeing orally on responsibility for a shared document via a videoconferencing system (e. g. Skype)
Creating rules for collective document authoring and roles distribution in a shared slideshow (e.g. PowerPoint)
Protecting a document from coworkers' modifications
Verbally warning one's coworkers
Restricting access to a shared spreadsheet to a few team members (e.g. Excel sheet)
Identifying constraints of media apparatus for organizing collective document authoring
Modifying documents with asynchronous authoring systems
Identifying appropriate media apparatus for organizing collective document authoring
Identifying coworker's needs
Identifying organizational complexity

Authoring a document collectively (cooperation work)
Identifying document's accessibility for collective authoring
Sending an e-mail to a coworker
Visualizing coworkers' modifications
Identifying coworkers through identifying information in an online shared document (e.g. Google Docs)
Enabling change tracking in a document (e.g. Word document)
Automatically receiving an e-mail from a collaborative development platform (e.g. Github)
Identifying the last person who modified a document on an online collaborative platform (e.g. SharePoint)
Making one's modifications visible for coworkers
Indicating one's changes in bright colors in a document (e.g. Word document)
Using the change tracking system on a document (e.g. Word document)
Managing the progress of collective authoring
Using instant messages in an online synchronous authoring system (e.g. Google Docs)
Sending e-mails to team members
Adding comments to an online shared document (e.g. Google Docs)
Sending messages in an instant messaging system (e.g. Skype)
Sharing one's screen showing a collectively authored document through a videoconferencing system (e.g. Skype)
Avoiding versionning conflicts
Using online shared document with synchronous authoring systems (e.g. Google Docs)
Using an automatic version protection system in a ticketing tool (e.g. Track)
Avoiding sending e-mails with attached document for modifications
Regularly exiting and saving one's progress in a shared spreadsheet (e.g. Excel sheet)
Using a versioning system in an online collaborative platform (e.g. SharePoint)
Notifying one's coworkers of a document opening by e-mail

Table of contents

Digital technology has become ubiquitous in the workplace, especially for office workers. So-called «new ways of working» gradually emerge, enabled by technological, organizational and societal developments. As distance collaboration is becoming increasingly common, it raises a number of critical questions. How does the organizational design evolve to accommodate and support this transformation? What are the key changes in the individual and team work practices? What competences do workers need in these new work environments? And how do the associated discursive changes impact on the practices and subjectivities of office workers?

This book presents the results of LITME@WORK, a 4-year research project (2015-2019) that addressed these changes through the lens of digital media literacy (DML) for office work, focusing specifically on teamwork and distance work. LITME@WORK was funded by the Belgian Science Policy Office (BELSPO).

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