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Scripting Agile Management

An Enquiry into the Socio-Material Practices of Industrial Technology Development

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Abstract

This study investigates the mechanisms of agile management – a widespread phenomenon of a systematised practice that is supposed to regulate, coordinate and control work in a more adaptable, collaborative and less hierarchical manner. Based on an investigation of agile management in three industrial companies specialising in technology development, the study sheds light on how ideas of agile management are put into practice.

The starting point of this study is the current debate on management approaches that claim to function without any assigned managers. Accordingly, management can no longer be located only within social relations between managers and employees. Therefore, this thesis provides an in-depth analysis of who and what contributes to render work coordination possible with a specific focus on the socio-material relationships.

Against this background, this dissertation places agile management at the centre of its analysis as it emblematically represents how management currently works in many contemporary organisations. Although industrial companies are increasingly starting to apply agile management, its underlying mechanisms are yet not fully explored. Which mechanisms agile management works with and how they stabilise in practice are, thus, central questions that this thesis answers.

The study contributes both empirically and theoretically to research on the mechanisms of (agile) management. I argue that the investigation of agile management requires a novel theoretical framework of *management scripts*. Management scripts are understood as programmes of action being embedded in the interactions, patterns of action, organisational roles and/or artefacts of agile management. These programmes of action guide and direct social action. Thus, I illustrate that agile management is executed by the close socio-material relationships and, more specifically, the artefacts' physical properties. This perspective allows us to better understand how agile management operates in its claimed form without any assigned managers.

Moreover, I provide empirical insights into agile management by presenting three core management mechanisms performed by social and material entities. In focusing on the ideas of adaptability, collaboration and flat hierarchies that are dominating the prevailing debates on agile management, I foreground the mechanisms of *scripted improvisation*, *scripted commitment* and *scripted order*. The first script of agile management guides and directs social actors to constantly improvise. The second underlying mechanism of scripted commitment directs social actors to stay permanently committed to their work performance and corporate

objectives. Practices of emotional collaboration attach social actors (emotionally) to the workplace and thereby guarantee that actors stay committed. Finally, I show that, despite claims of flattened hierarchies, agile management embodies a scripted order of relationships between social actors, through which asymmetrical relations of power emerge.

Overall, the study sheds novel light on the ambivalences and tensions of agile management between planning and improvising, caring and exploiting, enabling and constraining. I argue that these tensions and ambivalences are made compatible with each other by social and material actors, ensuring that work is still coordinated, even without a designated manager. The study therefore extends our understanding of the heterogeneity of social and material actors in management and presents a new interpretation of the management mechanisms and their involved actors and power relations.

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List of Abbreviations

ANT	Actor Network Theory
EDF	Électricité de France
PBI	Product Backlog Item
R&D Department	Research and Development Department
ROI	Return-On-Investment
STS	Science and Technology Studies
VEL	Véhicule Électrique

1. Introduction

There are no managers.
(Sutherland et al. 2019, Chapter 2.6)

This study investigates the mechanisms of agile management, a recent widespread phenomenon of a systematised practice that is supposed to regulate, coordinate and control work in a more adaptable, collaborative and less hierarchical manner. Agile management is an emblematic example for management in many contemporary organisations. As stated in the epigraph, peculiar to this phenomenon is the claim that it operates without managers. This suggests an uncertain shift in the general practice of management: if there is no longer a direct manager coordinating and controlling the work process, which mechanisms does agile management, then, work with?

The aim of this study is to examine the underlying mechanisms of agile management more closely in order to understand how they regulate, coordinate and control work. One of my core arguments in this study is that a focus on the physical properties of artefacts and their relation to social actors is necessary if we want to adequately understand how this kind of management functions. This study, thus, illuminates how agile management is performed by social and material actors through mechanisms that I term *management scripts*.[1]

Agile management emerged from debates around a new management style in software development that is claimed to drastically change the ways in which work is coordinated. The debate is centred around three issues: first, companies establish more flexible development processes in order to respond to rapid changes in customer demands more quickly. The turn towards flexibility is here often considered to replace former bureaucratic work coordination (Tihlarik and Sauer 2021). Second, companies start to establish closer collaborations between the different actors involved in a development process. This should facilitate higher transparency in work processes because former technology development often isolated the different development stages from each other. Collaborations should allow managers and employees to retain an overview of the bigger picture of a project or product. Thus, to still be able to make decisions, companies increasingly implement practices of close teamwork. Third, consultancies and handbooks on flat hierarchies (Robertson 2015; Kleinman et al. 2018) advocate a shift to flattening the organisational hierarchies. Accordingly, the model of a management with a strict supervisor-subordinate relationship is said to be increasingly outdated and inefficient and companies are eager to replace the former order of top-down

[1] For a more detailed explanation of management scripts, see further below and Chapter 3.

work coordination with a more symmetrical distribution of management among their employees.

Against this backdrop, agile management has become a leading example of how these debates are concretised into a particular management approach. Scholars regard this phenomenon as representing "the management paradigm for organisations in the 21st century" (Olbert and Prodoehl 2019, 12; my translation) and even predict the rise of an "agile capitalism" (Daum 2020). Pfeiffer et al. (2021) underline that agile management has become an "imperative", influencing other companies to also transform into agile organisations. Although originally conceived as a management approach for the software industry, agile management has sparked huge interest in contexts other than software development, bringing its principles into manufacturing, logistics and even administration, insurance and finance (Boes et al. 2016). Nowadays, companies, employees, entrepreneurs – and even governments – strive to be more agile because they believe in rendering organisations more adaptable to current user demands and in improving working conditions when introducing flat hierarchies. Trade unions underline the advantage of agile management:

> For employees who want to work this way, agility holds many opportunities: more self-determination, less stress, less pointless work, a quick sense of achievement, and continuous, direct customer feedback. (Barth 2021; my translation)

Peculiar to agile management is that it incorporates three principles of (1) more *adaptable* planning phases, (2) close *collaborations* and (3) *flat hierarchies* into a systematic set of practices[2] (Beck et al. 2001; Denning 2018; Sutherland et al. 2019). As the sociologists Tihlarik and Sauer underline:

> agile frameworks provide a more labor-process-oriented, more cooperation-oriented, and less planning-oriented and documentation-oriented form of management. (2021, 5)

Typically, this practice involves a set of defined roles, rules of behaviour, values and objectives. The focus is on rapid responsiveness to customer demands or external changes and a more symmetrical distribution of responsibility, through which hierarchies are said to vanish.[3]

[2] See also Chapter 2 for a more detailed description of the different practices, roles and rules of agile management.

[3] According to Boltanski and Chiapello (2007), these principles can be regarded as the result of the recuperation of emancipatory critique by capitalism. They argue that increasing demands from critical societal movements (they here refer to the artistic and social critique from the 1970s) have become incorporated by management to render potential critique compatible with (new) forms of managerial control. In seeking to understand how capitalism maintains its legitimitation and acceptance, they describe a 'new spirit of capitalism'. It represents the beliefs in capitalist rationales, by which potential critique or resistance could be disarmed or integrated (see also Wenten (2019) and Chapters 3, 6 and 8).

In this regard, the first idea of *adaptability* in agile management is realised by the replacement of rigid planning with more continuous review cycles which allow the integration of external (customer) requirements throughout the whole development process. In contrast to former, less flexible development processes, agile management is grounded in iterative feedback loops during each of the phases of design, analysis, development and implementation. This iteration should enable companies to adjust their core objectives to new customer/supplier requirements in a more spontaneous manner.

The second idea of *collaboration* is integrated into agile management through small teams that are supposed to interact with each other closely. The introduction of a new set of interactions targets more transparent development processes and communication channels. In this context, agile management is ironically known for its quite mundane, yet indispensable artefacts of sticky notes. These (should) help teams to communicate their work results and organise their work tasks more transparently. In this context, Wilf (2016) argues that new management approaches in technology development even represent a "Post-it Note Economy", pointing us to the essentiality of Post-it®[4] for product development. Thus, despite advancements in high-tech technology, collaboration in agile management is often interlinked with rather low-tech, mundane artefacts like these sticky notes[5].

Most notable, however, is the third idea of *flat hierarchies* that, in agile management, is realised by the introduction of new relationships and organisational roles. As management handbooks emphasise, "there are no more managers" (Robertson 2015, 39). Accordingly, the accountability for a new product is distributed more symmetrically when there is no 'manager' in the form of a single designated person who defines work tasks or is solely responsible for the product's functionality. The claim to have less or even no management at all is, in this context, the most extraordinary difference from former management approaches since employees are expected to take more responsibility for their own work coordination and the organisation's performance.

We now have a picture of what has changed over the past few years in the world of management that is, paradoxically, claimed to operate without managers as such. This leaves us, however, with the question as to how this new style of agile management actually operates? Which mechanisms does agile management work with if there are no managers anymore?

[4] Post-it® is a brand name owned by 3M and in the following, I will be using it interchangeably with sticky notes.
[5] This does not, however, mean that these sticky notes are only analogue. Companies also use digitalised versions of sticky notes; the ways of using them for work coordination still remain the same (see also Chapters 2, 5, 6 and 7).

Understanding the underlying mechanisms of agile management is important in several respects; research has already pointed to problematic side-effects of some management practices that still risk increasing control (Crowley et al. 2014; Costas 2012; Boltanski and Chiapello 2007; Drewlani and Seibt 2018; van Baarle et al. 2021; Wenten 2019). Scholars have stressed trends in growing responsibility transferred to the individual (Bröckling 2016; Pongratz and Voo 2003), as a result of which employees are expected to take on more responsibility, often even for their own financial security. Especially with regard to its widespread application in contexts of and beyond technology development, agile management suggests similar tendencies (Hodgson and Briand 2013). Thus, a closer examination is required and promises novel insights into a management 'without managers'. The investigation of the underlying mechanisms of agile management is therefore relevant for understanding contemporary trends in the coordination, regulation and control of work processes.

1.1 Three Research Perspectives on the Mechanisms of (Agile) Management

Looking at the current literature, scholars have researched the dynamics and mechanisms through which management approaches function from different perspectives. Studies have thereby investigated the role of leadership style (e.g., Attar and Abdul-Kareem 2020; Riggio 2017), strategic choice and managerial control (e.g., Moore 2018; Schaupp 2021a), self-governance (e.g., Fleming and Sturdy 2009; Lodrup-Hjorth et al. 2011), capitalist rationales (e.g., Boltanski and Chiapello 2007), organisational cultures (e.g. Carvalho et al. 2019) and corporate morals (e.g., Anteby and Anderson 2017) to find answers to the different mechanisms that direct actors' actions.

However, these studies usually have a conceptual underpinning which assumes that pre-existent categories can explain how management mechanisms emerge. These categories can be associated with, for example, "social class" (Moore 2018), "economic development" or "marketisation" (Fleming and Sturdy 2009), "organisational positions" (Hodgson and Briand 2013) or "neoliberalism" (Bröckling 2016). And although these explanations, based on a priori postulates, are important for making sense of agile management, they risk accepting too quickly the surface appearance as the whole. Coban and Wenten problematise that agile management is often perceived as "a tool that can be universally integrated and applied to different workplaces" (2021, 58). Nevertheless, such a take on the mechanisms of management risks restating assumptions, without explaining how these mechanisms really work in the first place. Therefore, this study starts from the following three research perspectives in the fields of the sociology of work, organisation and management studies[6] and

[6] In the following, I refer to the field of organisation and management studies by using organisation studies, management studies, and organisation and management studies interchangeably.

Science and Technology Studies (STS), which highlight different aspects of the mechanisms of (agile) management. By briefly outlining them in the following paragraphs, this study aims to bring them into conversation in order to better understand how agile management operates.

Three research perspectives on subjectification, the labour process and socio-material relations seem particularly useful for advancing our understanding of agile management. First, with regard to the literature on subjectification, studies locate the mechanisms of new management approaches in the self. Seen from this perspective, the mechanisms of (agile) management are understood as a displacement of managerial control through self-management. Scholars argue that management coordinates work by training employees to become more self-responsible and entrepreneurial (Bröckling 2016; Freeman 2014; Pongratz and Voß 2003). Usually informed by the concept of governmentality[7] (Foucault et al. 1991; Foucault 1980), the emergence of employee autonomy or empowerment is regarded as one of the driving mechanisms in making employees responsible for their individual performance. Employees become their own marketers for the products they produce or the skills they have because internal competence and demands for a constant self-optimisation force them to do so (Avle et al. 2019; Ivanova and van Scheve 2020). These dynamics result in employees becoming highly attached to the organisation's objectives as well as disciplined and committed to the creation of value within an organisation. Thus, instead of rigid managerial control, it is rather "programmes for governing" through the establishment of internal norms, habits, technology and organisational cultures that employees internalise to automatically coordinate, if not discipline, themselves (Bröckling 2016; Costea et al. 2008; Esmonde 2021). In this regard, current trends in agile management can be explained by mechanisms focused on self-discipline, self-government and subjectification (Mackenzie et al. 2020; Sauer 2017).

However, this perspective often does not pay sufficient attention to the role that artefacts play and often focuses on management discourses rather than the local practices of how the mechanisms are carried out. Although agile management introduces new artefacts for coordinating work, studies on subjectification have so far not analysed whether the dynamics of regulating the employees are equally programmed into artefacts. As research on the socio-material relationships (see further below) outlines, artefacts are yet equally important entities that coordinate social action. Lastly, the predominance of studies on the discursive level requires additional analyses on the micro level in order to fully understand the mechanisms

[7] Governmentality is the study of how societies or individuals are governed, disciplined or regulated by a specific set of techniques of domination and the self. For Foucault (1980), the concept of governmentality explores the dynamics and relationships between processes of subjectification and the emergence of power. Governmentality is an "ensemble of techniques, strategies, rationalities, knowledge and mentalities through which subjects are governed" (Ivanova and van Scheve 2020, 5). Thus, it provides answers to the question of why individuals perform and act in the way they do and how these actions are deeply interwoven with power relations.

through which management functions. Therefore, by combining aspects of subjectification with the focus on material objects and the micro-level context of agile management, this study contributes to this research perspective in order to gain a deeper understanding of the mechanisms of agile management.

Second, unlike studies on subjectification, research on the labour process explains the novel mechanisms of management through the predominance of a specific social group that controls the work process. Thus, current forms of management are explained through social relations being reproduced and deeply embedded in the workplace. From this perspective, management 'without managers' is based on more subtle and obscured micro-politics that is still performed by a particular, predominant social group and external authorities. Studies usually connect the emergence and formation of management with the influence of social interests in capital accumulation or ownership relations between management and workers (Barrett 2004; Thompson and van den Broek 2010). Management mechanisms are consequently either explained as technological (algorithmic) control or class conflicts between management and employees, both explanations sharing a similar assumption of predominating social interests. On the one hand, scholars argue that work is coordinated by technology that still represents strategic choice by management (Moore 2018; Schaupp 2021a); on the other, the mechanisms of agile management are explained as the re-establishment of surveillance and control by management, although public debates claim otherwise (Briand and Hodgson 2015; Kämpf 2018).

However, with regard to the debates on flat hierarchies in agile management, these studies often restrict their focus to questions of, for instance, how and why technology or new management approaches are implemented due to interests in capital accumulation. Such a perspective yet runs the risk of disregarding other entities that also impact on how agile management operates. Wajcman explains that:

> even theoretically 'homogeneous' groups, such as capital and labour, have differing definitions of goals and of how to attain them. There can be broad agreement on a final objective, but the goals needed to meet it may be unclear and, thus, open to different definitions; and what they are is likely to emerge only over time. (2006, 777)

Consequently, agile management cannot be explained by a priori assumptions regarding interest groups but requires a more nuanced understanding of the different actors and practices that make it possible. Wajcman criticises the perspective on social interests fostering technological control for assuming too quickly "that the social interests embodied in technologies could be directly identified and straightforwardly designed into machines" (2006, 775). She underlines that technology is not a mere outcome of strategic choice by social

interests and nor are social interests "pre-existing and a matter of overt dispute" (2006, 775). Especially with regard to agile management's intensive use of artefacts such as Post-its that appear to be mundane and taken-for-granted, a perspective on social interests often dismisses how these objects participate in directing the work process. Thus, a closer look at how social interests and material objects relate to one another is necessary if we want to understand how agile management and the idea of, for instance, flat hierarchies really works in practice.

Third, an emerging research strand on socio-material relationships explains the mechanisms of management as interactions between human and non-human actors and how artefacts are designed and composed (Bérard 2013; Lafuente and Prata 2019; Lindahl 2005; Orlikowski 2010; Schmidt 1997). According to a socio-material perspective, the mechanisms of agile management are not only directed by dynamics of subjectification or social interest groups but also by an ensemble of different social and material actors. Scholars such as Ball et al. (2021) explain how material objects such as sticky notes contribute to collaboration practices and Lindahl (2005) more explicitly underlines that machines direct the management of an entire technological project. In this context, studies emphasise the role of the physical composition and form of artefacts that impact on social actions (Beynon-Davies and Lederman 21017; Gärtner 2014). Accordingly, the way that artefacts are designed and the substances they are composed of likewise matter when it comes to the coordination of work. This research perspective explores artefacts as managing entities without referring back only to social interests as the aforementioned research strands would do. It refrains from treating actors or materials as taken-for-granted, which otherwise risks restating presumptions about management without ascertaining what upholds its functionality. Moreover, as Coban and Wenten argue in an examination of the socio-material practices involved in agile work:

> the realization of working agile is not a social practice uniquely exercised by humans [...]. [W]e highlight how agile work consists of [...] relationships between human *and* nonhuman entities. (2021, 58)

A perspective on the socio-material relationships of agile management provides a more nuanced understanding of human *and* non-human actors – who both participate in the management of work. Seen from this perspective, mechanisms do not emerge from and cannot be explained by solely human-driven activity or categories such as economic interests.

However, studies with a socio-material perspective that are related more directly to agile management remain rather scarce in the current research landscape. Scholars such as Lafuente and Prata (2019), Jeyasingham (2020) or Coban and Wenten (2021) have pointed our attention to agile management and how, in this context, social and material actors interact with each other. But a more detailed focus on the socio-material relationships in relation to

the underlying mechanisms of agile management remains underexplored. The exploration of the socio-material relationships in this study consequently provides deeper insights into the underlying mechanisms of management and adds to existing investigations an empirical focus on agility. Thus, I contribute to this research strand by conceptualising technical artefacts as managing entities and exploring the socio-material relationships in the context of agile management.[8]

1.2 Research Questions

Inspired by the three research perspectives, I investigate the mechanisms that agile management entails instead of solely analysing what agile management requires and causes once it is established. Unlike those studies examining the discourses of management or social actors such as managers or employees alone, I engage with the micro level of agile management and add a focus on material objects to the analysis. In this regard, I contribute to the three research perspectives when addressing the role of social interests, while, *at the same time,* considering agile management as the result of relationships between social and material actors. Therefore, this study investigates more closely the mechanisms of agile management that drive – and are driven by – social and material actors. In order to shed light on the underlying mechanisms, this study asks:

- How and by what means are ideas of agile management put into practice?
- How is work coordinated by social and material actors?
- What are the underlying mechanisms of agile management?

I will briefly outline how I am engaging with these questions in the following section and present the core theoretical and empirical findings that this study will provide.

1.3 Outline

The following chapter (Chapter 2) starts with a short introduction to the history, promises and functional elements of agile management. It presents the origins of agile management in the software industry and describes the new set of practices, rules, artefacts, organisational roles and meetings that are said to establish a novel management approach for contexts within and beyond the software industry.

In Chapter 3, I will elaborate on my theoretical underpinnings and explain why theoretical concepts from STS are necessary to fill the research gap on the mechanisms of agile management. Inspired by the three aforementioned research perspectives, I argue that the

[8] For a more detailed description of how I approach the socio-material relationships theoretically and methodologically, see also Chapters 3 and 4.

study of agile management requires an understanding of management as (embedded in) a socio-material assemblage and a focus on management scripts. This approach allows me to treat both social and material entities as playing an equal role in coordinating and regulating the work process. Rather than investigating the mechanisms of agile management solely from the perspectives of subjectification or social interests, this study consequently provides a novel framework by treating the socio-material relationships as the focus of the analysis. In redeveloping the concept of scripts (Akrich 1992; Akrich and Latour 1992), I argue that the study of *management scripts* enables me to better understand how agile management operates. Management scripts allow me to illuminate the expectations being deeply manifested in the patterns of action, artefacts and organisational hierarchies of agile management. Management scripts are here understood as programmes of action or instructions for what form agile management should take. These scripts eventually have an impact on the actors' actions and regulate and coordinate the work process. They also provide insights into the physical properties of artefacts – that is, the affordances – and their capacities for offering a set of actions (Gibson 1979/2015; Hutchby 2001). Management scripts also shed light on the manifestation of power asymmetries because they attribute some actors with power while preventing others from exerting influence. The chapter closes with a proposition for a framework for studying the mechanisms of agile management and argues that it is the close relationships between social and material actors and the artefacts' physical composition that makes agile management work. In transferring the concept of script to the field of management, I contribute to the current literature in the sociology of work, organisation and management studies and STS.

Chapter 4 discusses my methodological approach to achieving my research aims and outlines the research design, the empirical data and analytical approach. I employ a comparative case study and qualitative research methods to investigate three industrial companies at the forefront of German technology development that have started to implement agile management. In Chapter 4, I describe the different companies and explain their attempts to implement agile management in more detail.

The analysis reveals three central mechanisms of agile management, which are presented in the Chapters 5 to 7. Structured along the aforementioned ideas of adaptability, collaboration and flat hierarchies of agile management, I present the underlying mechanisms of scripted improvisation, scripted commitment and scripted order that guide and coordinate the employees during their daily work lives. I thereby shed light on the tensions and ambivalences deeply manifested in agile management that appear to be made compatible with each other. As we shall see, it is this dynamic of tensions and the close socio-material interactions that guarantee agile management to be still able to operate, even without a designated manager.

Chapter 5 is dedicated to the idea of adaptability and discusses how it transforms into a mechanism of what I term *scripted improvisation*. Agile management entails visions of fast and adaptable management on the one hand and constant improvement through the expectation of failing on the other. This dynamic of 'quick and dirty' practices reveals the management script of improvisation. I show how even impromptu, improvised actions, usually perceived as the counterparts to scripts, paradoxically, turn into regulating and coordinating elements. Thus, I illustrate how the management script of improvisation directs employees to act spontaneously, reflexively and imperfectly. The analysis of management scripts highlights that it is still grounded in strict mechanisms whereby improvisation is now one of the key objectives. In showing how both social and material actors participate in the coordination of work, the chapter contributes to scientific debates on organisational improvisation. It underlines that improvisation is not only an ad hoc, spontaneous practice without prior planning but can itself turn into a management mechanism. The chapter reflects on the mechanism's effects on employees – how it produces disorientation, perceived chaos and intensified work.

Chapter 6 scrutinises the idea of collaboration and underscores how it is grounded in a mechanism of *scripted commitment*. I start by outlining the idea of collaboration before showing how collaboration between team members is enabled by social and material actors in the context of agile management. I present three arguments: first, in Section 6.2, I contend that agile management is based on a 'safety net' which provides care and protection from stress and criticism for the involved actors. I show that this safety net is manifested through emotional feedback, attentive (body) language and (social and material) caretakers. These elements of the safety net target the creation of a more supportive, caring and respectful work atmosphere. In this context, I show that even material objects such as sticky notes or spaces that I call 'comfort zones' *afford* the affective engagement of social actors with their work environment.

Second, I show that agile management establishes new forms of collaboration through processes of collective problem solving which, I argue, is only possible because of the close socio-material relations and artefacts' physical properties (Section 6.2.3.). I contend that collaboration based on care and social cohesion emerges, quite paradoxically, out of the objectification and de-emotionalisation of individual, affective concerns. In analysing one example of the problem-solving process more closely, I reveal the objectification process that takes place through artefacts such as sticky notes and the whiteboard. I show that emotionalised problems turn into abstract and collective matters of concern, leading to every participant in the team then engaging with the originally individual problem.

Third, I contend that agile management is based on a second mechanism of *scripted commitment*. Section 6.3 shows how this mechanism influences employees' emotional and affective involvement. I argue that the script being embodied in patterns of (emotional) action, artefacts and interactions directs and obliges the employees to become affective, attached and committed to their daily work activities. I emphasise that such a mechanism contributes to the instrumentalisation of social actors and their emotions to act in the interest of the individual's, team's and organisation's pursuit of profit and/or improvement. In this vein, the mechanism of scripted commitment points us to the application of affective management.

In response to prevailing debates on flat hierarchies, Chapter 7 examines the organisational structure of agile management. I argue that agile management is manifested through a mechanism of *scripted order*. In presenting the idea of flat hierarchies, the chapter first discusses the growing interest in flat organisation, as a result of which hierarchies between organisational members are said to vanish (Section 7.1.). Second, I highlight how flat hierarchies are projected into the increased focus on the customer and the product, thus, it is claimed, resulting in the power relations becoming more balanced (Section 7.2.). The third part of this chapter (Section 7.3) argues that agile management operates with a management script of order that is deeply manifested in the establishment of organisational roles, and practices of unifying diverse interests, organising teamwork and categorising customer requirements. I demonstrate how essential work practices and responsibilities that produce value for the organisation are invisibilised by the script. Therefore, in this part, I shed light on the underlying management script of order that attributes some social actors with more power than others. However, I show that these power asymmetries are not manifested in the role of a 'classical' manager. This chapter presents a mechanism which coordinates work, not through direct control or self-governance, but through socio-material relationships and the design and physical composition of material objects.

Finally, Chapter 8 discusses the implications of these mechanisms for regulating and coordinating work in agile management by pointing to the socio-material relationships, the physical composition of (mundane) artefacts and the subtle scripts that now ensure work coordination. I argue that work is regulated by instructions that are implicitly manifested in handbooks, artefacts, interactions and the rhetoric of agile management. I furthermore discuss the implications of studying management scripts for broader questions of the mechanisms of (agile) management, the relationship between power, in/visible work and materiality and new forms of affective management. I close the chapter with the thesis' implications for research and present the study's limitations and possible avenues for future research.

Overall, this contribution provides a novel story of agile management by illustrating that it is executed by social and material actors and, more crucially, the design and use of the artefacts deployed in regulating the work process. I argue that agile management requires a study of the underlying *management scripts* manifested in social and material entities that guide and coordinate work. As we shall see, agile management carries blueprints or instructions for what form the management should take. These blueprints and instructions are deeply manifested as scripts in artefacts, interactions, patterns of action, attitudes and work habits. This lens allows me to regard management as executed by socio-material relations and the physical properties of material artefacts that enable, constrain and, thus, direct social actions.

2. What is Agile Management?

The study centres on agile management as it represents how management currently works in many contemporary organisations. This chapter therefore presents the origins of agile management and describes the elements that different methodologies, artefacts or organisational roles in agile management unite. I start by portraying the former management approaches in technology development that agile management sought to replace and end the chapter by describing the core elements and methodological approaches of agile management.

Often understood as a response to the former management approaches in technology development, agile management began with a strong criticism of the conventional, rigid and bureaucratic models from the mid-20th century. One of the starting points of the critique was Beck et al.'s (2001) "Agile Manifesto for Software Development". The Manifesto was written by a group of software developers in North America who were dissatisfied with the then current management style, often referred to as the waterfall model (see Figure 1).

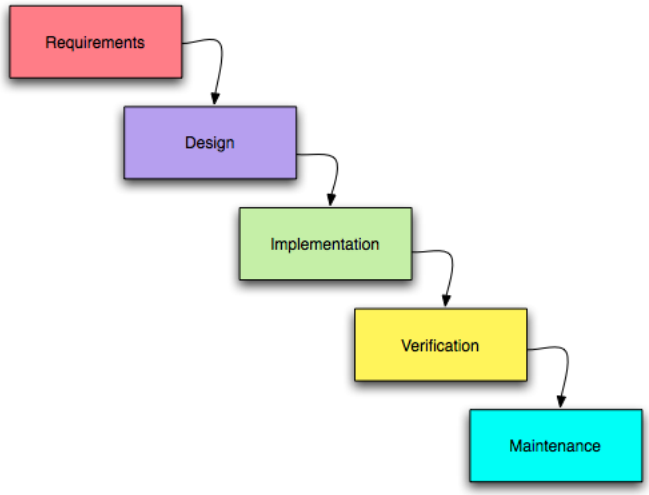

Figure 1: The Waterfall Model
(Source: Hoadley 2005)

The waterfall model's origin dates back to a NATO conference on software engineering that sought to improve quality management and the organisation of soft- and hardware (Naur and Randall 1968). It was characterised by long, stable and fixed stages in the development of a specific product. At the core of the Waterfall model stood the premise of a detailed listing of every single element required for the finalisation of a specific product. Schwaber, one of the Manifesto's authors, describes the Waterfall model as a methodology that:

> gathers all the requirements, then creates the design, then writes the code, then develops and runs tests, and finally implements the system. Between each of these steps, or phases, were review meetings. (2004, 54)

Although the model had review phases incorporated, Schwaber criticised it for its low profitability and abundance of bureaucratic planning: he argued that in spite of the flexibility gained by the review meetings, it was almost impossible to make major adjustments and changes in between these phases. Companies applying such a model also often realised that it was rarely possible to foresee every single potential impediment, especially considering that many development processes often took several years to be completed. Software developers noticed that errors were sometimes only noticed at the end of the project because of the lack of evaluations and checks at earlier stages. This meant their circumvention could never be achieved when following a model with rigid, inflexible development processes. Especially in the context of software development, trial-and-error phases were a common practice and therefore required a novel approach. The Waterfall model was consequently increasingly negated by software engineers who sought to replace the high expense of documenting, communicating and negotiating coupled with a strict top-down structure, with a more flexible development process and self-organised and autonomous work teams.

As a response to these shortcomings, the Agile Manifesto paved the way for a new era of more flexible management involving higher autonomy for employees and iterative review phases. The Manifesto was particularly appealing to many organisations in the software industry because it emphasised new elements, such as customer feedback, that were integrated into the following core values of agile management:

> Individuals and interactions over processes and tools
>
> Working software over comprehensive documentation
>
> Customer collaboration over contract negotiation
>
> Responding to change over following a plan. (Beck et al. 2001)

These values indicate a drastic shift from the former management approach of intensive documentation and inflexible planning phases that the authors of the Manifesto perceived as hindering a more responsive process and so more efficient development of software. Moreover, they addressed the importance of personal collaborations and customer feedback being prioritised over questions of contracting or strictly following documentation. That way, the authors of the Agile Manifesto believed it would be possible to evaluate the product and determine potential impediments at a much earlier stage than a Waterfall model would ever allow. Agile management is designed to reorganise innovation and development processes

earlier by introducing shorter time frames in the design, test and deployment stages in the form of 'Sprints'. Images of the agile methodology thereby often depict the development process as a repetitive cycle with customer feedback earlier on and almost continuously throughout each of the Sprints. This should realise a more flexible development process, allowing software companies to immediately react and adapt to changing development conditions. The general aim is to devote time to planning and scheduling the project's outline, but every step should be accomplished within feedback cycles and phases of prototyping and improvements. Such a management approach would, moreover, restructure the former development process by introducing teams of developers with different disciplines and expertise.

In contrast to the Waterfall model, agile management is expected to increase productivity and speed up development processes: the main goal is "increase[d] productivity" while "delivering the highest priority business value" (Schwaber 2004, 7, xii). The close interaction with (potential) customers and the introduction of new, more iterative and flexible phases of designing, testing, improving and refining should guarantee a more user-centred design and development process. Agile management also promises to respond to new market demands, trends and customer requirements more quickly. The short-term, yet repetitive, planning phases in the form of Sprints is not unattractive to companies in the field of technology development as it reduces the problem of 'being stuck' in traditional, bureaucratic plans in the form of milestones and investments in features that are outdated by the time they enter the market. Another advantage that many agile management advocates emphasise is its maintenance of employee satisfaction and motivation. According to Meißner (2017), for instance, agile management has often been employed in order to increase employee motivation. Agile management is, in this regard, a win-win method for complying with both the organisation's targets and its members' demands.

There are a variety of different approaches that are framed as agile; for instance, Design Thinking, Rapid Prototyping, Extreme Programming, Scrum and Kanban. In this context, Scrum is arguably one of the most widespread and applied methodologies in (industrial) organisations (Marchenko and Abrahamsson 2008; Pfeiffer et al. 2021) matching the principles of adaptability, collaboration and flat hierarchies. Many studies have already discussed the differences between the different approaches but scholars such as Iivari and Iivari (2011) conclude that agile management is an ambiguous approach that always unfolds differently. Often, organisations combine different methodologies at the same time. Although there are different understandings of agile, most of them are informed by a similar set of the following roles, practices and artefacts. As we shall see in the analysis (Chapters 5, 6 and 7), companies introducing agile management implement similar roles, meetings and artefacts,

although they do not subscribe to a particular methodology. Therefore, the following paragraphs describe the core elements that were present all in the companies studied (see Chapter 4).

Agile management implies the reformation of former hierarchical organisational structures by introducing new roles such as Product Owner, Scrum Master, Service Request Manager, Service Delivery Manager, Development Team, Customers and Lead Users. These should enable a more equal distribution of responsibilities, less direct managerial control and the integration of potential customers (see also Chapter 7). Not all of these roles are present in every instance of agile management; they vary depending on the different methodology. For instance, Scrum suggests a Product Owner, a Scrum Master and a Development Team, whereas Kanban involves Service Request Managers and Service Delivery Managers. However, these roles are often applied in a less consistent manner and the following analysis mainly refers to the roles of Product Owners, Scrum Masters and Development Teams as these three roles were all represented in the firms under scrutiny. And although not in every example I am presenting, there was a person with a particular title, they were, in fact, still assigned to similar activities related to these entitled positions. For instance, in some cases, there was no title of a Scrum Master but, nevertheless, some actors were responsible for similar activities of the Scrum Master's tasks of moderating the meetings. Therefore, in the following chapters, I will refer to Scrum Masters, Product Owners and Development Team or team members to signify the different responsibilities and activities that were assigned to each of the different titles.

Product Owners, Service Request Managers and Service Delivery Managers are mainly in charge of the product's or service's functionality. They are usually in touch with (external) stakeholders such as suppliers, marketing branches, consultancies, potential customers, sales departments and internal executives. Their role is, thus, particularly directed to producing knowledge about the service or product and incorporating external (and internal) interests and requirements into the development process. Such an idea is often related to user-centred design or customer-driven innovation. Because of their close connection to external interest groups, Product Owners/Service Request Managers define work packages and develop priority lists indicating which work package should be implemented next.

The Scrum Master is a role peculiar to the Scrum framework, who mediates between the Development Team and the Product Owner to ensure a smooth workflow during the development process. The Scrum Master's tasks are often understood as "Leadership" (Schwaber 2004, 1) or meeting moderators and they often take care of the general work climate and a respectful collaboration. The Scrum Master is therefore responsible for the

progress of the team, internal communication and making sure that all tasks are accomplished on time.

The Development Team is a group of individuals working through the work packages towards the finalisation of a product. They are in charge of estimating their time and work effort and work closely together when gathering at regular events or meetings such as the 'Daily', 'Review' or 'Retrospective' (see Figure 2).

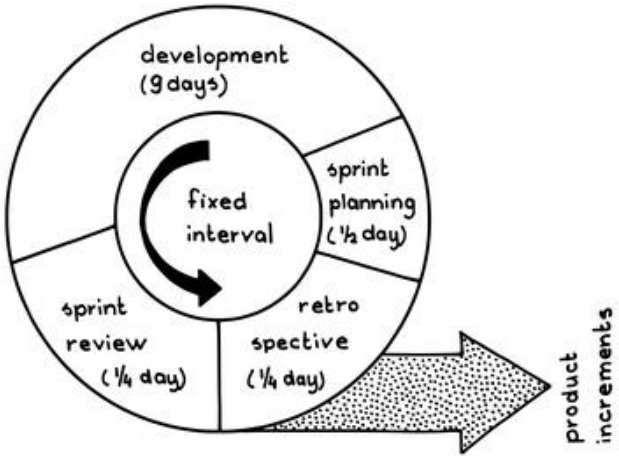

Figure 2: Example of a Sprint involving the different meetings of Review, Retrospective, and Sprint Planning
(Source: Sutherland et al. 2019, Chapter 3.46)

The different events or meetings usually happen on a regular basis in order to increase productivity and maintain a structured and continuous workflow. Many agile management approaches are structured in various phases called 'Sprints', each lasting for about four to six weeks. These Sprints are performed by the entire team with the aim of generating, testing, reviewing and, where necessary, reworking, an idea. With each Sprint, the team is gradually approaching the end product by developing a deliverable element of the product. Hence, agile management is composed of Sprints in order to enable repetitive, iterative steps during the devleopment process, with customer feedback earlier on and almost continuously throughout each of the Sprints.

Starting with planning phases called 'Sprint Planning' or 'Design Sprints', the different work packages and job assignments are discussed, planned, defined and refined each time a Sprint is accomplished. During these meetings, the Development Team, Scrum Master and Product Owners come together and decide which product elements (also called Product Backlog Items (PBIs)) should be created during each Sprint. These PBIs are manifested on sticky notes or moderation cards and transferred to the Product Backlog (see Figure 3). The notes contain all the different steps and tasks needed to develop and improve an initially rough idea (the vision)

that should, at some point, end in a marketable product. The Product Backlog, thus, records the PBIs that are prioritised when appearing in a vertical order on the matrix. The Extreme Programming agile management method – and also Scrum methodologies and Rapid Prototyping – translate PBIs into so-called 'user stories' that represent customers' values and requirements. Usually, these stories are described by one or two sentences indicating the user group, the requirement and the final output of the product or service.

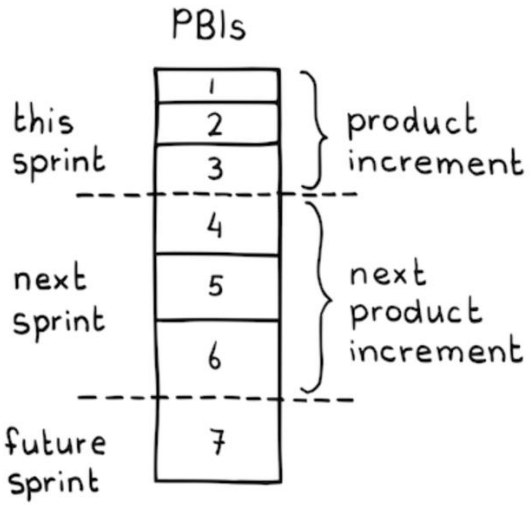

Figure 3: The Product Backlog arranges the different stages in the development process of a product (Source: Sutherland et al. 2019, Chapter 3.54)

The 'Daily', as its name suggests, is a meeting which usually takes place for 15-45 minutes at the start of each day, attended by the entire Development Team. During these meetings, team members update each other on the tasks currently being worked on listed on the so-called 'Scrum Board' (see Figure 4).

In addition to the Product Backlog, which gives a general overview of the different PBIs and Sprints, the Scrum Board is a feature for listing each Sprint's work tasks in more detail. The Scrum Board is mainly for the team's internal use in order to update everyone on who is working on which task. Therefore, the Development Team updates the Scrum Board during the Daily and refers to it when discussing whether further support by colleagues is needed and what the next steps in the Sprint are.

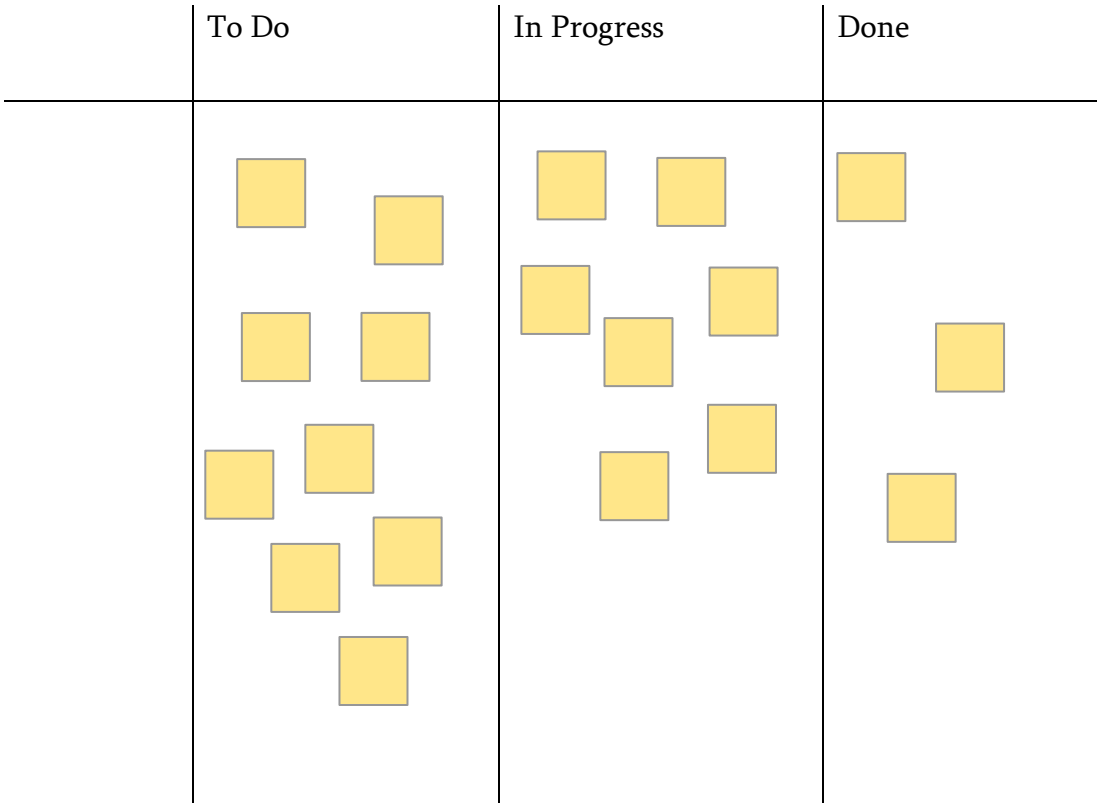

Figure 4: Example of a Scrum Board
(Source: own representation)

The 'Review' and 'Retrospective' group meetings offer an ongoing updating of each of the team members, the Scrum Masters, Product Owners and even customers about the progress and current state of the project. Reviews are recommended at the end of every Sprint and should last no longer than four hours. The Review mainly concentrates on discussing the work tasks of the past weeks, what has been done and which tasks are still in progress. Its objective is mainly to present the current state of the project to the Product Owner and the customer and it is essential for integrating external feedback into the development phases.

Unlike the Review, the Retrospective focuses more on internal reflections and discussions about events and work activities that have been successful or unsuccessful in order to prevent any future problems. Retrospectives usually happen every two to four weeks but, depending on the context, may also happen weekly. In this context, Retrospectives ideally result in Learnings and Best Practices to be used by the team so that the project proceeds productively. All the meetings, and the teamwork in general, are moderated by the Scrum Master.

Material objects such as whiteboards or sticky notes (whether in analog or digital form) play a vital role in agile management as they are said to be core tools in brainstorming, organising,

categorising and evaluating. Along with user stories and the Product Backlog, the Scrum Board is a common object to "help the team organize their thinking and planning" (Sutherland et al. 2019, Chapter 3.56). The Scrum Board is usually only used internally, while user stories and the Product Backlog are artefacts connecting the customers. As we shall see in the following chapters, objects such as moderation cards, whiteboards, digital screens, pens, computer mice, keyboards and sticky notes play a vital role in mediating and supporting the interactions on a collaborative level and coordinating the work process more generally.

This chapter has presented the historical development of agile management, a methodology devised to replace the former approaches of technology development with a novel, more flexible, customer-oriented and less hierarchical management. This chapter has foregrounded the origins and promises of agile management and highlighted the different elements, organisational roles, events and artefacts that it is based on. Despite its popularity, agile management's underlying mechanisms have yet to be fully explored. Therefore, I argue for a new theoretical perspective based on management scripts and affordances, which I turn to in the next chapter.

3. Theoretical Background and Framework

In this thesis, I develop a framework for studying the mechanisms of agile management. In order to understand how the coordination, regulation and control of work is realised in the context of agile management, I argue that we need to pay particular attention to the role of artefacts and their relationship to management practices. Therefore, this thesis considers the notion of scripts (Akrich 1992) as a fruitful concept to study the explicit and implicit mechanisms that are deeply manifested in the social and material elements of agile management. Scripts enable me to trace the dynamics rendering the implementation of agile management possible and to unfold their effects on the work process. They also allow a better understanding of the underlying mechanisms of agile management when focusing specifically on the embedded expectations regarding patterns of actions, artefacts, organisational roles or interactions.

In this regard, scripts have four characteristics in particular that are useful for my interest in the relationship between agile management and its embedding in the workplace. I define *management scripts* as (1) programmes of action that have (2) affordances, that can be (3) reconfigured and that represent and manifest (4) power relations.

First, management scripts are understood as "programs of action" (Akrich and Latour 1992; Latour 1992) or 'recipes' for what management should look like. These programmes of action are manifested in both social and material practices; that is, artefacts, patterns of action or organisational structures contain an underlying instruction of how to use a technical object or perform a certain activity. An analysis of scripts thereby provides insights into the underlying ideal types or blueprints of agile management.

The second characteristic of scripts is their relationship to material objects and the affordances these objects carry. Affordances foreground the physical properties of material objects and direct our attention to their capacities for offering a set of actions. In the context of management, the focus on affordances highlights how artefacts invite – and thereby also regulate – (social) actors to a specific kind of action through their physical composition, and how these actors make use of these 'invitations'.

Third, management scripts can be adjusted and reconfigured and I argue that the relationship between scripts and reconfigurations is not a dichotomy, but is better understood as a deep intertwining. Agile management promises high adaptability and flexibility, which indicates underlying mechanisms instructing even the possibilities for reconfigurations. Therefore, the

focus on reconfigurations allows me to take into account the close intertwining of scripts and their modifications when being adopted in the workplace.

Fourth, management scripts manifest relations of power in both their programmes of action and their reconfigurations. Since power is a central part of management practices (Clegg et al. 2006; Courpasson 2017), a perspective on scripts sheds light on how power relations are manifested in agile management and how individuals are influenced by them.

Studying the mechanisms of agile management through the lens of scripts first requires a perspective that takes the close interactions between social and material actors into consideration. Therefore, the chapter starts with the general ontological and epistemological underpinnings of my analysis, which are informed by research in STS and organisation and management studies on socio-material assemblages. I subsequently demonstrate how and why I consider the focus on management scripts as valuable in the analysis of the mechanisms of agile management. I argue that four core characteristics are necessary if we want to understand which mechanisms agile management works with. The chapter ends with a model for analysing agile management by applying an adopted script analysis (Akrich 1992) to the field of management. In this regard, I contribute to engagements with management in the sociology of work, organisation and management studies, and STS research on scripts.

3.1 Agile Management as a Socio-Material Assemblage

When studying management, we quickly encounter computers, tables, flipcharts, working bodies[9], viewpoints, routines and many more material and social elements in the workplace. I argue that the study of agile management requires a perspective on management that takes this close interaction between humans and non-humans into account. Although scholars in organisation studies and the sociology of work have recently called for a detailed integration of non-human actors into the analysis of management (Boxenbaum et al. 2018; Carlile et al. 2013; Leonardi 2016; Howcroft and Taylor 2014; Pfeiffer 2019), the research landscape on the interactions *between* social actors *and* the materials they work with still remains marginalised. Informed by concepts located in STS, I therefore understand management as a socio-material assemblage. I argue that such a theoretical underpinning is useful for examining the processes of how the mechanisms of agile management operate, and how they are established and manifested by interactions between humans and non-humans.

[9] In using the term bodies, I refer to scholars such as McDowell (2009), Myers (2008) and Böhle and Weihrich (2010) in order to express the physical expressions involved in (intellectual) work activities. 'Bodywork' foregrounds the physical activities that are required in work practices that are often presumed to be only 'intellectual' (for example, as we shall see, the task of discussing work results with team members also involves physical activities, see Chapter 5).

This section presents my theoretical underpinning, beginning with a short overview of the underexplored role of materiality in the sociology of work, and organisation and management studies on (agile) management. I then explain the concept of socio-material assemblages by discussing an example that illustrates how human and non-human actors participate in the development of technology. In doing so, I underline why this lens is necessary when studying agile management.

In spite of recent calls for further examination of the material in management practices, the majority of studies on management are less concerned with the material than with the social. As outlined in Chapter 1, the research perspectives on subjectification and the labour-process are predominantly informed by social constructivist perspectives[10] that consider material objects as shaped and driven by social action (Briken 2020; Evers et al. 2019; Leonardi and Barley 2010; Pfeiffer 2019; Wajcman 2006). Labour sociologists and organisation scholars both agree on the important role that technical objects play and almost every study of management has also focussed on the socio-political dimensions of technology (e.g. Chiapello and Gilbert 2019; Gekara and Than Nguyen 2018; Zuboff 2019). Yet, especially in the sociology of work, humans are usually perceived as more important than non-humans in explanations of macro-level labour relations (Spencer 2018) or micro-level managerial strategies (Raffetseder et al. 2017; Woodcock 2017). The ways in which technical objects are introduced into the workplace are understood as the result of human-driven activities: scholars underline the impact of digital technology in regulating work practices to reinforce social interests or relations of power (Bathini 2021; Moore and Robinson 2016). Studies have concentrated on the use of (automation) technology and its consequences for autonomy and control (Bennet and Strange 2015; Briken et al. 2017; Wood et al. 2019) or to what extent digital technology contributes to the formation of new skills, modes of cooperation, flexibility or time pressure (Mullan and Wajcman 2017). Organisation scholars place a similar emphasis on social processes when it comes to technology organising work practices in the interest of a specific social group (de Vaujany et al. 2021; Hafermalz 2021). An important part of the claims made in these studies on management is the emphasis on technology's social and political shaping (Bijker et al. 2012). Social processes consequently make up the linchpin of analyses in sociology of work and organisation studies, in which material entities predominantly serve as (strategic) explanatory sources for understanding management.

[10] Despite the growth of social constructivist studies, sociology of work and organisation studies are still criticised for their technological determinism (Leonardi and Barley 2010; Howcroft and Taylor 2014). Seen from this perspective, technology is the driving force in societal development. For instance, research on the rise of robotics technology argues that there will be drastic changes in the labour market whereby social actors are generally regarded as being passive and, thus, powerless in the face of any substantial intervention (Brynjolfsson and McAfee 2013).

However, considering the fact that workplaces consist of social *and* material entities, analyses of management that pay closer attention to the interactions *between* these entities are rather less common in sociology of work, and organisation and management studies. This neglect of the close interrelation between social and material elements is problematic, as Leonardi and Barley note:

> Even the most influential constructivist studies of technology and organizing tilt toward explaining how people interact with each other around the technology, rather than providing evidence of what specific material features people use, why they use them, and how their use constrains and enables users' actions. (2010, 33)

Leonardi furthermore emphasises that the focus on materiality is particularly important in order to understand the consequences of organising – and, thus, managing – practices in the work process.

> If organizational scholars do not adequately theorize the role that materiality plays in the organizing process, they are likely to be unable to explain changes in the form and function of work and work systems and, consequently, they will lose their relevance. (2016, 530)

As a result of these shortcomings, scholars in organisation studies have started to turn their attention to the close relationship between social and material entities. The research perspective on the close socio-material relationships, for example, show how artefacts such as whiteboards contribute to the enactment of lean management (Hultin et al. 2020). Lindahl's (2005) examination of engineers who manage diesel power plants suggests considering diesel engines themselves as 'managing' actors. Taking these considerations as the starting point of my analysis, I contribute to the current literature on (agile) management when stressing the close interrelation between social actors and material objects.

It is against this background that reflecting on management through the lens of socio-material assemblages proves valuable to studies on agile management because it highlights the rigidities and robustness of management that cannot be explained solely by social processes (Latour 2005). In order to engage with the social and material relations in more detail, the following paragraphs present my definition of socio-material assemblages and discuss an example to clarify this perspective.

At the core of STS analyses stands the tenet of socio-material assemblages[11] involving heterogeneous– that is, human and non-human – actors that all play a role in structuring interactions and establishing (social) order. In his book *Reassembling the Social*, Latour (2005) stresses the notion of assemblage to reveal the different associations between the social and non-social entities that form society. He emphasises assemblage's symmetric analysis, which treats human and non-human entities (often also referred to as social and technical *actants*)[12] as equally important. Every single interaction, thing, living being, concept or fact is the result of interpretative practices and interactions between human and non-human actors. Thus, the social is always also material and vice versa. Examinations in STS provide an alternative understanding when considering society as a durable and robust entanglement of heterogeneous actors that assemble and stabilise over time and space. Consequently, even society and its structures or categories, such as class, are not pre-existent entities which form social actors and their agency (Law 1991). In line with this thinking, social order loses its stability and is reconfigured once the actors upholding the assemblage resist or vanish.

Although many STS scholars use the terms 'technical' and 'material' interchangeably, I refer to material rather than technical when regarding management as a socio-material assemblage. The term material[13] denotes the physical qualities of (non-human) objects more accurately while still reflecting the entanglement between social and material entities. Unlike technology, materiality proves more useful because, as Leonardi argues, it:

> can direct attention to the properties intrinsic to technological artifacts and remind researchers that those properties are fixed, at least for some short period of time, and encourage them to explore not only how they become fixed (as researchers in science and technology studies have

[11] The terminology in STS has sparked a great debate among social scientists, revolving around different concepts of networks, assemblages, entanglements and agencement (Caliskan and Callon 2010; Delanda 2016); the words 'technical' and 'material' are also contested scientifically (Leonardi 2012). Their use remains rather fuzzy even today and the different terms are treated almost interchangeably. The fact that even entire readers on Actor Network Theory (ANT) – one of the core theories used in STS – refer to 'sociotechnical networks', 'sociotechnical assemblages', 'sociotechnical arrangements', 'sociomaterial networks' and 'sociomaterial ecologies' almost synonymously (Blok et al. 2020) underlines the ambivalence of these terms. Despite these significant inconsistencies in the use of terminology, I understand and refer to management as a socio-material assemblage to highlight that the social and material are deeply entangled but still have their own qualities and effects.

[12] The term 'actant' earned both criticism and support in scientific research on the material's potential for agency (Amsterdamska 1990; Callon and Latour 1992; Collins and Yearley 1992). Although different degrees of material agency are discussed in scientific research, I consider material objects as *actors* in order to highlight their performative quality of impacting on human action and also on other material objects.

[13] Leonardi (2010) has in this regard argued that, generally in the literature, the term materiality is not adequately conceptualised. Materiality is often referred to tangible, physical objects but he shows that empirical analyses then often also confuse it with less tangible software. Despite these inconsistencies, I refer to materiality as the form, matter and meaning of non-human entities – that is, the physical composition of artefacts can thereby be both analogue or digital (see also Chapters 2, 5, 6 and 7). In this regard, the material is always also social and, vice versa, the social always constitutes material elements (see Latour 2005; Maasen et al. 2020 or Orlikowski 2010).

> done so well) but also how their fixedness affects what people deem to be important to their work. (2012, 32)

Thus, the notion of *socio-material assemblages* points us to the physical conditions of artefacts having performative qualities when affecting the ways in which social actors are coordinated and regulated. It also puts a stronger emphasis on the physical form and matter of actors in the assemblage (Kallinikos 2012). Understanding management as a socio-material assemblage acknowledges the fact that material objects have their own effects that would remain invisible if the material and the social were not treated symmetrically (see also Section 3.2.2.).

One particular example of studying technological development through the lens of its close socio-material relationships illustrates how the study of agile management requires a closer attention to materiality. Callon's (1989) examination of the development of an electric car (henceforth VEL, as Callon terms it) provides novel insights into how both the social and the material realms participated in its development process and contributed to the shaping of Actor Network Theory (ANT). Although ANT is grounded in a different set of concepts,[14] the study serves as an example to illustrate why the integration of both social and material actors in studies of management is necessary.

In describing and explaining the failure of a French company to promote electric cars, Callon argues that technological inventions succeed or fail because both humans and non-humans drive these processes. He refers to debates about consumption and environmental issues in the 1970s and underlines how they affected the French automobile industry's attempts to advance technology development. Because of governmental pressure and competition from other leading companies such as Renault, electric energy inputs were increasingly regarded as the best alternative for cars. Therefore, the company Electricité de France (EDF) initiated a novel project promoting and producing VELs.

Callon argues that both social and material actors require equal consideration in his analysis. He highlights that it was not only human actors such as engineers who drove the research and development process of VELs, emphasising that other actors (such as consumers, governmental actors or companies representing social interests) *as well as* material actors (such as fuel cells, catalysts and accumulators) would participate in and contribute to the development process. Thus, he refrains from a deeply social constructivist analysis (Bijker et al. 2012) when counterarguing that social interests inscribed into technology are not the only driving force and that non-human actors also affect the ways in which VELs emerge (or not).

[14] For a detailed explanation of ANT, see Law and Hassard (1999) or Latour (2005).

People have the same influence on the VELs' performance as accumulators: "None of these entities can be placed in a hierarchy or distinguished according to its nature" (Callon 1989, 86). His analysis treats both social and material entities as equally important. Callon argues that it was because of technological limitations that the company had to change its development strategy to ensure that the VEL project still proceeded. From his perspective, the failure of the VEL was finally explained by the combination of absence of customer interest, increased costs, competition with other firms and problems with material objects such as the catalyst:

> So it was the Renault engineers, in alliance with the contaminating catalysts and aided by the increasing weakness of the protest movements, who completely rehabilitated the traditional motorcar, although the motorcar underwent some subtle changes in the process. (Callon 1989, 91)

Callon's example shows that technological failure is not only driven by humans; it also depends on material entities. Hence, his perspective prioritises neither technology nor social factors as exclusively directing the development process of VELs. He explicitly states that the catalysts "refused to play their part in the scenario prepared by EDF: Although cheap [...], the catalysts had the unfortunate tendency of quickly becoming contaminated, rendering the fuel cell unusable" (1989, 90-91). Callon's analysis also points out that the close relationship between social and material actors enabled non-human entities to "act, react and cancel each other out, in just the same way as any others" (1989, 22) and illuminates the entanglement of humans and non-humans that implies a "texture or structure which is an arrangement of constituent elements" (1989, 33). This demonstrates how socio-technical development is closely interwoven in an assemblage of social and material actors that render facts, achievements and structures durable.

Although Callon's analysis is predominantly concerned with the ultimate successes and failures of technological design, it is useful as a reference point when studying agile management. Seen from this perspective, management is only possible because of the close relationships between human and non-human actors stabilising and maintaining the coordination and regulation of work processes. As Wajcman says, "[r]ather than existing in a separate realm, technology is a constitutive part of social life, shaping and being shaped by culture" (2006, 783). Thus, management practices are composed of social and material entities, which suggests that all of them play a role in coordinating people. As Leonardi and Barley note: "we argue for unraveling them [the social and the material] empirically in order to study how each contributes to the whole" (2010, 34). The focus on socio-material assemblages also contributes to current debates on the emergence of a new management paradigm (see Chapter 1) as it points us to the role of even mundane objects participating in

the management of work. Hence, considering management as a socio-material assemblage detects the underlying practices performed by humans and non-humans which render agile management possible.

It is against this background that I understand agile management as a socio-material assemblage constituted by – and, at the same time, constituting – human and non-human actors that coordinate work collectively.

Overall, I have argued that studies of agile management require a more nuanced understanding of materiality in order to uncover the dynamics of coordinating and directing work processes. In highlighting the growing concern about material objects in management practices and the close socio-material relationships, I have presented my theoretical underpinning considering management as a socio-material assemblage. I have argued that the analysis of how agile management plays out in practice requires a consideration of the coordinating practices that both social and material entities execute. The suggestion of placing an empirical focus on the different socio-material entities is consequently the starting point of my analysis which will underline how the form and matter of artefacts influence social actors' interactions and performances in their daily work and vice versa.

I argue in the following that understanding the underlying mechanisms of agile management necessitates a close assessment of management scripts. A focus on scripts allows for a thorough analysis of the interactions between social and material elements. Moreover, it sheds light on the explicit and implicit ideal types of agile management inscribed in the socio-material assemblage and pays particular attention to how these are modified at the same time. This is particularly useful for research contexts such as agile management that are claimed to perform with mechanisms that cannot be only related to social actors.

3.2 Management Scripts

If we want to understand how agile management is implemented in (industrial) organisations, how it manifests and which specific mechanisms it works with, I argue that we have to investigate the underlying management scripts. With regard to claims that agile management involves no managers at all (see Chapter 1), scripts are useful to foreground the mechanisms that make the coordination and regulation of work practices in organisations possible. Thus, as we will see in the following sections, putting agile management approaches into practice is not solely realised by direct negotiations between different social groups on the shop floor, but by management scripts that guide and shape the coordination of work.

I will discuss my theoretical take on management scripts through presenting the four characteristics of (1) programmes of action, (2) affordances, (3) reconfigurations and (4) power relations.

3.2.1 Programmes of Action

Management scripts are understood as programmes of action guiding and pre-structuring practices in the workplace. They embody the expected blueprints or ideal types of what agile management should look like and are deeply manifested in social and material elements of management. A focus on management scripts is necessary if we want to comprehend how work is coordinated in contexts where management is claimed to be more flexible and self-organised. Management scripts foreground the underlying programmes of action that manifest in patterns of action, organisational structures and artefacts. This perspective enables me to investigate how specific visions and expectations are deeply manifested in texts or patterns of action as well as in artefacts, all of which guide social action.

Beginning with my definition of management scripts, I illustrate my theoretical background and contribution to the fields of organisation studies and the sociology of work. I describe how and why the lens of management scripts is necessary if we want to understand the underlying mechanisms of agile management.

In combining research in organisation studies with concepts in STS, I define management scripts as instructions for actors to follow a specific pattern of action and to use a material object in a certain way. As "programs of action" (Akrich and Latour 1992; Latour 1992), management scripts are embedded in both social and material elements that coordinate the work process without a person to direct these actions. Organisation scholars such as Barley and Tolbert refer to scripts as "outlines of recurrent patterns of interaction that define [...] the essence of actors' roles" (1997, 83). Thus, on the one hand, management scripts are institutional guidelines that can be located in habits of behaviour, norms, organisational rules and values, and also quite ordinary 'taken-for-granted' customs (Weik 2012). They are often invisible or mundane because the actors engaging with them do not notice them explicitly.

On the other hand – and with regard to the underexplored role of materiality in the current literature – I argue that management scripts are also manifested in material objects. Consequently, artefacts equally direct actors to follow a specific pattern of action. This perspective is particularly informed by analyses in STS that combine the concept of scripts as institutional templates for organisational rules, values or interactions with the study of material objects. The main interest is to understand how technical artefacts, their designers, and their users relate to one another. Akrich (1992) and Latour (1986) therefore argue that technical objects contain a script pre-defining and directing the ways in which technology is

used. Material objects are provided with programmes of action and also function as "ordering devices" (Suchman 2007, 187). In this vein, artefacts have a quality of guiding, ordering – and, hence, managing – actions once they are implemented into contexts of use.

In this regard, the use and application of artefacts in order to coordinate work is influenced by their material composition, which does not always allow actors to engage with management scripts in a flexible way. According to Akrich, the concept of scripts grasps "the extent to which the composition of a technical object constrains actants in the way they relate both to the object and to one another" (1992, 206). From Latour's and Woolgar's perspective on "inscription devices" (1986, 51), intentions would therefore be inscribed into objects in order to restrict actors' behaviour. Latour's example of speed bumps, for example, as replacements for the traffic sign 'Slow Down' are constructed in such a way that car drivers are directed (forced) by these material artefacts to reduce their speed (Latour 1992). This perspective allows us to regard material objects as entities that are, on the one hand, socially shaped but are, on the other, entities that have the capacity to act upon others (see also Section 2.2.2.).

In following these theoretical accounts, management scripts are manifested in both social, institutional and material form – that is, routine meetings, the distribution of roles or the use of a specific artefact entail (unspoken) instructions outlining how these social and material elements should (be) perform(ed).

Management scripts do not appear out of nowhere, but are a product of different actors (for instance, authors of management handbooks, consultants, employees, managers, designers of a specific management tool, etc.) whose expectations assemble in social and material elements. Hence, the ways in which work processes are coordinated are deeply entangled with the pre-embedding of actors' expectations and visions of what agile management should look like. Investigating these scripts therefore enables me to illuminate the blueprints or ideal types of agile management. In this context, Akrich notes that designers of technology, for instance, "define actors with specific tastes, competences, motives, aspirations, [and] political prejudices" through the construction of technologies with "the world inscribed in the object" (1992, 208). Czarniawska similarly underlines the:

> phenomenon of legitimate collective agents inscribing an institutional order into machines, partly unnoticed by the machine users, and partly controlled by other legitimate instances. (2009, 55)

These considerations show that scripts contain projections of potential users into the material composition of technical objects. Akrich and Latour (1992) offer a vocabulary to describe the different mechanisms of integrating expectations and visions into a script. The notion of

'inscription' designates the starting point by showing how the projected user becomes integrated into technical objects. Akrich's (1992) examples, for instance, discuss the implementation of new technology such as the electricity meter and how it pre-defines the relationship between technical objects and social actors but, also, how the implementation establishes a certain mode of control regarding a 'moral' consumption of energy.

When it comes to the context of (agile) management, scripts do not always have an explicit origin that can be traced back to one specific actor such as, for instance, the consultant who implements a new management methodology in a company. Wacjman stresses that:

> [t]o be effective, programmes of action need to be inscribed not only into discrete devices, but also in aligned networks of technologies, humans and social institutions. (2006, 775)

As we shall see in Chapters (5, 6 and 7), management scripts emerge from and are reinforced by the close interactions between socio and material actors that, for instance, attribute a precise objective to a specific routine meeting. In this regard, Hubak (1996) and Fallan (2008) broaden the perspective by asserting that marketing, market positions or the popularity of a specific brand are relevant components of a script. Hence, agile management is deeply entangled with the specific expectations, values and visions of a diverse set of actors regarding artefacts, symbolic representations such as advertisements for specific work products, and patterns of actions of, for example, routines.

To sum up, management scripts are understood as programmes of action which are embedded in both human and non-human elements. These elements are imbued with pre-defined objectives, expectations and visions of what management should look like. I have argued that management scripts are useful in the analysis of agile management because they reveal the blueprints and ideal types of management. Management scripts shed light on how specific visions and expectations are deeply manifested in artefacts, texts and/or patterns of action. In light of current debates on the complete abolishment of management (Chapter 1), the analysis of management scripts therefore allows me to expose the underlying mechanisms that render the coordination of work still possible. As we shall see in the analyses of agile management, although these scripts are projected into artefacts and patterns of action, they also emerge through the close interactions between social and material actors.

3.2.2 Affordances

The focus on management scripts as programmes of action stresses the role of artefacts in management and the turn to affordances even more explicitly foregrounds the physical properties of material objects. Affordances are here understood as the actions offered by artefacts' physical properties which may either enable or constrain social actors. I argue that

the focus on affordances contributes to current studies of agile management as it provides novel insights into how work is also managed and regulated by the artefacts' design and physical composition. Thus, affordances promise a novel analytical approach to study the mechanisms of agile management when pointing us to the form and matter contributing to how work is coordinated.

I start this section with my understanding of affordances and their relation to the study of management (scripts) and discuss how this perspective contributes to a more nuanced comprehension of materiality.

In extending the research focus on agile management to artefacts' affordances, I contribute to the current literature and argue that agile management is also executed by the *form and matter* of material objects. I understand affordances as artefacts' possibilities of offering and generating action through their physical – and stable – properties[15]. In management contexts, scientific research has begun to acknowledge that artefacts constrain or enable actors to perform in teams (Ribes et al. 2013) and that, for example, the specific size of sticky notes can limit actors during management and innovation processes (Beynon-Davies and Lederman 2017; Lafuente and Prata 2019). In this regard, Bérard underscores that:

> an artefact possesses stable properties that endow it with specific possibilities for action, while at the same time these possibilities must be perceived by a given actor in his or her environment in order for them to be effectively realized. (2013, 100)

She argues that despite its great potential for understanding the role of material objects in studies on organisational change, the concept of affordances has been only marginally applied in organisation studies. In line with her argument, MacKenzie et al. (2017) are in favour of bringing the concept of affordance into studies of management and the labour process. Therefore, considering technology's physical properties more directly is promising as it exposes how social actors and material objects interact with each other, how they are attached to each other and how management is also executed through the physical composition of material objects.

[15] The concept of affordances has a different tradition than the script concept and originates from considerations of the relationship between animal behaviour and environment. Gibson, who coined the term, writes that "affordances of the environment are what it *offers* the animal, what it *provides* or *furnishes*, either for good or ill. These affordances *have to be measured relative to the animal*" (1979/2015, 127; emphasis in original). Gibson stresses the role that the environment's physical properties play and how these interact with animals. He, thus, clarifies that affordances can be understood as possibilities for action that specific elements, such as the environment, offer to its involved species. His concept has been taken up by scholars in STS and organisation studies (e.g., Ball et al. 2021; Bruni 2005; Hutchby 2002; Leonardi 2011; Pollock and D'Adderio 2012) and serves as the basis of my outlined theoretical understanding.

In this regard, considering management scripts as affordances offers a more nuanced understanding of the role of materiality in the process of managing and coordinating people. Although the concept of scripts is often understood as being predominantly concerned with "the notions of design and purpose than might seem available in the concept of affordance" (Jarzabkowski and Pinch 2013, 583), studies on scripts still focus on the physical composition of artefacts. Akrich and Latour briefly touch upon affordances in their suggested vocabulary of scripts:

> Prescription; proscription; affordances, allowances: What a device allows or forbids from the actors – humans and nonhuman – that it anticipates; it is the morality of a setting both negative (what it prescribes) and positive (what it permits). (1992, 261)

They stress that scripts are material *and* social (for example, a script is manifested in a machine tool but equally plays out as an institutionalised routine) and they enable (permit) or constrain (prescribe) actors. Unlike the script, however, affordances do not imply as much of a (strategic) inscription of the designer's vision into the design of technical objects. Thus, in the context of agile management, affordances highlight more strongly how the physical composition of artefacts also regulates the work process (rather than, for instance, only social interest groups).

However, the fact that artefacts offer limited possibilities of action does not mean that the material composition of artefacts always has the same outcome and can afford action in a universal manner. As Hutchby writes, "affordances are not just functional but also relational aspects of an object's material presence in the world [...]. They are enabling, as well as constraining" (2001, 448). How an artefact eventually enables or constrains social action is consequently contingent on the actors' knowledge and perception of it. As Jarzabkowski and Pinch argue, "material affordances are relative to the situation in which they are used" (2013, 582). Against this background, in order to understand agile management, its investigation requires special focus on artefacts' physical compositions and properties in the situated context of their application.

Overall, I have argued that the concept of affordance provides a better understanding of how artefacts' interface and design have an impact on (social) action by 'inviting' actors to use them in a specific way. A closer analysis of artefacts therefore points our attention more directly to the physical conditions of objects enabling and, at the same time, constraining social actors to manage their work. Especially in combination with scripts, the emphasis on affordances provides fresh perspectives on the artefacts' physical composition that participates in managing agile work. Management scripts and their affordances consequently illuminate the role that materiality plays in contexts of agile management that do not work with direct

managerial control via social actors but, as we shall see in the analysis, via the material's affordances.

3.2.3 Reconfigurations

While studies underline the characteristic of scripts becoming modified, I argue that management scripts and their relationship to these reconfigurations are not contradictory dichotomies, but complementary parts of management. In problematising the depiction of actors as entirely 'script-driven' and organisations as being scripted to the core, contributions in studies direct our attention to actors' active role in adapting, repurposing and refining scripts (Akrich 1992; Drewlani and Seibt 2018; Orlikowski 1992; Scott and Orlikowski 2014). Accordingly, a unidirectional focus on scripts affecting, for instance, workers, carries the danger of assuming too quickly that actors are strictly following the scripts-in-use. Against this background, I understand management scripts to be in a more intertwined relationship of stable instructions on the one side and modifications by social and material actors on the other. Especially with regard to recent trends in agile management towards greater flexibility and adaptability (see Chapters 1 and 2), I argue that the study of agile management requires an understanding of management scripts whose reconfigurations have the potential to also turn into a script themselves.

In demonstrating that the current literature on scripts regards them as flexible in their application, I discuss why the focus on the deep intertwining between scripts and their reconfiguration is necessary if we want to understand how agile management operates.

Management scripts can be reconfigured when being modified, resisted or improvised. For instance, using an analogy to theatre or film, scripts are the counterpart of improvised, impromptu activities that actors on stage perform in order to create different scenes with an open end. As Suchman argues, scripts are reconfigured by practices involving precisely the opposite of scripts' characteristics, that is, improvised, tacit and 'situated actions' (1987, 2000). In line with Suchman, Igelsböck argues that "applying a script necessarily requires the effort of improvisation" (2016, 437). Hence, scripts have a quality of 'incompleteness' as they cannot address every single course of action in contexts of use. Although scripts may regulate or constrain actors' activities, at the same time, they attribute power to actors to alter them. Returning to Latour's (1986) example of the 'Slow Down' traffic sign (Section 2.2.1.), he shows that drivers circumvent and resist the prescriptions and instructions manifested in the sign, noting that car drivers still maintain their speed on the streets because signs do not 'materially force' them to slow down, unlike speed bumps. Latour ascribes an important agency to users, which Akrich pinpoints as the ability "to reshape the object, and the various ways in which the object may be used" (1992, 206). Akrich describes such processes of adopting and re-adjusting

as “de-scription”. On this level, actors can reverse the technology’s intended design and application and subsequently ‘de-scribe’ them. According to Akrich, “technical objects and people are brought into being in a process of reciprocal definition in which objects are defined by subjects and subjects by objects“ (1992, 222). Social actors give meaning to technical objects. Akrich and Latour add to these two definitions the processes of “anti-program”, “de-inscription” or “sub-scription” (1992, 260), which characterise the users’ actions of accepting or resisting.

With regard to the context of agile management, scripts can be changed by employees’ ‘tacit knowledge’ (Barley and Bechky 1994; Böhle and Huchler 2017) or resistance by a certain group of actors (Edwards 1979; Schaupp 2021b). Thus, management scripts relate flexibly to actors and change according to the actors’ empirical knowledge, prior experience and implicit, subjective skills. Research illustrates that new forms of management addressing, for instance, the restructuring of organisational hierarchies or routinisation often play out differently once they are fully implemented (Hodgson and Briand 2013; Pentland and Feldman 2008). Technical objects that are said to increase efficiency are equally adopted flexibly and many labour sociologists argue that they rather reinforce work control (Gandini 2018; Noble 2011) or are resisted and reconfigured by workers (Niebler 2020; Schaupp 2021b; Woodcock 2017). Against this backdrop, both the institutional framework of management in terms of labour division, and the material framework in terms of machines or management artefacts are subject to modification.

However, demands for more flexible and adaptable management practices suggest a refinement of the relationship between management scripts and their reconfigurations. New formats such as rapid prototyping, stages of brainstorming or ‘learning by doing’ in formalised work processes assume that even practices of experimentation and improvisation are somehow based on a specific framework, if not a programme, of action. Igelsböck and Schüßler have, in this regard, posed the question as to “how far improvisation is scripted as well” (2019, 4). Yet, a stronger engagement with the relationship between management scripts and their potential modification through improvised action still remains only marginally investigated. Therefore, I argue that management scripts and their relation to their reconfigurations are deeply intertwined and cannot be understood as standing in a dichotomous relationship. As we shall see, agile management works with precisely this ambivalence of scripted improvisation that both constrains actors’ action and, at the same time, enables them to improvise (see Chapter 5).

I have argued that management scripts and their reconfigurations are deeply intertwined with each other. Management scripts are not entirely stiff and inflexible; they can be re-shaped and

repurposed. As I will show throughout the analyses, there are growing demands for adaptability to be directly addressed in contexts of agile management; yet the practices of producing adaptability are scripted when implying programmes of action towards improvisation. Including the reconfigurations and the relationship between scripts and improvisation is therefore necessary if we want to understand how agile management is implemented and which specific (reconfigured) mechanisms – or programmes of action – are involved.

3.2.4 Power Relations

I claim that the study of agile management also requires a focus on how management scripts reinforce and legitimise (asymmetrical) relations of power. Their analysis reveals the role that the underlying programmes of action play in strengthening individuals' power and influence. In starting with my definition of power and its relation to management scripts, I present the current research perspectives on power in existing studies of agile management and analyses of scripts. I discuss why and how the focus on management scripts is necessary in this context. First, in pointing to management scripts and their relation to power, I contribute to the literature on the sociology of work and organisation studies that has thus far marginalised the role of socio-material relationships and artefacts in shaping power asymmetries. Second, I contribute to analyses in STS when arguing that scripts ascribe power to individual actors while devaluing, invisibilising and depriving others of their capacity to exercise power. In this regard, studying management scripts in agile management provides novel insights into the distribution of power through the underlying programmes of action and material objects of agile management.

Management scripts manifest power relations when providing some actors with more influence, pre-structuring the relationship between social and material actors, and invisibilising others' capacity to act and influence. As Law underlines, scripts are always reliant on the competence of their recipients to interact and realise them and thereby create a ranking of competences. In referring to an example of machines being used by a crew of technicians, Law explains:

> we might say that 'competent' crew members are those that are able to act the scripts built into the machine by the designer: and, of course, enact (and embody) the rankings in the orderings implied by the (designers' version of the) machine. (1994, 128)

Thus, this ranking equally means that actors who do not have such competence are automatically ranked lower in the hierarchy of exercising power. Consequently, power relations emerge from the manifestation of programmes of action and the subsequent interpretative practices of social and material actors. Accordingly, since management scripts

have the quality of guiding and directing actions, they contribute to ordering the (asymmetrical) relations of power. In referring to STS, for scholars such as Law, power is the result of ordering modes[16] that:

> generate objects and entities in characteristically patterned but asymmetrical relations such that some are deprived of the ability to act in certain ways. And, contrariwise, they may tend to empower certain kinds of entities or objects with specific and extended rights. (1994, 118)

In this regard, power is defined as the added capacity or 'extended right' of individuals to influence others' actions (Law 1994; 1991). Thus, power signifies a relationship between actors who can control or influence other actors' actions[17]. The relationship can be asymmetrical and produce a hierarchy between actors with high influence and those with low influence over each other's actions.

With regard to management scripts, actors are not always deprived of their power completely; instead, management scripts also invisiblise or delete some actors' efforts, influence and responsibility, and others benefit from this. Law argues that the modes of ordering consist of "patterns of deletion" (1994, 118) being performed by social and material actors. Deletions are here understood as invisible work practices that are neglected, ignored, devalued or taken for granted (Puig de la Bellacasa 2011; Star and Strauss 1999) through the manifestation of management scripts. Management scripts can consequently delete the practices of actors whose work is still essential for rendering the pursuit of an (organisational) objective possible. This deletion of work is mainly perceived as "low-status work [that] gets done 'automatically', as if people were programmable devices" (Law 1994, 131), "background work" (Star and Strauss 1999, 20) or "invisible labor" (Crain et al. 2016) of routines or ordinary practices that are taken for granted. According to Star and Strauss, "the workers themselves are quite visible [at the workplace], yet the work they perform is invisible or relegated to a background of expectation" (1999, 15). Thus, management scripts reinforce power asymmetries because they render work activities invisible that are yet essential to create value within organisations. The analysis of how organisational structures are characterised by agile management in Chapter 7 will demonstrate that scripts render work invisible and that some actors gain more power than others as a result of this.

[16] Besides the mode of ordering mentioned here, Law (1994) contends there are several additional modes of ordering occurring at the same time. The theoretical framework is nevertheless mainly preoccupied with the effects of asymmetrical power relations rather than the different modes of ordering.

[17] In addition to more conventional perspectives on power as restricting ('power over'), Law (1991) also defines power in relation to its productive, enabling capacities ('power to'), its storage and discretion. The following Chapters will, however, mainly concentrate on the first two elements of 'power over' and 'power to' (influence) others' actions.

Against this backdrop, I argue that although power is a central part of management practices (Clegg et al. 2006; Courpasson 2017), prevailing studies on agile management do not adequately investigate and explain power relations with regard to material objects. Often, agile management is either said to blur the boundaries between managers and employees (Lafuente and Prata 2019; Zaitsev et al. 2020) or studies presume managerial control to be intentionally delegated to technology whereby social actors remain prioritised in the analysis (Hodgson and Briand 2013; Moore 2018). In both cases, a closer analysis of power and how it manifests in material and social elements of agile management is still missing. Although Moore, for instance, explicitly engages with the role that digital technology plays in the context of agile management, she asserts:

> New uses of technologies in the Quantified Workplace are part of an emerging form of updated Taylorism, that is, processes of subordination, where quantification of new areas of work through tracking technologies may help corporations keep up with cut-throat competition. (2018, 56)

She here underlines that new technology intensifies the (self-) management of the work process; however, her analysis does not give any examples of how these specific technologies actually interact with workers and thereby reproduce or establish power relations. Her analysis ends with the argument that technology exacerbates power, not because it has manifested certain mechanisms that potentially disadvantage actors but because Capital "can increase its profit ratios" through these new technologies (2018, 56). As argued in Section 2.2, these lines of argument place a strong emphasis on the social while omitting a closer investigation of how power is also deeply inscribed into the human and also non-human elements of agile management.

Therefore, I propose to engage with power asymmetries through the examination of management scripts when analysing more closely the expectations regarding distributed power being inscribed in the material objects of agile management. According to Wajcman, "more workplace studies are needed that consider how tools, artefacts and technologies feature in work practices and their accomplishments" (2006, 778), in particular looking at "how technologies both reflect and shape prevailing patterns of power" (2006, 782). In focusing on management tools, Chiapello and Gilbert similarly underline how they carry political dimensions that always involve power relations:

> Because they enable and constrain action, because they relay power relations and governmental regimes, and because they uphold social compromises, management tools belong to the world of politics. (2019, 228)

Referring to the context of agile management, a closer look at management scripts, thus, reveals the different hierarchies of power when some actors are endowed with the capacity to exercise power, while others are not. The theoretical and empirical engagement with power relations through technical objects requires even closer attention, especially with regard to the current demands for greater autonomy and flattened hierarchies in the context of agile management (and beyond). As we shall see in the analyses, even mundane objects such as sticky notes or whiteboards can establish asymmetrical relations of power (see Chapter 7).

Moreover, STS scholars argue that scripts also entail power dynamics (e.g., Bruni and Esposito 2019; van Oost 2016). Studying this relationship contributes novel insights to the current literature on scripts beyond the field of management. For instance, Ask et al. (2019) scrutinise how digital apps have values and biases inscribed into their interface that eventually pre-define a group of users, yet remain hesitant to point to the problematic exclusionary effects that these platforms can have for their users. Curchod et al.'s (2020) research on the exacerbation of power asymmetries through algorithms using eBay as their subject can serve as the starting point for treating objects as manifestations of power asymmetries. They argue that algorithms imply underlying programmes of action that:

> empower some groups of actors by granting them more rights (buyers can evaluate sellers), disempower some others by granting them fewer rights (sellers cannot reciprocate with negative evaluations), and set procedures that regulate interactions on the platform (by imposing evaluation criteria on buyers or downgrading sellers with low scores). (Curchod et al. 2020, 667)

Thus, objects not only direct a programme of action but, more crucially, invest actors with a certain power and agency.

I have argued that power relations establish in and through management scripts. A script analysis, thus, discovers the social relations and power dynamics deeply manifested in the social and material elements of agile management. Especially with regard to claims that agile management involves no management at all (see Chapter 1), the focus on management scripts and power relations is even more fruitful in foregrounding the mechanisms that are still in play.

Overall, I have argued in these sections that if we want to understand how the coordination, regulation and control of work is realised, we need to pay particular attention to the role of artefacts and their relationship to management practices. I propose to study management scripts as they allow me to investigate more closely who and what drives agile management in the first place. Management scripts have four characteristics; they are here understood as (1)

programmes of action that have (2) affordances and can be (3) reconfigured. Lastly, management scripts embody and manifest (4) power relations. The following section will now turn to a specific framework for studying scripts in the context of (agile) management.

3.3 Framework for Studying Management Scripts

I argue that the focus on management scripts is fruitful for understanding the underlying mechanisms that make interactions, roles, patterns of action and artefacts work in the way we use and encounter them in agile management. Therefore, based on the theoretical background presented in this chapter, this section proposes a framework for studying management scripts in agile management contexts. The framework for studying the implementation of agile management contributes to ongoing debates in scientific research on the socio-material relationships and the analysis of power.

With regard to the methods of locating the mechanisms of agile management, this thesis proposes to locate management scripts in the contexts of their applications. Hence, instead of doing an analysis starting with the pre- or inscription of certain visions into programmes of action and ending with their reconfigurations, the framework links these processes more directly together. Traditional analyses in STS usually start with the process of inscription where scripts are defined and assembled into technical objects or routines (Akrich 1992; Barley and Tolbert 1997). Accordingly, detecting the management scripts would imply a detailed analysis of the contexts in which the new management approach was first developed and conceptualised. In this regard, management handbooks, consultancies, designers of management artefacts or managers introducing agile management could be the starting point in analysing the embedding of visions and expectations into (intended and unintended) scripts. After having located these scripts, examinations usually continue with the context of their implementation and reconfiguration, which are often referred to as processes of pre-scripting (see Section 2.3.3.). In this regard, the analysis of management scripts would foreground the practices of how individuals modify, ignore or resist certain routine meetings, material objects or organisational values.

However, especially in the context of agile management, scripts are often hard to locate as they have travelled through multiple contexts and it is often unclear "who the 'designers' of the scripts are" (Igelsböck 2016, 438). Thus, applying a script analysis to the field of management requires a "reverse study" (Igelsböck 2016, 438); that is, it starts with the practices of using

and implementing agile management in order to detect the underlying management scripts[18]. In this regard, the assessment of the mechanisms of agile management particularly concentrates on the reciprocal processes of scripts and their recipients: while material objects or social, institutionalised meetings entail scripts guiding the individuals' actions, these non-human and human elements are, at the same time, equally scripted by individuals. For instance, artefacts, routines and the distribution of organisational responsibilities all embody a script guiding and directing teamwork towards self-management. But, at the same time, it is these same artefacts, routines and responsibilities that make it possible for teamwork to actually become oriented and, thus, scripted in such a self-organised way. It is precisely these socio-material, reciprocal dynamics of management scripts that my framework proposes to engage with in the following chapters in order to understand how management scripts manifest within the context of agile management.

Following these theoretical considerations, the framework suggests investigating agile management as a socio-material assemblage in order to highlight that management consists of social and material elements. The analysis is, thus, based on the following questions:

- Who and what is involved in agile management?
- Who and what stabilises agile management?

With a special focus on management scripts, I propose to specifically engage with the following questions:

- Which expectations and visions are embedded in the material and social elements of agile management?
- Which instructions or programmes of action can be detected in the material and social elements of agile management?
- How are programmes of action stabilised (and re-configured) by social and material actors?

[18] In contexts where "the innovator [of a technical object] is no longer present" and "the ordinary user [...] has already taken on board the prescriptions", Akrich suggests to analyse the scripts of technical objects through the study of "user's manuals or in contracts", "disputes", "what happens when devices go wrong, or follow the device as it moves into countries that are culturally or historically distant from its place of origin" (1992, 211). However, in the context of agile management, it is not the problem of absent innovators or users having fully adopted the scripts. Agile management rather represents a diffusion of different innovators, methodological approaches, sets of rules, roles and meetings; thus, it is often differently applied and blurs the boundaries between ordinary and exceptional/new contexts of use (see also Chapters 2 and 4). Therefore, the identification of handbooks, disputes or contexts beyond the origin of agile management are themselves often hard to locate. Against this background, the subsequent analysis is inspired by Akrich's considerations, yet suggests a reverse study of scripts starting with the context of their application.

- What are the effects of these management scripts on their recipients for coordinating the work process?

In order to shed light on the affordances of artefacts, the framework also asks:

- What are the artefacts being used in agile management composed of?
- How do material and social actors interact with each other?
- (How) do matter and form of artefacts constrain or enable social actions?

With regard to the manifestation of power relations, the framework integrates questions detecting the distribution of agency and responsibilities, when asking:

- Who and what do the inscribed programmes of action prioritise or privilege in taking action?
- How do management scripts attribute or deprive power to/from social actors?
- How do management scripts render work invisible that is still beneficial for other actors?

Against this backdrop, I transfer valuable insights from STS and organisation studies on scripts to questions of the mechanisms of agile management. Barley's (1986) work on technology contributing to processes of organising and Lavén's (2008) and Igelsböck's (2016) studies on innovation scripts can be seen as starting points for extending the concept of scripts to contexts of management tools. Yet, I believe there is still more to add for organisation studies, the sociology of work and STS. Thus, the following chapters will shed light on the management scripts embedded in practices of establishing agile management in the workplace and what this means for current forms of management and work in technology development.

3.4 Conclusions

This section has presented my theoretical background by arguing that the study of agile management requires that attention be paid to the socio-material relationships, the underlying scripts guiding and directing action, the artefacts' physical properties and the power relations emerging from the manifestation of programmes of action in both social and material elements of agile management. I have argued that in order to understand the mechanisms of agile management, investigations need to examine how agile management is originally envisioned and eventually used in practice more closely. Management scripts give insights into the underlying values and expectations and reveal the power dynamics deeply manifested in material and social elements of agile management. Foregrounding management scripts is an important step to detect and acknowledge the different entities playing a vital role in manifesting and establishing agile management. Taking management scripts into account

in the analysis, the following chapters will reveal the processes of how social and material actors establish the mechanisms of agile management. They will underline the contribution of physical objects to coordinating work and explain the power asymmetries that emerge from the programmes of action that render some actors more powerful than others. How the analysis was conducted and which specific research methods and exemplary cases it draws on will be demonstrated in the next chapter.

4. Methodology

In showing the different steps and data material required to achieve my research aims, this chapter outlines my research methods and exhibits how I approached my research material analytically. I conducted a comparative case study of three examples of agile management located in the industrial sector of German technology development and analysed them using mixed research methods of in-depth interviews, ethnographic fieldwork and an artefact and document analysis. The interpretation of the data was inspired by interpretative approaches based on Grounded Theory (Glaser and Strauss 1967) and script analyses mainly used in STS (Akrich 1992).

4.1 Research Design & Case Selection

My research design employed a comparative case study of three examples representing different elements of agile management and different degrees of implementation. The selection of companies was particularly motivated by my research interest in the mechanisms of agile management and their effects, and the socio-political implications for the work process. A comparative approach is fruitful in uncovering similarities and differences in agile work settings and gaining profound insights into what holds the new management approach together (Mills et al. 2010; Rowley 2002). In this chapter, I discuss the collection of my empirical data when describing the three examples I chose for my research undertaking.

My research design was constructed, first, based on the different ideas that were circulating in the discourse on agile management (see Chapters 1 and 2) and, second, on different degrees of implementation and institutionalisation. First, I selected suitable initiatives that claimed to be implementing similar ideas of adaptability, features of collaboration and a less top-down organisation structure currently being discussed as different from former management approaches[19]. In this regard, empirical studies have shown that companies often implement a mix of different methodologies and tools that'"best suit' the company's internal objectives (Iivari and Iivari 2011). My case selection paid more attention to similar overarching ideas rather than choosing a specific type or methodology of agile management.

Second, I accessed initiatives that were different in their nature, degree and state of implementation. Although similar in their general interest in agile management, the differing stages of their implementation meant that I was able to determine the differences, similarities and, finally, patterns and mechanisms that agile management is based on. The case selection

[19] For a more detailed explanation, see Chapter 2.

was therefore informed by the following three stages and degrees of institutionalising agile management approaches:

1: Agile management as a testbed[20] (isolated/temporary)
2: Agile management as a project (simultaneous/temporary)
3: Agile management as a completion (permanent)

The three examples allow for the exploration of different aspects ranging from ideal types of management, contrasts between former and novel practices, and routines or conventions that emerge during the implementation of agile management. While a testbed mainly serves as a valuable basis for understanding the ideal types of the agile management, the project and completed implementation put more focus on the differences between former and new management approaches and illuminate the (newly) established routines, organisational responsibilities or habits and patterns of interaction.

The first example of a testbed gives specific insights into the daily doings of agile management in an isolated environment[21] and what the ideal agile management would look like. As Engels et al. argue, unlike former experimental formats or pilot projects, testbeds offer the possibility of "testing new sociotechnical arrangements *in situ* and at a meso-scale" (Engels et al. 2019, 1; emphasis in original). Testbeds are therefore particularly fruitful for acquiring knowledge about the blueprints and ideal types of agile management. Engels et al. underline that

> their envisioned benefits are tied to the possibility of testing (and jumpstarting) full-fledged new ways of living under the assumption that certain systemic changes have already happened and that society (at least in this model environment) has adjusted accordingly. Test beds thus often require substantial interventions into social orders, albeit at small scale. (2019, 2)

Testbeds illuminate the underlying assumptions or expectations to their full extent – here, actors are not disrupted by other projects or responsibilities since they are only focused on the test environment.

The second example illustrates a stage of implementation that sheds light on the contrasts between former and novel practices when introduced as a project taking place *simultaneously*

[20] Testbeds are a common method in natural sciences and software development used to conduct controlled experiments in isolated environments to provide proof of concepts, scientific theories or computational methods. Recently, testbeds have entered the novel contexts of policymaking, social sciences and also industrial research and development (Engels et al. 2019; Evans and Karvonen 2014; Renn 2018).

[21] Recent concerns about testbeds point to the risk of diminishing or evading democratic regulation when running in exclusive settings without the integration of multiple interest groups (see Engels et al. 2019). In spite of the potential risks and problems that testbeds carry, the focus of this thesis remains on the *internal* practices happening within testbeds and not so much on the politics that testbeds engender.

with daily work activities. Projects serve as a valuable example of investigating management mechanisms, especially in contexts where new and former management practices run parallel with each other. In these contexts, new management styles stand out more directly from the usual daily life and thereby work as a contrasting example to the still existent traditional management. Hence, differences and similarities between the former and the new management approach can be observed and detected more precisely.

The third example finally includes the institutionalised form of agile management and, thus, illuminates the adjustments, adoptions and routines of agile work settings. The focus on a completed state of implementation is particularly important for understanding the socio-material conditions that render agile management possible in regard to its stabilisation. An example of completion furthermore provides supplementary insights into who and what contributes to the manifestation of agile management for a longer period of time.

My research design concentrates on these three differing stages of implementation as they foreground the blueprints and idealised mechanisms of agile management, and the contrasts between their novelty and former practices as well as the establishment of (new) conventions once agile management has been fully adopted. The following three sections describe the companies[22] I selected to explore an example of a testbed, project and completion of agile management.

4.1.1 Agile Management as Testbed: The Innovation Camp

The first example involves the attempt of a leading company in the automobile sector to run a testbed for agile management in an isolated location external from the usual workplace. The automobile sector is a representative site of the ongoing upheavals in production and innovation strategies as a result of new economic, environmental and political developments (Boes and Ziegler 2021). Therefore, it serves as a valuable example for understanding the dynamics of implementing a new management approach. The company has around 90,000 employees and was founded in the first half of the 20th century. Its product range from premium-class products to mobility services. The company has had a very long history of different trends and management strategies and has been through several restructures. As many of my interview partners explained, the implementation of agile management was a result of previous attempts to change the company's business strategy. It, thus, testifies to the challenging task of introducing a new approach into a company with long-standing traditions – for instance, the persistence of routine meetings or path-dependencies in production

[22] The following information on the three examples were collected from the company's website, annual reports, interview transcripts and fieldnotes. They are anonymised and, therefore, some information (on, for instance, the exact location) was not given in detail.

processes – and a workforce that has already gone through various different internal restructurings.

The innovation camp that I selected as the testbed case study was one of the projects through which the organisation sought to prepare its employees for a new departmental transformation. The testbed is organised as an innovation camp that runs twice a year for a period of six months, in which employees exclusively engage with this new environment while being exempt from any other work activities happening in the rest of the company's business. The camp was advertised on the company's internal communication platform and employees explicitly had to apply to be part of it. It was located in a co-working space and, thus, in a different location than the employees' usual workplace. It involved agile elements such as iteration, scheduled meetings and different phases, mainly coming from the Scrum methodology. For instance, iterative cycles of feedback loops, the designation of different development stages as 'Sprints', the establishment of new organisation roles and new tools for organising such as the Product Backlog (which lists all the different elements necessary for the finalisation of a product) were all essential parts of the innovation camp. Sprints usually lasted for about four to six weeks. In addition to the Sprints, there were regular group meetings ('Daily', 'Review' and 'Retrospective') designed to guarantee an ongoing updating of each of the team members – and in some cases external stakeholders – on the progress and current state of the project. The 'Daily', as it name suggests, took place every day and was meant to last no longer than 15-30 minutes. Its main purpose was to update the current status of any work tasks necessary to accomplish the sprint. The 'Review' mainly concentrated on discussing the work tasks after each of the sprints: what had been done and what was still in progress. The 'Retrospective' focused on reflections and discussions about events and work activities but also covered communication or general interactions among team members that had been successful or unsuccessful in order to prevent further impediments. In this context, the 'Retrospective' should ideally result in 'Learnings' and current 'Best Practices', using which the team should ideally proceed productively with the work. The program involved three Pitches, where novel ideas – and prototypes – are presented in front of different stakeholders. The innovation camp therefore integrated multiple elements of agile management and intentionally ran as a testbed for bringing these different approaches to the employees' attention.

4.1.2 Agile Management as Project: The Makeathon

Similar to the first example, the second example of initiating a novel format for innovating, namely a Makeathon, was sought to bring in new management ideas into the company. Unlike the testbed, however, the Makeathon was being run in parallel with other daily activities. The Makeathon was part of an automobile manufacturer in Germany with over 120,000

employees. It is also known for its premium-quality products and mobility services ranging from automobiles and motorcycles to E-scooters. The company' foundation dates back to the first half of the 20th century. Similar to the first example, it has a long history of different management trends and business strategies, which becomes particularly interesting considering the current interest in this yet another style of agile management.

The idea of implementing a Makeathon as a novel format for innovating can therefore be equally understood as an alternative attempt to respond to new trends in technology development that combine designing with practical elements of manufacturing. Many enterprises have already started to integrate Makeathons, as short-term idea generation events, into their internal strategy (Drewlani and Seibt 2018; Wenten 2019). Organised as internal competitions, Makeathons are usually limited to several days or a week during which teams of employees are expected to quickly come up with new product ideas and test them out practically. One of the premises is to combine traditional technology manufacturing techniques with agile methodologies. Peculiar to Makeathons is, thus, the connection between intellectual practices of brainstorming or designing and elements of manufacturing and working at machines. Makeathons are often presumed to provide organisational members with fresh methodologies for innovation and scanning the future market when internally testing new potential product ideas.

The company under scrutiny adopted such an approach because it had only partially achieved a restructuring and realised it had to catch up with recent trends in technology development. Many of my interviewees emphasised: "As far as I know, there is already one department that has transferred to agile completely"[23]. The Makeathon was believed by its organisers and the company employees to be the accepted method to introduce the company's employees to new ways of innovating. The Makeathon that I investigated happened in an external Makerspace[24] location that can be characterised as a highly professional workshop with the newest technology. Although it was externalised, the Makeathon took place simultaneously with other projects and daily activities. This was often a challenging task since the employees had to juggle between tasks coming up in the Makeathon and the daily requirements of their official projects. Every employee of the company could apply for the Makeathon, which was advertised on the company's internal communication platform. The Makeathon drew from different agile methods such as Scrum, Rapid Prototyping and Design Thinking (see also Chapter 2) when,

[23] Interview with participant 2 of Makeathon, Munich, December 2017.
[24] Makerspaces are machine shops that are accessible to everyone interested in designing, tinkering, repairing, constructing or experimenting with new machines or materials. Makerspaces are usually equipped with different machines and tools such as CNC machines, water jet cutting machines, 3D printers and wood saws. For closer analyses of the internal practices happening in a Makerspace, see, e.g., Dickel et al. (2014; 2018).

for instance, introducing the core agile principle of iteration. The Makeathon entailed very short cycles of planning, developing, evaluating and implementing. Accordingly, the involved actors were asked to develop an idea, construct a first prototype, test it with potential users and re-work it where necessary. After a week, the participants presented their final products to different stakeholders (both internal and external) who voted for the best idea. Employees additionally used Scrum elements such as the Product Backlog which lists the different criteria necessary for a product or idea to be fully realised. These different elements of iterative cycles and new tools for organising the development process underline the company's attempt to bring in new management approaches in the form of a project running parallel with other daily activities.

4.1.3 Agile Management as Completion: The R&D Department

The third example, which illustrates the attempt to implement agile management in a more complete form, is represented by the Research and Development (R&D) Department of a company specialising in home appliances. Its company base is located in Germany and has around 60,000 employees. The company is mainly producing household appliances but it has recently also started offering digital services.. Based mainly in Southern Germany, it has production sites in fifty other countries. Similar to the first two companies, the company has a long tradition and has been through many different stages of departmental restructuring and changes in business strategy. Against this background, the employees in this company were also familiar with internal transformations and the example of the R&D department can, thus, be understood as one of the restructuring attempts.

The restructuring attempt translated into the establishment of an R&D department that was supposed to fully apply agile management practices. With the help of different consultancies, external advisors, and even internal coaches, the R&D department replaced its internal structure of specialised sub-departments with working groups divided by project. Hence, the department had experts with very different disciplinary backgrounds and specialisations working on one particular project rather than having one specific disciplinary expert group working on different projects.[25]

The R&D department adopted different elements from agile management but was particularly inspired by Scrum when introducing scheduled meetings and the planning of development steps through Sprints. It had similar tools for organising the development process since the different projects were using Product Backlogs or Scrum Boards, which involved listing the

[25] That the R&D Department is organised by projects is not an exception but rather documents trends in re-organising work towards more flexibility and efficiency (Boltanski and Chiapello 2007; Kalff 2018).

different work tasks on a whiteboard so that they were visible to everyone involved in the project. Meetings also followed the different frameworks of Dailies, Retrospectives and Reviews, and each project always had an assigned Product Owner and Scrum Master, who were responsible for the product's functionality and the connection to external stakeholders, and the moderation of the discussions, respectively.

The R&D department differs from the first two examples because its work under agile principles was not restricted to a certain period of time. Consequently, the outcomes of agile management certainly ended up in the economic market at some point, which rendered the work activities in the R&D department more ordinary but, more crucially, economically highly important.

All in all, my research design and case selection was informed by three industrial companies that have a genuine interest in agile management. In order to facilitate a comparative study, they are similar in their size, history and focus on technology development. They fulfil the different requirements of isolated and simultaneous, yet restricted stages of implementation on the one hand and full completion on the other. The selection of these field sites helps understand which tools, ideas, interactions and organisational structures prove fruitful for industrial companies and illuminates the underlying mechanisms of agile management as they unfold in practice.

4.2 Research Methods & Data Collection

In order to understand the mechanisms of agile management and their effects on and socio-political implications for the work process, my research methods involved an interview study, a short period of ethnographic fieldwork and the analysis of documents, photographs, guidelines, handbooks and artefacts. Using several methods is useful for collecting rich data, for understanding the field itself and for contrasting field observations with ongoing debates and the expectations that manifest in textual and artefactual documents.

The period of data collection spanned 2016–2020 in different locations across Germany with a concentration on the cities of Berlin and Munich (see Appendix 2). The selected period was particularly chosen because of the growing attention that agile management has received from industrial companies recently (Madsen 2020). The choice of the locations resulted from the companies' characteristics in terms of size and motivation to introduce agile management approaches.[26] Berlin and Munich also have the reputation of having become places of

[26] Scientific research highlights how location and cultural context shape innovation policy and organisational practices on a broader level (Lundvall 2013). My focus on local specificities is mainly to

innovation and technology development, and this is reflected in the fact that even traditional industries based there are more likely to take up a new innovation strategy.

4.2.1 Interview Study

The interview study forms the core of my empirical data as it illuminates the narratives circulating in the organisation (Czarniawska 2004) and the self-perceptions of the actors' practices in relation to organisational dynamics while also contrasting their expectations with the practices taking place during my fieldwork. Interviews provide insights into the underlying mechanisms and scripts of agile management when touching upon questions ranging from daily work activities to the organisational structure and the roles that material and technical objects play.

My interviews were organised as semi-structured interviews which helped me to both streamline the questions relating to my general research interest and leave space for the interviewees to elaborate on aspects that arose during the interview. Over time, I revised and sharpened the research questions as new insights informed my general research interest. However, questions addressing daily work life, differences between the former and the agile management approach, labour division within the team and beyond, the distribution of responsibilities and the different tools and materials utilised in organising the development processes always remained at the core of my interviews.

I reached my interview partners mainly through snowballing techniques (Flick 2009) after having approached my first group of contacts through friends, colleagues or formal inquiries. During my fieldwork (see below), I was also able to enter the field more deeply and gained new interview partners through daily encounters and conversations happening in the corridor. Most of the interviews were conducted in person, although due to the COVID 19 pandemic and local distances, the last interviews were often conducted over the phone or virtually.

In total, I conducted forty-one interviews, seven of which are characterised as background interviews and thirty-four as more in-depth material. Twenty additional 'informal' interviews also provided essential information for my analysis. These interviews took place during lunch meetings, coffee breaks or in the hallway and were consequently only recorded in the form of notes (for an overview of my empirical material, see Appendix 1).

highlight the different adoptions of management ideas *within* companies and what these adoptions can tell us about the underlying mechanisms of management. Therefore, the city in which the management idea was implemented was less important than who, what and how it emerged from factors from *within* the company.

My main interview partners were employees and participants in initiatives to introduce agile management in order to get insights into how agile management works in contemporary organisations. Because of ongoing debates on the promises of agile management[27] and my research interest in the effects of management practices on work practices (and not least their organisation), I mainly concentrated on the conditions and concerns of the employees. I also interviewed managers, executives, coaches, directors and coordinators of new management initiatives in order to get an overall picture of the mechanisms and effects of agile management. The majority of my interview partners were male; only eight of the forty were female, which illustrates the problematic gender imbalance in contexts of technology development (Tihlarik and Sauer 2021). Although questions of gender were not the centre of my research study, the unequal gender distribution still points to the problematic and excluding dynamics of even those management methodologies that claim to be otherwise[28].

During the second year of research, I gained interest in questions of co-determination and participation, which led me to also engage with works councils[29] and trade unions. Following interviews with three actors involved in labour politics in one of the biggest trade unions of German industrial organisations, I extended my analysis to include a particular view on the politics of employee participation and managerial control.

4.2.2 Ethnographic Fieldwork

In addition to the interview study, the analysis is informed by ethnographic fieldwork as this can provide insights into the internal dynamics and conditions of what can often become only partially visible in articulations and verbal expressions (Latour and Woolgar 1986; Latour 1988). Fieldwork is more about exploring what actors say and do, getting a grasp of their organisational background, internal traditions and, in my analysis, it especially illuminates how social and material elements relate to one another. In this context, I was mainly interested in how ideas of agile management were put into practice, by what means agile management operated, how agile management affected employees' daily lives and what particular visions and expectations were inscribed in the texts, artefacts and interactions of the actors starting to work according to agile principles.

My fieldwork involved short and intense visits to the three enterprises in Germany (for a detailed overview of my fieldwork locations and events, see Appendix 2), supplemented by

[27] See also Chapter 2.
[28] Studies have in this regard investigated the different idealised imaginations of femininity and masculinity (Tihlarik and Sauer 2021). For an inspiring analysis of the performance of gender and its subsequent discriminatory effects in innovation practices, see also Bruni et al. (2004) or Pecis (2016).
[29] A works council is an organisation representing employees or workers in a company. It is independent from trade unions that usually act on a more national level. Works councils complement trade unions' activities when implementing and adjusting national agreements by trade unions at the corporate level.

observations at different events, discussion rounds, workshops and conferences that were either organised by actors in the field or that dealt with topics and concerns raised throughout the fieldwork.

Illuminating the underlying mechanisms and socio-material practices involved in adopting a general idea of a management approach into the local context of technology development requires 'thick descriptions', detailed accounts of field activities and constant reflections on the interrelations between different actors (Geertz 1973; Van Maanen 1988). My fieldwork visits therefore involved participant observations (Emerson et al. 2001; Silverman 2001) and silent observation, which is here understood as the passive practice of observing without interacting with the field proactively. Although I had a specific research interest in mind, I tried to be as open as possible to the field in order to analyse how activities unfolded and avoid assumed understandings, expectations and definitions. I recorded detailed observations coupled with short reflections, snapshots and interim reflections that were related to theoretical and conceptual considerations. My research interest in the mechanisms of agile management and their effects on the work process thereby guided me to collect and record the material from the field.

With my theoretical perspective on management scripts, I engaged with heterogeneous social and material actors since I considered all of them to be contributing to the constitution of managing the work in innovative contexts. I encountered engineers, software developers, project managers, salesmen, designers, executives and public relations officers. They had different organisational roles, for instance, group leaders, managers, coaches, employees and apprentices. Even though the focus of my research was on actors in the role of employees and workers, the engagement with other positions and statuses within the organisation was fruitful as it contributed to the bigger picture of who drives the mechanisms of agile management.

In addition to social actors, I also focused on material entities, for instance sticky notes, pens, whiteboards, tables, desks, people and documents all played a role in my field visits. STS and workplace studies have already raised the issue of including material objects (often defined as 'actors' themselves (Latour 1992)) and consequently motivated my data collection to also point to the relationship between social and material actors and the environment they are embedded in. I, thus, paid attention to the different ways in which my research partners interacted with their work material (see Section 3.2.3.).

I regard fieldwork as a research method to make sense of the field being studied whereby my own engagement through observing, describing, notetaking and analysing was also a constitutive part of constructing the meanings and subjective realities of the world I intended to investigate. Research in STS in this regard discusses the relationship between social

scientists and the fields they study (Haraway 1988; Viseu 2015; Zuiderent-Jerak 2015), pointing to the performative role that social scientists play. I therefore tried to reflect on my own engagement with the field in my fieldnotes. Especially in contexts where I was more actively involved – not only as an observer but also as a participant – my fieldnotes included paragraphs recording my own actions. While my own actions are not central to the analysis, I still consider them as important elements that contributed to and affected the entire investigation. Silverman (2001) and Lavén (2008) have in this regard underlined how the recording of fieldwork activities is contingent on the interpreter's perspectives and consequently contains variations of analysis and interpretations. Having these dynamics in mind, I entered the field, constantly reflecting also on my own involvement in the fieldwork and the interviews I conducted.

Gaining access to the field was a challenging endeavour and it was often not easy to get consent for participant observations. In two companies, access was generally accepted and I attended some (but not all) meetings and discussion rounds. In the R&D department, I was invited to meetings on a very sporadic basis. Many actors were sceptical about my research interest, and even my presence, but after four interviews, they more often invited me to stay for an informal meeting during their lunch break.

4.2.3 Artefacts

Unlike the interview study and field observations, my analysis involved engagement with artefacts. I scrutinised the different artefacts used during and after my field visits. Studying artefacts promises fruitful insights into the manifestation and mechanisms of agile management as they manifest the mechanisms in the form of scripts. Discussing the role of non-humans in hospitals, STS scholar Bruni highlights that "approaches to studying non-humans are not well developed" (2005, 358). I therefore sought to contribute to discussions on how to engage with objects methodologically when applying an analysis of both the form and matter of artefacts and their close interaction with humans.

It soon became obvious during my fieldwork that sticky notes, whiteboards and other material usually utilised for brainstorming sessions were core companions of the employees' work life. Wilf (2016) and Nafus and Anderson (2009) also argue that these objects are vital tools in the innovation world. For this reason, I examined the role of sticky notes and whiteboards in more detail and paid attention to their form and matter. In addition to studying the material properties of artefacts such as these, I collected advertisements, product descriptions and manuals relating to both the analog and digital versions of sticky notes, boards and (mind) maps. This perspective contributed to revising my interview guideline to put a stronger focus on the perception and use of material objects by my interview partners.

4.2.4 Documents

In addition to artefacts, I also engaged with textual documents through a document analysis. Such an analysis is valuable in locating the original imaginations and expectations that become deeply embedded in managing practices once they are implemented. Studying textual documents contributes to discovering how management approaches emerge and are constituted and serves as a source for comparing and contrasting written articulations with actions happening on the 'practical level'. As Law (1994) highlights, research cannot fully grasp all of the activities within the field because the activities researchers are interested in often also happen elsewhere. Thus, both written texts and actions are deeply interwoven and co-shape one another.

The core unit of the document analysis consisted of around twenty documents and I mainly studied handbooks, guides and websites advertising agile management or technical tools and digital software suggested for agile management. I focused on five authors in particular as they were part of the Agile Manifesto (Beck et al. 2001) and published handbooks on different methodologies of agile management from then on. While Ken Schwaber and Jeff Sutherland established the widely known Scrum methodology, Alistair Cockburn, Martin Fowler and Kent Beck specialised in methodologies called Crystal and Extreme Programming. These approaches all had a similar motivation, namely to renovate the then-current organisation and management of software development. Once I discovered that these different approaches had all played a crucial role in agile management in the companies I investigated, I particularly focused on these three methods. I additionally collected field material such as guidelines, advertisements, photographs, emails, annual reports, press releases, and even notes taken by my research partners during brainstorming sessions.

Overall, my research methods were based on a combination of an interview study, ethnographic fieldwork and a document and artefact analysis. I collected different data ranging from fieldnotes, interview snippets, audio data and material objects including sticky notes, photographs and website extracts, that all served as the basis for the subsequent interpretative analysis. How I approached my empirical data analytically will be demonstrated in the next section of this chapter.

4.3 Analytical Approach

The interpretation of the empirical data material was based on a mix of different approaches located in Grounded Theory (Glaser and Strauss 1967) and STS (Akrich 1992). I applied open methods of open coding, in-depth interpretative reading and script analysis.

Although the study was generally informed by generating context-specific knowledge through thick descriptions, its objective was still to find similarities, differences and underlying

patterns that held for all three examples. Inspired by the method of a comparative case study (Mills et al. 2010; Rowley 2002), the collected data was, thus, analysed to reveal the underlying mechanisms with which agile management operated, while still acknowledging the importance of the situated nature of their empirical contexts.

To analyse my data material, I referred to established techniques and methodologies such as coding and re-coding, categorising, group interpretations and mapping out broader, overarching themes. Inspired by scholars such as Fletcher's (2014) and Glaser's and Strauss's (1967) suggestions for open and axial coding, I carried out two phases of coding my interviews, documents and fieldnotes. The first round was substantive coding, where I clustered themes and categories according to the following dimensions:

- visions and expectations
- differences between former and agile management approaches
- work organisation and hierarchies of responsibilities
- modes of work
- affects and emotions[30]
- materiality

I then ordered the different themes and categories resulting in, for instance, codes such as 'adaptability and flexibility', 'teamwork and collaboration', '(no) hierarchies', 'commitment', 'activation', 'affective engagements', 'power asymmetries', 'organisational change' and 'material encounters'. This phase was particularly important for finding similarities, contradictions, the general characteristics of agile management.

The second round of coding was of a more theoretical nature, where I sought to apply theoretical concepts to the codes. I connected codes such as 'commitment' and 'activation' to literature in the sociology of work on employee involvement, commitment, and entrepreneurial selves (Benson and Brown 2007; Bröckling 2016; Irani 2019). Codes such as 'affective engagements' and 'power asymmetries' were aligned with scientific research on emotions (Ahmed 2010; Hochschild 2003) or power through in/visible work (Crain et al. 2016; Puig de la Bellacasa 2011; Suchman 1995; Star and Strauss 1999).

I extended the process of coding with more intuitive, interpretative phases of reading through the lines of my material. After these phases of coding, I realised the analysis needed a more detailed engagement and, therefore, I went back to selected interviews and fieldnotes I had

[30] I use the terms affects and emotions interchangeably. For a more detailed explanation, see Chapter 6 where I analyse the role of affects in contexts of teamwork.

highlighted as important and valuable. I undertook a more detailed, sequential analysis, which was done collaboratively with colleagues and also involved individual phases of interpreting the data on my own. Having the former codes in mind, I read deeply through each line of my interviews and fieldnotes and sought to understand how actors engaged with their material surroundings, how these interactions between social and material actors could be characterised, which visions and expectations actors referred to in their daily work activities, which affects became visible, which aspects of the work were valued as productive, and which mechanisms might potentially be inscribed in artefacts, interactions and organisational structures of agile management.

Supplementary to the phases of general coding, I applied a 'script analysis' (Akrich 1992; Hyysalo et al. 2016). This allowed me to detect the underlying expectations, visions and imagination of how agile management should look. These imaginations are deeply embodied in *both* social actors *and* material objects (see also Chapter 2). A focus on scripts consequently points to the expectations and ideal-typical modes of managing and working, forms of collaboration, and also power asymmetries deeply manifested in artefacts, tools and methodological frameworks of agile management. Contrasting them with my field observations and practices happening on the site finally shed light on how and under what (expected) conditions the mechanisms of agile management are stabilised.

I examined websites, interviews, advertisements and manuals according to the visions, expectations and values manifested in texts and things. Inspired by Akrich (1992) and studies on scripts in organisations (Curchod et al. 2020; Igelsböck 2016; Lavén 2008), I investigated textual documents that mentioned, either directly or indirectly, the presumptions and expectations regarding agile management, the different values projected towards or in the different interactions, and organisational structures or artefacts required for agile management. In this context, I also focused on artefacts such as sticky notes and whiteboards to explore the inscribed values and expectations of companies and developers of these artefacts. I further applied the script analysis to the handbooks and manuals to illuminate the underlying mechanisms of how work is imagined to be organised.

4.4 Conclusions

This Chapter has presented my methodological analytical approach by outlining my research methods, my research material and the interpretation of data. I have conducted a comparative case study of three examples of agile management, which are in the industrial sector of German technology development. The data material has been collected through an interview study, ethnographic fieldwork, an artefacts and document analysis in order to address the socio-material relationships in agile management more closely. I have combined elements of

open coding and in-depth interpretations of the empirical material with STS-informed analyses of scripts in texts and things. This combination finally helped to understand the underlying mechanisms of agile management, which I will be turning to in the next three chapters.

5. Adaptability in Agile Management and Scripted Improvisation

This chapter scrutinises the underlying mechanism of agile management that should ensure industrial companies can increase their adaptability to change. I argue that agile management is now executed by a mechanism that I call *scripted improvisation*. I demonstrate that the close social and material relationships and the artefacts' physical properties coordinate the employees to constantly improvise, self-optimise and engage with their own performance more self-responsibly. Thus, in contrast to studies highlighting the emergence of more self-managed work or entrepreneurial selves being achieved through social relations or subjectification (see Chapters 1 and 3), I argue that work is instead coordinated by the socio-material relationships and the artefacts' affordances. The analysis reveals that the human and non-human elements of agile management (e.g., handbooks, artefacts, patterns of action, habits and attitudes) have inscribed the expectation of improvisation that eventually directs and coordinates the employees' actions. Improvisation is understood as spontaneous, ad hoc and extemporaneous planning through actions as they unfold (Cunha et al. 2014; Kamoche and Cunha 2001; Weick 1998). The analysis shows that improvisation as spontaneous and ad hoc activity is, ironically, scripted and turns into a management mechanism. My analysis therefore contributes to current debates in the sociology of work (Böhle 2017) and organisation and management studies (Cunha and Magni 2015). I argue that improvisation is not an entirely ad hoc, spontaneous practice without prior planning, but that it also functions as a management mechanism. Throughout the chapter, I illustrate how the mechanism involves very stressful and disorienting practices for the employees and ambivalent features of planning, talking and focus on the one side, and improvisation, imperfection and prototyping on the other.

The first section of this chapter discusses the idea of adaptability, why it is perceived as an important element for current management and how it is sought to be implemented. The second section then illustrates the core elements required by agile management in order to achieve adaptability by discussing 'quick and dirty' practices. Agile management aims to accelerate technology development to render organisations responsive to change (quick). I argue that the quick practices of recurring meetings, time-saving and reviewing reveal the management script of improvisation. This mechanism ultimately directs the involved actors to contribute to adaptability as they are forced and disciplined to act more spontaneously and ad hoc. Agile management moreover targets a constant improvement of the development process (dirty) that should allow novel requirements to be integrated more straightforwardly. I argue that the emphasis of a work attitude towards imperfection equally illuminates the underlying script of improvisation that pushes social actors to improvise. I also discuss

throughout the different sections the problematic effects that arise from this scripted improvisation for the employees.

5.1 The Idea of Adaptability

Prevailing debates on new management options emphasise the need for more adaptable development processes because of the growing uncertainty in socio-political, technological and economic developments. What adaptability is, why it is necessary and what it should generate will be shortly explained in the following paragraphs.

The idea of adaptability is often discussed as a continuation of the flexible organisation, a feature which will allow it to become more responsive to change. Flexibility and adaptability usually address desired increases in productivity and ability to change or internal factors such as the improvement of a work-life balance or customer demands (Li et al. 2008). Unlike flexibility, which identifies the attempt to change an entire state in organisations, adaptability is related to changes "*within* a given state" (Bordoloi et al. 1999, 135; emphasis added). Organisation scholars such as Hodgson have nevertheless suggested a broader understanding of adaptability as a new modus operandi, that is,

> the capacity of an organization to change its strategies, structures, procedures, or other core attributes, in anticipation or response to a change in its environment, including changes in relations with other organizations. (2013, 980)

Anticipating change more quickly requires the ability to successfully cope with ad hoc planning and many scholars have recognised this development as a turn towards "organisational improvisation" (Hadida et al. 2015). Accordingly, adaptability is often realised by improvisation being understood as spontaneous and extemporaneous planning through actions as they unfold (Kamoche and Cunha 2001; Vera and Crossan 2005; Weick 1989). Thus, in order to be more responsive to new changes, organisations impose phases of acting "without the benefit of elaborate prior planning (Cunha et al. 1999 in Kamoche et al. 2001, 735).

While the differences between flexibility and adaptability remain blurred in both academic and public debates (Tejeiro Koller 2016), the term adaptability itself has attained a prominent place in recent developments of shaping and re-configuring technology development. Academic scholars, managers and consultancies draw an image of a "new competitive setting", evoked by fast changes in "technology, politics, environment, social tendencies, customer habits and business models" (Tejeiro Koller 2016, 838). Scholars anticipate that organisations will increasingly be confronted with unpredictability regarding their development and compatibility because external factors based in politics, economic or technological development would develop in unexpected ways. The digital revolution especially has led

managers and academic scholars to believe in the need for organisational change because technology is expected to affect internal and external requirements faster than ever before. Customer groups and preferences are changing, which pushes organisations even further to respond more quickly to new demands affecting their product lines or services. New methodologies reinforcing organisational adaptability should therefore improve a company's ability to scan and monitor market dynamics, customer behaviour and competitors' strategies.

Against this background, the explosion of handbooks on the 'adaptable' or 'adaptive organisation' and academic interest in the 'learning organisation' and adaptability (Hodgson 2016; Pettit et al. 2016; Staber and Sydow 2002) encourages us to take a closer look at how these ideas are actually put into practice. The growth in consultancies and coaches for new management strategies has contributed to the widespread assumption that companies require stronger competence in adaptability in order to survive in the (global) market.

Agile management is hailed as one of the methodologies suitable for preparing organisations for permanent change (Leybourne 2009; Shim and Lee 2019). Consultancies specialised in agile management explain that "to quickly adapt to market changes [...], we believe in a fit organization, which balances leanness with strength and agility" (AT Kearny 2021). Agile methodologies are increasingly believed to respond to these new conditions, even though it is still unclear how they unfold in practice.

To sum up, the idea of adaptability denotes a shift from inflexible planning to a more responsive engagement with external and internal changes. Due to rapid developments in digital technology and the rising uncertainty of socio-economic advancements, adaptability has become a core element of new management styles. Yet, in contexts of technology development, adaptability also means ongoing changes and adjustments to previously defined plans and objectives. This flexibility, thus, requires a new type of management, which agile management is expected to realise. Since it remains uncertain which mechanisms agile management actually works with, the following analysis examines this idea and illuminates the mechanism of scripted improvisation that makes work coordination without definite objectives still possible.

5.2 Scripted Improvisation: Quick and Dirty

Snapshot 1: Go Wild!

> *It's the first day at the Makeathon. I open the entrance door and what immediately overwhelms me is the fast movement in this workspace. Doors open and close almost every second, people move around quickly, carrying different pieces of wood, metal or notebooks. Every time a particular door opens, I hear a rhythmic clinging of a hammer on what sounds to me like a hard metal plate, some chatter and an*

undefinable roaring in the background. On the other side of the room, a team has settled down on a group of sofas, putting their heads together. It seems as if they are in the middle of a heated debate as they're gesturing wildly and two of the four are nodding or shaking their heads. One of the organisers of the Makeathon approaches them. I observe that the team appears a little nervous as they shuffle together their notes, pens, papers, sticky notes, coffee mugs and laptops that are on the table. It looks as if they are trying to bring some order into the chaos. I hear the organiser saying "Guys, leave the stuff! This is the place where you can go wild!" and some of the team members laugh. He continues, pointing at his watch: "You have a couple of minutes left so hurry up and get prepared for the joint meeting".

This Snapshot draws attention to the contradictory elements of agile management – spontaneous brainstorming and inflexible, time-bound teamwork: team members can "go wild" but only within a very restricted timespan and according to a strict plan. The suggestion by the organiser of the Makeathon, which is an event for rapid prototyping, to "leave the stuff" on the table reveals a rather bizarre and ambivalent demand for chaos. The team wanted to present itself in a focused and structured manner when starting to bring the 'chaotic' materials on the table into order. Yet, surprisingly, the organiser acted very positively towards the chaos as if this were one of the core elements of the Makeathon:

> We want to create a space for creative and autonomously crafted ideas, where you just organise yourselves and [...] we just leave you by yourselves.[31]

The organiser's reaction to the team's attempts to order their work surroundings, thus, indicates the enforcement of agile management according to a somewhat idealised image of improvised and creative technology development.

The Snapshot alerts us to how agile management is somehow following a specific script to create an atmosphere of improvised, spontaneous and creative technology development. It also illuminates the socio-material assemblage of agile management involving movement, noise, gestures, team members, notebooks, sticky notes and laptops that are all vital elements in creating such an atmosphere. As we shall see in the following, these different elements have inscribed a vision of improvisation that finally results in employees being constantly challenged by spontaneous, ad hoc actions without the possibility of prior planning.

Scholars in organisation studies are interested in the role that improvisation plays in organisations and management, and argue that in order to be more responsive to new changes,

[31] Interview with organiser of Makeathon, Munich, December 2017.

organisations require phases of acting "without the benefit of elaborate prior planning" (Kamoche et al. 2001, 735). They study the conditions of improvisation (Vera and Crossan 2005) and the different degrees of improvisation (Cunha et al. 2014; Hadida et al. 2014). In this context, scholars such as Sonenschein (2015), Vera and Crossan (2005) and Leybourne (2007) underline that improvisation can be trained through a set of guidelines or organisational routines. Kamoche and Cunha's improvisational model (2001) highlights how 'minimal structures' can serve as templates for innovation practices, illustrating that improvisation does not always occur in conditions without any blueprint or underlying structure guiding and directing action. Also, in referring to Leybourne (2007), Cunha et al. explain:

> The need for flexible designs, those that accommodate rather than suppress organizational change, led to the development of guided forms of carefully scripted, structurally framed and, in some cases, organizationally legitimized improvisation. (2014, 367)

Dell (2012) even argues that improvisation has become a new management tool – or, as he frames it, a technology – that directs organisations and their members to adopt impromptu, extemporaneous practices.

However, while these studies underline "improvisation as managed practice" (Cunha et al. 2014, 367), the following analysis contributes to these debates by emphasising the role of socio-material interactions and artefacts' affordances in guiding and managing improvised actions. The following sections, thus, illuminate the first mechanism of agile management which is achieved through the management script of improvisation. I show how the script of improvisation is deeply manifested in quick and dirty elements of agile management that involve a script pre-structuring and directing the coordination of work.

5.2.1 Quick: Recurrence

Agile management is based on a set of regular, recurring meetings to accelerate the development processes and ensure constant adjustments and I demonstrate that these recurring meetings imply a script of improvisation that directs – if not forces –employees to act more spontaneously, ad hoc and, thus, improvise. Ironically, although agile management is said to be more flexible, the general framework of events and meetings reveals a rather inflexible structure. I show that the management script ultimately results in work coordination that is constantly readjusted and therefore increases disorientation and work intensification due to the growing number of regular meetings.

In contrast to former management approaches with less flexible elements, the usual working day at agile workplaces was, paradoxically, still characterised by very fixed, recurring

meetings. When I talked to my interview partners about their new work life under agile management, the first thing that they told me about was the increased number of regular meetings. A Scrum Master[32] who is usually responsible for moderating the planning meetings mentioned that her former workday "didn't have such a solid structure"[33] as under agile management. Another interview partner described the course of an agile workday as being packed with various recurring meetings which took place on a weekly or even daily basis:

> We always start with a Daily standup. […] Just a catch-up within the team. And then you start with your work packages. […] And then we still have appointments in the team during the day… Somehow, so many things have just popped up here, for me it's not clear anymore what's part of our product, who is the target group and so on. There is always discussion. […] And then you have regular things like the Review.[34]

The Review that was meant to discuss and evaluate the past and current stage of the development process generally took place "on a weekly basis"[35]; however, sometimes there were several Reviews during a week. The Daily was another core routine meeting that generally happened every day for between fifteen and thirty minutes. A Scrum Master in the home appliance company said that:

> After the lunch break, we have our Daily for fifteen minutes, where everyone comes together. A further half an hour is also blocked out in case there is still need for discussion.[36]

The Daily was established in all three agile management case studies and team members manifested the recurrence of the Daily when gathering every morning or noon in a meeting room. The Makeathon was regulated by daily meetings in the morning and in the afternoon – and sometimes also directly after lunch – the team members' day was dominated by yet more daily meetings for coordinating and planning the development process. In contrast to its claim of more flexible development phases, agile management appears to have a highly fixed, rigid framework of recurring meetings.

That meetings should happen regularly is suggested by management handbooks with the aim of making quick adjustments and accelerating the production process. One of the handbooks

[32] The positions in agile management can differ depending on the framework (see Chapter 2); also, during my fieldwork, firms' internal structures established a diversity of different roles (Business Owner, Product Manager, Software Team, Agile Coach, etc.). In spite of its heterogeneity, the following analyses will mainly concentrate on the three roles of Product Owner, Scrum Master and Development Team as these were positions represented (if not known by precisely these terms) in each agile project team I encountered.
[33] Interview with employee 2 at R&D Department, Berlin, September 2019.
[34] Interview with participant 6 of the innovation camp, Berlin, May 2019
[35] Interview with participant 9 of innovation camp, Online, July 2019
[36] Interview with employee 2 at R&D Department

on agile project management states that the key objective is to "make on-the-spot adjustments to keep the project moving toward the desired goals" and that "the adjustment must be made as quickly as possible to minimize further deviation" (Schwaber 2004, xvii, 4). Therefore, recurring meetings should make it possible to intervene in the development process more directly, quickly and regularly. According to *A Scrum Book*, "given the complexity of the work, the characteristics, size, and quantity of tasks change frequently—sometimes minute by minute" (Sutherland et al. 2019, Chapter 2.29). It states that "it's even useful to follow [the rules] most of the time" (Intro) because otherwise, organisations cannot achieve the aim of adaptability. As a result, "you are striving to deliver early and to get into a rhythm [...] while managing production cost" (Chapter 3.46). Thus, the recurrence of meetings should allow for constant adjustment and acceleration while keeping production costs low.

Yet, in spite of the intention of guaranteeing constant adjustments, a closer look at the establishment of recurring meetings reveals an underlying script of improvisation that became a management mechanism for work coordination. The acceptance of constant changes and "on-the-spot adjustments" requires the Development Team to permanently engage with work tasks spontaneously. Because it is recommended that adjustments are "made as quickly as possible", people working according to agile are assumed to react more ad hoc to potential change without the possibility of prior planning. And, especially because of the importance and increased number of *regular* meetings, there was no need and also no time for full in-advance preparation. The daily work schedule, with a variety of meetings on different topics, should prioritise a quick pace over long, elaborate planning. According to *A Scrum Book*, meetings such as the Sprint Planning where the first elements required for a product are defined should aim to form an "*initial* plan the Development Team works from in the Sprint, which it refines and adjusts every day at the Daily Scrum" (Sutherland et al. 2019, Chapter 2.24; emphasis added). Thus, recurring meetings presume that the involved actors constantly bring in new ideas, and modify or specify the work tasks such that they "wouldn't have to waste time" (Schwaber 2004, 41) in predefining everything in advance. Consequently, the regularity of meetings was explicitly conceptualised/programmed for an improvised engagement with the development process.

The script of improvisation directed the Development Team to improvise on a regular basis during their daily work. Improvisation turned into a management mechanism since impromptu activities without prior planning did not simply unfold but were created precisely – and only – through the establishment of rigid schedules rather than loose and flexible innovation cycles. "Thousands of appointments and blockers" that rendered "the schedule

completely packed again"[37] made it nearly impossible for a more profound reflection about an idea. Team members underlined that "we rarely have the time to really think an idea over"[38].

Moreover, as my interview partners highlighted, the recurring meetings involved a lot of talking and discussion that reinforced improvisation throughout their daily work. During the innovation camp where agile management was implemented as an external test bed (see Chapter 3), the Development Team often emphasised that:

> You have to talk a lot. And you also have these Retrospectives and Reviews where you talk to see what's working, what's not working out. […] It's just a lot, a lot of talking.[39]

Thus, because much more time was spent on talking through the different work packages and evaluating them, the Development Team had to work at a very fast pace throughout (the rest of) the working day. Many interview partners stressed that they had a very limited timeframe for their actual job assignments precisely because of this strong emphasis on regular discussions instead of actually working on task accomplishment. "Why can't we just do it and stop talking?"[40] was a sentiment raised by many of my interviewees. Meetings often ended with the statement, "Come on, we'll just leave it for now"[41], thereby creating highly provisional work plans which had to be reworked the next day. Product Owners and Scrum Masters, who were usually responsible for moderating the meetings, took "no longer than 30 minutes"[42] to prepare the meetings. This made it impossible to anticipate and prepare discussions of every single work task, potential impediment or best practices beforehand. The amount of regular meetings coupled with the expectation of quick adjustments and increased discussion rounds ultimately constrained the scope of profound, prior planning. Consequently, work coordination was directed towards improvisation.

As a consequence of the mechanism of scripted improvisation, work coordination resulted in stronger work intensification, disorientation and perceived chaos. Team members in particular emphasised the "intensive work", and complained that "you discuss a lot, a lot"[43] and that "personally, I found the time pressure a bit too intense"[44]. The establishment of recurring meetings moreover requires a lot of effort, as one of the Scrum Masters highlighted:

[37] Interview with participant 3 of innovation camp, Berlin, April 2019
[38] Interview with employee 5 at R&D Department, Online, November 2019
[39] Interview with participant 6 of innovation camp
[40] Interview with participant 6 of innovation camp
[41] Interview with participant 2 of innovation camp, Berlin, April 2019
[42] Interview with employee 2 at R&D Department
[43] Interview with participant 6 of innovation camp
[44] Interview with participant 1 of Makeathon, Munich, December 2017

> The scheduling effort is large, right? If you add it up: a quarter of an hour every day plus an hour every week plus every four weeks. Almost two days in the end, that's quite an effort.[45]

This intensification of work has been increasingly problematised by labour sociologists since it risks voluntary self-exploitation when putting extensive effort into the accomplishment of tasks (Pfeiffer et al. 2014). Because the number of meetings has increased and thus uncertainties accumulate (because every work task or product element can be modified at any time), employees are pressured to remain updated in order to accomplish their work exercise (see also Chapter 6). One of my interview partners noted that "every hour, we have a new topic"[46], which made it difficult for the teams to 'keep up' with the constantly changing issues. The amount of meetings that still had very different objectives (for instance, the Daily addressed the daily updating of the team's work progress, whereas the Retrospective targeted the involvement of customer feedback) made it highly challenging for employees to maintain their focus. As one of the team members in the innovation camp noted, "you are a bit lost and disoriented"[47]. Hence, although agile management is claimed to provide a more adaptable and focused development process, it also risks bringing about more chaotic, disorienting and overwhelming planning.

5.2.2 Quick: Time Saving

In combination with the recurrent meetings, agile management involves time-saving practices that further inscribe the expectation of improvisation. I show in the following how the management script of improvisation acts upon the involved actors in agile management, resulting in increased responsibility and straining bodywork. Moreover, I argue that it is particularly the physical properties of artefacts that direct actors to improvise.

I begin by showing how the saving of time is established through time-boxed meetings, the habit of standing rather than sitting, the assignment of timekeepers and artefacts such as sticky notes for brainstorming, and duct tape and cardboard for rapid prototyping. I then present my argument that these elements have embedded a script of improvisation, as a result of which quick and ad hoc work processes are prioritised over elaborate planning phases. I subsequently discuss how these management scripts direct the employees to work more quickly and, thus, improvise. Finally highlight that the artefacts' physical properties also manage the work process. In contrast to research stressing the enabling characteristics of work artefacts such as sticky notes, whiteboards, cardboard, pens and sticky tape for brainstorming and ideation activities (Nafus and Anderson 2009), I therefore contribute to the current

[45] Interview with employee 2 at R&D Department
[46] Interview with participant 4 of innovation camp, Berlin, April 2019
[47] Interview with participant 4 of innovation camp

literature and argue that these artefacts also actively direct and, thus, 'programme' actors towards improvisation.

Because of the large number of daily meetings, agile management was based on a strictly scheduled timeframe and the different teams initiated the habit of standing meetings to keep them short and maintain focus. Recommended in handbooks on agile management, this kind of time-boxing had the aim of keeping the planning phases limited to the most important aspects in order to allow for constant changes and improvements. *A Scrum Book*, for instance, recommends "strictly time-box[ing] the meeting to keep focus on the daily plan" (Sutherland et al. 2019, Chapter 2.29). As already mentioned, Daily meetings usually lasted no longer than thirty minutes and it was advised that other meetings such as the Retrospective and the Review should also be kept short. In this context, other handbooks on agile management emphasise the importance of "standing up to keep it short" (Cockburn 2000, 140). Team members, Scrum Masters and Product Owners therefore have to stop themselves from discussing every single work task or idea.

Artefacts and persons assigned as time-keepers further ensured the saving of time. For instance, during the Makeathon, prototyping sessions were time-limited by timekeepers and alarm clocks:

> Prototyping went in a jiffy, only sixty minutes and this was always very controlled. Someone was assigned as a timekeeper and she said 'Now for one hour - here is cardboard and wood; here is string and sticky tape: do your first prototype'. Sixty minutes, then the alarm sounds and you have to present the result.[48]

As well as the team members and non-human elements of alarm clocks or reminders on the wall, the Makeathon involved additional objects such as cardboard or wood for prototyping to make sure that the development process ran quickly. Rather than working with high-tech machines, the use of string, cardboard and sticky tape made it possible for the teams to quickly craft a first prototype. Other examples of agile management reveal similar elements of saving time: for example, some Development Teams put a set of questions recommended by management handbooks on the wall to keep focus and the time short. As one of the interview partners underlined:

> We must often remind ourselves to stick to a set of questions. We have now written down three questions on the blackboard under 'What do I have to answer in the Daily?'[49]

[48] Interview with participant 6 of Makeathon, Munich, December 2018
[49] Interview with employee 2 at R&D Department

These questions have a precise agenda of planning the daily work activities and team members expected each other to align the planning sessions along them. These questions usually included the following three that were also recommended in *A Scrum Book*:

> What did I do yesterday that helped the Development Team meet the Sprint Goal?
>
> What will I do today to help the Development Team meet the Sprint Goal?
>
> Do I see any impediment that hinders me or the Development Team from meeting the Sprint Goal? (Sutherland et al. 2019, Chapter 2.29)

Thus, time saving was ensured by focused questions such that everybody could concentrate fully on the Daily's objectives instead of going off-topic.

Additionally, core elements in time-saving were sticky notes and whiteboards which ensured that both planning and designing phases remained time-boxed. During my fieldwork, the so-called Scrum Board (see Figure 4) played an essential role in planning processes: structured in the form of a table, the Scrum Board illustrates the current state of every work task. By indicating 'To Do', 'In Progress' and 'Done', the Scrum Board is 'fed' by sticky notes containing the different work tasks placed in the relevant column. In this regard, many of my interview partners underlined the importance of these mundane and simple tools because "they are easy to work with" (fieldnotes R&D Department, September 2019), tangible and facilitate a fast mode of planning and readjusting. Sticky notes or paper cards are also recommended as tools in most agile management handbooks, for example:

> We like cards because they are simple, physical devices that encourage everyone to manipulate them. It's always that little bit harder for people to see and manipulate things that are stored in a computer. (Beck and Fowler 2001, 41)

Tangible objects such as sticky notes are advocated precisely because they do not require any expertise or effort to work with. As noted by Beck and Fowler, and also my interview partners, they are simple and easy to use, which facilitates quick development phases. Similar to the prototyping materials of sticky tape and cardboard, sticky notes are hence ideal tools to accelerate the development process. Nafus and Andersson (2009) underline in their analysis of innovation practices that these tools are vital companions in making creative, collaborative and fast product development possible. As one of the Scrum Masters said:

> I really enjoy working with sticky notes – be it on the wall or with a digital tool, it doesn't matter. But this process of forcing yourself to keep the ideas short and to put them on paper.. Well, you can't go that far, you just write down first ideas.[50]

Accordingly, sticky notes are here introduced in order to engender short ideation processes where first ideas are quickly manifested on a piece of paper.

In this regard, these different elements of time-boxed meetings, assigned timekeepers, reminders and artefacts such as sticky notes and sticky tape were established to stick to a practice of time-saving that facilitates quick technology development. Time-boxing the meeting, thus, had the objective of "avoid[ing] robbing time from development" (Sutherland et al. 2019, Chapter 2.29) and "avoid[ing] too much hand-wringing about what is possible. The goal is to get to work, not to think about working" (Schwaber 2004, 8). Avoiding too much hand-wringing emphasises that time-boxing is expected to enforce more impromptu activities and spontaneity rather than elaborate design phases. And, when looking at the different elements more closely, we observe they indeed imply a programme of action aimed towards improvisation.

I argue that the attempts to save time are based on an underlying script of improvisation that, first, directs the involved actors' actions and, second, is reinforced by the artefacts' physical properties. First, time-boxing the meetings via timekeepers, questions on a wall or the habit of standing rather than sitting, comprise a programme of action aimed at encouraging improvisation. Considered as impromptu and ad hoc action with no prior planning, improvisation becomes a management mechanism. Employees are encouraged – if not forced – to plan quickly, ad hoc, without long preparation phases or to design and accomplish work tasks spontaneously. While agile management allows for continuous improvement and, thus, adaptability, at the same time it leaves the Development Teams, Scrum Masters or Product Owners with the expectation of not wasting too much time on highly elaborated definitions of work tasks or creating a concise outline of the development process.

For instance, setting the clock to sixty minutes was explicitly aimed at making it more difficult for the team to craft more complicated prototypes. One of the organisers of the Makeathon explained that the participants should "just quickly, freely make something"[51]. This process fostered a fast pace of prototyping, in which the organisers expected the participants to design a prototype without a prior template or any instructions. And eventually, it made the Makeathon's participants rush through the day. Hence, the time-boxing in this context implied the aim of constant improvisation and turned into the mechanism that guided the

[50] Interview with employee 2 at R&D Department
[51] Interview with organiser of Makeathon

different actors involved in agile management. In this regard, Seitz underlines in his analysis of the economy of time:

> A framework emerges that is responsible for organizing the process and structuring all content, rather than this being the responsibility of any individual within the frame of activity. (2020, 30)

Thus, instead of having only social actors involved in disciplining the teams during the development process, it is rather the complex entanglement of social and material elements that take over the management.

Regarding the objectives encapsulated in the three questions during the Daily, they likewise aimed at improvisation. As *A Scrum Book* emphasises:

> Note that as developers voice impediments, there is a natural tendency to delve into them and explore possible solutions. But this meeting is for replanning and decision-making, not for problem-solving. (Sutherland et al. 2019, Chapter 2.29)

Limiting the Daily meeting to fifteen to thirty minutes and providing a precise set of questions prevents the Development Team from "delving" into an idea or discussing a specific problem more thoroughly. Although decision-making is also a challenging endeavour requiring time and effort, the questions serving as reminders still imply an underlying script of improvisation when targeting an action without being able to prepare it in advance. In this regard, the questions should prevent problem-solving, while reinforcing revisions or decision-making, illustrating that planning and decision-making are assumed to be less time-intensive tasks than problem-solving. Yet, as suggested earlier, there was rarely time to prepare the meetings in advance (usually, preparation time was less than thirty minutes). As a result of the time-boxing, plan revisions and decision-making usually happened during the meeting. Therefore, the involved actors of the Daily, that is, the Development Team and the Scrum Master, were required to make these decisions and formulate new plans ad hoc. That these still remain time-consuming practices will be illustrated further below, yet this signifies how agile management establishes improvisation as a regular, and sometimes even involuntary, occurrence.

The habit of standing "to keep it short" (Cockburn 2000, 140) likewise illustrates that the core expectation was to make the employees improvise. Standing should help speed up the team's workflow and constrain more detailed discussions (as in, for instance, "problem-solving"). As *A Scrum Book* indicates, "many teams stand during the meeting to *emphasize* the short duration of the meeting" (Sutherland et al. 2019, Chapter 2.29; emphasis added). Thus, the practice of standing should signal and symbolise an attitude that it is not worth the time to sit down and thereby pre-structures the actors' actions towards short, initial discussion rounds

that should not require preparation. The embedded script of improvisation led to the fact that even physical bodies were 'programmed' and scripted towards improvisation. For instance, my interview partners stressed that they were standing to "remind [them] to keep [the meeting] short"[52]. Being on the move, being agile and, thus, always up for new ideas or tasks became increasingly internalised in both the team's minds and bodies. Also, here, we even find the mechanism of scripted improvisation being directed towards the activation of flexible bodies. While the expectation of ad hoc, impromptu, improvised practices is inscribed in the handbooks and guided questions, it also illustrates the internalisation of improvisation in the actors' bodies. Even their physical performance is expected to align with ad hoc, spontaneous and flexible planning. Consequently, the script of improvisation inscribed in the saving of time contributed to directing the actors to plan and make decisions extemporaneously.

Secondly, artefacts used in agile management and their form and matter also *afford* the employees to improvise. As previously outlined, sticky notes, whiteboards and prototyping material are expected to accelerate the planning and design process of technology development. I claim that they also have manifested a script of improvisation in their *physical properties* that eventually impacts on the actors' work activities. Hence, unlike studies which highlight the enabling characteristics of these artefacts for brainstorming and ideation activities (e.g. Nafus and Anderson 2009), I argue that they also contribute to managing the work process.

According to 3M, the company which owns the patent for Post-it[53] notes (see Figure 5), artefacts entail a script of improvisation and this view is also becoming visible in management handbooks. 3M envisions that actors will "instantly make a note, send a message or leave a reminder" (2021a). Sticky notes consequently embody an explicit programme of action for improvised practices despite being designed for making "instant" notes or serving as reminders. In this regard, the company pre-defines the use of a Post-it for noting down thoughts, ideas and memos, spontaneously and quickly.

[52] Interview with participant 6 of innovation camp

[53] Even though there are various, insightful and detailed analyses of the invention of the Post-it (for example, Garud et al. (2011)), this chapter regards the sticky note as an object embodying the management script. Therefore, the following paragraphs concentrate on the expectations about its use inscribed in the material composition of the material object rather than discussing its historical origin.

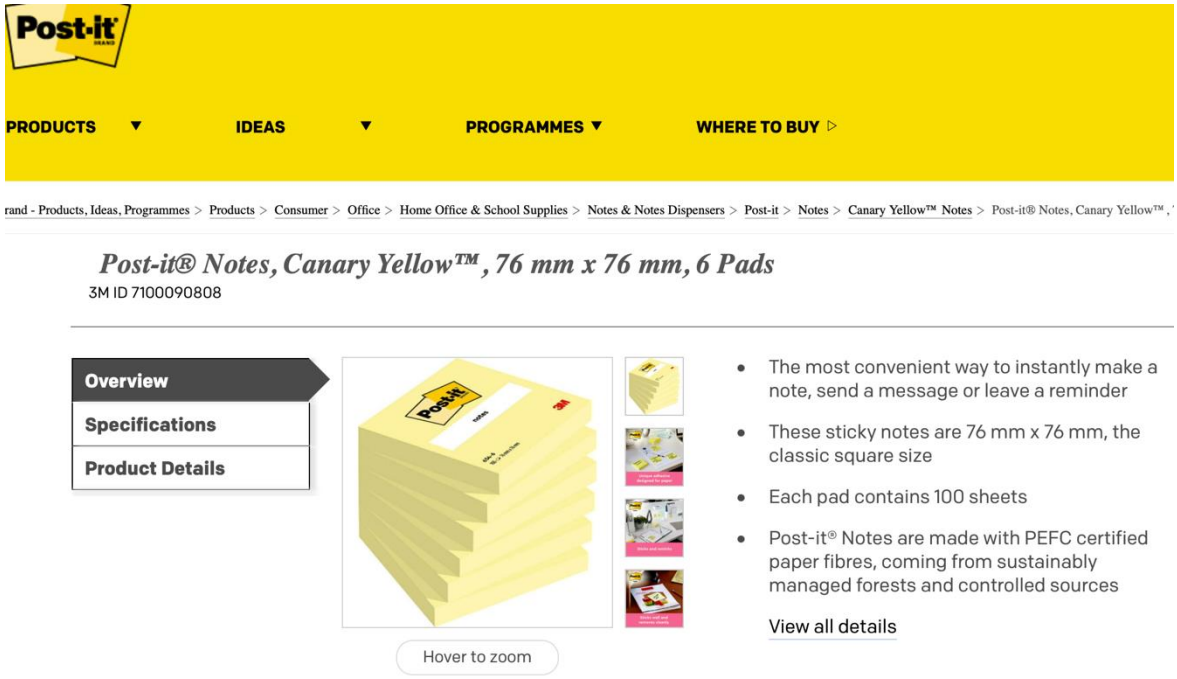

Figure 5: Product description of the Post-it note
(Source: 3M 2021a)

This vision of improvisation is deeply inscribed in the material form of the sticky notes and I argue that their affordances eventually direct social actors to improvise. Measuring from 76mm x 76mm to 102 mm x 152 mm in size (albeit the latter is only rarely used), the artefact directs the coordination of work to focus on the most relevant aspects in order to be able to fit on such a small piece of paper. More elaborate thoughts requiring detailed explanation or reflection processes would immediately be constrained by not fitting on the sticky note. In their analysis of agile management, Lafuente and Prata highlight that "words within the paper have to be drawn up tightly – and there is no room for long-winded sentences, syntactic complexities or conceptual nuances" (2019, 245). As the Scrum Master mentioned above also noted, sticky notes "forc[e] yourself to keep the ideas short"[54] and they additionally enable "the discipline to say what I am going to do and what is hindering my work task"[55]. Thus, "shortening a text to the point of making it fit into the Post-it involves an exercise of succinctness that requires certain practice" (Lafuente and Prata 2019, 245) which, I argue, is characterised by improvisation. Sticky notes are expected to be used for quickly scribbling down thoughts or work tasks; and even the digital versions of sticky notes utilised in distributed work teams (see Chapter 2) have material constraints because of their digitised size appearing on a standardised screen. Humans cannot elaborate on a thought or idea as intensively as they want to and, instead, are forced to keep their ideas short. Consequently,

[54] Interview with employee 2 at R&D Department
[55] Interview with employee 2 at R&D Department

team members, Scrum Masters and Product Owners are restricted in their use of the sticky note due to its peculiar materiality and the inscription of improvisation.

Moreover, low-tech artefacts such as cardboard and wood similarly contribute to directing social actors to work more spontaneously and even *afford* a more improvised engagement with a prototype. Sticky tape, cardboard and string, often associated with contexts of leisure tinkering practices (Toombs et al. 2014), are now transferred into the context of high-tech companies. These materials are introduced in the context of rapid prototyping as they are expected to be easier and faster to work with than high-tech objects such as a 3D printer which usually requires prior training. The reference to more mundane artefacts, thus, allows for a faster prototyping process while also prescribing more spontaneous and impromptu practices than complex machines would (see also Dickel 2019). In this regard, the materiality of sticky tape or cardboard and wood encourages the employees to use them more creatively and openly, such that they feel "more self-confident to just start"[56] with a first prototype. Consequently, artefacts in agile management display a rationale of improvisation, which the involved actors are required to make use of in order to facilitate a flexible, adaptive and simultaneously productive workforce.

However, the socio-material practices of time-saving entailed problematic side-effects of increased responsibility and straining bodywork for the actors of the Development Team. As the scripts influenced the team's actions, team members became increasingly overwhelmed by the requirement to make so many decisions in such a short amount of time. That this time-keeping was often combined with stressful, challenging exercises was illustrated by one of the team members in the innovation camp:

> It's difficult to make decisions. We had a certain amount of time and sure, we had a thousand ideas. You have to focus and pursue only one idea and decide within the team. […] And it was difficult at some points to make a decision.[57]

The perceived time pressure always stressed social actors when they were being increasingly pushed to make impromptu decisions without prior planning. As Seitz writes, "[t]he methods confine the individual in a specific temporality, precisely in the interplay between intensive work phases and short breaks" (2020, 30). Hence, due to the growing time pressure, the employees were increasingly constrained in their actions and making decisions was perceived as particularly challenging. Moreover, the management script of improvisation held the employees increasingly responsible for their own performances because nobody told them

[56] Interview with participant 2 of Makeathon
[57] Interview with participant 5 of innovation camp 5, Berlin, May 2019

precisely what to do or how to do it (except for some superficial, guiding questions or timekeepers). Leybourne stresses:

> Improvisation forces employees to take responsibility for their actions, as there will be no validated or agreed plan to support decisions. Such improvisation is therefore often surreptitious, as such action puts the employee or manager at risk, exposing their actions to unwelcome scrutiny in the event that improvisational actions are less than wholly successful. (2007, 233)

The management script of improvisation risks disadvantaging particularly those actors who might not be able to make ad hoc decisions or plan in a more spontaneous and flexible manner.

Additionally, as seen above, the mechanism of scripted improvisation results in physical activities and an active engagement of bodies when, for instance, walking around in the office to think, brainstorm or communicate with colleagues next door. When describing their daily work activities, many employees underlined that "you run around a lot"[58] and they usually did the meetings in front of the wall "without actually sitting down" (fieldnotes innovation camp, April 2019). One of the Scrum Masters also explained that "we have a ball for moderating the discussion and we throw it back and forth"[59]. Further examples illuminate the strenuous bodywork when, for instance, team members underline "you talk yourself to death"[60]. The mechanism of agile management also implies physical effort where actors are aware of their bodies during even the "simple" practice of talking. These movements manifest the fast pace of technology development by keeping the actors' bodies and minds constantly alert and, more problematically, they require physically capable team members.

This section has illustrated the underlying mechanism of agile management manifested in quick practices of agile management. I have argued that the recurrence of meetings and the focus on saving time imply a script of improvisation which directs the involved actors to plan and design without preparation and with increased spontaneity. Thus, I contribute to research that discusses the realisation of adaptability through ad hoc planning without prior elaborations (Böhle et al. 2012; Kamoche and Cunha 2001), through my argument that improvisation itself has a managing quality. Finally, I discussed what the mechanisms of agile management entail when pointing to the problems of perceived disorientation, work intensification, stress, increased responsibility and strenuous bodywork.

[58] Interview participant 5 of innovation camp
[59] Interview with employee 2 at R&D Department, Berlin, September 2019
[60] Interview with participant 2 of innovation camp

The next section turns to the other part of the mechanism of scripted improvisation involving dirty practices, through which the involved actors are forced to create imperfect products, while, at the same time, producing value for the organisation.

5.2.3 Dirty: Reviewing

In addition to recurring meetings and time-saving practices, agile management involves reviewing practices, which should produce more adaptable reactions to change. I show that this review process also involves dirty practices as it allows actors to create provisional and rudimentary work packages or beta versions. I argue that reviewing also manifests the script of improvisation because the focus on constant revisions and improvements prescribes more spontaneous, improvising actions.

As well as the increase in rather inflexible, recurring meetings and time-saving practices, agile management entails the element of reviewing the development process to guarantee adaptability. Reviewing usually happened during the Review and Retrospective meetings – or the Daily Progress Presentation in the Makeathon. The Review focuses on the general development process and primarily on the output, whereas the Retrospective concentrates on the dynamics of teamwork by aiming at Best Practices. During the Review, the team, the Product Owner and external stakeholders gather in order to discuss "What's working? What's not working out? Why is it not going well?"[61]. Thus, reviewing involved both positive and negative elements of a development process. Also, as seen in various guidelines and handbooks of agile management, the discussions in the Review revolve around the project plan with the objective of continuously improving it:

> The stakeholders attend the Sprint Review meetings and compare the project's actual progress against its planned progress. Changes in course and revisions to the plan made in Sprint Planning meetings are explained to the stakeholders. (Schwaber 2004, 67)

Similar to the recurrence of meetings, the processes of reviewing should guarantee that changes and revisions can be made at any stage of the development process. Hence, the core objective was to replan, evaluate and, ideally, increase productivity. As one of my interview partners explained when asked to describe 'agile', to him, it is:

> that you are courageous. And that you are also ready to leave the paths you have taken if they turn out to be wrong. In the end, agility is a step back into your childhood. Because every child, when you see a child running into a dead end, and you realise that it's in a dead end, it turns around and runs out of it again. The longer we work in our daily routine and the older we get, the harder it is for us to get out of a dead end by turning around and running out of it again.

[61] Interview with participant 6 of innovation camp

> And agility is all about recognising these dead ends. And if you realise the customer has a completely different need than you originally thought, then don't stick to your own ideas but focus on the customer instead and develop better products.[62]

The comparison of the development process with the courage and curiosity of children demonstrates the importance of adjustments by reviewing. "Dead ends", here interpreted as potential problems, should be quickly identified as they are vital to the required flexibility of creating alternatives. The initiation of recurring and time-boxed Review meetings thereby targets a quick identification of dead ends in order to make quick adjustments, increase productivity and "develop better products". Thus, the focus on the customer and the development of a better product do not necessarily involve improvements in more collaborative work practices (see Chapter 2), but rather higher benefits for the organisation (see also Chapters 6 and 7). Consequently, reviewing was all about the evaluation of the development process and/or customer demands in order to achieve greater value for the organisation.

The position of the Scrum Master additionally involved encouraging actors to revise and make changes; the ScrumMaster is somebody who:

> encourages the Team to revise, within the Scrum process framework and practices, its development process to make it more effective and enjoyable for the next Sprint. (Schwaber 2004, 9)

Adopting the idea of adaptability was also guided by a designated human actor, the Scrum Master, enforcing practices of constant reviewing and revising. Hence, agile management is aimed at the team's ability to respond to new requirements, changes or impediments in the form of "dead ends" more quickly and efficiently.

The focus on reviewing targets a continuous improvement and reflexive examination of the development process' performance:

> the designers have to produce good designs to begin with - and - also have to review and improve their design regularly, to deal with the better understanding of their design. (Cockburn 2000, 182)

In order to produce "good designs" and, thus, products that are marketable and attract customer interest, the development process requires constant feedback loops of revisions. Handbooks stress the importance of regular improvements; yet here, the focus is on the design rather than internal aspects of teamwork or the work climate. Although agile management

[62] Interview with organiser 2 of innovation camp, Berlin, July 2019

claims to provide close collaboration (see Chapters 1 and 6), the reviewing and improvement was still designed to be for the organisation's progress rather than discussing elements of teamwork. While *A Scrum Book* emphasises that even the Daily is meant to update the team's internal work activities, the product remains the priority. Accordingly, the Daily "gives the team a chance to examine itself and improve the product direction on a daily basis" (Sutherland et al. 2019, Chapter 2.36). Also, Beck and Fowler, writing on the agile methodology of Extreme Programming highlight that agile management is based on practices designed "to continuously improve" (2001, 53). Such an emphasis on improvement indicates the expectation of permanent optimisation of the development process. However, I will show further below how the reviewing entails a script of improvisation in which actors are forced to evaluate, improve and optimise their own performances as well as those of the products.

Review meetings were always accompanied by the Scrum Board which had been designed to help render the adjustments and new requirements or work tasks tangible and visible. Plans for upcoming work tasks or discussions of potential mistakes during the Review meeting were noted on sticky notes and subsequently placed on the Scrum Board to visibilise the collection of the different work tasks. The Scrum Board is a vital element of the reviewing as it is perceived to facilitate faster shifting and accomplishing of product elements or work tasks. Team members:

> put sticky notes on the flipchart for the tasks they would need to do for that story. They would move the stickies below a flipchart to show tasks being taken out of scope of the current iteration. (Cockburn 2000, 77)

Hence, sticky notes are here perceived as a suitable tool for making quick and flexible changes in cases where tasks need to be "taken out of scope" or require less attention. In this regard, one of the Scrum Masters I interviewed similarly asserted:

> Earlier, we simply worked with pens on the whiteboard but that doesn't allow you to shift the parts around. Well, you can wipe, but you can't shift. And to me, the shifting is very helpful.[63]

Using these rather mundane artefacts – whether analogue or digital – symbolises the fast pace of technology development. The possibility to make immediate changes and adaptions is thereby highly appreciated by the involved actors in Development Teams, Scrum Masters and Product Owners.

However, a closer look confirms the underlying mechanism of improvisation directing actors to improvise. Management handbooks generate the expectation of improvisation when

[63] Interview with employee 2 at R&D Department

suggesting constant revisions of intermediate results that are never expected to be completed. As the analysis of recurring meetings revealed, improvisation was expected to happen through the focus on *initial* elements that can be regularly reworked and revised. *A Scrum Book* moreover outlines that the participants "assess the status of the product and [...] learn about end-user needs, risks, opportunities, problems, and likely completion dates" (Sutherland et al. 2019, Chapter 2.35). Teams, Product Owners and Scrum Masters are expected to review the process according to the outcome's and teamwork's strengths ("status of the product", "end-user needs" or "opportunities") but also their weaknesses ("risks" and "problems"). The focus on improvement means that certain product ideas or work packages will be worked on again and do not require an already perfectionalised outline. Following this line of thinking, the actual output of planning rounds is not a finished product but rather the presence of mainly initial work tasks that can be re-adjusted at any time. The Scrum methodology thereby indicates Planning meetings should always end with "a *detailed enough* design of the solution" such that each of the actors "*feel* they can complete their work plan during the Sprint" (Sutherland et al. 2019, Chapter 2.24; emphases added). It is not possible for well-detailed and 'thought-through' task descriptions to arise out of these planning sessions. Instead, the focus is on spontaneity and impromptu planning such that actors do not fall back into patterns of long planning phases that are claimed to slow down the development or brainstorming process. Thus, work tasks or new requirements often remained provisional and are "always refined" (fieldnotes R&D Department, September 2019) during the meetings. As one member of the Development Team said, "I have the feeling that every work task is only a beta version of something that is never really complete" (fieldnotes innovation camp, April 2019). The indication of "feeling"[64] the right degree of planning further illustrates how everyone had to refer to intuitive and emotional actions as they unfolded. According to Leybourne and Sadler-Smith (2006) and Leybourne (2009), intuition is an essential feature of improvising because it often emerges from situations where reference to prior experience proves difficult or time pressure does not allow for a profound (re-)assessment. This reveals the expectation that social actors will make plans on a more provisional, less elaborated basis. This provisionality results from the reviewing processes requiring the teams to be prepared for abrupt changes. However, it also often left the teams with the sole option of making extemporaneous decisions "on the fly" rather than thinking profoundly about a more pre-defined outcome or work package. For the sake of adaptability, reviewing processes implicitly (and explicitly) forced the involved actors to improvise.

[64] That feelings and emotions play a vital role in technology development has already been highlighted by Su et al. (2021), Seyfert (2019) and Coban and Wenten (2021). For further analysis of the role of affects in collaborative work settings, see also Chapter 6.

Moreover, although sticky notes are said to create higher flexibility, they also illuminate a script of improvisation embedded in their design and physical properties. The peculiar quality of sticking and then moving thoughts or work tasks written on the wall enables a quick brainstorming and adaptability and, more crucially, it also actively *prescribes* improvising. According to Sutherland et al., authors of *A Scrum Book*, "the team has to figure out what will fit" on a Scrum Board and "they may have to juggle the PBI ordering, and maybe even adjust some PBI content" (2019, Chapter 2.24) in order to plan the next work steps accordingly. PBIs are the individual items required for the product to become complete and marketable, and juggling them requires not only flexible and highly spontaneous practices during the process of task definition, but also the right material – that is, sticky notes, to be easily transferable. Hence, handbooks and guidelines of agile management inscribe improvisation into the use of Post-its when suggesting precisely these artefacts that offer the required physical properties. The stickiness of Post-its crucially affords their transferal, replacement or removal from the wall. The Scrum Master emphasised that shifting is very helpful, but it required an immediate change of focus. Such a quick readjustment consequently often resulted in the fact that "sometimes you do not even know what you are going to do during the day"[65]. Post-its, thus, embody a script of being used extemporaneously because of their property of being flexible and changing their position abruptly and without much prior planning. Inoue underlines that:

> The Post-it note thus provides participants with an object lesson to make themselves agile and flexible subjects, ready to engage in short-term projects and to swiftly adjust to another project with another set of people. (2016, 751)

In combination with the fixed schedule, sticky notes and the whiteboard play an equal part in work coordination when enforcing constant improvisation on teams' working days. They thereby activate the Development Team to stay permanently updated and committed to the daily work as their affordances force them to do so (see also Chapter 6). They also demand the ability to improvise because adjustments and revisions cannot always be anticipated.

5.2.4 Dirty: Imperfection

Unlike reviewing to improve and adjust to new product requirements, agile management places an explicit emphasis on failing and, thus, 'dirty' practices. In presenting the establishment of a work attitude towards imperfection, I assert that the acceptance of rudimentary products for the sake of fast and efficient development processes further reinforces the script of improvisation. This has problematic consequences because the

[65] Interview with participant 1 of innovation camp, Berlin, April 2019

Development Team is increasingly confronted with the contradictory demands for imperfection on the one side, and self-optimisation and perfection on the other.

Agile management is based on a particular work attitude towards imperfection and failure in order to become more adaptable. As already touched upon in Section 5.2.3, the Development Team adopted a prescribed work attitude towards failing when also "focusing on problems"[66]. 'Dirty' practices, such as a default prototype, even occurred in the development process. In Review meetings, for instance, the focus on failing and imperfection was reinforced by the team's attitude to "just trying it out" (fieldnotes Makeathon, December 2017), the general emphasis on "trial and error"[67] and "lessons learned"[68]. Here, the teams sought to engage with failures and mistakes in order to improve and learn from them. During the innovation camp, the teams underlined that mistakes and personal failures were not denounced but seen as necessary:

> If the idea doesn't work, it's no big deal and you try something else. That is a completely different attitude to failure; it wasn't like that in my former job. There, you could make mistakes but it was almost embarrassing to do so.[69]

In expressing the new (to her) possibility of experimenting with failing, she learned to become more self-content and less "embarrassed" or insecure about creating a new product. This engagement with failing enables the development process to become more efficient and adaptable. Teams immediately "try something else" rather than sticking to the original plan or idea because they feel too embarrassed to accept their mistakes.

The emergence of a different work attitude towards failing encourages actors to continue to create new ideas and, thus, improve. In *A Scrum Book*, the authors refer to Robert Heath's (2009) *Celebrating Failure* which suggests accepting and reacting to failures "with positive comments" (cited in Sutherland et al. 2019, Chapter 3.42). In this context, *A Scrum Book* pronounces that:

> the team must accept the fact that there is a risk that the exploration may not result in a potentially shippable Regular Product Increment, but it is nonetheless worth the time spent for the insight gained. (Sutherland et al. 2019, Chapter 3.42)

The attitude towards failing is quite astonishing considering the fact that agile management still targets profitability by "ensur[ing] [the] product is moving in the direction of […] Greatest

[66] Interview with employee 2 at R&D Department
[67] Interview with participant 6 of innovation camp
[68] Interview with employee 3 at R&D Department
[69] Interview with participant 6 of innovation camp

Value" (Chapter 2.35). Yet, the core objective of going in the 'wrong' direction is to try out new ideas and improve former product ideas or elements. If you fail fast, you also improve fast.

Establishing a positive attitude towards failing moreover allows for accelerated technology development inasmuch as "the Team [is kept] from spending too much time searching for perfection" (Schwaber 2004, 110), accepts "that mistakes will be made" and arranges "processes that adjust to the fact of mistakes" (Cockburn 2000, 58) as one of the solutions to complex and changing project requirements. A work attitude that accepted failing made it possible for teams to adjust quickly and efficiently.

However, such a work attitude to failing and imperfection is highly scripted towards improvisation, which directs the employees to constantly react extemporaneously during their workday. Review meetings are expected to involve imperfect, provisional work results, which prompt the employees to improvise. For instance, the concentration on failing and imperfection inscribes the expectation of leaving the current state of the project in its 'natural' state rather than perfecting the product before the Review. As *A Scrum Book* underlines:

> Too often a team will prop up the product with temporary supporting structures to make it work well for the Sprint Review, or will spend time trying to "impress" the stakeholders with a sophisticated presentation. There is very little opportunity to be convincing here: the product stands on its own. (Sutherland et al. 2019, Chapter 2.35)

Sutherland et al. explain the traps and obstacles that reside in the creation of "sophisticated presentations" or other attempts to "make it work well". The striving for perfection and "impressive" outputs yet appears as the fallacy of Scrum: "The focus is on learning" (Sutherland et al. 2019, Chapter 2.35) and not on perfection, as the authors go on to state. These performances were a common practice during the Makeathon, the innovation camp and the R&D Department. One of the innovation camp coaches mentioned that they "really try to ensure that the project continues. But one option of going on is also, very clearly, that the project doesn't continue and fails"[70]. Thus, the performance of actors in agile management literally demanded failure in order to proceed with the project's advancement. Through the push towards imperfection – which could be understood as lowering the pressure for polished, perfectionalised results – work activities became increasingly scripted with the emphasis on rather provisional outcomes.

The following Snapshot underlines that this work attitude was even trained in order to direct the employees towards improvisation.

[70] Interview with organiser 2 of innovation camp

Snapshot 2: Learn How to Fail

> *Today is a "Fuck-Up Night" in the co-working space and the innovation camp teams are expected to participate. Over lunch, I ask one of my interview partners what this event is about. He replies that an external trainer will be coming to the co-working space, giving a lecture on "making failing productive with hands-on advice". He says that one of the big rooms is already set up with different posters, moderation cards, pens and coloured notes so he assumes there will also be some practical parts involved. The workshop will end with a session where the teams think about past situations of failures themselves. The tricky part is to talk about these moments without "giving a big rant", as my interview partner put it. He mentions that the workshop is presented by the camp's hosts as a way of seeing failures as more of a "Eureka" moment. I notice his optimism and he stresses that it is crucial to learn how to deal with mistakes because they are too often associated with shame and frustration.*

This Snapshot presents an example of scripted improvisation that was manifested in a professional event and that involved social and material elements. The event aimed to teach the involved actors how to best engage with failing, yet it simultaneously trained them to improvise. The event was meant to show the participants how to get accustomed to the idea that failing is a productive force for learning, improving and becoming open to change. Actors, both human and non-human, embodying the "spirit" of agile management through participants listening to and engaging with these new ideas, materials representing the failure-oriented rationale of agile management, and hosts staging the advantages of failing, combined with the spread of a specific rhetoric focused on errors and different activities to teach idealised failing are part of the new mechanism of scripted improvisation. As organisation scholars underline, errors are an essential part of improvisation when treating "errors as opportunities rather than threats" for learning (Weick 2002, 175). Thus, the different elements involved in the event entail the expectation of learning and improving from mistakes that yet always require instant, ad hoc reactions. Weick further argues that "[e]rrors now become viewed as experiments from which people can learn, […] as transient flaws that will work out as events unfold" (2002, 174 f.). The focus on failing is deeply connected to abrupt changes and, more crucially, to unknown situations that only "work out as events unfold". Hence, with regard to the Fuck-Up Night, the participants should be trained to react more "on the fly" through failing. One of the participants mentioned that he learned to:

> Just do it. If you get knocked on your ass, you get up and keep running. Those were the things that made me ask myself, why are you worrying about a hundred thousand scenarios when you

> don't even know what's going to happen. Just try it out, then you'll see what direction you're going in.[71]

Instead of worrying about a "hundred thousand scenarios", the employees learn to experiment more quickly. My interview partner here pointed to the potential of greater flexibility through "just doing it". This work attitude is based on the expectation that the employees will act more abruptly. A similar dynamic was performed in the development department and the Makeathon, where advertisements for events such as rapid prototyping or hackathons and signs on the office walls illustrated the importance of failing: "Fail fast, cheap and early" or "Failure is success if you learn from it" emphasise that the general approach towards accomplishing work tasks in design and innovation processes requires "imperfection". As a result, actors were encouraged and also expected to work quickly although they were still expected to reach a perfect and polished outcome in the end. And because of the expectation that the development of a product is only possible when mistakes and errors are detected, employees are also directed to improvise.

The use of sticky notes moreover reinforced actions of improvisation as their physical design required immediate, abrupt reactions. Sticky notes are key instruments for sketching out first ideas and thereby represent the rationale of improvisation. By using a Post-it instead of a bigger piece of paper, it is impossible for actors to craft highly elaborated designs or to write a detailed manuscript on what to do in the upcoming Sprint phase. Team members using sticky notes are instructed to scribble down improvised thoughts or to leave short reminders on the paper. The organiser of the Makeathon, for instance, emphasised the preliminarity and imperfection in the form of sketches enabled by the small sticky notes: "Everyone who was at the Makeathon [...] was supposed to fill out a small piece of paper, a sketch of their idea, what they think is cool and what is still missing"[72]. Creating sketches was not only required by social actors; it was also reinforced by the materiality of the paper. Both the expression of a "sketch" and the "small piece of paper" indicate that there was not much space (or time) for elaborating on an idea. In this context, Lafuente and Prata claim that the use of Post-its affects the ways of working and thinking in such a way that social actors would automatically keep themselves short and concise:

> While interacting with them [Post-its], it is unavoidable to fall on a series of premises, as for instance, the need to be clear and to do one thing at a time, or the convenience of using the verb-noun structure. (2019, 241)

[71] Interview with participant 8 of innovation camp 8, Online, June 2019
[72] Interview with organiser of Makeathon

Ironically, Lafuente and Prata argue that sticky notes would afford succinctness, clarity and focus but this does not automatically guarantee perfection. In particular, the physical composition of the artefacts used in agile management made it possible to combine focus and clarity with improvisation enacted by sketches, short thoughts, quickly scribbled ideas or work packages reduced to one or two elements that are consequently very incomplete and provisional. Regarding the aforementioned aim of fast development processes, efficiency was therefore prioritised over perfect, polished outcomes precisely through the form and matter of the sticky notes. Hence, the use of sticky notes and whiteboards as well as cardboard and sticky tape reinforce the mechanism of scripted improvisation. This management script finally directed the actors to set their main focus on work activities that explicitly do not end with properly planned, perfectionalised or overly polished outputs.

As a consequence of the management script of improvisation, members of the Development Team feel increasingly pressured by the contradiction between imperfection on the one side and, ironically, the demand for optimisation on the other. The Development Team was particularly affected by the script of improvisation because they were predominantly responsible for creating the final product. The new work attitude towards imperfection involves the expectation of continuously improving by making ad hoc changes to create even better products. Yet, in the end, team members are still expected to come up with a final outcome that represents a marketable and "good design" (see above). This reflects current developments in self-optimisation (e.g., Bröckling 2016; Maasen and Sutter 2007) and underscores the ambivalences of optimisation and imperfection deeply manifested in agile management. Agile management therefore leaves the team members in a challenging position: they are pushed to continually negotiate between imperfection and an outcome that still aligns with "the organization's values and goals" (Sutherland et al. 2019, Chapter 2.16). These organisational values and goals can vary, but in most cases, they represented "that I generate a benefit and [...] I get it back via a payment from the customer"[73], "process optimising"[74] or "that we can get real products to market better and faster"[75]. Thus, the teams often felt increasingly pressured to accept failing while, at the same time, being challenged to perform more successfully (fieldnotes Makeathon, December 2017). Detailed planning was combined with incomplete prototyping and planning. Best practices should be developed, yet failing and imperfection remained at the heart of agile management. Against this background, improvisation that is often perceived as the core element for creativity and organisational

[73] Interview with jury of Makeathon, Munich, December 2018
[74] Interview with agile coach of home appliance company, Berlin, December 2019
[75] Interview with organiser 2 of innovation camp

change (Böhle 2017; Cunha and Magni 2015) turns into an increasing challenge for the actors engaging with it.

This conflict between imperfection and optimisation is moreover amplified by the material's affordances. For instance, sticky notes appear as functionalist tools to enable creativity, productivity and collaboration. As the Post-it advertisement (see Figure 6) states, it "has helped people be more productive, communicate better and express themselves in a number of creative ways" (3M 2021b). The Post-it is here implying "more" and "better" creativity or productivity. The use of sticky notes, thus, requires constant improvement and optimisation. It suggests actors have initially been unable (or at least less able) to respond to requirements such as clear communication ("communicate better") or faster results ("be more productive"). This draws a distinction between the past and the present, where the former is characterised by notions of "not enough" and the latter by "even better". As Wajcman argues when analysing the increased use of calendars, these objects "are emblematic of a larger design rationale in Silicon Valley to mechanize human thought and action in order to make them [engineers] more efficient and reliable" (2018, 1). The design and use of the Post-it is equally motivated by the belief that contributing a continuous optimisation will lead to becoming "more efficient". Thus, contrary to the idea of scribbling down, brainstorming or inventing without already sophisticated outcomes, sticky notes are still expected to engender optimised work activities that the employees now have to deal with.

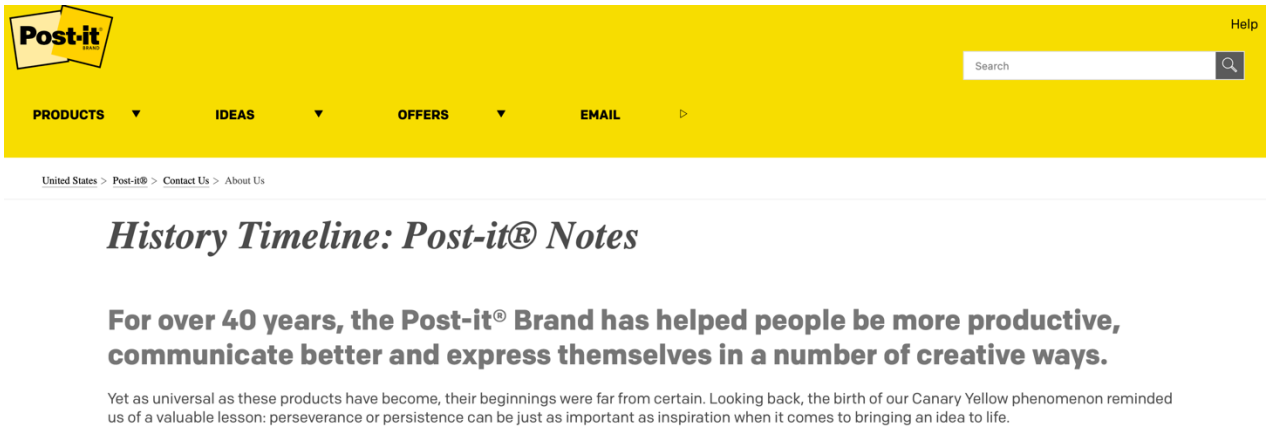

Figure 6: Description of the Post-it's history presented on the company's website (Source: 3M 2021b)

Overall, in discussing the emergence of a work attitude towards imperfection and, thus, dirty practices, I have illuminated the underlying script of improvisation. This script is deeply embedded in the attitudes towards failing and artefacts, imagined use and actual physical properties. In discussing different elements of staging failing and imperfection, I have shown

that agile management now works with a new mechanism, forcing social actors to improvise through errors and mistakes. I have also identified the problematic side-effects that this mechanism can have for those team members mainly in charge of developing a product or idea.

5.3 Conclusions

This chapter has engaged with the first mechanism of agile management, scripted improvisation. I have shown that the different socio-material practices have embedded the expectation of improvisation that ultimately guides and coordinates the employees towards improvised, optimised and self-responsible actions. In highlighting the patterns of action, attitudes towards and uses of artefacts that should render technology development more adaptable, the analysis reveals that work is managed by scripts and the artefacts' affordances. Although improvisation is often regarded as an ad hoc, spontaneous practice with no prior planning, I have underlined that it *is* scripted and, more crucially, has turned into a management mechanism. This management mechanism has finally revealed the new challenges and opportunities facing employees subject to agile management.

In this regard, I have discussed the emergence of scripted improvisation by pointing to two overarching features of agile management, that is, 'quick and dirty'. I have analysed the script and how it is deeply embedded in recurring meetings and a novel practice of time-saving. In this regard, I have shown that it is these management scripts that ultimately establish the coordination of work rather than only social actors making the employees work. I have, moreover, discussed how the management script impacts on the work activities. In this regard, I have shown that the management script engenders work intensification and leads to a stronger perception of disorientation among employees. It also risks increasing self-responsibility because the enforcement of improvisation complicates decision making. The analysis consequently sheds light on the management script of improvisation that demands both openness and spontaneity on the one hand, and coordination and regulation on the other.

The second part has investigated the second feature of dirty practices, which stress a work attitude towards imperfection. In this context, the analysis has yielded insights into how the expectation of improvisation is manifested in the establishment of failing that requires constant spontaneity and provisionality. I have equally underlined the consequences of scripted improvisation for employees and argued that agile management risks a constant self-optimisation during the work process.

With a lens on management scripts and affordances, the analysis contributes to current research on 'trained' improvisation by arguing that improvisation is managed by social and material actors and, more crucially, artefacts' affordances. It contributes to research by

claiming that improvisation itself turns into a management mechanism. I have additionally shown that artefacts usually perceived as tools for brainstorming and innovation practices also actively direct and coordinate the work process through their physical properties.

As this chapter has shown, agile management is grounded in close interactions of collaborative teamwork. Therefore, the next chapter will engage more closely with the underlying mechanism of agile management that realises work coordination within teams.

6. Collaboration in Agile Management and Scripted Commitment

In the previous chapter, I analysed the idea of adaptability in agile management and argued that it is manifested by an embedded script of improvisation emerging from the close relationship between social and material elements. Thus, implementing agile management in an organisation requires close collaboration between different human and non-human entities. The previous chapter touched upon collaborative elements and this chapter will engage with the idea of collaboration in agile management more closely. It thereby reveals the second mechanism of agile management, scripted commitment, that directs actors to devote themselves to the organisation's objectives. In analysing the social and material elements involved in collaboration, I present three arguments.

First, I argue that collaboration is based on a safety net in order to ensure that mistakes and failure or moments of work intensification (see Chapter 5) are tackled collectively.

Second, I show that socio-material relations ensure collective problem solving, so that originally individual concerns become a matter of collective concern. In considering the interaction between artefacts and team members in more detail, the focus on management scripts and affordances reveals that the physical properties of artefacts also contribute to directing collaborative work practices. During processes of collective problem solving, personalised and emotional concerns are elevated to the level of the team as they are objectified and abstracted through the use of sticky notes. Errors made by individuals therefore become the responsibility of the team.

Third, these dynamics indicate that collaboration involves a script of commitment that directs the involved actors to permanently commit to the organisation aims of value creation and profit making. Compared to previous management mechanisms, the effective power of artifacts is to make this commitment possible.

The chapter responds to current trends in the literature on the "affective turn" in organisations (Fisher 2019; Gherardi 2017; Gregg 2009) and management (Resch et al. 2021; Thompson and Willmott 2016) underlining the role that emotions play in the management of work. Especially in the context of technology development, thus far only a few scholars have addressed the emotions, feelings and affects that social actors use in their work activities (Coban and Wenten 2021; Moore 2018; Seyfert 2019). Exploring emotions and affects in the realm of technology development and, more specifically, agile management, highlights how emotions are not an element of exclusively feminised work realms (Hochschild 2003) but also play a role in male-dominated contexts (Tihlarik and Sauer 2021). I argue that agile

management demands affective commitment to the organisational targets. In this regard, affect and emotion are closely interlinked with each other and therefore I use the terms interchangeably. Affects are often used to refer "equally to body and mind" and are contrasted with "emotions, which are mental phenomena" (Hardt and Negri 2004, 108). But in following Ahmed (2004), emotion and affect are here brought together. Ahmed argues that an "analytic distinction between affect and emotions risks cutting emotions off from the lived experiences of being and having a body" (2004, 39). Affect and emotion both signify the lived, emotional experiences that involve bodies and minds (Schmitz and Ahmed 2014).

This chapter starts with the idea of collaboration that has turned into a core element of agile management and underlines how collaboration is a core part of agile management. I subsequently analyse the different practices of collaboration in the context of agile management and argue that they are based on a safety net. This safety net ensures that mistakes, failures and work intensification are tackled collectively. I then turn to the script of commitment that is deeply embedded in the interactions, patterns of action and artefacts of agile management.

6.1 The Idea of Collaboration

Presented as the linchpin of new management approaches, collaboration has been a core feature of management approaches of technology development since the 1990s. What it defines and what it should bring about will be discussed in the following.

Collaboration defines a particular employment relationship among different members within an organisation and is usually characterised as an "interactive and, thus, collective, situated generation of teamwork" (Meißner 2012, 37; my translation). It is expected to increase productivity and render devleopment processes more creative (Crowley et al. 2010; Kunda 2006). According to Tjosvold et al., collaboration is beneficial for both the organisation and its members because it facilitates:

> mutual assistance and support, division of labor, specialization of effort, accurate communication, open discussion of diverse views, identification of problems and shortcomings, creation of new alternatives, confidence in new ideas, effective risk-taking, and commitment to implementation. (2003, 4)

This definition of collaboration points us to the dynamic promises for both the organisation ("division of labor", "effort", "accuracy", "effectivity", "implementation") and its members ("assistance and support", "open discussion", "identification of problems", "confidence"). In this regard, similar to the idea of adaptability, collaboration has become an attractive organisational principle as a response to prevailing demands for worker satisfaction and their

commitment to companies, increasing trust and fairness in the organisation (Applebaum et al. 2013; Batt 2004). In contrast to former bureaucratic and formalised management approaches, self-managing teams and close interchanges between organisational members promise more efficient communication (Minssen 2006) and greater empowerment of the workers (Ivanova and van Scheve 2020).

Academic debates have noted that organisations' interest in implementing team structures in their business strategies has developed into a profound global fashion. Sewell (1998, 2005) and Sennet (2012) therefore argue that teamwork has become a core principle for organising – and controlling – the labour process since the 1990s. Following the tradition of manufacturing (Womack et al. 1990), working in teams has also entered the realm of white-collar work (Crowley et al. 2013; Garrett et al. 2017). As Boltanski and Chiapello show in their analysis of the management literature of the 1990s, (originally emancipatory) demands for growing collaboration have become a major part of new management approaches. With a critical perspective on the emergence of 'a new spirit of capitalism'[76] (2007, 29), they argue that the turn towards empowered teams serves as a justification for capitalism. Other critical scholars have, in this regard, problematised teamwork as a novel managerial strategy to exert control over employees (Costas 2012; Ivanova and van Scheve 2020; Resch et al. 2021).

Despite such a sceptical outlook, team-based projects have still proven a leading organisational principle for technology development (Kalff 2018) and many industrial companies have already fully implemented self-managing, autonomously working teams. Against this backdrop, the public sphere is full of proponents, concepts and methodologies advertising collaboration in new management styles. Handbooks such as *The Collaborative Organisation* (Morgan 2012) and *The Innovative Team* (Grivas and Puccio 2011) are the result of an expansion of the general idea of teamwork and collaboration in less hierarchical and bureaucratic organisations (see also Chapter 7).

The importance of collaboration between different stakeholders and organisational positions is also the basis for agile management. Proponents of agile management take up the aforementioned promises of teamwork to achieve more effective communication, stronger work engagement, higher productivity and compatibility. *The Agile Manifesto*, for instance, expresses the importance of "[i]ndividuals and interactions over processes and tools" (Beck et al. 2001). Rather than valuing the development process, agile management favours

[76] Boltanski and Chiapello define the spirit of capitalism as "the set of beliefs associated with the capitalist order that helps to justify this order and, by legitimating them, to sustain the forms of action and predispositions compatible with it" (2007, 29). As I have argued elsewhere (Wenten 2019), companies have taken up demands for a more collaborative community in order to legitimise new forms of managerial control (see also Chapters 1 and 8).

interpersonal relations and interactions. *A Scrum Book* supports supportive, open and honest interactions between team members: "you must have a foundation of trust and respect for effective communication" (Sutherland et al. 2019, Chapter A1). The emphasis on trust and respect points us to the importance of affects and emotions in collaborative settings as driving forces for achieving organisational growth and efficiency. With regard to increasing interest in affects in management (Farias 2017; Gherardi 2017; Hochschild 2003; Resch et al. 2021), such a strong emphasis on affective elements such as trust and respect in agile management therefore requires closer analysis.

Overall, this section has demonstrated that collaboration and teamwork are vital elements of agile management as they promise more efficient work processes, a supportive workforce and increases in productivity. The section has underlined that affects appear to play an increasingly important role in agile management. However, although collaboration has been fully established as part of management approaches since the 1990s, the perspective on affects in agile management is still not fully investigated. The following analysis discusses what it takes to work in collaborative teams and how collaboration, as part of agile management, requires social and material actors to be realised. As we shall see, the analysis of the underlying scripts in collaboration practices reveals the second mechanism of management that I call *scripted commitment*.

6.2 Agile Management's Safety Net

I claim that collaboration in agile management is based on a safety net fostering affective teamwork through emotional feedback, attentive body language and new roles of (social and material) caretakers. In showing how new interactions, and social and material actors create emotional collaboration practices, I reveal that agile management, in contexts of technology development, involves affective and emotional practices.

6.2.1 Emotional Feedback

At the core of agile management stands a safety net to establish honest and respectful collaboration. I show in the following that the safety net is manifested by emotional feedback through the realisation of an emotional and attentive (body) language and caretakers.

The safety net of agile management is established by emotional feedback. As already outlined in *A Scrum Book*, collaboration requires a safe environment for the involved actors. Therefore, it suggests:

> Creat[ing] an environment where [team members] consider themselves as a team (a community), with sufficient trust to feel safe interacting with each other. They take explicit, obvious, and consistent actions to demonstrate trust. They set up working procedures by mutual agreement. (Sutherland et al. 2019, Chapter 2)

This emphasises the importance of a safe environment, in which close, intimate processes of collaboration unfold. *A Scrum Book* uses a specifically emotional language with words such as 'feeling', 'trust', 'safe', 'mutual agreement' and 'community'. The words symbolise a highly protective and supportive work climate, within which the team expresses their feelings honestly. The emphasis is on mutual agreement in a community aiming at cohesion. The quotation moreover points us to highly affective elements involved in agile management and I argue that the establishment of emotional feedback, (body) language and affective caretakers manifest the safety net.

Such a safety net is important since it protects the involved actors from critique that – if it does not take place in an environment of support and trust – results in situations of blaming each other for individual mistakes. As *A Scrum Book* explains:

> When a team examines itself, it makes its members vulnerable to criticism. Individuals might feel embarrassed, threatened, or incompetent. This can lead to defensive behavior in which team members can deny their own responsibility, both individually and collectively, and externalize the problem. (Sutherland et al. 2019, Chapter 2.36)

Especially in Review or Retrospective meetings where feedback and evaluations occur, a safe and respectful engagement with each other's concerns is important. *A Scrum Book* emphasises that individuals should not "feel embarrassed, threatened or incompetent" since this would have problematic effects on the general progress of the project. Therefore, a safety net with emotional feedback rounds ideally absorbs these potential threats and criticisms.

As one of the Scrum Masters who moderates team meetings said, "What I really like is […] the focus on feedback, openness and […] What doesn't work well, what bothers me, what isn't fun at all"[77]. Such feedback could imply discussions of negative aspects such as individual mistakes or failures regarding a work task (see also Chapter 5). Yet, although this has been problematised for the increased pressure and control over the work process (Resch et al. 2021), the team members emphasised the comfortable, secure and supported work climate: "You are super honest and if something doesn't work out, you talk about it"[78]. While the previous chapter has shown that the focus on failures and imperfection is to regulate the

[77] Interview with employee 2 at R&D Department
[78] Interview participant 1 of innovation camp

employees' work process, my interview partners still appreciated that they could "talk about it". 'Talking about it' signals trust among the teams to open themselves towards each other, even in cases of impediments such as a dysfunctional prototype. The claim that the teams "talk about it" moreover highlights the emotional elements involved in feedback. During the Retrospective where actors review the ongoing innovation process, the Development Team, Scrum Master and Product Owner expressed their insecurities and mistakes in a highly emotional manner: "You get your fears off your chest"[79], as one of the participants in the innovation camp said. One of the innovation camp organisers endorsed the "appreciation towards colleagues and employees" because it is "important how you feel"[80]. In most of the cases, meetings ended with a round of 'kudos' [81] and applause to signal the mutual acknowledgement of each other's work. Kudos is either articulated verbally or written on cards shown to everyone after a meeting. Common sentiments were "Awesome day" (fieldnotes Makeathon, December 2017) or "Thank you, Martin, for helping me out with fixing the prototype" (fieldnotes innovation camp, April 2019). One of the organisers of the innovation camp mentioned in an informal conversation over lunch, that they had initiated the kudos round to keep everyone engaged and foster a more trustful community among the different teams. These different elements of emotional feedback supported the Development Team, Scrum Masters and Product Owners, who were all involved in the different meeting rounds, in presenting their affective capacities. Thus, the emergence of emotional feedback manifested a safety net where everyone cared, trusted and was honest with each other.

In this context, emotional feedback was reinforced by the use of specific (emotional) language and communication. During the Makeathon, the innovation camp and also in the R&D Department, the general language was characterised by enthusiasm, fun or excitement; emotions that are usually societally perceived as positive (Ahmed 2010; Fleming and Sturdy 2009). At the Makeathon, the organisers would start the day with exhorting every participant to "Enjoy the spirit" or reminding them that "This is the place where you experience work as fun" (fieldnotes Makeathon, December 2017). This particular wording implies that former management is assumed to be connected to practices other than the sensation of excitement and fun whereas agile management is now claimed to amplify the scopes of more fun-related activities. Scholars have in this regard underlined the appearance of "playbour" (Lund 2014), which characterises forms of work activities with practices of playing and gaming. Playbour involves a novel, emotional language of joy. In suggesting a language of success during the collection of feedback on posters, *Agile Software Development* similarly underscores that:

[79] Interview with participant 5 of innovation camp
[80] Interview with organiser 2 of innovation camp
[81] Kudos comes from Greek and means praise or honour.

> The wording on the poster matters. One [...] team had posted 'Things we did wrong last increment.' Another had posted, 'Things to work on this increment.' Imagine the difference in the projects: The first one radiated guilt into the project room, and was, not surprisingly, not referred to very much by the project team. The second one radiates promise. The people on the second team referred to their poster quite frequently when talking about their project. (Cockburn 2000, 78)

Team members are consequently expected to use a language of success, encouragement and forward-thinking. Even though agile management requires processes of failing, its general language concentrates on what can be learned from them by turning failures (here understood as "guilt") into success ("promise"). Cockburn assumes that how messages are phrased during the daily work activities has influence on how the team works. As I will argue in Section 6.4, the language used has a strong impact on the team's commitment. In order to ensure that every participating actor takes these principles and the use of language seriously, further elements such as a code of conduct are often part of collaborative practices. *A Scrum Book*, for instance, suggests formulating a code of conduct when the team first comes together and makes concrete propositions for the conduct to focus on "Openness, [...] Courage [...], Respect" (Sutherland et al. 2019, Chapter 2.31). The latter is particularly fruitful for establishing a safety net as it entails interactions where individuals "value and are thankful for remarks and criticism from all team members" (Sutherland et al. 2019, Chapter 2.31). The emotional support and understanding among the actors leaves them with the assurance that failures and mistakes are not necessarily problematic but, instead, a productive force necessary to keep the (agile) organisation thriving.

In addition to the verbalisation of emotions, the safety net is also contingent on attentive body language. Schwaber writes that meetings should generally be held with a body language characterised by "the team members lean[ing] forward, interact[ing], collaborat[ing], look[ing] each other in the eye, and form[ing] a plan of action" (2004, 22), emphasising that close collaboration between the different parties and eye contact are important in order to achieve trustful – and efficient – collaboration. "Face-to-face conversation" (Beck et al. 2001) is one of the main principles expressed in the Agile Manifesto and Cockburn suggests that "face-to-face communication should become a core part of your development process" (2000, 85). Such a physical presence is imagined to give rise to intimate spaces of communication where actors are more attentive and listen to each other.

Snapshot 3: Moving Bodies

> *It is early in the morning and I enter the hallway of the development department building. On my way to the office where I am about to conduct an interview, I pass another office and from the corner of my eye I can see moving bodies and wild*

gesticulations. I turn around in order to see what is going on. I can see one of my interview partners from last week standing in a circle with other people; they are talking, moving their hands up and down, pointing to the whiteboard and manoeuvring their bodies back and forth towards the whiteboard. Nobody is sitting even though there are about 20 chairs and tables in the room.

The Snapshot illustrates how collaboration is deeply entangled with active bodywork which, I argue, emphasises the safety net with people feeling trusted and respected. Most of my interview partners stressed that physical movement was necessary to provide space for the teams to "understand each other better"[82]. Face-to-face interaction and a body language of constant movement encouraged discussions in an attentive and, thus, supportive manner. As McDowell (2009) underlines in her analysis on service work, the ways in which bodies work and are used by care workers expresses a specific emotion or intimacy. Like care workers, even engineers and industrial designers use their bodies to influence the nature of collaboration. Gherardi emphasises that "the body is there in order to be affected and affect. It is a less individual, self-contained body and a more social and collective one" (2017, 11). As we observe in the Snapshot, standing displays attentiveness since the body has to be kept engaged. Standing in a half circle in front of the whiteboard, individuals are also not as exposed to critique as they would be in a more confrontational setup (for instance, when standing or sitting opposite each other). Thus, through the emergence of emotional feedback and emotional (body) language, the collaborations manifested into a safety net, where everybody felt appreciated, trusted and respected.

I have shown that collaboration in agile management is based on a safety net achieved by emotional feedback through emotional and attentive (body) language. I have argued that the emergence of a new form of collaboration within this safety net helps actors to feel supported by their colleagues.

6.2.2 Caretakers

Establishing caretaker roles contributes to the safety net and I argue that it is not only social actors but also material objects that now serve as protectors from criticism and work intensification. Scrum Masters, team members and Agile Coaches, as well as sticky notes, whiteboards, and relaxation areas that I call 'comfort zones', represent attributes such as empathy or shared understanding which protect humans from stress or fear during their daily work lives. I begin by outlining the role that social actors play in the safety net of agile management and then illustrate that they become increasingly affective in order to create an intimate and supportive work climate. I finally discuss the role of artefacts and their

[82] Interview with participant 5 of innovation camp

contribution to establishing a safety net, arguing that they support a structured work process and enable mutual understanding of each other's work tasks.

Scrum Masters and Agile Coaches

As well as the emphasis on emotional feedback, the formation of caretakers such as the Scrum Master and Agile Coach furthermore manifests the safety net of agile management. Scrum Masters embody the role of a caretaker, teacher and 'protector' of the team's condition. According to *A Scrum Book*, "the ScrumMaster serves the team out of empathy and care for the team and its objective" (Sutherland et al. 2019, Chapter 2.19). Scrum Masters are expected to establish a work atmosphere characterised by care and trust. Sutherland et al. go on to emphasise that "the ScrumMaster protects the team from unwarranted threats and criticisms" and is responsible for "protection, as well as encouragement" (Chapter 2.19). Especially with regard to open feedback and focus on failures (see Chapter 5), Scrum Masters play an important part in establishing protection from criticism that may otherwise result in discontent or resistance (see further below). Therefore, I argue that they can be seen as caretakers because their role is characterised by empathy, care and support for both the team and the organisation's aims. The Scrum Masters I interviewed confirmed that the major attribute required for being a Scrum Master is "a lot of empathy"[83]. Situations of stress, mental (or physical) overload, discomfort or conflicts among team members are therefore addressed by the Scrum Masters who encourage employees to stay engaged and involved instead. The Scrum Masters, for instance, helped the teams try out new ideas and be courageous. Scrum Masters were not explicitly part of the Makeathon but, together with the innovation camp and the R&D Department, the examples of agile management all entailed a clear assignment of caretakers; for instance, one person has "the responsibility to take care of the team" and stayed in close contact with every team member so "that you [the Scrum Master] can also get a feeling for the team's mood"[84]. Others took care "that everyone can best let off steam, so to speak, so that everyone is happy" [85]. In setting up these caretaker assignments, collaboration increasingly turned into a practice of working together in a safety net where everyone felt trusted and, more crucially, cared for.

In addition to the Scrum Masters, another group of actors played an essential role as caretakers, namely external and internal Agile Coaches. While these coaches were not part of the general agile management approach, all three case studies – the Makeathon, the innovation camp and the R&D Department – involved Agile Coaches. Internal Agile Coaches were responsible for the wider and more general, intra-organisational support of agile working

[83] Interview with employee 3 at R&D Department
[84] Interview with employee 3 at R&D Department
[85] Interview with participant 2 of Makeathon

teams and, unlike Scrum Masters, they usually acted as 'neutral experts'. In contrast to internal coaches, external coaches did not have a stable position but were often only integrated in the beginning of the implementation phase to give, as one employee explained, "advice during the whole planning process on how to organise and improve ourselves"[86]. While their role also serves to ensure optimisation (see also Chapter 5), Agile Coaches were often understood as advisors helping and supporting the Development Teams. Thus, their role was also to manifest a safety net such that everybody supported and cared for one another.

Sticky Notes, Whiteboards and Comfort Zones

I claim that, as well as social caretakers, artefacts are equally responsible for the safety net and its involved social actors by *affording* affective collaboration based on trust and care. Research in STS has shown that materiality plays a vital role in rendering collaboration possible. According to Knorr Cetina (1997) and Latour and Woolgar (1986), material objects are companions of interacting and collaborating scientists. Knowledge production is therefore only possible through close interaction between human and non-human actors. Gherardi (2017) adds to these considerations of a "post-social world" (Knorr Cetina 1997), that material objects even establish and foster affective practices. She asserts that:

> Technological practices and artefacts embed affect, and similar to architecture [...], they affect humans in their relationships with technology and the extent to which the boundaries between the two are blurred. (Gherardi 2017, 6)

Accordingly, material objects also entail affective elements and influence social actions (see also Kwek and Seyfert 2018). I take Gherardi's claim as the starting point for the subsequent analysis, arguing that artefacts are caretakers and *afford* affective work activities. In the context of agile management, material objects such as Post-its, whiteboards, chairs, desks, doors, pens and paper are caretakers and, more crucially, they *afford* a collaboration based on trust and care. Social actors build strong attachments to the materialities of their workplace and the physical composition of artefacts equally encourages them to do so.

Artefacts such as the whiteboard or Post-its support the daily work life of social actors to maintain structure and overview. As outlined in the previous chapter, an average work day for Development Teams, Product Owners and Scrum Masters is filled by a great number of meetings with abruptly changing topics and they find it difficult to maintain focus through these repetitive meetings. Therefore, artefacts such as the Post-its or whiteboards used for the Scrum Board (see Figure 3) should provide a better overview of the different work activities. The Scrum Board (whether analogue or digital) is used to organise the daily work tasks of a

[86] Interview with employee 4 at R&D Department, Berlin, October 2019

team by listing the 'To Dos', tasks 'In Progress' and those that are 'Done' in order. Thus, they become caretakers, structuring the teams' daily work activities. According to one of the agile management handbooks, reflections on the team's performance and progress should be accessible to everyone: "They [the team members] write those [the reflections] on a flipchart and post it in a prominent place so that people are reminded about these thoughts as they work" (Cockburn 2000, 78). Sticky notes thereby encourage social actors to stay focused and concentrate. The activity of allocating tasks and creating reminders is here distributed among social and material actors, whereby the latter organise order and continuity. 3M describes its Post-its as used for "leaving everyday messages and reminders" (2021a). They make it possible for individuals to be reminded at any time, and therefore ensure that social actors do not lose sight of their work assignments. The company advertises the product with the slogan "Move your to-dos with you throughout the day" (3M 2021a). The digital version of Scrum Boards describes the use of virtual cards and Post-its as a way to "drag cards from list to list so that everyone knows the status of the task at hand" (Trello 2021). Hence, social actors do not have to keep every element of the project's status in mind because Post-its now do the work of recording and storing knowledge within the organisation. Artefacts of the Scrum Board are imagined to take over the responsibility for organising and structuring work activities. Consequently, employees do not have to worry about forgetting a task, which finally guarantees stability in their daily work life of flexibility and adaptability. In this regard, Lafuente and Prata reason that Post-its:

> operate as an interface that mediate fast exchanges, which do not demand from team members to invest themselves in larger questions or concerns regarding the project. (2019, 246)

As the authors emphasise, sticky notes do not require constant attention or strong investment in discussion rounds because they take over the role of a more direct distribution of work tasks. In this context, academic research emphasises how non-humans and humans take care of each other in a reciprocal relationship (Buser and Boyer 2020; Coban and Wenten 2021; Puig de la Bellacasa 2011). Lafuente and Prata, nevertheless, conclude that "post-its generally afford more of an immediate, short-term and practical type of collaboration" (2019, 246). I, however, argue that sticky notes, at the same time, afford collaboration based on care rather than practicality. In this line of argument, artefacts such as sticky notes enable human actors to be protected from losing their focus on their work tasks.[87]

[87] We will see in Section 6.3., however, that artefacts have inscribed the expectation of constant commitment, rendering the aspect of the artefact's care and protection in a different light. Artefacts also activate and, thus, constrain social actors, resulting in an even more intensified and permanent work discipline.

Moreover, I argue that material objects reinforce the safety net not only because of their functional role but also because of their physical composition through their form and matter. That the material setup contributes to the emergence of team-based collaboration is also acknowledged in management handbooks. *A Scrum Book*, for instance, suggests "collocat[ing] the team members, ideally in a room of their own, within talking distance" (Sutherland et al. 2019, Chapter 2.8) in order to strengthen a close collaboration and more intimate interactions. It further emphasises the need for extra "quiet rooms such as small offices" (Chapter 2.8) for internal meetings. The architecture is suggested to allow colleagues to interact with each other easily while providing opportunities for interpersonal conversations or concentration phases. In relation to the idealised workplace, another agile management handbook warns against people working in single offices "with closed doors or exiled to cubicles" (Schwaber 2004, 114) which results in:

> people alone in their offices or cubicles, often staring at a computer monitor. There was no conversation, no hum of activity, no feeling of a group of people undertaking work that they were excited to do. (114 f.)

Accordingly, the idea of collaboration only flourishes properly if teams are grouped in the same building, ideally in the same office. The architectural layout subsequently permits humans to express their feelings ("conversation"), integrate themselves in a solidary community and become sensitive to each other's concerns ("feeling of a group of people"). These propositions presume a socio-material setup for intimate interactions, close communication and therefore depict a specific kind of office as the idealised space to realise respectful and supportive collaboration. The different materials and components of the office architecture are thereby expected to function as caretakers, responsible for social actors feeling safe and comfortable.

Hence, the physical properties of artefacts such as sticky notes, whiteboards, computers, glass doors and furniture afford humans to use them in a careful and intimate manner and to engage with their colleagues more affectively. For instance, the architectural setting in all three case study locations afforded collaboration on a highly intimate and careful level. All had spaces for coffee breaks or casual, informal meetings. Both the Makeathon and the innovation camp took place in co-working spaces, in which the safety net was materialised by open glass doors, walls, coffee rooms and lounges to relax. These rooms were equipped with coffee tables, couches and reading corners and were highly appreciated by the involved actors. Most of my interview partners stated that they made conversations easier, more spontaneous and more intimate. The architecture consequently acted upon social actors to internalise a mode of

working based on sharing, caring and mutual support. The architecture of glass doors, for instance, clearly points towards openness and collective support:

> [The architects] paid a lot of attention [...] that the rooms have windows. I think that's pretty important since it nurtures ideas [...]. And by seeing the people, I can immediately help them.[88]

The use of glass doors instead of opaque materials made it almost impossible not to look inside the workshop or meeting rooms.[89] The quotation illuminates the *affordance* of glass doors to respond to the activities happening behind them. In critical situations such as an accident or a machine defect, other participants could intervene more directly and the material of glass would particularly reinforce this. During my fieldwork, I also saw a number of signs and posters on the walls with sentences such as "Help yourselves when support is needed" (fieldnotes Makeathon, December 2017). The letters were in red or blue, asking for everyone's attention. Offices in the development department were less open but group meetings were still held in the few larger spaces that had high ceilings, big windows and desks arranged in a square. My interview partners explained that they never use the desks because they prefer moving in front of the whiteboard and therefore stand during most of the meetings.

Although the workplaces were laid out differently, I argue that they functioned as 'comfort zones' and one example of the 'intimate' boxes at the innovation camp (see Figure 7) illustrates the affordance of these comfort zones in more detail. I often conducted my interviews in these 'small boxes' because many of my research partners told me that these "are the spaces, where we can have quiet and personal conversations"[90].

[88] Interview with employee 1 of Makerspace
[89] Studies on the architecture of co-working spaces equipped with glass offices also stress the opposite effects of higher exposure and managerial control over the individual work processes (e.g. Leclercq-Vandelannoitte 2021).
[90] Interview with participant 1 of innovation camp

Figure 7: Three examples of meeting boxes
The two on the left and at the bottom were the boxes where I conducted my interviews at the innovation camp
(Sources: on the left and bottom own photo; on the right LinkedIn Sales Navigator 2021)

One of my research partners explained that he often used these boxes for meetings with customers or suppliers because it made him and the guests feel more comfortable than being in an official meeting room. He explained that the work environment in these boxes was more intimate, personal and quiet and they felt in a safe space. One of the innovation camp participants even called these boxes 'the uterus' because she felt so secure; I had a similar experience during my fieldwork:

Snapshot 4: The Uterus

> *Michael brings me to the funny boxes that are located at the front of their office. From the outside, they look as if they have been wrapped in cushions as if to protect people from potential dangers and attacks. Michael mentions that this is where he usually*

holds his meetings with external stakeholders. He says this is what others call "the uterus" because inside it is so cosy, warm and comforting. The boxes are open to one side, facing the external windows. The offices are behind them, which is why, from the inside, you cannot see anything happening in them. In each box is a big table and two benches opposite each other. We sit down. I am fascinated with the insulation because I can barely hear the group standing and talking next to the box. The acoustics are quite damped and every noise outside of the box muffled. Michael starts speaking and his voice is so different compared to our conversation before. He speaks slowly in a very low and calm voice.

This Snapshot describes the atmosphere within these boxes that are built in such a way that conversations are calm and turn into personal meetings. The combination of soft cushions, warm colours, soundproofing material on the walls and warm lighting appears to protect hard-working employees from external noise, stress and negative feelings. The architecture, thus, took over the role of making sure that the social actors remain calm, motivated and closely connected to their colleagues, Product Owners or other external stakeholders. And, more crucially, the architectural composition enabled human actors to express their feelings and emotions because of the material's appearance and performativity. Michael lowered his voice and considered the boxes as safe spaces and this was only possible because of the form and matter of the boxes. In this regard, Gherardi (2017) describes how spaces can have affects, which comes to the fore in the furniture and architectural layout that elicited a safety net with caring and supportive interactions. The example of the comfort zone therefore illustrates that even the physical composition of work desks and office walls contributes to collaboration based on trust and care.

This section has underlined how collaboration in agile management is based on a safety net, which both social and material actors contribute to. I have argued that the safety net involves emotional feedback, an attentive (body) language, affective caretakers and material objects affording intimate and caring interactions. The analysis has, thus, shown that agile management involves affective practices and argued that it is also the physical properties of artefacts that establish collaboration based on care and trust. The following section will discuss an example of collaboration in the context of agile management in order to highlight how both the social and material realms participate in ensuring processes of collective problem solving.

6.2.3 Collective Problem Solving

Snapshot 5: Collective Problem Solving

> *On my way to the cafeteria, I pass the discussion room where I see one of the teams having a meeting. They are standing in front of a whiteboard and I think they are having their Retrospective. One of them seems very stressed. It looks as if he might have done something wrong. I am curious how the members are going to solve the issue so I stop and watch them for a couple of minutes. All of his colleagues are listening very carefully and the Scrum Master scribbles some words on a Post-it. The Scrum Master appears to be very attentive and at one point, he touches his colleague's shoulders. He sticks the Post-it on the whiteboard and I can see that the person who seems to have made a mistake releases the tension in his body. One of the other team members raises her hands, talking and writing on two other Post-its. I can see that she refers to one of the Post-its written by the Scrum Master and places hers next to it. It seems as if she is trying to signal everyone that there is no need to stress out.*
>
> *Later, in my interviews, I asked my research partners what was going on that day. They responded that they were discussing an issue with one of the suppliers. The person responsible for liaising with the supplier had not received its confirmation on a specific technical component, which resulted in a severe delay to the Sprint. The Scrum Master underlined that during the Retrospective, the team managed to discuss the problem openly and said that "we can learn from this mistake so in our next Sprint we are going to do it differently"*[91].

This Snapshot illustrates how the interactions among non-humans and humans are a deeply attached, interdependent relationship. As the Snapshot indicates, collaboration requires a close relationship between sticky notes, whiteboards and pens on the one side and employees, their ideas, emotions and verbalisations on the other. I will demonstrate in the following that the joint process of problem solving is only made possible by the close interactions between socio and material actors. I argue that personalised and emotional issues turn into a collective matter of concern because, quite paradoxically, material objects reify and depersonalise them. As a consequence of such a reification process, individual emotional concerns become an abstract, yet collective, issue that everyone can identify with. Hence, the following paragraphs underline how artefacts' affordances and the socio-material relations guide and direct collaboration.

Agile management involves practices of collective problem solving, through which emotional feedback is provided in group meetings. Retrospective or Review meetings are the most

[91] Interview with employee 3 at R&D Department

common events for discussing positive and negative aspects of the previous Sprint. The feedback given orients the next phase of the development process. During these meetings, the Development Team is brought together with Product Owners and/or Scrum Masters to either find a solution for a problem or discuss the next steps. As one of my interviewees noted, "if [a developer] has a problem with the task, it's not his problem, it's our problem as a team"[92]. The aim is to find a collective solution to an individual problem.

Artefacts such as the sticky note and whiteboards are used to enable a shared understanding of each other's concerns. Therefore, as the Snapshot outlines, team members make use of these artefacts to engage with the spoken aspects in a more tangible and straightforward manner. The artefacts do the work of visualising and recording the aspects covered in these meetings. Cockburn, for example, underlines how "large, sticky, revisable shared information radiators are often used by people to achieve greater understanding and to align their common goals" (2000, 86). "Information radiators" are here another term for sticky notes or other artefacts that record information and are transportable. The description of the software Jira (see Figure 8), a widely used application for work organisation in digital collaboration settings, highlights its advantages in a similar fashion:

> Make sure to leave comments on issues so that everyone on the team can follow what's going on; this creates an open way of working, instead of restricting communicating between two people via private emails. (Atlassian 2021)

Sticky notes are consequently regarded as visualising the current state of the team's progress and, moreover, ensuring teamwork based on a shared agenda. Discussions are held around the whiteboard and everybody sees each other's thoughts once transposed onto a Post-it. Thus, the whiteboard and sticky notes render it possible to maintain an overview of individuals' different concerns.

[92] Interview with agile coach of home appliance company

Make sure to leave comments on issues so that everyone on the team can follow what's going on; this creates an open way of working, instead of restricting communicating between two people via private emails.

Figure 8: Screenshot of the tutorial for the software Jira
(Source: Atlassian 2021)

As one of the Scrum Masters said:

> What also helps me a lot in the moderation, and in general to create a mutual understanding, is that you can also refer to the Scrum Board all the time. And you can rearrange things very quickly and bring in a structure that would otherwise get lost in the discussion or that is not so easy to realise in an Excel list or a Word document.[93]

The Scrum Master pointed out that former material objects that are, ironically, more digital than artefacts used in agile management often rendered the process of collective problem solving less tangible and very inflexible. The introduction of sticky notes therefore enables a more straightforward process of sharing feedback and "mutual understanding" through the quick reshuffling and placing of words/sticky notes on the board. Hence, these material objects facilitate transparent teamwork and a community with shared aims and cohesion among the different social actors.

Quite paradoxically, the materiality of sticky notes also only *enables* the expression of feelings and emotional concerns by *objectifying* and *de-emotionalising* them. During the meeting, more and more Post-its are placed next to and relate to each other. Post-its and whiteboards now visibly interact, with the other colleagues' concerns being put on a sticky note. Eventually, the words and meanings are decoupled from the person they originate from. Once on the whiteboard, the often quite personal concern turns into a depersonalised issue. Thus, concerns and feelings immediately transform into a more abstract issue because they materialise as short sentences or two or three words on a small note. Certain learnings that a colleague has noted down subsequently blur into another one's problem. Consequently, mistakes or

[93] Interview with employee 2 at R&D Department

emotional issues do not remain related to individuals but transform into a more general matter of collective concern. As Wilf exemplifies in his analysis of how customers' needs convert into the project's task descriptions:

> When data about consumers were transferred to a series of textual artifacts of decreasing dimensions that culminated in Post-it notes, the result was increased abstraction of the data until they were represented in the form of single words or even single-graphic sketches on single Post-it notes. (2016, 737)

The Snapshot equally illustrates that individual enthusiasms or mistakes blur into depersonalised words on a Post-it – and they even objectify the person's emotions and turn them into concrete, yet highly *de-emotionalised* elements. In this context, Lafuente and Prata underline that:

> as soon as an individual feeling or thought is written down, it is not a feeling or a thought anymore, but an objective information that can be shared with the team and registered in the project history. (2019, 246-7)

They illustrate how the Post-its' materiality plays a vital role in collaboration practices. In line with their argument that artefacts abstract personalised issues, I argue that it is precisely the material composition of sticky notes, or the digital screen, that constrains the team's expressions and feelings and transfers them into a more general matter of collective concern. Even though the core principle of agile management rests on emotional feedback, the socio-material practices and artefacts' affordances paradoxically translate personal and emotional issues into the opposite, that is, depersonalised and objectified concerns. This objectification process is nevertheless a necessity in order to make collaboration and, more specifically, the process of collective problem solving possible. Thus, form and matter of artefacts play a crucial role and contribute to the facilitation of collaboration.

To sum up, in addition to affective individuals, emotional feedback and caretakers, I have shown that agile management involves practices of collective problem solving. These practices are a core element in ensuring the safety net of mutual understanding and care. However, the focus on the socio-material relations and artefacts' affordances has revealed that such a collective problem solving is only possible through close relations between social and material actors. I have also argued that these relationships and the physical composition of sticky notes and whiteboards, paradoxically, turn individual emotional issues into a depersonalised and objectified matter of collective concern. It is this objectification process that finally renders the collaboration of mutual understanding and care possible.

However, although these sections have portrayed agile management as an opportunity for mutual care and protection from criticism or work intensification, the next section illuminates the underlying management mechanism. Agile management has inscribed a script of constant commitment which directs and disciplines the involved actors to constantly engage and agree with their own and the organisation's performance.

6.3 Scripted Commitment

> There are some things that are just over the top. I don't have to pat everyone on the head, I'm not that kind of person [...] Always after a meeting as a team, you applaud to say it went great. And I say: 'Okay. It's a bit too much now, right?'[94]

This quote reveals that, although the safety net creates a more caring and respectful collaboration, it also increases pressure to be emotional. It shows that collaboration also pushes actors to be affective and supportive in a community although they might not always want to. Therefore, in this section, I argue that the different practices in the safety net embed a script of (affective) commitment directing actors to still be engaged, committed and emotionally attached to their work and corporate objectives.

In the following, I demonstrate how the emotional attachment to 1) emotional feedback, 2) the process of collective problem solving, and 3) (social and material) caretakers and the materials' affordances embody a script of constant commitment. I show that this script directs and instrumentalises social actors to work towards the organisation's overarching aim of profit-making and creating value as well as individual performance and the team's well-being. I argue that such a script turns into an 'affective management', through which even feelings and emotional capacities become subject to their regulation.

Commitment is the attachment to the organisation's goals and Césario and Chambel describe it as the "psychological attachment of employees to their organizations" (2017, 152) and "the degree to which employees relate to their jobs as part of their life as a whole" (153). According to Allen and Meyer (1990), commitment touches upon three different levels, namely the affective, normative and calculative. This explains the employees' engagement in the organisation through the creation of affective feelings towards an organisation or moral reasons for working according to the organisation's goals. Kim, referring to Meyer et al. (1989), defines affective commitment as "a driving force that makes employees contribute to the improvement of the organization's performance" (2014, 40). In this regard, scholars of the sociology of work and organisation studies understand affects and emotions as an essential part of work that is managed and controlled by corporate aims of profit-making (Hochschild

[94] Interview with participant 3 of innovation camp

2003; Illouz 2017; Woodcock 2017). According to Stark and Crawford, emotions "serve to sustain the social relations within the logics of economic instrumentalism and efficiency" (2015, 1). Following these perspectives, I argue that agile management involves a similar dynamic of attaching social actors to the organisation. I contribute to these research perspectives when foregrounding more directly *how* such commitment is achieved by the management script and the artefacts' affordances.

6.3.1 Emotional Feedback

Collaborative interactions of emotional feedback embed a script of commitment into organisational objectives directing actors to sacrifice themselves for the organisation. As Hochschild[95] emphasises, "feeling rules" connect to "a script [...] for directing action" (2003, 56). Seen from this perspective, the establishment of a code of conduct and emotional feedback in agile management are equivalent to feeling rules as they also involve a script directing action. As *A Scrum Book* highlights, „[t]he Scrum Team agrees to norms of conduct [...] to enable it to grow into high performance" (Sutherland et al. 2019, Chapter 2.31). The quotation illuminates that 'feeling rules' such as the code/norm of conduct are expected to direct teams towards "high performance". Thus, the Development Team is expected to follow feeling rules in the form of a code of conduct in order to improve their work. Rather than providing team members with an environment characterised by a safety net, emotional feedback is consequently also instrumentalised for corporate aims of increased work commitment that potentially results in higher productivity. *The Agile Manifesto* highlights the importance of "build[ing] projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done" (Beck et al. 2000). Thus, while the subjects of this quote ("them") are not further specified, the Manifesto expects high work motivation to emerge from the close collaboration between supporting and caring individuals. By giving teams "the environment and support they need", the authors of the Manifesto expect from them an increased commitment "to get the work done". They closely interlink a safe, supportive environment with higher commitment. The author of *Agile Project Management with Scrum* asserts that "[w]hen people are given all the help they need and ask for, when people are encouraged and treasured, they almost always respond by doing their best" (Schwaber 2004, 118). Practices of giving (emotional) feedback thereby involve an underlying programme of action that should create highly motivated and engaged teams working towards "best" work outputs. Schwaber furthermore describes how he has helped implement agile

[95] Hochschild uses the notion of script as an equivalent to "feeling rules", which "are what guide[s] emotion work by establishing the sense of entitlement or obligation that governs emotional exchanges" (2003, 56) She explains feeling rules with the difference between "what I do feel" and "what I should feel" (57). Consequently, feeling rules can be here understood as implicit, yet prescribed, actions. When using script, however, Hochschild borrows the term from theatre and, for instance, relates service work to a stage with a specific choreography and directors (see 2003, 126).

management in different organisations: he "was proud to be associated" with "people striving to improve the organization, the teams, themselves, and their profession" (2004, 118). This statement indicates that agile management is grounded in the expectation of engaged people who "strive" for the organisation's and their own performance. In this regard, *A Scrum Book* emphasises that "[w]e believe that a happy team strives to make things even better" (Sutherland et al. 2019, Chapter 3.91). Hence, agile management connects emotions with the achievement of corporate aims here defined as productivity and optimisation ("doing their best" and "better"). If team members are happy, they devote themselves (voluntarily) to improvements and optimisation (of, for example, their work tasks or a product).

Happiness thereby turns into a scripted feeling: as the team is expected to serve corporate aims, it cannot express their happiness randomly. Scholars such as Fleming and Sturdy emphasise in their study on managerial control through fun:

> there is a shift in emphasis towards employees expressing their fun and playful side, rather than suppressing it in the name of sober, bureaucratic productiveness. (2009, 573)

They argue that the increased acceptance of companies to fun-related work activities or "playbour" (Lund 2014) is a novel way of controlling the identity of employees. They assert that fun stands in contrast to former management practices that sought to increase productivity through bureaucratic organisation (see also Chapter 1). However, Fleming and Sturdy stress that fun elements are now increasingly "appropriated as a corporate resource to enhance output", by which "control is achieved" (2009, 571). Thus, providing collective support through emotions implies the expectation of motivated teams becoming committed to the organisation's productivity. A closer look at agile management handbooks equally reveals that such a commitment is achieved through the management script deeply embedded in feeling rules of emotional feedback. Emotional feedback involve a script directing teams to sacrifice themselves to make the organisation better and more productive.

In this vein, Ahmed underlines, happiness is not always a feeling that creates satisfaction but is deeply entangled with power relations. She argues that "happiness is used to justify oppression" (2010, 2), when referring to activist movements who have problematised the discrimination involved in claims of "the happy housewife" or "the happy slave" (2). Transferring her perspective to the study of affective management illuminates a similar dynamic: the introduction of collective problem solving or the sharing of emotional concerns risks the exploitation of emotions for legitimising the corporate aims of proft-making.

In the view of one of the innovation camp's organisers, the recognition and experience of mutual respect within a work team has indeed "an extremely strong influence on the

willingness of the others to simply give it a try"[96]. Willingness here indicates that the Development Team ("others") is motivated to engage with and try work tasks that would otherwise have been rejected. As scholars such as Maasen and Sutter (2007) underline, this resembles a new form of managerial practice that enforces self-regulation and willingness to commit to, for instance, self-optimisation. In this regard, the safety net in particular is expected to ensure that social actors feel protected and supported by their colleagues and so put increasing effort into their work accomplishment. Thus, the focus on emotional feedback and a safety net is not necessarily aimed at a more supportive community but, instead, implies the underlying script of increased employee commitment. *A Scrum Book* underlines that "having pride means working to your own standard of quality and taking ownership of the results" (Sutherland et al. 2019, Chapter 2.31). The authors here indicate that the sentiment of 'pride' is particularly expected as the reason for higher responsibility and, thus, commitment to the project. And as we have seen in the previous sections, pride can particularly emerge from practices of emotional feedback and kudos. The work of team members gets recognised, appreciated and acknowledged by their colleagues. The resulting pride is, nevertheless, closely connected to the expectation that team members therefore put greater effort into the accomplishment of work tasks. Schwaber moreover advocates that "one practice that slowly and then exponentially adds productivity to the Team is its commitment to its work and the team members' commitments to each other" (2004, 116) while Beck and Fowler write that "motivation is the key to productivity" (2001, 75). The focus on emotional feedback was particularly useful in encouraging employees to work more productively. Although productivity is not further defined by Beck and Fowler, it leaves us with the observation that emotional feedback involves a programme of action that should render social actors more motivated. The emotional feedback and the strong emphasis on affects embody a script to direct the employees with the aim of proactive commitment.

The script of commitment subsequently impacted on the team's action, directing them to work with even more intensity[97]. Team members often considered themselves "in a position where we say: we'll just try it out. We simply make changes and try them out"[98]. And due to the growing importance of emotional feedback and internal appreciation expressed through kudos or a Code of Conduct, the Development Team felt more willing to do so. Thus, on the one hand, the focus was on supportive teamwork, experimentation with new work packages

[96] Interview with organiser 2 of innovation camp
[97] This dynamic can also be understood as the 'manufacturing of consent' that Burawoy (1979) has claimed to represent the managerial strategies making factory workers agree with work control and their exploitation. In the context of agile management, the scripted commitment has similar effects on the involved actors creating high work motivation and consent with the management mechanism and corporate objectives.
[98] Interview with employee 1 of R&D Department, Online, August 2019

and care for each other. But on the other hand, agile management created increasing pressure on individuals' performances and required self-esteem and courage to actually commit to experimenting with these new ideas or prototyping. This often also implied more intensive discussion rounds and situations where "we just set up an additional meeting in case there are further things that need to be discussed"[99].

In this context, the emphasis on attentive (body) language reinforced a strong co-dependence on other team members and required strict commitment to the accomplishment of work tasks. Team members invested a lot of time in meetings, which simultaneously required being *physically* present in the office and *emotionally* engaged with their colleagues. Because of the rather small size of team members – ideally, no more than seven (Schwaber 2004) – a non-attending member is immediately noticed unlike, for example, in a team of 20 persons. Face-to-face meetings, coupled with their regularity (such as the Daily), therefore entail an even more binding affect to the team's performance than less regular meetings using video calls. Additionally, Dailies contribute to the constant activation of employees' attention and commitment when asked to remain standing. The use of a specific body language ultimately elicited team members' emotional attachment to work accomplishment which then took over the work of coordinating and directing the daily work practices. The establishment of a safety net, thus, not only targets a more intimate and supportive teamwork, it also implies the management script of teams to become more committed to the organisation. Such a script illuminates how even affects and emotions are increasingly subject to the management mechanism, which hints at an 'affective management'.

6.3.2 Caretakers

Caretakers such as Scrum Masters and artefacts such as sticky notes carry a script of commitment. This management script, embedded in the roles and artefacts of agile management, reinforced the willingness of social actors to commit to the organisation's aims of making a profit.

First, Scrum Masters were not only introduced as caretakers to protect vulnerable members from criticism (see above) but to reinforce commitment. *A Scrum Book* states that the Scrum Master "defends the Scrum process and nurtures the organization to successfully use Scrum. (Sutherland et al. 2019, Chapter 2.19). The role of the Scrum Masters is, thus, expected to "nurture the organization". The role involves a script of serving the organisational aims and, as the agile management handbook on Scrum suggests, Scrum Masters explicitly focus on "motivat[ing] the team [to] take ownership" (Sutherland et al. 2019, Chapter 2.19). The organisational role of Scrum Masters is scripted to encourage team members to make a higher

[99] Interview with participant 8 of innovation camp

work commitment in the form of responsibility and ownership. Their role furthermore entails "helping the team to continually improve" (Sutherland et al. 2019, Chapter 2.21). In this vein, they are expected to increase the teams' productivity and performance optimisation.

The establishment of the Scrum Master role eventually fostered growing self-awareness, responsibility and the willingness to commit among each of the individuals. Even though team members could resist or become demotivated, they were still forced to keep trying because of the presence of the Scrum Master. For instance, during the fieldwork, Scrum Masters made sure "that everyone updates the Board"[100] and that actors stayed committed to the tasks. Thus, by initiating explicit roles of caretakers who functioned as motivators, the management script involved in the role of the caretaker strengthened individuals' commitment to taking responsibility and engaging with their team's work performance.

Second, and in addition to the Scrum Master's caretaking, I argue that artefacts also entail a script of commitment and that their form and matter even *affords* actors to commitment. Hence, the commitment of social actors to organisational aims was particularly reinforced by the material affordances of work artefacts such as sticky notes and whiteboards.

Artefacts used in agile management inscribe a programme of action to direct humans to become affectively attached to their individual work performance and the organisation's aims. While facilitating mutual understanding and reminders, the Post-it slogan "Move your to-dos with you throughout the day" (3M 2021a) reveals a script of commitment. Sticky notes are expected to be used by employees to stay permanently updated and constantly involved in keeping the daily work tasks updated and accomplishing them. Sticky notes are assumed to be moved on a frequent, daily basis. As the digital version furthermore indicates when expecting social actors to "drag cards from list to list" (Trello 2021), they imply a script of commitment. The perspective that sticky notes serve as reminders presupposes an activation and preparation for potential changes in the project's timeline. The sticky note is a carrier of ideas that team members improve, readjust and change in status from incomplete to accomplished. Coupled with the composition of the whiteboard's matrix, these artefacts therefore force the members to remain attentive to potential change. In this manner, they enable, if not prescribe, the Development Team, Scrum Masters and Product Owners to stay permanently activated. Artefacts of agile management, thus, work as 'caretakers' for a transparent work organisation and mutual understanding. However, they also simultaneously make social actors highly responsible for internalising a constant involvement and activation.

[100] Interview with participant 4 of innovation camp

In this context, I argue that their specific material features of stickiness and small size *affords* practices of staying constantly engaged, attentive and committed to work accomplishment. According to *A Scrum Book*, "the team moves sticky notes across the board to represent its progress to Done" (Sutherland et al. 2019, Chapter 3.44). Hence, the use of sticky notes and moving them around engenders a direct perception of success, encouraging teams to strive for 'Done'. The Agile Coach, for instance, advocates the use of the Scrum Board and sticky notes because "they move around during the meetings. And it's a different feeling when I can really move my task from 'In process' to 'Done'"[101]. The physical and bodily labour of moving a task into a new column yields a far more direct and perceivable progress because of the self-embodiment of work statuses in the individual's bodies. As one of the Scrum Masters explained:

> We really appreciate this interactive character of a wall. And this speed of things to change and this presence of the wall in the room. That you don't have to open a file or a software program first.[102]

While the movement on a digital Scrum Board might be less physical at first sight, the use of a computer mouse to move and click through the Scrum Board on the screen entails a similar practice of fixation. Progress is not only celebrated verbally but also physically, in the flesh of the organisational members' bodies. The physical properties of sticky notes consequently reinforce the willingness of social actors to use them, and this is believed to increase productivity and efficiency.

Moreover, the materiality of Post-its, their sticking yet falling down at some point, required constant attention by social actors – and because humans are particularly highly attached to their tangibility, they felt even more obliged to treat the Post-its with care and attentiveness. During my fieldwork, it was not unusual, when I entered an office, to find some Post-its lying on the floor. Most of the time, people were concerned with putting them back on the wall. For most of the team members, the Scrum Board is not a fixed table but something that "needs to be kept alive"[103], a continuously changing object that has its own life. Social actors were, thus, deeply connected and engaged with their materials and therefore created (emotionally) attached relationships to them. Hence, artefacts afford a constant engagement with being moved and reshuffled. The materiality of sticky notes and the whiteboard established a programme of action concentrating on constant commitment to the individual's mental and physical performance. The whiteboard was often installed at a specific height, which made it easier to stand, rather than sit, in front of it in order to be able to see and write something

[101] Interview with agile coach of home appliance company
[102] Interview with employee 2 at R&D Department
[103] Interview with participant 3 of innovation camp

down. It forced actors to stay active during the meetings and afforded permanent and active involvement. One of my interview partners mentioned that "you are active all the time"[104]. The material feature of the Post-its' stickiness in particular implies a script enforcing commitment among social actors to remain active every moment during the already quite laborious working day.

In addition to artefacts for work coordination, intimate spaces and the architectural setup of what I have called 'comfort zones' additionally afford commitment. As Gregg (2011) asserts, the increased use of (digital) technology can reinforce the merging of private, domestic intimate relations with professional activities that usually happen in external non-domestic workspaces. I argue similarly that the architectural environment blurs the boundaries between private leisure activities and professional work-related practices, and thus social actors developed a stronger attachment to their workplace and, more importantly, to their colleagues, executives and customers. Hence, even though the architectural work environment of intimacy seeks to make collaboration as easy and efficient as possible, it also affords work commitment through its quality of connecting, attaching and activating social actors. The close relationship between calm and warm comfort zones and social actors using these intimate spaces, such as the boxes or reading rooms for business meetings, engendered a work atmosphere of close, intimate interactions between different parties in the project. In the architecture of open, shared offices, spaces of relaxation perform as 'comfort zones', through which team members and stakeholders build personal interrelationships and thus, trust. These comfort zones entail the expectation of emotional attachment, yet they simultaneously attach social actors more strongly and emotionally to their workplace and colleagues. As a consequence, the safety net of intimate spaces and comfort zones not only aims at a more supportive environment but affords higher work commitment to the team's workplace. The script of commitment is additionally reinforced by the practices of collective problem solving, which I will be turning to in the next Section.

6.3.3 Collective Problem Solving

The following example of collaboration around the Product Backlog (see Figure 3) furthermore illustrates the manifestation of scripted commitment directing actors to devote themselves to corporate aims. Similar to the process of transforming individual concerns into a collective problem, interactions around the Product Backlog – in a reverse dynamic – transform collective concerns into a single organisational goal. The Product Backlog is one of the tools used to compile the different PBIs required for the ongoing Sprint (see Chapter 2). It connects different interests on a poster and merges them into project tasks, product items or work

[104] Interview with participant 3 of innovation camp

assignments which, when completed, may take the form of a software product (e.g., an app for urban mobility) or a new hardware device (e.g., a new gadget for improving household organisation). The Product Backlog is a list of the elements necessary in order for the project to be completed, prioritised according to the expected date of delivery. *A Scrum Book* underlines how the Backlog is "informed by the expectations of all stakeholders" who are "end users, partners, Team members, and any managers in the organization" (Sutherland et al. 2019, Chapter 3.54). Consequently, team members, Scrum Masters, Product Owners and other stakeholders are all involved in the process of compiling the Backlog. Such a list, which is ideally accessible to everyone in the project team, visualises the product requirements and the interests of customers, suppliers, managers, teams and other internal and external interest groups[105]. This sharing of knowledge, connecting different stakeholders and their interests, finally materialises and aligns the multitude of interests on a poster into core organisational aims. Whiteboards and sticky notes forming a Product Backlog thereby manifest the aim by objectifying them into a product requirement of a work package. As the author of *Agile Project Management with Scrum* underlines, these requirements or packages still represent the "project's initial overall requirements, return on investment (ROI) objectives, and release plans" and eventually "provide the greatest value and ROI to the organization" (Schwaber 2004, 7, 18). ROI is here understood as the main source for making profit and creating (surplus) value for the organisation. The author stresses that the Product Backlog gives "highest priority to the requirements that are of highest value to the business" (2004, 18). *A Scrum Book* equally outlines that everyone involved in agile management should work "to deliver value" and "to optimize long-term value" (Sutherland et al. 2019, Chapter 3.50), which here means targeting ROI. Hence, the Product Backlog is claimed to streamline individual interests and concerns into an organisational matter of concern.

As a consequence, the artefact of a Product Backlog and the practices around it involve a script of commitment, rendering everybody increasingly responsible. The Product Backlog is expected to involve everyone in the project since the organisation's aims turn into a collective matter of concern. As one of my interview partners put it: "Let's think together about how to make every day work even better"[106]. The collective process of problem solving implies the expectation of rendering everyone responsible for – and, thus, committed to – improving the daily work objectives. As the Agile Coach put it:

> Problems are not to be understood as those of an individual or a team, but problems affect all of us because they can have an effect on the customer, too. And in this respect, we all have an

[105] See also Chapter 7 for an analysis of the mechanisms of scripted order, where I show that the Product Backlog endows some actors with greater power than others.
[106] Interview with organiser 2 of innovation camp

> interest in either preventing problems from arising in the first place or solving them as quickly as possible.[107]

'Your problem is also my problem' was a common attitude and illustrates the expectation that every individual would contribute to solving the problem or accomplishing a work task. As the Agile Coach underlined, problems or different work packages are not an individual matter of concern; they are *everyone's* concern. As outlined in Section 6.2.3, the objectification of emotional concerns not only creates a more supportive collaboration, it moreover reveals the script of committed actors. The quote of the Agile Coach illuminates the expectation that everybody's attention is required in the team for solving an issue. "We all have an interest" implies that everybody must be fully engaged.

But in addition to social interests enforcing a higher work commitment, the Product Backlog itself contributes similarly to render actors more committed. It objectifies diverse interests and renders them into a depersonalised target. And, because of the depersonalisation of formerly individual mistakes or product requirements, every individual involved is pressured to perform with the utmost dedication, knowing that their performance serves a collective aim. Schwaber underlines that "the commitment the team members make to each other to accomplish something [...] help[s] the team successfully fulfill this responsibility" (2004, 21). The safety net, thus, increased emotional pressure and made it the responsibility of individual actors to engage with the team's and organisation's performance. Through the collectivisation of originally individual concerns or interests, team members felt closely connected to their colleagues, creating even greater pressure on them to fulfil everyone's expectations: team members consequently did not want to be a disappointment to their team. Jira's product description of the advantage that a "team [that] can follow what's going on" (Atlassian 2021) highlights that everybody monitors the progress[108] and, more crucially, that everybody has to stay engaged in their individual contribution to the group. Such a description of the software implies an underlying script of committed and engaged team members that follow each other's tasks and stay constantly up to date. Jira is programmed in such a way that the teams (should) remain up to date on the current status of the work tasks. In this vein, both the practice of collective problem solving and the artefacts used for such a process entail a programme of action that directs actors to devote themselves entirely to the project. Problems turn into a common issue, individuals are increasingly forced to exert great effort in helping the team to progress. Hence, the objectification of individual concerns involves an underlying management script of commitment directing social actors to increasingly self-identify with and attach to organisational objectives. The script makes everyone equally responsible for

[107] Interview with agile coach of home appliance company
[108] For a more detailed discussion on the (in) visibility of the work tasks, see Chapter 7.

organisational success and moreover entails dynamics of affective management when even regulating the actors' feelings.

To sum up, this section has underlined that agile management has inscribed a management script of commitment that, I argue, represents the second mechanism of agile management. I have shown that emotional feedback, (social and material) caretakers, processes of collective problem solving and artefacts have inscribed the expectation of commitment to organisational targets of profit. These scripts finally oblige the involved actors to self-engage, if not self-exploit, themselves when becoming increasingly attached to their work environment. This illuminates a dynamic of affective management, by which the actors' feelings are increasingly subject to their regulation. Because of the emergence of the safety net, the Development Team felt reassured and comfortable enough to try out new ideas, take over tasks that initially appeared challenging or impossible to perform and focus on the product's functionality to be continuously improved. In this vein, they voluntarily engaged with and devoted themselves to improving their work performance in order to satisfy the organisation's aims of productivity, profit and value creation.

6.4 Conclusions

In this chapter, I have shown how the idea of collaboration in agile management is based on a safety net that involves a management script of commitment. I have presented three arguments. First, I have argued that agile management is based on a safety net characterised by: 1) supportive and emotional feedback; 2) (social and material) caretakers; and, 3) a respectful engagement with individual mistakes and practices of collective problem solving.

Second, I have argued that these practices of collective problem solving are only possible because of these close socio-material relations and the affordances of sticky notes. Personalised and emotional concerns become increasingly objectified, depersonalised and de-emotionalised, which, paradoxically, promotes social cohesion. By underlining that social cohesion ironically manifests through the objectification of feelings and personal concerns, my analysis provides new insights into ongoing debates on employee commitment and the role of affects and emotions in technology development. Without the socio-material lens of scripts and affordances, it would not be possible to see the influence of the physical properties shaping collaborations. The analysis therefore reveals how materials increasingly play a role in managing the work process.

Third, the chapter has revealed the underlying management script that makes it possible to achieve employee commitment and the coordination of work in contexts of agile management. I have argued that agile management is based on a script of commitment deeply embedded in

the practice of giving emotional feedback, collective problem solving and the role of (social and material) caretakers.

I have moreover underlined that the artefacts's affordances contribute to increase the work commitment among the employees. The form and matter of artefacts involves capacities for offering action that direct actors to stay permanently activated and, thus, committed.

The results of the analysis ultimately point us to the political effects of affective management in contexts of technology development, where intimate solidary relationships can become instrumental for the organisation's productivity and the general aim of profit making.

Overall, the analysis has illustrated the ambivalent effects of the safety net and its involved management scripts. On one hand, the safety net ensures a supportive and caring work climate where individuals can count on and care for each other. But on the other, everybody is at the same time responsible for the others' work activities, tasks and, more importantly, that these are accomplished within the required timeframe. In particular, the highly emotional attachment among team members reinforces a programme of action to stay constantly committed to the organisation's aim of value creation. Hence, collaboration practices additionally exploit affective, caring and supportive employees. They encourage employees to devote themselves to value creation and the company's profit. This points us to the politics of the management scripts and the following chapter will discuss more closely how power asymmetries are re-established despite claims to the contrary.

7. Flat Hierarchies in Agile Management and Scripted Order

After having addressed the mechanisms of scripted improvisation (through which social actors are directed to improvise) in Chapter 5 and scripted commitment (through which social actors are obliged to devote themselves to their own, the team's and the organisation's performance) in Chapter 6, this chapter turns to the third mechanism of agile management that I call *scripted order*. Together, these mechanisms regulate, coordinate and control the work processes in agile management.

In discussing the idea of flat hierarchies as the third dominant principle of agile management (see Chapters 1 and 2), this chapter addresses the order of agile management. That is, I analyse the formation and arrangement of organisational structures and the relationships between actors. I start with a short description of the idea of flat hierarchies in current debates on management. I then discuss how flat hierarchies are introduced in agile management. In this second part of the chapter, I show that the belief in flat hierarchies is based on a more product- and customer-oriented management. Flattened hierarchies are consequently achieved by placing the emphasis on output, that is, the product and customer requirements, rather than the internal structuring of the work process.

The third part of the chapter presents the analysis of the underlying scripts in order to understand through which mechanisms agile management now operates. I show that agile management is based on a script of order and argue that agile management entails asymmetrical power relations that result from these scripts ordering the relationships between actors asymmetrically. As outlined in Chapter 3, power is here understood as the added capacity of actors to influence others' actions. The analysis reveals that management scripts endow some actors with power, while depriving others. I also highlight that management scripts invisibilise some work activities which other actors yet gain their power from.

The third part of the chapter is structured along the script of order manifested in (1) the organisational roles, (2) practices of unifying diverse interests, (3) organising teamwork, and (4) categorising customer requirements.

First, the idea of flat hierarchies involves questions of the organisational roles and, therefore, I discuss in more detail how these still entail a script ordering the relationships between actors. Although claimed to the contrary, the analysis reveals that former positions at the top of the organisational hierarchy are implicitly still expected to persist in agile management. Thus, the script of order is here deeply manifested in the different roles expected to influence the development process.

Second, I highlight that the process of unifying diverse interests involves a script of order. Flattened hierarchies are often claimed to be realised by unifying the diverse interests of different stakeholders in the development process. This process should contribute to ordering the timeline of the project. However, the analysis demonstrates that these practices are deeply embedded in a script ordering the relationships between those actors who direct and prioritise the course of development process and those who are forced to comply with it. In this section, I present two arguments. First, I show how artefacts (e.g., the Product Backlog) are constructed in such a way that they endow some actors (e.g., Product Owners) with more power than team members. I argue that power asymmetries do not only emerge from organisational roles but from the close socio-material relations and physical properties of artefacts. Second, I describe how the socio-material process of unifying diverse interests involves limited actions for (critical) reflections, differences or the representation of multiple voices.

Third, I analyse the organisation of teamwork activities and emphasise that the script of order is also embedded on the team level. That is, although teamwork is claimed to be carried out without any hierarchies between team members, the analysis shows the contrary. I argue that some actors in the team gain more influence over the development process. In this context, I reveal the role that socio-material relations and the physical properties of artefacts play in shaping the order of relationships between team members. I show that artefacts 'delete' some of the actors' expertise because they render work tasks invisible that yet represent expertise. Resulting from this, power asymmetries within the team are reinforced. In this context, the analysis makes a contribution to current debates on managerial control emerging from the increased visibility of work activities. I argue that visibility is not always the core resource for power asymmetries and show that *invisible* work also reinforces power asymmetries.

Fourth, the script of order is embedded in practices of categorising customer requirements. A closer examination reveals that during the processes of collecting and categorising customer feedback, hierarchies emerge between the customer's requirements and the team's work efforts. Due to the form and matter of artefacts that render some work activities invisible, social actors are deprived of their influence over the development process. Therefore, this chapter puts forth the argument that the material composition of artefacts – rather than only social actors' (intellectual or positional) resources – also contributes to establishing asymmetrical power relations.

The analysis of the underlying management scripts contributes to wider debates on power relations in contexts of (agile) management. Typically, scholars argue that predominant groups of interest, being already advantaged in society, re-establish their position and social

status, by which power asymmetries emerge. However, the following analysis underlines that such an explanation of power asymmetries through social status is not sufficient. These considerations of social status being (merely) reproduced usually focus on the consequences that such reproductions entail. Yet, I show in the analysis in more detail *how* power emerges in the first place. I argue that the socio-material relations, the affordances of artefacts and the management script of order contribute to power asymmetries.

7.1 The Idea of Flat Hierarchies

Current debates around new management styles repeat the idea of flat hierarchies as a core requirement for flexibility, self-management and the companies' compatibility with other enterprises. Even though scholars have reported the still prominent persistence of managerial hierarchies (Pfeffer 2013), the belief that companies with strict hierarchies will remain compatible with other firms competing on the external market is now perceived as a rather outdated perspective. The following paragraphs will outline what exactly the idea of flat hierarchies entails and its aims.

In contrast to the former organisational structures in a top-down hierarchy, the turn towards flattened hierarchies is increasingly advocated due to the growth in knowledge work, decreases in productivity and the former's lack of adaptability. Top-down hierarchies have historically been regarded as the most suitable structure for organisations to keep labour efficient and complexity constrained due to pre-defined and controlled communication channels. In this context, a top-down hierarchy meant to have supervisors at the top (for instance, managers) and subordinates at the bottom (for instance, employees or workers) of an organisational structure. Top-down hierarchies were often related to asymmetrical power relations, meaning that those actors at the top had a greater ability to influence others than those at the bottom (Clegg et al. 2006; Pfeffer 2013). These power asymmetries were manifested by, for instance, organisational norms, sanctions, rewards, surveillance and monitoring or performance evaluations (e.g. Hill and Jones 1992; Sihag and Rijsdijk 2019; Stanton and Stam 2003). Yet, research on the effects of hierarchical organisations has shown that the growth of knowledge work has severely restricted organisations from engaging adequately with changes or environmental impacts (Blackler et al. 1993). As a result of this increase in the number of knowledge workers, managers lost their expertise to such an extent that they could barely respond to organisational issues or provide solutions to internal problems. Lee and Edmondson stress that:

> When environments or customer needs are changing quickly, organizational employees may need to respond more quickly than managerial controls and reporting relationships allow, leading to missed opportunities and other failures. (2017, 3)

The removal of rigid top-down organisations was progressively supported, even by management, because direct control and surveillance were said to render organisations less productive and compatible. Both scientific studies and public opinion have strengthened the belief in a more flexible, looser structure with self-managing teams because less hierarchical structures improve the ROI and help organisations to respond to a dynamic market more quickly. Although studies have repeatedly highlighted that managerial hierarchy is most effective in contexts of predictability, stability and certainty (Burns and Stalker 1994; Hamel 2007), current developments show that more adaptable organisations are required. These arguments have even convinced managers who were usually at the higher end of the hierarchy to relinquish their beliefs that only a rigid hierarchy can yield the expected effects of organisational growth and compatibility (see also Chapters 1 and 2).

Moreover, developments in labour politics and studies on employee satisfaction have further reinforced the belief in integrating more 'empowered' and self-managing teams. Studies that underlined the growing importance of personal fulfillment or satisfaction through the (daily) work (e.g., De Hauw and De Vos 2010) reinforced a turn towards flat organisations. Workers who had been suffering from the strict control mechanisms (Wilkinson 1989) therefore applauded the idea of eliminating the hierarchical order in the workplace.

These different insights have all contributed to the development of new strategies for re-organising the internal management of work towards flattened hierarchies. 'Flat' or 'self-managing' organisations are now the most attractive principles for industrial organisations because of the increase in knowledge-based work, growing uncertainty about market developments and strong demands for autonomy in the labour process (Boltanski and Chiapello 2007; Lee and Edmondson 2017). Suggestions of flat hierarchies in organisations therefore propose a drastic change in the structure from rigid job positions to flexible roles (Laloux 2014; Robertson 2015; Turco 2016). Flattened hierarchies would consequently allow a larger number of actors to have influence and, thus, power over their own actions. The former hierarchy of supervisors at the top and subordinates at the bottom is replaced by self-managing or autonomous teams. Against this background, industrial companies have started replacing hierarchies of, for instance, top management and executives, middle management, and employees, with a less top-down outline.

In this context, agile management approaches recommend a similar organisational structure, in which hierarchies are distributed more evenly. As one of the management handbooks on the Scrum methodology emphasises, "there are no managers in the Scrum framework" (Sutherland et al. 2019, Chapter 2.6). Instead of structuring the work processes according to

organisational positions, expertise or authority,[109] agile management is claimed to establish the idea of output-driven work organisation coordinated by the product's and customer's values. The distribution of power in agile management is, thus, imagined to be more balanced, rendering the organisational structure less hierarchical.

Overall, flat organisations have become novel principles for increasing productivity, work commitment and economic growth. The idea of flat hierarchies has also gained more and more acceptance in debates on agile management. Nevertheless, it is still unclear through which mechanisms agile management works, especially considering that top-down hierarchies and direct managerial control are said to be removed. The subsequent sections therefore engage in more detail with the idea of flattened hierarchies in the context of agile management and highlight how it is realised by product- and customer-orientation.

7.2 Product- and Customer-Orientation

The idea of flat hierarchies in agile management is realised by orienting work coordination towards the customer and the product. Instead of focusing on the means of accomplishing work activities, agile management centres more strongly on the product itself and the customer's preferences. I show in the first part of this section how customer- and product-orientation is believed to eliminate a top-down hierarchy and foster a more symmetrical distribution of power between the involved actors. I subsequently describe in more detail what the different positions of the Product Owner, the Development Team and the Scrum Master[110] in agile management involve. I highlight that flattened hierarchies are realised by coordinating work through an emphasis on the product and the customer, through which the involved actors achieve higher autonomy over their own work process.

Agile management proclaims a novel work coordination informed by the external criteria of customer requirements. Work coordination is:

> outward facing: that is, our focus and concern are on the end user, market, and customers rather than on the tools and technologies we use to do our work. (Sutherland et al. 2019, Chapter 2.4)

Everyone involved in agile settings is, thus, expected to coordinate the work activities according to the user's or customer's interests. This means that jobs assignments are directed by the customer's needs and does not require the definition of every single work activity

[109] Authority is here understood as the acceptance of power through legitimised responsibility and the capacity to command (see, e.g., Weber 1986).
[110] As mentioned in Chapters 2 and 5, agile management involves different positions and titles but the following analysis focuses on the actors fulfilling the roles of Product Owner, Development Team and Scrum Master since these were all represented (if not known by precisely these terms) in the three companies I studied.

involved. The quote of *A Scrum Book* above underlines that "the tools and technologies we use to do our work" are less important than the focus on the "outward facing" elements and, thus, requirements 'external' from the development process. *The Agile Manifesto* adds to the value of the product that "our highest priority is to satisfy the customer" (Beck et al. 2001) and the author of *Agile Software Devleopment* stresses that every stage of the development process results in an intermediate (or at some point final) product that has "direct use to the customers" (Cockburn 2000, 139). Poppendiek highlights in her foreword to *Agile Project Management with Scrum*:

> Scrum doesn't focus on delivering just any increment of business value; it focuses on delivering the highest priority business value as *defined by the customer*. (Poppendiek in Schwaber 2004, xii; emphasis added)

Integrating the customer's demands into the development process of a product should ensure a higher organisational performance in the market and the early implementation of novel (user) demands. Such customisation or customer-orientation has become a common strategy in the management of product development (Mahr et al. 2014; Kämpf 2018). Also, agile management and its focus on potential customers being integrated into the development process represent these developments. The focus on the customer thereby illustrates the replacement of input-driven – hence, more direct focus on the work processes, with output-driven management – that is, the focus is on the product and its end-user.

In addition to the customer-orientation, agile management places a similar emphasis on the product. *The Agile Manifesto* documents that "working software is the primary measure of progress" (Beck et al. 2001); the main target of agile management is consequently the final product, here considered as "working software". Hence, both product and customer guide the criteria for work coordination and, as we shall see, for defining internal hierarchies.

The shift to the customer and the product is claimed to flatten organisational structures. Hierarchies between different organisational positions are balanced out when aligning the different positions with a shared aim of a functioning product representing customer interests. For example, as stated in Section 7.1, Sutherland et al., authors of *A Scrum Book,* explicitly state that:

> there are no managers in the Scrum framework. […] Development Teams are […] Autonomous Teams, and the […] Product Owner, while accountable to stakeholders and investors, isn't subject to control by any higher power within the enterprise. (2019, Chapter 2.6)

Sutherland et al. emphasise that the Development Team and Product Owner positions both act autonomously in the development process. Scrum proponents envision a balancing of

power because management is claimed to vanish. Management is in this regard deeply connected to control, as the authors further elucidate:

> In the usual English language sense of the term, management is fundamentally about control and responsibility, according to the dictionary definition (New Oxford American Dictionary [...]). Responsibility means willingness to take accountability. One reason there is no management in Scrum is that control of the development process is decentralized across members of the Autonomous Team. (2019, Chapter 2.6)

The difference between management in the traditional sense compared to that exercised in agile management resides in the distribution of power among numerous different actors instead of one central position. Concrete instructions and control over the work process are thereby replaced by growing autonomy for actors such as members of the Development Team. And, as a result, hierarchies become less top-down because everybody has influence over the development process:

> The key to project management is balancing power between the business people and the programmers. Done right, software project management has
>
> - Business people making business decisions
> - Technical people making technical decisions. (Beck and Fowler 2001, 21)

Although the separate areas of business-related assignments and technical aspects are clearly defined, the organisational hierarchy is claimed to become thereby flattened. Both parts are equally important for the product's quality. "Business people" are here related to actors being in charge of "[c]hoosing the relative priority between features" (2001, 22). Features are characterised as a specific element of a product that needs to be worked on. Business people also make decisions on "[w]hether another user interface feature is more important than another" (22). Thus, they are in charge of anticipating the next steps required in order to proceed with the development process and meet user requirements. Technical people, in contrast, take care of the production of the feature and "[g]uess[...] how long something is likely to take to program" (21). Technical people (i.e. the Programmers or the Development Team) consequently have the power to decide on the internal development process. In spite of their different areas of decision-making, proponents of agile management believe in the balancing of power because both areas of responsibility are assumed to be equally important and influential for the product's success. In a similar manner, informed by the Scrum methodology (see Chapter 2), one of the management handbooks illustrates that:

> [t]he Product Owner is responsible for [...] ensur[ing] that the most valuable functionality is produced first and built upon [...]. The Team is responsible for developing functionality. (Schwaber 2004, 7)

Agile management hence proclaims a lower hierarchy between the positions of the Product Owner and the Development Team since they are seen as working collaboratively towards the same objective. Through the increased focus on the product's "functionality" and the customer's preferences (that these are "produced first and built upon"), the ways in which work is coordinated and executed are left as open as possible and distant from direct commands.

In line with the core idea of flat hierarchies, the involved actors are able to determine autonomously *how* the work process should be organised. In this vein, it is particularly the focus on the product and the customer that flattens the hierarchical structure because actors decide the coordination of their own work tasks more autonomously. In the following paragraphs, I describe in more detail how the different positions of the Product Owner, the Development Team and the Scrum Master are directed towards the product and the customer. In spite of their different functions, they are still claimed to flatten the organisational hierarchy because no one is expected to have greater influence over each other's actions.

Product Owners are not meant to manage the development process (or social actors) but rather the product and its customer requirements. They oversee the product's path from a first version to a final, marketable item. According to *A Scrum Book*, "Product Owners own their products" (Sutherland et al. 2019, Chapter 2.11), which means they are responsible for the content and the order of the deliveries during the development process. Product Owners are explicitly ascribed to the product, which is the final outcome of the project's efforts. The main aim is to orient every activity towards the product's suitability for the future market. They also, however, remain "responsible to those funding the project for delivering the vision in a manner that maximizes their ROI" (Schwaber 2004, 8). Product Owners are also mediators between different stakeholders including "customers, end users, shareholders, marketing and sales, support, designers, architects, developers, and testers" (Sutherland et al. 2019, Chapter 3.55). Similar to the "business people" being responsible for deciding on the timeline of the development process, the Product Owner "manages all business relationships external to the team" (Chapter 2.11). This means that their daily work activities do not so much address the internal development processes but rather involve the general supervision of the product.

Product Owners additionally discuss the product's delivery line with the team by prioritising work packages that are defined by the product's requirements rather than each of the work tasks. Product Owners define and prioritise the so-called PBIs, the elements that should be

created next. They put upcoming PBIs on the so-called Product Backlog (see Figure 3) – a list that integrates every requirement and interest of the stakeholders in the form of PBI. Product Owners should prioritise the different items "in a way that generates the largest long-term ROI. The Product Owner must account for both revenue and cost" (Chapter 3.50). In close connection with the customer, Product Owners have to take care of the greater picture of the product serving the organisation's aim to make profit ("largest long-term ROI"). The Product Backlog is therefore structured along the requirements of developing a final product that is ready for the market, yet it is mainly used for the overall direction of the development process. Negotiating the schedule of the upcoming work packages is based on the customer's desires and demands which drive the prioritisation process.

In this regard, the Product Backlog should explicitly *not* list all the different expertise, skills and work assignments of the development team but, rather, the different elements required to make the product work and be attractive to customers. Product Owners are thereby expected to connect different interest groups and integrate them into the Product Backlog. Product Owners are therefore the most accountable for determining the value of the product for the customer. It has become clear that they are mainly responsible for exploring the most suitable options for the product to reflect customer requirements and directing every development step towards this as the source of the organisation's profit-making (as in ROI). Consequently, agile management does not aim for precise instructions of *how* to develop the product. Instead, it is customer requirements that are expected to predetermine the different responsibilities, job assignments and definition of work packages. Hence, Product Owners should not establish a hierarchy between themselves and other actors such as the Development Team. While the Product Owner could be understood as the supervising authority over the team's process, agile management deliberately pre-establishes an organisational structure which concentrates on the *product's* functionality and not so much on the individual's progress. The team, thus, equally strives towards the same aims but does not have to fear any interventions in their work process by potential supervisors.

With regard to the team level, the Development Team reinforces flattened hierarchies among its members as they are expected to care about the product's functionality rather than their personal work activities. As the authors of *A Scrum Book* highlight, "the Scrum Team needs to tune into the Product Owner and ignore other voices within the organization so that the team can stay focused" (Sutherland et al. 2019, Chapter 2.11). One of the core principles is the team's self-organisation, which is described as increased autonomy and individual power over the work progress. The Scrum methodology stresses the team's autonomy over how to accomplish job assignments:

> the Team figures out how to maximize its productivity itself; the job of planning and executing the work belongs solely to the Team. The ScrumMaster and others can guide, advise, and inform the Team, but it is the Team's responsibility to manage itself. (Schwaber 2004, 101)

Labour division is suggested to happen in a loose hierarchy and the management of the work process should mainly concentrate on the product. Management handbooks such as *A Scrum* Book proclaim there is "no hierarchy within the team" (Sutherland et al. 2019, Chapter 1.1). The so-called Scrum Board (see Figure 4) and the Product Backlog (see Figure 3) (see also Chapter 2) serve the flattening of hierarchies through their product- and customer-orientation. For instance, the team's job assignments usually address the product's state or customer requirements that have been allocated through interviews or other user feedback. The Scrum Board is a table arranged according to the current state of work tasks (for example, To Do, In Progress, Done) and instead of personal positions, expertise, names or skills, work tasks are listed in according to urgency, product requirement or *user story* – representing user demands. This arrangement suggests the alignment of work coordination with the product and customer and should allow for a flattened hierarchy within the team. Special competences or individualised work tasks would not be represented on the Board. Through this, agile management presupposes that actors develop self-responsibility and self-management. This means that the organisational structure is not accompanied by unidirectional control executed by 'management' roles. Instead, team members gain greater autonomy and are consequently less subject to external (managerial) control. The general product-orientation in work coordination among team members should decrease top-down hierarchies because it is now the *product* that is managed, rather than each of the different work tasks of the team.

The Scrum Master moves between the different functions of moderating discussions, encouraging actors to be involved in keeping on track (see Chapter 6) and aligning the Product Owner's interests with the team's concerns. While they are not directly assigned to a particular customer or product, they represent the agile principles incorporated in the focus on products and customers.

To sum up, agile management should foster a shift in the organisational hierarchy by focusing more strongly on the product and the customer. I have demonstrated that the object of work coordination is no longer the work process itself, but the product to be developed. Hence, through the increased focus on the output and customer requirements, actors such as the members of the Development Team or Product Owners coordinate their daily work activities more autonomously; this is expected to result in the hierarchies of influence between the differently involved actors in the product's marketability (business) and functionality (technicality) being treated as similarly important.

However, a closer look at the underlying expectations and programmes of action regarding the organisational structure of agile management reveals the persistence of hierarchies. This will be discussed in more detail in the next section of this chapter.

7.3 Scripted Order

So far, we have seen that the idea of flat hierarchies in agile management is expected to be achieved by product- and customer-orientation. However, a closer look at the underlying management scripts illuminates that hierarchies still remain existent in agile management. I show in the following sections of this chapter that the expectation of a specific (hierarchical) order is deeply embedded in the organisational roles, interactions, artefacts and patterns of action.

My analysis is located within wider debates on power relations in contexts of management practices that discuss how power asymmetries are predominantly stabilised by marketisation, strategic choice, leadership style and managerial control (e.g., de Vaujany et al. 2021; Huws 2010; Long et al. 2011; Riggio 2017). Scholars in the sociology of work argue, for instance, that predominant groups of interest, being already advantaged in society, can impose their interests on the organisational structure. Such a dynamic shapes the ways in which power is utilised (Hill and Jones 1992; Hodgson and Briand 2013; Nielsen et al. 2016; Norris and Reddick 2013). Hence, power is here understood as being either obscured by new trends in, for example, the marketisation of organisations (Dörre and Röttger 2003; Moldaschl 1998) and self-management (Lodrup-Hjorth et al. 2011), or as being still deeply manifested in new organisational structures through the dominance of exclusive social attributes and status (Gandini 2018; Moore 2018). It is against this background that the first part of this section underlines how organisational positions involve a script of order, through which former positions with higher power are re-established.

However, I argue that explaining these power asymmetries through social status being reproduced in contexts of agile management is not sufficient. Often, studies on management presume the pre-existence of specific social rankings and therefore predominantly look at the consequences that these entail. I argue that these considerations require additional attention to *how* power emerges in the first place.

Therefore, the subsequent parts illuminate how the socio-material relations, the affordances of artefacts and the management script of order itself contribute to power asymmetries. In addition to organisational roles, I pay attention to the underlying scripts and programmes of action embedded in the practices of ordering the relationships of actors involved in agile management. I consider power as emerging from interpretative, socio-material practices and argue that power in management cannot be solely explained by (a priori) social status, class

or leadership style. I claim that the emergence of power asymmetries is entangled with a script of order.

In the following paragraphs I show that the management scripts embedded in the (1) organisational roles, (2) the unification of diverse interests, (3) the organisation of teamwork, and (4) practices of categorising customer requirements manifest and stabilise the emergence of power asymmetries.

7.3.1 Organisational Roles

Snapshot 6: What to Do With Flattened Hierarchies?

> *After my interview, the Agile Coach invited me for a coffee and I sensed he wanted to talk about a specific issue. He told me that 'obvious' challenges during the implementation process of agile management such as the persistence of traditions, path dependencies or the bureaucratic structure of the company weren't really the problematic obstacles here. He emphasised that the most important and complicated question is that of bringing managers and 'normal' engineers together in order to transform the organisation into a less hierarchical place. He underlined that it is almost impossible to convince managers that giving up their top positions wouldn't immediately cause financial cuts in their salaries or major damage to their influence. Agile management is regarded as a new methodology that replaces the hierarchical ladder with a fluid structure where everyone could be in a leading position such as a project manager. The Coach therefore emphasised that those at the top are currently afraid of losing their financial and positional benefits. The Coach mentioned that most of the people in leading positions were quite upset and there was a lot of dissent and anger lingering within the company.*

This Snapshot points us to the political ambitions of social actors to maintain their social status within the organisational hierarchy. Although hierarchies between management and employees are said to be discarded with the introduction of agile management, those who were formerly higher up in the organisational ranking now fear losing their social status, position and financial benefits. The Coach expressed his concerns about how to convince actors at the top of the (former) organisational hierarchy to still support the new organisational structure. To him, it was clear that flattened hierarchies were the solution to the organisation's restructuring. However, the Snapshot shows that flattened hierarchies are not always easy to implement in industrial companies with a long corporate history.

Therefore, this section puts the belief in flat hierarchies to the test and examines the different organisational roles of agile management more closely. The analysis still reveals an underlying script of order. Roles that were previously at the top of the hierarchy are still expected to

maintain their influence and, thus, power to influence others' actions. Hence, despite claims to the contrary the specific roles of the Product Owner, the Scrum Master and the Development Team still embody a script that ultimately reproduces asymmetrical power relations. I conclude with a problematisation of the scripted order as it particularly disadvantages and instrumentalises members of the Development Team.

Despite the claim of flattened hierarchies, agile management is still expected that positions such as the Scrum Master or Product Owner will be taken over by persons that were formerly located at the top of the organisational hierarchy. As management handbooks underline, "the ScrumMaster fills the position normally occupied by the project manager" (Schwaber 2004, 16) and "Project Managers [...] become [...] Product Owners" (Sutherland et al. 2019, Chapter 3.62). Most of the time during my fieldwork, actors who had previously been in higher positions in the organisation –project managers or team leaders, for instance – were usually those who were assumed to act as the Product Owner. Although each of the three case studies implementing agile management approaches sought to introduce flattened hierarchies, a closer look reveals the contrary. The majority of my interview partners mentioned that the distribution of roles was deeply coupled with former experience, reputation and organisational positions[111]: in the company where agile management was implemented in the R&D Department, "the Product Owner is often equated with the project manager, [...] it is usually the group leader who has this ownership".[112] A similar dynamic occurred in teams participating in the Makeathon where agile management was tested out in a shorter and limited time frame. Although the Makeathon did not use titles such as Product Owner or Development Team, a specific order in the teams still arose: "I took over the job of the project manager, which is what I actually always was, and I made sure that everyone now has an area of responsibility"[113], as one of my research partners highlighted. Meanwhile, my interview partners were constantly referring back to project managers' former positions. New roles were often confused with old roles: "Our team leader tries to do the prioritisation and slips into the role of the Product Owner"[114]. Others clarified that the "Product Owner is static because he is the team leader usually".[115] The different roles therefore yield a script of order, where old positions at the top were re-established in agile management. In this regard, the introduction of a new terminology alone does not lead to a restructuring or flattening of former hierarchies.

[111] In addition to these aspects of expertise or reputation, the positional hierarchy in the organisation was additionally ensured by institutionalized regulations in the form of contracts. Even though organisations do not always provide insights into their contract systems, these types of scripted orders were also not the main focus of analysis. For a more thorough analysis, see e.g. Peel and Boxall 2005; Warner and Hefetz 2020.
[112] Interview with employee 2 at R&D Department
[113] Interview with participant 2 of Makeathon
[114] Interview with employee 5 at R&D Department
[115] Interview with agile coach of home appliance company

Agile management explicitly suggests the same, previously hierarchical, positions of project managers or leaders remain in charge of directing the development process. Thus, rather than dividing up the various tasks of former managers or project leaders and distributing them among a wider collective of new organisational roles, project managers are still expected to carry out the same activities, just under a new name.

Agile management involves an underlying expectation of order in which Product Owners have greater influence over the development process than others also involved in the process. In spite of the Product Owner's function to achieve consensus among other involved actors during planning meetings, *A Scrum Book* states that "the Product Owner has the final word on [the Product Backlog's] content and ordering" (Sutherland et al. 2019, Chapter 2.11). My interview partners similarly mentioned that those who were accepted as project managers both fulfilled their role of keeping everything on track and managing the team's internal progress. Consequently, they also had an influence over the team members' work although this was claimed to have been abandoned as a result of the product- and customer-orientation. Thus, unlike the beliefs in a more balanced power between "business" and "technical" people (see Section 7.2.), agile management still implies a script of a (hierarchical) order.

The roles of the Product Owners were always connected to supervisor functions and ranked higher in the development process of a product. Participants in the Makeathon stated that they could not actually decide on their own what would be developed or what feedback would be integrated into the prototype's design. For instance, the project leader "pushed us a bit"[116] to work on a specific prototype that the team was not really convinced of, as one of the team members explained. In the other companies that implemented agile management, decisions over the organisation of the work tasks and deciding which one was the most important were often also assigned to one individual. As one of the Product Owners said, "I, as the Product Owner, take the stories on sticky notes and put them in order and say: this is important now, okay?"[117]. The Product Owner is here particularly assigned to make decisions and ultimately influence what the teams will work on next. As a result, the team was usually directed by the script embodied in the organisational roles when complying with the decision in the end. The power to prioritise that had originally been regarded as being balanced out by the team's intervention was consequently re-established. Decisions over the most important tasks remained individualised and reinforced an order of relationships between actors with greater influence, and thus, power over others.

[116] Interview with participant 2 of Makeathon
[117] Interview with employee 4 at R&D Department

In addition to the Product Owners, the Scrum Masters' role is equally embedded in a script of order as they are expected to act as team leaders or 'servant leaders'. Although not specifically assigned in management handbooks (see Section 7.1.), they are still expected to guide the teams and the development process. Servant leaders are generally understood as actors who:

> empower and develop people; they show humility, are authentic, accept people for who they are, provide direction, and are stewards who work for the good of the whole. (van Dierendock 2011, 1232)

They are leaders and guide a group of actors in order to "encourage[…] followers to become the very best they can" (1231). In this regard, Scrum Masters are often expected to represent some of these criteria and thereby reveal the underlying script of order. Sutherland et al. highlight that "The ScrumMaster helps Product Owners succeed by guiding them" (2019, Chapter 2.19). Hence, they are expected to interact closely with the Product Owners who usually represent the top of the organisational hierarchy. One of the Scrum Masters equally underlined their roles characterised as Coaches and, more crucially, as serving the project leaders:

> And for me, 'Coach' meant that you're not just there as a policeman – I don't think that's very effective – but that you are accompanying the Development Team and Product Owner and also personally giving them things that they could use… so that's a very supportive role. And that is also equivalent to the idea of Servant Leader.[118]

In this regard, the entitlement of Scrum Masters – although they are often in a higher position within the organisational structure – emphasises the role of acting "not just as a policeman" but also being the team's support. Yet, they entail a script of order because the Scrum Master still coaches, accompanies and supports the teams and Product Owners. They are assumed to have specific characteristics, expertise or influence to improve the team's performance or the Product Owner's actions. In this context, in his analysis of project management, Banks highlights how:

> through introducing […] 'emancipatory' mechanisms as the 'project team', managers are increasingly adopting the seductive veil of 'facilitator' or 'friend of creativity' in order to mask the pervasive reapplication of traditional and formulaic management in the interests of capital accumulation. (2007, 72)

Hence, although agile management is claimed to establish a flattened hierarchy, the introduction of roles with new titles (Scrum Master and Product Owner) still involves a hierarchical order. But these new titles and beliefs in empowered teams also relate to attempts

[118] Interview with employee 2 at R&D Department

to obscure the yet persistent managerial control. In their analysis of the management discourse of the 1990s, Boltanski and Chiapello (2007) argue that the coach becomes a dominant figure replacing former management with new characteristics of leading, supporting and inspiring actors. Similar to them, Banks regards the introduction of a new terminology as another way of obscuring the maintenance of managerial power. While Banks here explains the production of power with social status and interests in capital accumulation, the perspective on management scripts illuminates that power is also inscribed into the organisational role pre-defining an order of responsibilities. However, in addition to organisational roles, I will show further below (Sections 7.3.2., 7.3.3. and 7.3.4.) that power is especially emerging from the management script rather than only from the reproduction of social status.

However, the script of order is particularly problematic for team members as it has the potential to instrumentalise their work capacities. Actors (such as team members) with less influence can be directed to comply with their embedding in asymmetrical power relations. For instance, in some cases, Product Owners used their power to rearrange the order and schedule of the work packages. Even though team members could influence the distribution and prioritisation of work tasks, the Product Owners still had the final word. Product Owners adjusted work tasks with the additional aim of keeping actors committed (see also Chapter 6). The Product Owner in the R&D Department described the usual procedure of defining and distributing work tasks in the team:

> Everyone indicates in the stories where they could collaborate, so we can see: here, in this story, we are well staffed, and in this one, we are not so much. And the other way around. And if a name appears insanely often, it won't work [...]. So, if necessary, you have to adapt the stories [...] because there's a risk of not being able to accomplish all the tasks, because a resource is overused.[119]

On the one hand, the Product Owner's statement demonstrates that agile management prevents overworked team members: their resources should not become "overused". However, on the other hand, it also hints at the Product Owner's power to influence the direction of the development process towards constant work commitment. He underlines that the core aim is "to accomplish all the tasks", which simply cannot always be realised. The Product Owner's statement indicates that it is important to have as many team members as possible assigned to a work task. Consequently, rather than team members deciding their work schedules themselves, the Product Owner's role still implies s/he decides who works on what task. Work

[119] Interview with employee 4 at R&D Department

coordination was also coupled with the Product Owners' enforcement of motivation and employee commitment. The Product Owner added that:

> due to [...] meetings at short intervals, you can't really afford to have a hiatus anymore. If somebody is in a bad mood somehow and not so engaged for a few days, everyone notices that immediately. That is, of course, also helpful for the overall efficiency of the project if everyone is fully involved. But for the individual it is also a burden.[120]

The Product Owner's statement reveals that low engagement and "a bad mood" can strongly influence the development process and the "overall efficiency". Despite the acknowledgement that this is "a burden" for the individual, the statement shows that a constant involvement is still prioritised over the individual's well-being[121].

In this context, scholars highlight that agile management is coupled with a hierarchical distribution of power. In an assessment of a Makeathon in an industrial company, I show that principles of growing autonomy and self-organisation were translated into new modes of organisational control (Wenten 2019). Hodgson and Briand's analysis of the relationship between autonomy and control demonstrates a similar hierarchical structuring of agile projects:

> While Agile/Scrum here resulted in a system where the members of Gameteam [the organisation under scrutiny], collectively, had influence over the choice of tasks, work methods and, to a degree, quality standards, more substantial decisions related to work effort, targets, resource allocation and the selection of team members were imposed on them externally. (2013, 322)

According to them, agile management implies the dynamics of a re-established asymmetrical order of influence. Similar to the previous assessment of the roles of the Product Owner and the team, decisions regarding the work process were individualised. The teams in Hodgson and Briand's analysis had no influence over the "more substantial decisions" which informed the more general direction of the project.

Yet, this is highly problematic: many of my interview partners complained about the intensive work and challenging and exhausting time pressure (see also Chapter 5). Thus, this ambivalence between work motivation on the one side and pressure on the other illustrates

[120] Interview with employee 4 at R&D Department

[121] This example also illuminates the emotional pressure of team members to constantly stay committed to corporate objectives. The quotation underlines that "everyone notices [a bad mood] immediately", pointing us to the problem of team members working under great (emotional) pressure and control. For a more detailed analysis of the manifestation of work commitment and its negative outcomes, see Chapter 6.

the problematic consequence of the scripted order. Satisfaction and motivation risk reinforcing power relations, even when team members are *voluntarily* involved and committed. Therefore, for the benefit of the 'overall efficiency', the organisational roles of Product Owners, Scrum Masters and the Development Team embed a scripted order, through which the capacity to influence the development process and the team's actions (and feelings) is distributed asymmetrically. As a consequence, showing any dissent or 'resistance' was hardly possible. Thus, in order to achieve efficiency, former hierarchical positions and social status are re-established rather than abandoned as it was originally intended in agile management.

To sum up, despite claims to the contrary, agile management is based on a script of order, which is deeply manifested in the formation of (new) organisational roles. I have demonstrated that formerly advantaged groups were expected to and expected themselves to re-establish their influence through their organisational position. This is highly problematic for those at the bottom of the hierarchy. I have discussed in the last part of this section how the script risks directing social actors to comply with the hierarchy rather than showing resistance. In the following section, I will discuss more in detail how such a script of order is not only manifested in the formation of organisational roles. I demonstrate that the asymmetrical order of relationships deciding over the development process is also deeply inscribed into the practices of unifying diverse interests and the artefacts' physical properties.

7.3.2 Unifying Diverse Interests

Flat hierarchies are often claimed to be realised by unifying diverse interests of different stakeholders into the product's features. This process should contribute to ordering the timeline and next work packages of the development process. Yet, I argue that these practices also entail a script of an order of the relationships between actors directing, prioritising and deciding on the development process on the one side and actors being forced to subordinate themselves to these on the other. Therefore, in this section, I offer two arguments: first, I argue that the scripted hierarchy is not solely manifested by the social actors directing the work coordination. The focus on management scripts and artefacts' affordances reveals that it is the socio-material relations that shape how work is coordinated. In the following, I show how artefacts such as the Product Backlog are constructed in such a way that they endow some actors (e.g., Product Owners) with more power than team members. It is through this lens that I reveal that power asymmetries emerge from the close socio-material relations and the physical properties of artefacts.

Second, I describe how the socio-material practice of unifying diverse interests constrains actors in their expression of alternative thoughts, critical reflections or differences. I end this

section with problematisations of such limitations as they do not allow for a more intensive (and critical) reflection of the individual work process.

Agile management involves practices of unifying diverse interests that should inform the schedule and the prioritisation of the work packages (see also Chapter 6). As well as the customer, "shareholders, marketing and sales, support, designers, architects, developers, and testers" (Sutherland et al. 2019, Chapter 3.55) should also orient the prioritisation and the project's schedule. Thus, all these people's interests reflecting on the design, legal or marketisation level, as well as customers, who are here understood as the group of people acquiring the product in the future, need to be also included in the development process.

Against this background, Product Owners or actors who had an equivalent position in the project (as, for instance, the 'team or project leader' in the Makeathon) were gathering and unifying these interests and were constantly in touch with different interest groups involved in the product. One of the Scrum Masters described the Product Owners' responsibilities:

> He or she goes to the meetings with the stakeholders where the project content is discussed. He then takes the content with him and adds it to a list. We really have it physically on the wall and prioritise it. And our team leader should still have an overall view, especially between the projects. What should be prioritised? And he takes them and pulls them up and puts them back into an overall prioritised Backlog for us.[122]

Product Owners absorbed different interests when meeting with (external) stakeholders, gathered feedback and were ultimately in charge of deciding the Product Backlog's order (see also Chapter 2). Product Owners collected customer feedback in order to understand in more detail what the product required in order to be successful in the market. They engaged with the salesmen's interests when trying to convince suppliers to invest in their specific product. And they integrated the knowledge of engineers and designers, which empowered them to distribute the different work tasks according to functionality. Thus, a variety of different interests were unified in the Product Owner's position of deciding on the most urgent steps to do next. These processes of unifying the diverse interests subsequently result in a prioritised Product Backlog, which the Development Team uses to allocate the individual work tasks.

Taking a closer look at the process of unifying diverse interests, however, illuminates an underlying script of order, which is deeply manifested in artefacts such as the Product Backlog and the interactions between social actors. In addition to organisational roles implying a scripted order, it is, hence, also the artefacts and practices of aligning different interests that re-establish a hierarchical organisational structure. I argue that the management script of

[122] Interview with employee 3 at R&D Department

order ultimately endows some actors with power, while depriving others of their influence. *A Scrum Book* describes the use of the Product Backlog:

> One person needs to be responsible for the Product Backlog. This person needs deep domain knowledge, business insight, understanding of product technology, technical dependencies, and the authority to force rank the backlog to maximize business value. (Sutherland et al. 2019, Chapter 2.11)

Sutherland et al. expect the Product Backlog to be authorised and used by "one person" who possesses (exclusive) knowledge about business-related aspects or technical issues. This person is the Product Owner and Sutherland et al. here explicitly emphasise that this role has "the authority to force rank the backlog". Hence, the Product Owner is expected to acquire the feedback from different interest groups that ultimately enables – and legitimises – the Product Owner's authority to prioritise.

Sutherland et al.'s statement reveals that the design of the Product Backlog specifies a programme of action that only empowers the Product Owner. It suggests that not everybody has the required resources (*one* person "needs deep domain knowledge"). Thus, in order to fill out and prioritise the Backlog, the person using it needs to be able to represent the general organisation's interests, market values and customer voices *in addition* to the team's capacities and their potential to accomplish tasks. Such a programme of action establishes an order between actors possessing the resources for using the Product Backlog and others who do not have such a background knowledge. As a consequence, the Product Backlog embeds an underlying script ordering the relationships between those actors having the capacity to directly influence the development process (the Product Owner) and others without such power (the Development Team).

Artefacts in agile management imply a programme of action that require a specific background knowledge in order to be used and endow some actors with more power to influence. In this context, Law underlines how the manager in a research institute only gains the power to make decisions and has high responsibility because "he is multiple" and represents "different voices at different times" (Law 1997, 5, 6). Law clarifies that the reason why some actors are more powerful resides in the fact that "we are made by our organizational logics: but these are many" (1997, 5). The manager of the scientific institute has to decide what the institute's finances will be spent on and Law highlights that the ability and responsibility to make a decision is mainly dependent on the different logics within the organisation that the manager can refer to, allowing him to act as an accountant and a scientist at the same time. Multiple logics order and coordinate the institute, but only some are recognised or turn out to be the resource for having (and legitimising) influence. Consequently, for team members, the Product Backlog is

almost impossible to order as they are usually only in touch with the customer (if at all) (see Sections 7.2. and 7.3.3.). Moreover, because the Product Backlog should not explicitly list every work activity according to status, expertise, discipline or authority, it is even harder for the team to actually autonomously participate in the process of creating lists or prioritising the work packages. As a result, members of the Development Team and external stakeholders such as suppliers or even potential customers become increasingly disempowered although they contribute essential and valuable skills to the Product Owner's next priority list (see also Section 7.3.3.). Hence, although Product Owners are highly dependent on the work and experiences of other organisational members, they use their influence on others. This is especially due to the underlying script embodied in their role *and* the use and design of the Product Backlog, *both* of which enabled them to unify diverse interests that others would not have access to.

This scripted order between the Product Owner and the Development Team reinforces power asymmetries. Product Owners presented the information they had collected in their conversations with external stakeholders: "the Product Owners take [the stakeholders' interests] and divide them into tasks for their teams with user stories"[123], as one interview partner explained. While the teams can contribute some of their gathered feedback on the customer requirements to the creation of work packages, they still depend on the Product Owner's resources. Many interview partners I asked about their reactions to the prioritisations confirmed that they would usually agree with the decisions:

> It's usually accepted [...]. Well, sometimes there are discussions [...] like 'Isn't this other element much more important?' And that's also okay. [...] But that happens only in some cases and otherwise it's accepted.[124]

As a consequence, Product Owners legitimised their high-ranked responsibility because of their benefits from knowledge that other actors such as the Scrum Master or the Development Team did not possess and the material constraints of the Product Backlog. Without the knowledge and the authority to use the Product Backlog, team members are deprived of the power to even verify the order of the Backlog. Thus, the socio-material practices of unifying diverse interests reveal a script of order, which ultimately deprives teams of their power to equally guide the development process.

However, the scripted order embedded in material objects also deletes differences, multiple voices and (critical) reflections. As outlined in Chapter 6, sticky notes and whiteboards collectivise individual interests but, at the same time, they also individualise multiple

[123] Interview with employee 1 at R&D Department
[124] Interview with employee 3 at R&D Department

interests. For instance, during sessions collecting different stakeholder feedback, diverse interests were subsumed under one or two sticky notes. Different interests were unified into a single object of a sticky note (see Figure 9).

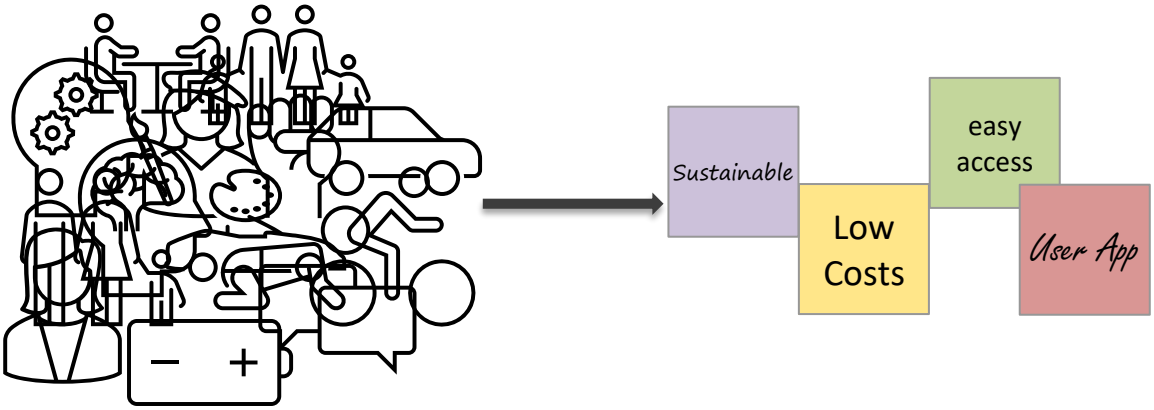

Figure 9: Diverse interests unify on a single sticky note
(Source: own representation)

Such a unification of diverse interests helped social actors to prioritise the most relevant interests, market demands and requirements.

However, these unification processes involved deletions of differences, multiple voices and (critical) reflections. Inspired by Star's (1991) work on the relationship between standardised technologies and power, the standardised form of a Post-it and a whiteboard coupled with the highly time-boxed meetings do not allow for new ideas, reflexivity or other potential assignments. Hence, the use of Post-its and whiteboards exclude those actors and perspectives with "an invisible, uncommon or stigmatized disorder requiring special attention" (Star 1991, 36). While Star discusses the impact of the standardised consumption industry on customers with allergies, I transfer her perspective to the context of agile management. Different interests, products or customer requirements become highly simplified when appearing on a Post-it or moderation card. The static composition of artefacts such as the Post-it and whiteboards prescribes a practice of unifying diverse interests that do not allow more thorough reflections (see also Chapter 5). Scholars such as Lafuente and Prata note that:

> Scrum is a framework to get things done, it doesn't lead well with research, reflection or theroization [sic], in fact, there is no room (in any ceremony or during the sprints) to do so. (2019, 249)

The use of small moderation cards or Post-its did not allow for long descriptions (see Chapter 5) and the meetings pushed everyone into making fast decisions. Conversations about different interest groups and critical perspectives were particularly restricted due to strict

schedules and the materiality of sticky notes. This resulted in the fact that the different work tasks often embodied a certain standardised, streamlined and uniform outline. As Lafuente and Prata argue:

> [meetings] in which all the feelings and thoughts need to be shaped to fill in a single post-it guarantees that otherness, doubtness [sic] and difference will be highly minimized. (Lafuente and Prata 2019, 248)

Thus, the form and matter of a sticky note constrained the process of engaging with the diversity of interest groups. It moreover runs the risk of a lower ranking – if not deletion – of marginalised interests that might still be valuable for the product's marketability. With regard to the unification of diverse interests into a single Post-it, these simplifications therefore risk deleting thoughts and ideas, alternatives or different demands. During the Makeathon, many teams problematised that often they were not able to reflect more critically on the development process or their own work:

> You also have to think about what you're doing from time to time. You have to take a breath and say, 'I'll give you a moment to think about it', and work out the topic, prepare it for the lesson, and then you can move on. Personally, I found that a bit too intense.[125]

Unifying interests also implied that social actors were not able to engage with the different interests merging into their own work tasks in more detail. These, instead, were invisibilised as they got lost in the process of unifying different ideas into a couple of words on the Post-it.

Overall, this section has discussed the practice of unifying diverse interests that should allow the integration of different stakeholders into the development process. In addition to the script of order embedded in organisational roles, I have argued that the yet hierarchical order is reinforced by these socio-material practices of unifying diverse interests. I have examined how artefacts imply a programme of an action requiring a specific expertise and thereby attribute power to actors such as the Product Owner. Because the design of the Product Backlog requires special background knowledge of customer requirements, only certain actors (such as the Product Owner) are able to manifest their powerful position within the still extant organisational hierarchy. Thus, I have shown how Product Owners are able to use their additional power to control the team's performance – but this is *not* because they bind the employees to an asymmetrical order of relationships between actors with direct monitoring strategies; rather, because they have exclusive knowledge about the product's features and

[125] Interview with participant 1 of Makeathon

requirements, they are able to make decisions on the product's future trajectory that others cannot.

I have moreover put forth the argument that the process of unifying diverse interests entails limitations in expressing differences, multiple voices or critical reflections. I have underlined that the form and matter of artefacts constrain social action when not allowing for a more intensive reflection of the individual work process.

In the following section, I will argue that the script of (a hierarchical) order is even embedded in practices of organising teamwork, although teams are claimed to collaborate without a hierarchy.

7.3.3 Organising Teamwork

Although Development Teams are said to act on a level playing field, this section illustrates the expectations of order as manifested on the team level. The following analysis demonstrates how the socio-material practices of allocating the different work tasks among team members equally embody a script of order. I show that this order is characterised by differences in expertise that ultimately create power asymmetries. Expertise is here understood as specialised competence or skill to undertake a work task.[126] I argue that teamwork practices are still embedded in an underlying programme of action directing actors to order their work tasks according to the yet implicitly required expertise. In this regard, this chapter puts forth the argument that it is also the material composition of artefacts – rather than only social actors' (intellectual or positional) resources – that contributes to establishing such an order of expertise. I will demonstrate that the scripted order finally endows (a number of) actors with the capacity to influence actions in the development process.

The analysis contributes to current debates on the increased visibility of work activities resulting in more control over the work process (Knights and McCabe 2003; Moore 2018). I argue that power asymmetries are not always the result of the increased visibility and, thus, control of detailed work tasks. Instead, power asymmetries are also reinforced by management

[126] There is a vast corpus of literature on the different degrees of expertise and their relation to tacit knowledge or lay expertise (e.g., Collins and Evans 2007; Dickel 2019), "expert power" and the organisation of work (e.g. Barley et al. 2020; Blau 1979; Reed 1996) or in knowledge production and research (e.g., Maasen and Weingart 2006). Although it often remains less conceptualized, I use the term 'expertise' to highlight the different degrees of specialisations during the management of work. Despite the debates on expertise and legitimised expert groups, the core interest in this chapter is the analysis of the order of relationships in agile management. Thus, the focus on expertise in this chapter serves to highlight the asymmetries of power and is not centred on the conditions or different types of expertise.

scripts because they render essential work tasks – and the involved expertise – invisible. These work activities are still vital as they contribute to the organisation's performance.

Organising the teamwork involves an underlying expectation of expertise that is implicitly inscribed into the team constellation and the different work tasks. When referring to the constitution of the team, *A Scrum Book* states "[t]here can be expertise in roles" (Sutherland et al. 2019, Chapter 2.4). While expertise is not clearly defined, the statement suggests that team members still have different competencies and skills. In describing how work tasks are distributed and ordered among the team, the authors further explain:

> the team decides how to take advantage of the Development Team members' special skills and areas of expertise. It may include deciding who pairs with whom, and so forth. (2019, Chapter 2.17)

They highlight that there are different "*areas* of expertise" (emphasis added) and "special skills". The pairing of internal groups who would work together is contingent on each individual's competence to execute a work task. It follows that teams would be grouped according to their "special skills" and background expertise. That there are different possibilities of combining the team members, thus, emphasises that teams are not composed of individuals with the same specialised competences and illuminates the existence of different experts involved in one team.

During my fieldwork, I observed similar dynamics of teams representing a variety of different expertise. For instance, the innovation camp that introduced agile management in the form of an external, 6-month long project included work coordination oriented by personal competences and skills. Team members usually ordered the distribution of work tasks according to the answers to questions such as "Who has the background?"[127]. This implies that team members did not distribute work activities among the team members arbitrarily. One of the team members explained: "in my case, I'm the only one in our team who has anything to do with finances. So it was clear that I had to wear the hat when dealing with the business"[128]. This reveals the expectation of different competences being assigned to team members.

Consequently, expertise is implicitly also related to the work tasks that are originally expected to only represent the customer's preferences or product elements. Talking to my interview partners revealed that every work task required specific competences and skills. One of my interview partners described the distribution of work tasks in the team:

[127] Interview with participant 3 of innovation camp
[128] Interview with participant 3 of innovation camp

> It's always the case that there is someone who is specialised in one topic, for example Android development [...]. And that's what's required for the [work task]. He will then, when he's not on vacation or something, he will take care of the [task]. This is how it works, it's his priority.[129]

The team members mentioned that work tasks were deeply contingent on each team member's availability and some team members were the only experts for a certain work task. The quotation also indicates that the work tasks require expertise or competence that not everybody has: my interview partners underlines that there "is someone who is specialised". In this vein, expertise is still required for – and represented by – each of the work tasks. It follows that, although teams are said to work without a hierarchy, the practices of organising the teamwork still imply a script directing them to order the work tasks according to those team members that have the expertise and are more competent to do a work task and others. This is contradictory to the claims of the same author that there is no hierarchy in the team (see Section 7.2.). Consequently, organising teamwork reveals the underlying script of order forcing actors to negotiate about the 'best suited' expert required for a job assignment.

A closer look reveals that organising the teamwork involves a script directing the practices of organising teamwork towards a hierarchical order of expertise. I argue that this hierarchical order is deeply manifested in the material composition of artefacts and such a script results in asymmetrical distributions of power. Even though the Scrum Board (see Figure 10) is supposed to arrange the work tasks less hierarchically, it is actually implicitly 'programmed' to establish a hierarchy of expertise. As outlined in Section 7.2, only work tasks related directly to the product or customer are supposed to appear on the Scrum Board, not activities that reflect the team's skill or expertise. Moreover, the most important and urgent task appears at the top of the board so that employees can identify and delegate their own tasks to the (often pre-given) priorities. Thus, Post-its in combination with the whiteboard are meant to order product- or customer-related work assignments according to priority and importance.

[129] Interview with employee 1 at R&D Department

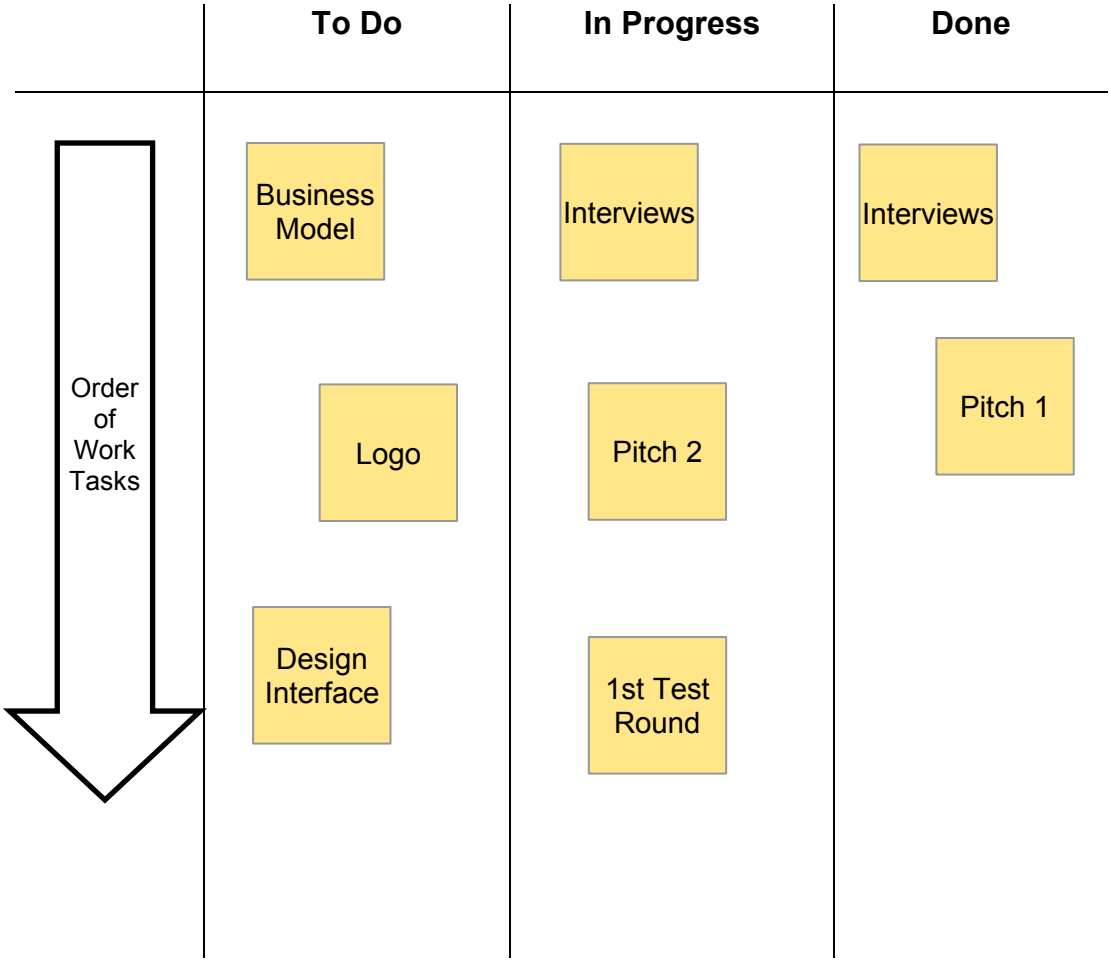

Figure 10: Example of a Scrum Board
Invisible work tasks not appearing on the Scrum Board may be tasks of greatest urgency or (routine) tasks under two or three hours
(Source: own representation)

However, I argue that the physical composition of artefacts in particular implicitly re-establishes an order of unequal levels of expertise, although it is claimed to be otherwise. Due to the size of the whiteboard and the sticky notes, only a selection of tasks appears on the Scrum Board. During my fieldwork, my research partners often complained about the material constrains of the Scrum Board:

> I realised that one of my research partners got really overwhelmed by the Scrum Board's restricted space. Standing in front of the board, he started to shuffle some Post-its around while saying 'it's so hard to put all of the Post-its on the wall, there's not enough space!' His team members laugh and they finally decide to limit the number of Post-its on the wall to the minimum. (fieldnotes innovation camp, April 2019)

As this fieldnote underlines, the material composition of Scrum Boards and sticky notes forces actors to decide on the work tasks as the space constrains them "to limit the number of Post-its". As a consequence, only certain work tasks can be – and finally are – visualised on the

Board. While supporting a better workflow, the size of sticky notes and the whiteboard limit their use and subsequently the content of the job assignments. Therefore, the material composition and the established practices of using the Scrum Board require negotiations about the order of work tasks and, thus, the required expertise. It demands from team members to manifest their expertise on the wall and implicitly legitimise their expertise. For the work task becomes visible, those actors assigned to it gain influence in the continuation of the project (as these are also discussed in other meetings). Hence, the use of the Scrum Board and the institutionalised practices of organising the work tasks reveal an underlying script of ordering the expertise.

As a result, some expertise gets deleted when being rendered invisible by the limited space to make notes. In this regard, *A Scrum Book* points out, many daily routine tasks should not be put on the Scrum Board:

> Some items, like cleaning the shop floor, daily machine maintenance, or refactoring code, are so routine that they are not even explicit in the work plan let alone directed at the business level. Other internal-facing work items such as testing and writing purchase orders might be explicit in the work plan, but are unlikely to explicitly appear as PBIs. Sometimes, these items loom large enough to threaten long term value: for example, cumulative effects of ignoring daily machine maintenance, or 'good housekeeping', may leave a work environment that is unsafe or inefficient and which begs a sizable cleanup effort. In these exceptional situations, the Product Owner may include bugs, overdue machine maintenance, technical debt reduction, and other traditionally inwardly facing items in PBIs because they have become large enough to merit business-level oversight. (Sutherland et al. 2019, Chapter 3.55)

This quotation illuminates that, although clearly defined work tasks appear on the work plan – and on the Scrum Board – a great number of other, also essential work activities, go unstated. Refactoring codes or machine maintenance also require expertise and a certain competence that cannot be executed by everyone immediately. Looking more closely at the different work tasks that appear on the Scrum Board in the three companies, it is quite surprising how many vital work activities are not listed:

> Well, we say for example, if you have an activity that takes less than two hours – because sometimes tasks fly in, and you try to accomplish them just in between – you don't write it on a card. […] For example, say, the task of translating a drawing into a three-dimensional model or, for example, ordering a prototype. So, I have constructed something and now I order it as a printed part.[130]

[130] Interview with employee 3 at R&D Department

When I asked my interview partner if these work activities were examples of the sort of things that she did not write on a Scrum Board, she nodded and continued: "No, exactly, so, very small things that just flutter in and someone comes up to you and says: 'Do this for me quickly'"[131]. Work tasks that take less than two hours are considered as part of ordinary, daily work life and are therefore not worthy of a place on the Scrum Board. Ironically, these are often the tasks perceived as the most important – "tasks [that] fly in" and that should be done "quickly". Nevertheless, the limitation of work tasks included on the Board was here especially restricted by the physical composition of sticky notes. By using a Post-it instead of a bigger piece of paper, it is impossible for actors to visualise *every* single work task. And due to the size of the whiteboard (or the computer screen if it is digital) on which the Scrum Board appears, especially those tasks that are urgent and need to be done immediately cannot require/receive equal attention. The earlier quotation from *A Scrum Book* on the routineness of work tasks such as "machine maintenance" and "refactoring code" reveals a scripted order. Not every work task's relevance for the overarching aim of "meriting business-level oversight" or of making profit is remembered when noted down on the Board: instead, they become taken for granted and thereby are 'deleted' by the focus on other expertise. Hence, the sticky notes visualise more the specialised work activities and, ironically, do not so much address those tasks that need to be done most importantly or regularly. They would be accomplished straight away or 'automatically'.

Resulting from this script – and particularly the material composition of artefacts – is the invisibility of expertise and, thus, an unbalancing of power. Scholars such as Barley et al. (2020) and Dickel (2019) underline the differences in expertise in collaborative work settings that are used to legitimise individuals' influence. In this regard, Zabusky (1997) emphasises how some expertise and skills are related to low status work and they are assumed to be less influential in the organisation's performance. Consequently, expertise equips individuals with power. The restriction of only listing very selected work tasks results in a hierarchical order of expertise, whereby some actors indeed gain more influence over the development process than others. Tasks that do not appear on the Scrum Board equally do not play a role in other meetings such as the Review or Daily where the general development process is discussed and reviewed. This suggests that these tasks have no relevance to the project at all, even though they are a central, and vital, part of it. Urgent tasks, in particular, suggest that they are the most important ones to keep the development process going. Ordering a prototype or creating a 3D model, for example, also require expertise and time-consuming practices such as researching, scribbling, making phone calls or discussions with colleagues that get deleted during the ordering process. Consequently, the material composition reveals a programme of

[131] Interview with employee 3 at R&D Department

action directing actors to establish an order of expertise, whereby not everyone's expertise can be used to influence the (continuation of the) development process.

In this context, although recent studies problematise the increased work control due to the exposure of work tasks on the Scrum Board, I argue that it is also the invisibility that recreates power relations. Scholars emphasise that the growing visibility of work tasks on, for instance, the Scrum Board risks exposing protected spaces, "shameful aspects" (Star and Strauss 1999, 23) or results in power asymmetries between supervisors monitoring their subordinates (Moore 2018). Yet, I argue differently that it is also the invisible labour being deleted from the board that reproduces power asymmetries. In this regard, scholars such as Crain et al. (2016) or Star and Strauss (1999) underline that the invisibility of work is deeply embedded in power asymmetries because it is work of which others still benefit. The necessary and vital work that becomes invisible through being taken-for-granted or because of its 'urgency' often devalues the involved expertise from which others still benefit. The analysis of the mechanisms of agile management has equally demonstrated the problem of invisible and deleted work. The fact that the form of the Scrum Board renders certain tasks invisible is especially problematic considering that they still serve the organisation's aim of value creation, compatibility and ROI (see Section 7.2. and Chapters 5 and 6). In this context, scholars such as Star (1991), Crain et al. (2010) and Puig de la Bellacasa (2011) argue that a focus on the invisible, often taken-for-granted work activities is important to shed particular light on the underlying power asymmetries in these invisibilisations. Thus, the script of ordering the expertise deprives some actors of their power to actively direct the development process. Moreover, it reveals the underlying management mechanisms that instrumentalise the expertise that goes unnoticed. Therefore, I contribute to perspectives that problematise the growing visibility by arguing that, in contrast, invisible work in agile management is equally contributing to power asymmetries.

Overall, my analysis has shown how the original claims of flattened hierarchies still involve an underlying script of order. In investigating practices of organising teamwork, I have demonstrated how the physical composition of artefacts reinforces an asymmetrical order of expertise. I have demonstrated that the institutionalised practices of organising teamwork around the Scrum Board and the material constraints of artefacts imply a programme of action directing actors to order their expertise. Subsequently, these scripts establish a hierarchy of influence resulting in asymmetrical relations of power. The next section now engages with the process of categorising customer requirements.

7.3.4 Categorising Customer Requirements

In addition to the scripted order between Product Owners and Development Teams as well as among team members, this section illuminates the underlying script of order between the

customer and team members. I investigate in the following paragraphs how practices of categorising customer feedback involve a script of ordering that ultimately render the team's work activities invisible. The following examples therefore demonstrate the invisible work that goes into making a user story possible and underline how these processes privilege the customer rather than the team's work efforts. I demonstrate that the physical composition of artefacts contributes to constraining the team's actions and, more crucially, their capacities of influence. As a consequence, team members are not able to make use of their resources to increase their influence over the development process. I close the section with problematising the hierarchical order by stressing the asymmetrical relations of power emerging from these invisibilities.

The process of defining work tasks involves categorisations of customer requirements, which 'programme' an order of relationships between the customer and the Development Team. Many handbooks on agile management explain how the customer's feedback is gathered through the team "connecting [...] with the customer (Sutherland et al. 2019, Chapter 2.7) or "programmers discussing the story with the expert customer" (Cockburn 2000, 139). Hence, although the role of the Product Owner is generally in charge of unifying diverse interests (see Section 7.3.2.), the allocation of customer feedback is still expected to be the team's responsibility. However, in this context, the customers gain a crucial role in directing the development process as they are expected to define the product preferences resulting in the final work packages or user stories. As the aforementioned quotations emphasise, the customer is often expected to be "the expert" rather than the programmers, that is, members of the Development Team. As outlined in Sections 7.2 and 7.3.2, the Product Backlog is one of the artefacts to define and visualise the different work packages that are necessary for the entire development process of a product. Integrating customer requirements into user stories or work packages called PBIs are thereby common practice. As one of the handbooks on the methodology of Extreme Programming points out:

> The customer
>
> - Defines the user stories,
> - Decides what business value the stories have,
> - Decides what stories to build in this release.
>
> The programmers
>
> - Estimate how long it will take to build each story,
> - Warn the customer about significant technical risks.

- Measure their team progress to provide the customer with an overall budget. (Beck and Fowler 2001, 40)

The quotation underlines the importance of the customer's feedback and the influence that these stakeholders are expected to have over the development process. The customer is in charge of defining the stories and, consequently, s/he is expected to inform the team's work packages. The quotation moreover reveals that the customer obtains the authority to decide over business elements or "what stories to build" in the upcoming Sprint. The team, in contrast, is expected to have the task of preventing potential impediments when warning about potential risks or providing information to support the customer in making a decision. In this regard, one of the organisers of the innovation camp emphasises that "the customer always decides".[132] This means that the team itself is here not expected to take over the responsibility of directing the development process as such. Although the customer-orientation is claimed to flatten hierarchies, a closer look reveals a script ordering even the relationship between the customers' and the Development Team's influence over the development process.

I argue that this script of order involves an asymmetrical distribution of power since a lot of work activities are rendered invisible through the focus on customer feedback. Although agile management concentrates on customer-orientation, there is no detailed explanation of how the customer feedback is actually gathered. As mentioned in Section 7.3.3, work activities such as the maintenance of machines or refactoring code are activities considered not worth mentioning during the planning and definition of job assignments. That information on the collection of customer feedback is not further specified illustrates the expectation of a range of invisible work practices that go 'unnoticed' or are taken-for-granted.

With regard to the categorising of the customer requirements that ultimately inform the team's job assignments (and, thus, are of high value for the team's progress), a lot of work remains invisible. The three case studies that have implemented agile management illustrate that categorising customer requirements is still highly contingent on each team's internal practices. The following example from the innovation camp should show how categorising customer requirements involves a lot of internal, interpretative practices that are rendered invisible by the scripted order between customers and the team. During the 6-month innovation camp, access to potential customers was predominantly organised by a documentation list. Such a list pre-defined the customers by categorising them based on the individual preferences and individual values of the actors that filled out the list. The following

[132] Interview with organiser 2 of innovation camp

Snapshot illustrates how the customer requirements turned into arbitrary yet abstract categories mainly built by the team's interpretative practices.

Snapshot 7: Storing The Customer

> *Michael is talking about one of the interviews he conducted this morning. I ask him how they learned about methods for doing interviews. He says they learned about the basic approaches in the first training sessions. They had to create guidelines for expert interviews, which they are now constantly revising and updating. They have a shared database that everyone on the team can access where the interviews are categorised by different areas, for example, traders and sales. He describes the database in more detail and mentions that the information is listed according to context/relevance for the innovation camp, name, email address, date of meeting, contact person in the team and operating area. The list is continuously supplemented by every team member. He says that this list is the basis for every user interview. I ask him if they record the interviews but he says they just take notes. The interviews are conducted in pairs. One person takes notes and the other one conducts the interview. After the interview, the notes are digitised and key points extracted.*

This Snapshot highlights two stages in categorising the customer's requirements that are often invisibilised by the scripted order between customers and team members: first, the personal ascription of relevance to customer preferences and, second, the abstraction of context-specific information for its wider use.

In the first stage, the personal ascription of relevance to customer preferences demonstrates that customer demands are shaped by interpretative practices. Social actors and the material objects of lists, screens and Excel files contribute to identifying the different customers. Seitz (2020), in his analysis of agile methodology *Design Thinking and the Spirit of Capitalism*, underlines that customer needs are reliant on internal preferences and result from personal interpretations and values determining what might be needed in the future. The process of developing a user story similarly illustrates that the customer emerges from the team's preferences and assumptions of what might potentially be relevant for the development process. Even though the customers are involved in the team's discussions, their preferences are also constructed by the ways and possibilities of conducting interviews or discussion rounds with potential users. One of my interview partners emphasised:

> It's very easy to say I just write a user story and take care of the user. But it's not that simple. It's also about user interviews and going from those interviews in a different direction for one

> or another Sprint. Or integrating new features because you learned something new from the user interviews.[133]

These challenges reveal how the possibility of customer-oriented management is deeply dependent on the team's work efforts of reviewing, interviewing, interpreting and knowing exactly when to go "in a different direction" (see also Chapter 5). Referring to the Snapshot, the list contributes to abstracting data into a few words signifying the 'relevance for the innovation camp'. Both humans and non-humans create customer requirements as the list and the team's interpretations are designed and directed towards customer interests. The material composition of the list and the screen thereby limit social actors from fully describing each of the different customer requirements. Instead, the list resulted in short words identifying the customer's background and relationship with the team's product. Hence, rather than customers being the only resource for defining work packages, the teams themselves put much effort and time into the categorising of the different customer requirements. Customer preferences are consequently often constructed by interpreting and crafting out the customer's needs in relation to the product's features.

The second stage describes the process of making customer feedback useful for other actors in the development process. Customer requirements are only established by conducting interviews and abstracting key information that needs to be processed by others who were not present during the interview. This process requires constant attention during the interviews since interviewers only took notes instead of recording the interview. One of the innovation camp team members mentioned that "You have to know the customers, of course, that's important. To define a person whom your product is, in the end, for sale to. You have to know your customer"[134]. Also, most of my other interview partners who conducted interviews agreed that, "it's difficult to find out what the customer really wants".[135]

Such a construction of customer requirements being the basis for creating work packages reveals the underlying script of order between customers and teams that render a lot of essential work invisible. The efforts that go into defining these criteria are vital for creating a user story, yet are rarely visible to other colleagues, external stakeholders, Product Owners or even the customers themselves. The only work that is visible to other actors are the list's "key points" representing the customer's interests; the rest of the work (representing the team's efforts) is expected to be done 'automatically'. These work activities are therefore never

[133] Interview with employee 1 at R&D Department
[134] Interview with participant 4 of innovation camp
[135] Interview with employee 4 at R&D Department

recognised as essential, valuable activities and consequently, rarely acknowledged as influential in the development process in general.

The Makeathon, where teams had to build a prototype within a short time span, had to engage with practices of categorising when, for instance, potential users "were invited by the organisers"[136], sometimes after only a couple of days of prototyping. Here, the relationship between the team and the customers was limited to short periods of testing the prototype and the interaction was highly pre-defined by the organisers. The participants in the Makeathon had to show the prototype to some of the customers and asked them some questions about it (fieldnotes Makeathon, December 2017). Thus, integrating customer feedback involved forms of categorising when ordering the questions according to a set of criteria. Yet, these activities often remained invisible to other actors involved in the development process.

These processes of categorising customer requirements hint at a script of order between customers and teams that render the latter's work practices invisible. I argue that this script is embedded in the artefacts' physical composition and interactions. I claim that the script limits actors to contributing only a fraction of their influence to the development process, and so power asymmetries emerge. Due to the artefacts' form and matter, team members are not able to use their resources gained in the categorisation process to influence the development process.

After having collected the customer feedback, the Product Owner, Scrum Master and Development Team transfer the feedback into work packages in the form of user stories or PBIs. A team member described this process, where everybody engages with the criteria required by and for the stakeholders. In the innovation camp and the R&D Department, for example, work packages were defined as user stories:

> We write down the project on a card and name the stakeholder who requested it. There is also a deadline. And then we write down which level of maturity it should have. We have [...] defined categories, for example a prototype or a component.[137]

The quotation reveals that the team is expected to contribute the expertise and perspectives gathered beforehand to the user story, yet, the material composition of the cards required them to fill them with the minimum of information such as "project", "stakeholder", "deadline", "level of maturity" and "categories" regarding the product. The lists and interactions entail a programme of action which requires team members to contribute only a *fraction* of their work – and, more crucially, their influence – to the development process. This

[136] Interview with participant 2 of Makeathon
[137] Interview with employee 1 at R&D Department

was not only due to the focus and privileged role of the customer. Integrating all the information and knowledge extracted from categorising customer requirements was also highly constrained by the material composition of artefacts. The cards and Excel lists themselves limited social actors to filling the columns with minimal information in order to maintain a structured overview over the different contact details. The artefacts consequently 'delete' the skills involved in the 'background work' of gathering customer criteria from which others yet benefit. The close collaboration between cards and human interpretations and categorising contributed to the fact that many activities and efforts were not indicated in the user stories. For instance, knowledge about the required workload or, more crucially, the skill of anticipating future customer requests, are never visible. Behind the list of columns and cards stand challenging and time-consuming practices of networking, approaching new contacts, discussing and interpreting that are performed by the team members. What each of the customers will actually demand once the product is on the market, is moreover very uncertain and cannot be easily anticipated by employees or project leaders. Also, the development process in the companies I studied usually lasts between five to ten years, making anticipating demands of the future market even more challenging. While these skills are not visible in the matrix on the documentation list or in the user story, they are still valuable data, allowing the team and the Product Owner to proceed with the project. Finding the right customers and extracting key information from them form the basis for defining a user story in the first place. Such information suggests that actors may have a strong influence over the continuation of the development process. However, not all the work involved appeared on the cards. The teams "very rarely write down a large list of requirements"[138], reinforcing the deletion of work tasks that are necessary to make the task possible. Ultimately, having a say over the development process was immediately constrained by the small number of words shown in the list or on the user story. Thus, even though team members gained power to influence the definition of their job assignments, the embedded script of order and the artefacts immediately deprived them of it.

Resulting from this scripted order and the invisibility of work are problematic exploitative elements and reinforced power asymmetries. Invisible work activities represent tasks that Poster et al. define as those activities "performed for the benefit of the employer and from which the employer reaps profits" (2016, 7 f.). In the context of agile management, it was also work performed for the benefit of the customer. As Poster et al. further emphasise, this relationship is highly problematic as it misapprehends and disregards the involved power asymmetries in such invisibilisation processes. In the presented examples, the knowledge gathered and possessed by the team for categorising customer requirements was rendered

[138] Interview with employee 1 at R&D Department

invisible by the scripted order between customers and team members. Moreover, the Product Backlog and Excel lists turned work efforts into a short and abstract list of single words. The examples of gathering information on customer demands, thus, point us to the increased efforts of interpreting, abstracting, categorising, interviewing, discussing, anticipating, brainstorming and prototyping that continue to run in the background and are invisible to most of the others' perceptions. Yet, the visible work of customer criteria *and* the invisible activities of interpreting, categorising, interviewing or abstracting data both serve others by acting as building blocks in the future development process. Hence, the challenging tasks are increasingly instrumentalised by the management mechanism and ultimately force actors to withdraw their influence.

In this regard, Crain et al. mention that "if workers are symbolically invisible, then no one sees their health or working conditions" (2010, 284). If the increased work intensification that social actors have to deal with remains invisible, it is impossible to make improvements in their daily work. Therefore, a closer look at the underlying management scripts reveals the problematic side-effects of the originally empowering effects of customer orientation.

Overall, this section has illuminated the practices of categorising customer requirements that are an essential part of the seemingly flat organisational hierarchy of agile management. Yet, although categorising customer requirements involves highly diverse work activities and expertise, I have shown that they imply a script of order. Due to the scripted order between the privileged position of the customer on the one side and the team on the other, the team's work activities were rendered invisible. I have shown that the practices of categorising customer feedback are still highly dependent on reviewing, interviewing, interpreting, abstracting and anticipating future demands. A closer analysis of the management scripts and the artefacts' material constraints therefore reveals that actors are forced to keep these practices invisible to others. These categorising practices are, nevertheless, important for the continuation of the development process and, thus, risk becoming instrumentalised – if not exploited – by the organisation. Hence, the script of order underlines how team members are deprived of their influence over the work process again since the only thing that appears to matter in agile management is the customer.

7.4 Conclusions

This chapter has discussed the third mechanism of agile management that I have termed scripted order. In focusing on the underlying management scripts and the socio-material relations involved in work coordination, I have argued that agile management is still based on a hierarchical order between actors, expertise and invisible and visible work, through which power asymmetries arise. I started with the idea of flat hierarchies and illustrated that, in the

context of agile management practices, flattened hierarchies are closely connected to product- and customer-oriented management. I have shown how the emphasis on the output (the product and customer requirements) rather than input (the internal structuring of the development process) is claimed to flatten the hierarchy.

However, a closer look at the underlying scripts has revealed that, quite to the contrary, agile management still involves an ordering of actors at the top and the bottom of the organisational structure. Despite claims to the contrary, power asymmetries still emerge due to the script embodied in organisational roles, the unification of diverse interests, practices of organising teamwork and categorising customer requirements. I have illuminated that the scripted order establishes asymmetrical relationships (of power) between the Product Owner and the Development Team, among team members and between the customer and the Development Team.

I have argued that the distribution of power can no longer be mediated by personalised, managerial control but instead, I have claimed that power is mediated by deletions and invisibilisations of essential work practices that still produce value for the organisation and benefit other actors higher up in the hierarchy. Thus, applying a perspective on management scripts and the close socio-material relations thereby allows us to see the different elements of social and material actors that all play a role in manifesting power relations in the workplace. Examining the management scripts, socio-material relations and the physical properties of artefacts allows us to detect the embedded management mechanisms, through which some actors are deprived of their power to further influence the development process. Therefore, this part of the chapter contributes to the current literature on the manifestation of power asymmetries in agile management. By showing in more detail *how* power emerges in the first place, the analysis has illuminated how management scripts also deprive actors of power.

8. Conclusions: Agile Management and Its Inherent Ambivalences

The main research aim of this study was the examination of the management mechanisms present in agile management – precisely because this societal phenomenon emblematically represents how management works in contemporary organisations. Agile management has become a leading approach for companies and promises to render organisations more adaptable to user demands and to introduce flat hierarchies. Peculiar to agile management is the expectation that there are no 'managers' anymore. Therefore, the study has engaged with the puzzle of how current management practices operate in their claimed form without any assigned managers. Against this backdrop, I have investigated how and by what means ideas of agile management are put into practice. Through a comparative case study of three industrial companies specialising in technology development, this investigation has cross-fertilised research perspectives in the sociology of work, organisation and management studies, and STS by examining the contribution of material objects to the dynamics of management. Therefore, it has scrutinised how work is coordinated by both social and material actors.

This study contributes both theoretically and empirically to research on the mechanisms of (agile) management. In developing a framework on *management scripts*, I contribute a novel theoretical perspective on studying management mechanisms without privileging 'the social' in the analysis. I moreover extend current research perspectives on the material composition of artefacts to better understand who and what regulates work. Finally, I provide empirical insights into agile management by presenting three core management mechanisms that are performed by social and material entities. I briefly outline the three core contributions in the following paragraphs.

First, my main argument in this study is that agile management operates through what I have termed *management scripts*. Management scripts are programmes of action that embody ideal types and blueprints setting out how agile management is expected to happen in practice. These programmes of action are manifested in patterns of action, interactions, organisational roles and/or artefacts that ultimately guide (social) actions. I argue that the study of management scripts allows for a better understanding of how management currently works because it integrates the close relationships between social and material actors into the analysis. The mechanisms of (agile) management are often explored with a theoretical underpinning assuming a priori categories (e.g., 'capitalism', 'neoliberalism' or 'organisational cultures') that seek to explain how management operates. These explanations, however, cannot sufficiently answer what drives agile management as they risk accepting too quickly

the surface appearance as the whole. Consequently, instead of assuming pre-existing categories that explain the mechanisms of agile management, I have presented an in-depth analysis of who and what contributes to agile management in the first place.

Second, I put forward the argument that a focus on the physical properties of artefacts and their relation to social actors is necessary if we want to adequately understand how agile management functions. For instsance, I have demonstrated that the material composition of artefacts is also involved in making collaborations between social actors possible: work commitment is ensured through these artefacts' composition. This perspective allows me to conclude that the physical design of artefacts plays an equal role (rather than solely human-driven activities) in directing and regulating the work done in contexts of agile management. Therefore, I contribute to current studies on the affordances of artefacts (e.g., Hutchby 2001; Bérard 2013) and highlight the material composition of objects involved in the coordination, regulation and control of work practices.

Third, the focus on management scripts has illuminated the underlying mechanisms of agile management and foregrounded the ambivalences and tensions deeply manifested in them. Through interviews, ethnographic fieldwork and an artefact and document analysis, this study has revealed three core management scripts that are central to agile management. In focusing on the dominant ideas of adaptability, collaboration and flattened hierarchies that are characteristic of agile management, I contend that agile management operates with the following three scripted mechanisms.

In regard to the first idea of adaptability, I have unravelled the mechanism of *scripted improvisation* (Chapter 5). Artefacts, patterns of action and interactions inscribe the expectation of improvisation and ultimately direct the involved actors to constantly act and plan ad hoc. Thus, the analysis has brought to the fore the mechanism of agile management that compels actors to improvise and, as a consequence, self-optimise. I highlight that human beings, sticky notes, whiteboards, routine meetings and institutionalised work habits are closely interlinked with each other and direct social actors to act without the possibility of always referring to prior experience. Therefore, I conclude that improvisation itself turns into a management mechanism. This finally reveals that improvisation as an impromptu, ad hoc practice without prior planning is, ironically, still highly scripted.

Moreover, the idea of collaboration is based on a mechanism of *scripted commitment* (Chapter 6). I argue that collaboration is only possible because social actors and material objects interact closely with each other. In this regard, practices of emotional feedback, (attentive) body language, collective problem-solving and (social and material) actors in the role of caretakers form a safety net of a supportive, caring and respectful work climate. I have shown

that such a 'safety net' should protect social actors from criticism and work intensification. The focus on management scripts has, however, shown that collaborative practices also involve a script that obliges social actors to stay engaged and (emotionally) committed to their and the organisation's performance. This scripted commitment represents an emerging form of 'affective management', through which emotions are regulated.

A closer look at the third idea of flattened hierarchies has brought forth a mechanism of *scripted order,* through which power asymmetries re-emerge. I have shown that the idea of flattened hierarchies, ironically, still involves a hierarchical order between social actors. In scrutinising the relationships between social and material actors, organisational roles, the unification of diverse interests, practices of organising teamwork and categorising customer requirements embody programmes of action that endow some actors with more power than others. In this context, I moreover argue that management scripts result in the invisibility of cetrain essential work activities, from which others extract and legitimise their power.

The study finally reveals that agile management is based on ambivalences and tensions that are, however, made compatible with each other and therefore guarantee the coordination of work. On the one hand, improvisation as ad hoc, unplanned action is closely connected to inflexible and scripted practices on the other. Protective, intimate collaborations are entangled with their instrumentalisation for higher work commitment and, thus, productivity. And lastly, the mechanism of scripted order has highlighted how agile management involves a belief in flattened hierarchies, while still imposing a hierarchical order of (social) relationships. These tensions make up the core of agile management while being manifested by social and material actors. In conclusion, it is this dynamic of tensions and the close socio-material relationships that allow agile management to operate, even without a designated manager.

8.1 Research Relevance

The findings of my analyses have implications for research perspectives in the fields of the sociology of work, organisation and management studies, and STS, which inspired this study. In this section, I will discuss what we can learn from these findings for (1) the theoretical engagement with management mechanisms, (2) the relationship between the 'mundanity' of artefacts, in/visible work and power relations, and (3) the empirical exploration of (agile) management.

8.1.1 Theoretical Implications for Studying Management Mechanisms

This study contributes to the sociology of work, organisation and management studies, and STS in five ways. First, the proposed framework for studying management scripts allows us to reflect on the management mechanisms without privileging only 'the social' in the analysis.

Second, this framework extends current script analyses to the context of management and, thus, contributes a novel understanding of scripts as 'managing entities'. Third, the analysis of the artefacts' affordances sheds light on the political dimensions of material objects and therefore contributes a focus on material objects to research in the sociology of work and organisation studies. Fourth, by arguing that improvisation is itself scripted, I offer new insights into the concept of scripts that are usually considered as the counterpart of improvised action: the study has shown that they are more closely intertwined with each other. Fifth, and more generally, this study contributes to script analyses in STS and demonstrates what a 'reverse study' can offer in contexts where scripts are not always directly traceable. I discuss these implications in more detail in the following paragraphs.

First, one of the main lessons of this study is that investigating the mechanisms of agile management requires a perspective on the close interactions between heterogeneous – that is, human and non-human – actors, rather than focusing on humans (with non-humans receiving little, if any, attention). I argue that a focus on humans and how they utilise their interests to regulate work is not sufficient. Social interests are not always homogenous and sometimes they are hard to locate and detect in the empirical context. Paying attention only to the role of social interests would consequently run the risk of overlooking other entities that also influence how agile management functions.

Therefore, I contribute to the sociology of work and organisation studies by showing that different objectives, interests and expectations are inscribed into a variety of social and material entities involved in management practices. Rather than assuming external authorities imposing a strategic set of interactions, artefacts and patterns of action, I show that it is an ensemble of *different*, *heterogeneous* actors that manifest such a process. Hence, as we have seen, management is not implemented through an exclusive group of social interests but through an entanglement of, for instance, human beings, intentions, expectations, emotions, organisational roles, work attitudes, codes of conduct and artefacts. It is this close intertwining of humans and non-humans that establishes and manifests the ways in which agile management plays out in practice. As a result of this socio-material perspective, we are able to see that artefacts affect a more respectful kind of collaboration, while simultaneously pushing actors to work more intensively. This approach allows us to see that social actors gain more influence over the work process than others because material objects also enable them to do so. The perspective on the socio-material relationships involved in agile management can finally be made fruitful for the broader research context of management. I highlight that the coordination and regulation of work is not solely executed by predominant social groups or forms of self-governance, but rather through management scripts. In this vein, the development of a framework on management scripts contributes a

novel interpretation of the mechanisms of management when foregrounding the different non-human managing entities.

Second, I extend traditional script analyses in STS by making scripts useful for the study of management. Scripts as programmes of action are typically applied in studies of technology's design and use. As I underlined in Chapter 3, these programmes of actions instruct the use of technology and, thus, function as 'ordering devices' of the relationships between social actors and technical objects. However, I also suggest considering the programmes of action as *management* scripts, through which instructions of action are directed towards the alignment of work activities with broader corporate aims. For instance, I have demonstrated that scripts embodied in artefacts or recurring meetings direct social actors to generate value in the form of ROI, productivity or efficiency gains (Chapters 5, 6 and 7). This means that once scripts are carried out in the context of management, they connect social actions with a broader organisational context of value creation. They do not function only as programmes of action instructing actors to use a specific technology or a routine, as I explained in Chapter 3. Instead, scripts in the context of management involve a set of systematised interactions, patterns of action or artefacts which instruct actors to work towards objectives beyond their personal (or societal) interests and for wider, corporate objectives. Consequently, transferring scripts to the realm of management offers new insights into STS analyses of scripts and makes them valuable for research contexts in the sociology of work and organisation and management studies that are beyond the field of technology-user relationships.

Third, complementary to the examination of the socio-material relationships and scripts, I offer a perspective on material objects with a more direct focus on their physical properties. In contributing to research perspectives in the sociology of work and organisation and management studies, I argue that even the form and matter of artefacts affect the ways in which work is coordinated and regulated. The analysis has revealed that artefacts – once being used in practice – have *their own* performative effects on the management of work. In Chapters 5, 6 and 7, I emphasised that artefacts have a guiding quality of their own when directing actors to constantly improvise (Chapter 5), commit and attach themselves voluntarily to the workplace (Chapter 6) or establish a hierarchical order of influence and expertise (Chapter 7). I have demonstrated that personalised and emotional issues can be solved collectively only because of the form and matter of material objects. Quite paradoxically, material objects reify and depersonalise team members' emotional concerns, which is why other colleagues can also relate to them (Chapter 6). Moreover, I argue that the physical composition of artefacts has political effects on management practices. Throughout the thesis, I have emphasised that the affordances of artefacts contribute to work intensification (Chapter 5), (voluntary) self-exploitation (Chapters 5 and 6) and the limitations

of (critical) reflections (Chapter 7). I have outlined how artefacts reproduce asymmetrical relations of power because their design renders work practices invisible, although they are crucial for creating value in the organisation (see also Section 8.1.2). Thus, I illuminate that the ways in which artefacts are designed and composed have political implications for management and work relations. To be precise, this is *not* an exclusive matter of social actors and their strategic choices. Instead, objects and their (fixed) properties contribute to privileges and power asymmetries without always necessarily being ingrained with social influence by a homogenous group of actors (see also Section 8.1.2). Therefore, this study provides a different story of agile management by pointing our attention to the (politics of the) affordances of artefacts deployed in regulating the work process.

Fourth, STS can learn from the study of the mechanism of scripted improvisation as this study reveals novel insights into the relationship between scripts and improvised actions. STS emphasises that scripts do not always perform as intended and require practices of improvisation. However, my investigation of the idea of adaptability (Chapter 5) has brought to light that scripts themselves integrate improvisation as an instruction. Thus, while often perceived as the counterpart of scripts, improvisation becomes a script in itself. Therefore, I argue that management scripts and their relation to their reconfigurations are deeply intertwined. The ambivalence of scripted improvisation especially, highlights that scripts both constrain actors' actions and, at the same time, enable them to improvise. With regard to recent trends in technology development towards more creative, spontaneous practices such as rapid prototyping or agile management, scripted improvisation provides us with novel insights into how even these improvised and 'unplanned' practices are also following a script. Thus, my argument extends the views on scripts by pointing to their characteristics of pre-structuring, pre-determining and regulating as well as facilitating improvisation according to a set of predefined rules and guidelines (for what this means empirically for current management practices, see Section 8.1.3.1).

Fifth, and on a more general level, studying management scripts has involved a 'reverse study' of scripts, which extends the current STS tradition in script analyses. As I underlined in Chapter 3, STS research on scripts typically starts with the analysis of the pre- or inscriptions of expectations into programmes of action. These are contexts where scripts are determined by their designers and integrated into a technical object or an organisational routine. As a second step, these scripts are scrutinised after having been implemented into the context of their application, that is, the moments of de-scription. In this context, STS analyses carve out the reconfigurations and improvisations of the scripts' users when adopting them in practice. However, as Igelsböck notes (2016), contexts in which the origins and 'designers' of scripts are hard to locate require a different approach, that is, a reverse study. As in agile management,

scripts cannot be traced back to a particular designer or inventor. Although agile management emerged from the Agile Manifesto (Beck et al. 2000), it has since developed into a diffuse practice combining different methodologies. Therefore, I suggest beginning with the investigation of scripts in the context in which they are applied and used instead of where they originate from (for what this implies for the analysis, see also Section 8.2.3). This investigation has proposed a different approach that does not proceed from pre- or inscriptions to de-scriptions but that starts with the potential de-scriptions in order to unravel the scripts in the first place. In this vein, this study has made a reverse script analysis fruitful for contexts in which scripts often appear to be impossible or difficult to locate.

8.1.2 Mundane Artefacts, In/Visible Work and Power Asymmetries

The analysis has revealed that power relations are deeply ingrained in even mundane artefacts as they implicitly reproduce a hierarchical order between actors with different influence and, thus, power. I have shown that work activities are rendered invisible by these artefacts and emphasised that this invisibility deprives some actors of their capacity to take action. I contribute to ongoing debates in the sociology of work and STS on invisible work that discuss how power emerges through the obscuration or taken-for-grantedness of work activities. In this regard, I show how power is also reproduced by the physical properties of even mundane artefacts and provide novel insights into the relationship between mundane artefacts and power relations.

My investigation points to a different understanding of power to that in ongoing debates on (agile) management as I argue that power emerges from interpretative practices and the close interactions between social and material actors. In the traditional sense, scholars of the sociology of work and organisation studies approach management with a perspective on social actors executing direct or indirect control. Control is thereby exercised through monitoring, evaluation or the establishment of sanction or reward strategies (see Chapters 1, 3 and 7). In this regard, management is typically understood as being based on relationships between supervisors (often understood as managers, executives or project leaders) and subordinates (often understood as employees or workers). Accordingly, power manifests through the reproduction of social status or social action and increased surveillance over the work process. Seen from this perspective, the introduction of new management artefacts (such as the Scrum Board, see Chapter 2) is often regarded as a tool for reinforcing managerial control over the work process. In addition to these accounts, research explains trends in self-organised, self-managed, autonomous teams by pointing to their self-governance. Accordingly, 'programmes of governance' (Bröckling 2016) that explicitly and implicitly act upon the work process and the involved actors explain why the mechanisms of management also constitute power asymmetries.

To broaden these research perspectives, this study shows that power is not solely executed by social interest groups but also by socio-material relationships and the inscription of power into, for instance, the interactions, patterns of action and artefacts of agile management. Accordingly, this study investigated more closely who and what participates in the distribution of power. Chapter 7 provided insights into this dynamic and revealed how organisational roles in relation to the (socio-material) practices of categorising customer feedback or organising teamwork embody power asymmetries. I argue that management scripts represent a programme of action that deprive some actors of their power, while endowing others with it. These findings point our attention to the *emergence* of power rather than assuming that power is 'already out there'. Thus, a perspective on scripts allows us to scrutinise power asymmetries even in contexts of agile management that are claimed to provide flattened hierarchies (see Chapters 1 and 7).

This study has provided a novel story of agile management when pointing our attention to the constitutive role that *mundane* artefacts also play in the manifestation of invisible work and power asymmetries. Unlike the assumption of some scholars (e.g., Nafus and Anderson 2009) that artefacts such as Post-its are (only) tools for faster idea generation, I have shown that even these artefacts and their affordances reinforce power asymmetries. Mundane artefacts obscure and 'delete' work activities resulting in (mainly) some actors losing and others gaining power, but also the appearance that some may appear to gain power 'out of thin air'. The analysis has thereby described the different intuitive and spontaneous practices that are necessary to ensure more flexible and adaptive development processes (Chapter 5). It has illuminated the emotional, physical and intellectual work practices that social actors perform in order to facilitate collaborative teamwork (Chapter 6). It has engaged with the collection of customer feedback, through which the practices of interpreting, categorising, abstracting data or brainstorming came to the fore (Chapter 7). These practices, however, are often perceived as common, daily work, not as core skills or competencies for technology development. Although still essential practices for accomplishing work tasks or achieving corporate objectives, they turn into invisible labour or 'background work' (Star and Strauss 1999). This invisibilisation results in asymmetrical distributions of power because the form and matter of artefacts limit which social actors can wield influence to direct action.

The uniqueness of this study is, thus, its integration of mundane artefacts and their material composition into the analysis of power asymmetries and in/visible work. With regard to the context of agile management, studies on in/visible work and control can learn from this investigation as it points us to the power relations emerging from invisibility as well as those from increased visibility. Instead of the growing exposure of work practices that renders employees vulnerable, this study has, in contrast, demonstrated that it is also the invisibility

of work that generates power relations. Bringing these dynamics and invisible work activities to the foreground is particularly important to understand what is entailed in actually working in an agile workplace and being regulated by management scripts. Lastly, it points us to the dynamics of internalised power asymmetries that become misapprehended and ignored when work is deleted by mundane artefacts.

8.1.3 (Emerging) Forms of Management

Besides its theoretical implications for studying management mechanisms, my analysis also extends our understanding of the empirical context of management itself. I shed light on the emerging forms of improvisation as a management mechanism and affective management, which compels social actors to act ad hoc and regulate their emotions. These are outlined in the following paragraphs.

8.1.3.1 The Management Mechanism of Improvisation

I argue that improvisation turns itself into a management mechanism which forces social actors to act spontaneously and ad hoc. Improvisation results from close socio-material relationships and, more specifically, also from the material composition of artefacts. This offers new empirical perspectives for the sociology of work and organisation studies by pointing us to how improvisation is trained and (socio-materially) scripted and, thus, subject to management.

Generally, research in the fields of the sociology of work and organisation studies engage with the relationship between improvisation and management in order to understand the conditions and effects of improvisation on management and work practices. In Chapter 5, I discussed how research in organisation studies regards improvisation as being based on minimal structures, training and scripts. In contributing to this strand of research, I argue that the 'planning' and scripting of improvisation is particularly reinforced by both social and material actors. I have highlighted that the form and matter of artefacts fosters improvised actions as the use of artefacts requires sudden, provisional and, thus, unplanned practices. This study consequently offers novel insights into the relationship between improvisation and management by also pointing us to the socio-material relationships driving improvised actions.

I not only provide novel answers to the socio-material conditions of improvisation but also show that improvisation itself is part of a management mechanism. I have highlighted that, because improvisation is scripted and follows a set of implicit rules, it functions as a prerequisite for programmes of action rather than as an entirely unplanned action as it unfolds. Consequently, improvisation itself is subject to being managed.

In this regard, scripted improvisation involves problematic outcomes, which increase self-responsibilities, decision-making pressures and/or work intensification. As discussed in Chapter 5, scripted improvisation sets out intensified challenges for employees who are confronted with the expectation that they will act without prior or more elaborated (critical) reflections. As I underlined in Chapter 7, agile management deliberately does not allow for critical reflections or differences in everyday life. Improvisation increases the (emotional) pressure on employees to accomplish their work according to organisational objectives, while simultaneously being obliged to act spontaneously and imperfectly. The mechanism of scripted improvisation illuminates the highly challenging ambivalence between imperfection and spontaneity on the one side, and optimisation and constant planning on the other. I have moreover highlighted that improvisation is deeply connected to bodywork, which hints at work intensification that is not only related to intellectual or emotional pressure. Thus, I argue that such a mechanism particularly risks negatively affecting those actors who are already subject to it. Therefore, my study adds a perspective on improvisation to organisation and management studies that highlights the enabling *as well as* constraining features of improvisation.

8.1.3.2 Affective Management

In addition to improvisation as a management mechanism, the analysis has illuminated the dynamics of affective management.[139] It has highlighted that emotions and feelings are subject to management. The specific perspective on management scripts thereby contributes new empirical findings to the role that material objects play in affective management.

Agile management consists of practices based on emotional capacities, which are increasingly subject to management. I have emphasised affects such as fear (Chapter 5) and fun (Chapter 6) being promoted during different meetings in agile management and shown that intuition (Chapter 5) and mutual understanding and care for each other's concerns (Chapter 6) are part of the daily life of teamwork. In this regard, the close relations between social and material actors create a protective safety net for team members caring for each other. Pfeiffer et al. (2014) similarly assert that agile management can indeed provide protective spaces for employees. However, they also express their concerns that these protective spaces still risk becoming co-opted by new forms of control. Similar to Pfeiffer et al.'s analysis, I have shown

[139] The emergence of an affective management represents ongoing developments in 'affective societies' (Slaby and van Scheve 2019). Slaby and van Scheve claim that affects and emotions have become a (systematic) part of societies and argue they are important resources for societal development. They thereby draw a picture of societies that are deeply entangled with affect "in public discourse, as part of political communications, in mediatized social interactions, and in more overarching attempts at managing, controlling and governing affect and emotion" (6). Seen from this perspective, affects are both protecting and controlling when visible in communities of vulnerable social groups, political campaigns but also control systems.

that the expectation of increased (affective) commitment to the work environment results in a highly pressurised environment, especially for the employees. Agile management therefore also implies a precarious side of the seemingly protective realm of intimate support and care.

With a specific focus on management scripts embodied in artefacts, patterns of action and/or interactions, I provide new insights into how employees are implicitly and subtly subject to affective management. Scholars such as Hochschild (2003), Moore (2018) and Resch et al. (2021) argue that affective elements of work processes are subject to managerial control. Service workers are expected to show more emotional engagements with their clients or manifest an 'intuitive feeling' for the expected mode of communication as examples of how affects are expected to become productive and 'corporatised' (Illouz 2017; Gregg 2011). The perspective on how artefacts' physical properties generate affective practices contributes to current research on, for instance, fun as a new management form (Fleming and Sturdy 2009) or "affective control" (Resch et al. 2021). By pointing to the role of artefacts in more detail, I underline that even mundane artefacts such as sticky notes contribute to the regulation of emotions and feelings. In Chapter 6, I showed that the form and matter of artefacts impacts on employees' emotional attachment to the workplace and how the architecture of agile management that I have termed 'comfort zones' affords actors to engage more emotionally with their team members. This results in employees' stronger commitment to devote themselves to the organisation's aims of making profit (for instance, through focuses on ROI, see Chapter 6).

The emerging form of affective management brings novel perspectives on the disadvantageous effects of agile management.[140] The analysis points us to the tensions between caring and intimate collaborations on the one side, and exploitative, individualised optimisation on the other (Chapters 5 and 6). Affective management risks exploiting (solidary) practices of care for each other. In Chapter 6, I showed that, although caring practices should provide shelter for social actors, protecting them from overwork and criticism, they are also utilised for higher commitment and organisational productivity gains. Intimate, caring work communities are coupled with new interdependent relationships where actors are also *forced* to care for each other. Hence, the strong emotional attachment of employees to their work environment elicits the creation of consent and agreement with the yet challenging and exploitative character of affective management. This dynamic risks increased emotional stress and could even result in employee burnout. The introduction of collective problem-solving or the sharing of emotional

[140] For instance, affective management runs the risk of discriminations against gender. Woodcock underlines that "emotional labour has become a normative expectation of women, and is perceived to be a 'natural' component of femininity rather than a distinctive skill" (2019). Although gender-related discriminations have not been at the centre of this study, the analysis illuminated the negative side-effects of the safety net for the involved actors, even in context that are male-dominated workplaces.

concerns can be also used to justify the emergence of power asymmetries that I pointed to in Chapter 7. Foregrounding the elements of affective management sheds light on the precarious elements of agile management that are particularly disadvantageous for those who are unable to express their feelings or are discriminated against by their emotional skills.

Finally, this study's findings reflect broader developments in society, where affects and emotions become protective elements on the one side and instrumentalising, controlling mechanisms on the other (see Slaby and van Scheve 2019). Thus, the study documents how societal developments in 'affective societies' also become a central part of the realm of management and work.

8.2 Limitations and Avenues for Future Research

This study has laid the foundation for analysing the mechanisms of management in contemporary organisations but there are several paths that future research could take. First, my analysis has brought a variety of different actors into the focus – be they employees, coaches, team leaders, sticky notes, whiteboards, chairs, pens or meeting rooms. Yet, actors such as the user, here understand as the customer, still require further analysis. Second, in light of the Covid-19 pandemic, the growth in remote working is eliciting new perspectives on the role of the physical properties of artefacts used in such online work settings. Third, my engagement with management scripts has largely concentrated on the regulating, constraining (or enabling) character of management scripts rather than looking at potential reconfigurations, modifications or adoptions. This is also true for the analysis of the artefacts' affordances examined in the context of agile management. Since research – especially in STS – has already pointed to the multiplicity of scripts and affordances, new avenues for future research have opened up for investigating the scripts' reconfigurations more closely. Finally, such a focus on the reconfigurations inspires another research path that is yet untravelled, that is an investigation of the liberating and empowering character of the management mechanisms. I discuss these aspects in more detail in the following sections.

8.2.1 The User, Forms of Management and Scripts

To begin with, the analysis opens new paths to enquire more closely into the role of the user.[141] In my analysis, I concentrated on actors encountered during my fieldwork: team members, employees, coaches, project leaders, moderators, sticky notes, whiteboards, prototypes, cardboard or sticky tape. However, although I discussed the emergence of customer-

[141] The user may represent different groups of actors (for instance, customers, suppliers or engineers, see Chapters 5, 6 and 7) but from an STS reading on scripts, the figure of the user predominantly refers to consumers or customers of a specific technology (see, e.g., Hyysalo et al. 2016). Therefore, in the context of this section on future research, I consider the user as the customer as one of the most influential actors in agile management.

orientation in agile management (see Chapter 7), the user of the final product that Development Teams develop was not the focus of this research.[142] An investigation of the user would be promising for the study of management and (technological) scripts considering ongoing scientific debates.

First, due to trends in technology development towards customer-orientation, the user has been increasingly integrated into analyses of management. In the context of agile management, the figure of 'the user' is usually linked to potential interest groups representing customers who, at some point, acquire a company's product or service. As I have shown throughout the thesis, these users are involved in, for instance, discussing the product's interface, a specific technical attribute or the work packages that a team should work on next. However, I have also demonstrated that categorising customer feedback also involves practices performed by the team itself that involve speculations, interpretations and forecasting product features that the user may potentially want in the future. Team members collect user feedback and take over tasks that often relate to the realms of marketing or sales (Chapter 7). Customer-oriented development, thus, suggests a new form of 'anticipatory management'. A closer investigation of the role of the user expects that skills of foresight and identifying future market trends will become subject to regulation. In this context, scholars highlight that customer-orientation forces employees to become self-responsible for their own and, more crucially, the company product's success (Boltanski and Chiapello 2007; Bröckling 2016; Irani 2019). Employees become marketers or salesmen of their own performances and the product's future success (Lopdrup-Hjort et al. 2011; Pongratz and Voß 2003). Moreover, as touched upon in Section 8.1.3, customers also play a role in affective management. Hochschild's (2003) analysis of service work highlights that the interactions between employees and customers require a specific emotional practice. Thus, focusing more on the interactions between the user represented by the customer and team members could provide new research paths for studying emerging forms of, for example, 'anticipatory' or affective management.

Second, especially with regard to script analyses in STS investigating user-technology-relationships, a closer look at the 'construction of the user' (see Hyysalo et al. 2016; Woolgar 1991) through the focus on the customer in industrial contexts could be an exciting path to take for future research. In a traditional sense of script analyses, the user usually represents those actors who are affected – and constructed – by the designers of a specific technology. Seen from this perspective, the user is the recipient of a script embodied in a technical object

[142] In addition to the user, the analysis could be extended to the role of the final products, 'invisible' actors such as cleaners, maintenance workers and apprentices or it could be pointed more directly to an elaboration of, for instance, female and male actors.

that the Development Team, for instance, develops. Looking at users through the lens of the customers could therefore be an exciting unit of analysis in understanding the relationship between internal actors designing and scripting technology and their relation to external actors representing the potential users of such scripts. As touched upon in Chapter 7, 'the customer' is also constructed by internal, interpretative practices. How do the interpretative practices of Development Teams create, develop and integrate programmes of action for future users into the product? Rather than focusing on scripts used for management, a user-focus may provide exciting insights into the development of scripts used to develop the technology or service in contexts of industrial technology development. Hence, in addition to extending our understanding of new forms of management, an analysis of customers could also contribute to STS research on the relationship between scripts and their potential users in the realm of agile technology development.

8.2.2 Agile Management and the Materiality of Digital Objects in the Covid-19 Pandemic

As the Covid-19 pandemic started spreading across the globe, companies were forced to rethink their strategies because of the requirement to abruptly implement elements such as remote working and online meetings. This study has argued that the physical composition of artefacts has an essential influence on how work is coordinated which leads to the question of whether a similar dynamic may hold true in times of Covid-19 when work became increasingly digitalised. Although I have emphasised that even digital versions of a Scrum Board or sticky notes have a tangible, physical interface and surface, there is more to add here.

Current debates around the increase in online working as a result of Covid-19 stress the risks of rising control and surveillance due to digital technology. Scholars generally relate this to the growing visibility and exposure of employees and the work process through new practices of 'online check-ins' or digital meetings (e.g., Hodder 2020) Accordingly, work control in the workplace is expected to be extended to the sphere of home. In this context, digital technology is usually perceived as an immaterial, intangible object whose monitoring capacities emerge from online screening and social pressure directed by and to social actors.

However, seen through the lens of this study's framework, digital software has affordances, which are equally responsible for regulating – and controlling – the (digital) work process (e.g. Porter and van den Hoof 2020). Research has explored the materiality of digital software[143] (e.g., Leonardi 2010; Suchman 2007). For instance, Leonardi (2010) emphasises that

[143] In his article on the materiality of digital software, Leonardi (2010) discusses the definition of materiality that is often not fully conceptualised. As mentioned in Chapter 3, in this thesis materiality refers to the form and matter of objects.

"[a]lthough it has no physical properties, software [...] provides hard constraints and affordances in much the same way as physical artifacts do". The few research partners I remained in touch with underlined that, as a result of the drastic spread of Covid-19, they were either shifting to the digital version of Scrum Boards or had stopped working according to agile management as such. These tendencies therefore inspire new research paths towards investigating the increased use of digital artefacts and whether their material properties equally affect and regulate the work process (at home). The focus on the materiality of digital objects could spark a novel debate on work control through digital software because it illuminates the different enabling and constraining effects of even the form and matter of digital software. Moreover, the perspective on the materiality and in/visible work could provide new insights into the characteristics of work control through the tendencies of (mundane) artefacts to render work also invisible.

8.2.3 Multiple and Reconfigured Scripts and Affordances

At the centre of this research is the investigation of the management scripts and how they direct and coordinate work. This research interest still leaves us with open questions about the multiple meanings and reconfigurations of scripts and affordances to be studied next. In this regard, current debates in STS about the multiple use, adoption and interpretations of scripts and affordances stress that scripts are, first, manifold and, second, can be reconfigured.

First, script analyses have revealed that several different scripts and artefacts' affordances can be effective at the same time (Denis and Pontille 2017; Jarzabkowski and Pinch 2013). The core argument here is that scripts and affordances both require interpretative practices and consequently have multiple meanings for the actors being affected by them. Jensen et al. point out that "different people interact with the same physical environment in differing ways, reading widely different meanings and affordances into it" (2017, 146). They therefore conclude that affordances "are rather relational and multiple: they are brought to life, actualised, in the specific situational relationship with users" (150). Referring to Hutchby (2001) in Chapter 3, I pointed to this ambiguity of affordances and underscored that they are contingent on the actors' interpretations. Throughout the thesis, I have shown that management scripts and affordances operate at the same time. However, a more in-depth look at how these scripts and affordances are differently incorporated or whether they also imply different meanings for the variety of actors was not the focus of this research (see also further below). Thus, a possible route to take for future studies is an investigation of the scripts' and affordances' multiple meanings.

Second, a script analysis involves an engagement with the reciprocal relationship between scripts and their reconfigurations. In developing the concept of the script, Akrich's (1992)

main concern was explicitly to underline this reciprocity. She thereby raised two questions that remind us about this relationship:

> The first has to do with the extent to which the composition of a technical object constrains actants in the way they relate both to the object and to one another. The second concerns the character of these actants and their links, the extent to which they are able to reshape the object, and the various ways in which the object may be used. (1992, 206)

In this regard, Akrich's understanding of scripts (here referred to as scripts embodied in technical objects) is closely interlinked with the ways in which they are adopted. Scripts and the material composition of artefacts constrain social action. Yet, vice versa, social action also reshapes the object and the scripts involved. As mentioned in Chapter 3, scripts can always play out differently and I argue that scripts and reconfigurations are closely entangled with each other. Recent developments in particular, hint at such an intertwining and I have illustrated it in the context of scripted improvisation (see Section 8.2.1, Chapters 3 and 5).

However, I have not explored in more detail how such an intertwining of management scripts and their reconfigurations is fully characterised. This is motivated by my general research interest in detecting the scripts in the first place. I use the lens of management scripts in order to better explain how management operates in contexts that are claimed to function without a manager. The framework on management scripts should foreground the dynamics and underlying mechanisms that still ensure that work gets done and remains coordinated in a systematic manner. As we have seen, many actors complied with the scripts because agile management was a new approach that they wanted to fully experiment with. Moreover, the scripts themselves entailed dynamics that also guaranteed the commitment of social actors and, thus, their acceptance of the mechanisms of agile management in general (see Chapter 6). This suggests that reconfigurations may not always have been present in these situations. My analysis of the companies' attempts to implement agile management is restricted to the time of the scripts' introductions: hence, it may even be argued that a potential reconfiguration only becomes visible and detectable once management scripts have been established over a longer period of time.

Given the aforementioned reflections on multiplicity and reconfigurations, nevertheless, we are directed to a third possible research path asking how mechanisms of agile management can also be reconfigured. The assumption that reconfigurations might only happen over a longer period of time requires further evidence because reconfigurations also happen after a script has been introduced for the first time. In this vein, rather than paying attention only to 'scripted improvisation', we could also ask about 'improvised scripting'.

8.2.4 Incorporating Tensions or New Paths for Resistance?

Finally, a closer look at how scripts are reconfigured may also allow us to integrate possible resistances and, thus, empowering dynamics of management scripts into the analysis. Another avenue for future research is consequently the analysis of how management scripts also enable (less influential) actors to gain more power.

Management scripts imply power relations and are entangled in tensions that appear to be made compatible with each other. The analysis has unravelled the contradicting dynamics of scripted improvisation, scripted commitment and scripted order. For example, in Chapter 5, I underlined that improvisation usually being understood as an ad hoc practice that happens without prior planning still involves scripted activities. I have shown that the care for each other in the safety net of agile management also carries self-exploitative tendencies (Chapter 6). In Chapter 7, I argued that, despite the belief in flattened hierarchies, agile management manifests a scripted order, whereby hierarchies of expertise and responsibility (re-)emerge. Hence, agile management is based on a complex set of contradictions and ambivalences. The outcome of these mechanisms may, thus, be interpreted as a system that speaks to 'the new spirit of capitalism' (Boltanski and Chiapello 2007), through which these tensions and ambivalences of management are made compatible with each other. According to Boltanski and Chiapello, the new spirit of capitalism defines a:

> set of beliefs associated with the capitalist order that helps to justify this order and, by legitimating them, to sustain the forms of action and predispositions compatible with it. (2007, 29)

They argue that management has been able to co-opt (or recuperate, as they term it) critical, resisting voices against the (exploitative) nature of capitalism by incorporating demands for autonomy, flexibility or creativity. The management approaches that result from these dynamics of recuperation legitimise the new capitalist mode of production without expecting further resistance. They underline that critique has become almost impossible since demands from more critical actors (for instance, they here refer to the critique coming from countercultural movements during the 1970s) have been integrated into new management approaches. As they write:

> it was by recuperating some of the oppositional themes [...] that capitalism was [able] to disarm critique, regain the initiative, and discover a new dynamism. (2007, 168)

The mechanisms of agile management point us to a similar dynamic of making exploitative elements of agile management endurable for those who are the most affected by it. But these

considerations leave us with the idea that agile management is yet another way of legitimising power and control.

However, inspired by STS that points us to the reciprocity of scripts as enabling and constraining, this study calls for the analysis of counter-practices. As I argue, the explanation of agile management through capitalism is not enough; it is rather the complex socio-material entanglements embodying scripts that guide and coordinate work. Considering scripts as being constantly stabilised by these socio-material relationships reveals their precarity and the possibilities of becoming otherwise – that is, the opposite might also happen – for instance, scripts can become empowering or liberating for those that are, in this analysis, so far identified as less powerful. Thus, considering the ambivalences of agile management as made compatible with each other for reasons of control requires further analysis. In this context, the study of the safety net inspires new perspectives on the protective and, more crucially, emancipating realm of agile management. Employees are generally motivated and their work attitude has so far suggested high work satisfaction under the new approach of agile management. Although this is deeply manifested in the organisational aim of higher productivity/profits, further investigation as to whether this might not also be a possible place for solidarity and opposition to managerial exploitation is desirable. Therefore, the next step of this study is to ask whether these tensions also offer new ways of emancipating actors from precisely those elements that render them powerless.

Overall, this study has invited us to explore and realise how much effort, tensions and ambivalences are put into and involved in compliance with agile management. It thereby shed light on the dynamics of making the tensions and ambivalences of agile management compatible with each other. Throughout the analysis, I have shown how agile management intensifies the workload and perceived disorientation of social actors, emotionalising and, thus, tying employees to the company and reproducing power asymmetries between the few actors with more influence and the numerous actors with little. However, work intensification and disorientation are simultaneously taken up by the establishment of a socio-material safety net in which actors feel secure and protected from external criticism. The mechanisms of agile management, thus, appear as both a solution and problem for the involved actors. And it is precisely this ambivalence that makes up the core of (agile) management and that also requires our constant attention now – and in the future.

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Appendix 1: List of Interviews

Makeathon

Director of makerspace	January 15, 2016
Employee 1 of makerspace	May 15, 2016
Director of makerspace	June 8, 2016
Employee 2 of makerspace	June 16, 2016
Participant 1 of Makeathon	December 7, 2017
Participant 2 of Makeathon	December 7, 2017
Organiser of Makeathon	December 13, 2017
Participant 3 of Makeathon	October 29, 2018
Participant 4 of Makeathon	October 29, 2018
Member of works council and trade union	October 29, 2018
Participant 5 of Makeathon	November 7, 2018
Participant 6 of Makeathon	December 1, 2018
Jury of Makeathon, Manager of automobile company	December 14, 2018

All interviews were taken place in Munich

Innovation camp

Member of trade union	Munich, March 29, 2019
Participant 1 of innovation camp	April 3, 2019
Participant 2 of innovation camp	April 3, 2019
Participant 3 of innovation camp	April 4, 2019
Participant 4 of innovation camp	April 29, 2019
Participant 5 of innovation camp	May 13, 2019
Participant 6 of innovation camp	May 20, 2019
Participant 7 of innovation camp	Online, June 11, 2019
Participant 8 of innovation camp	Online, June 18, 2019
Organiser 1 of innovation camp	Online, July 4, 2019
Participant 9 of innovation camp	Online, July 4, 2019
Organiser 2 of innovation camp	Online, July 12, 2019

All interviews were taken place in Berlin if not further specified

R&D Department

Employee 1 at R&D Department	Online, August 9, 2019

Agile coach of home appliance company	September 27, 2019
Employee 2 at R&D Department	September 30, 2019
Employee 3 at R&D Department	September 30, 2019
Employee 4 at R&D Department	October 22, 2019
Employee 5 at R&D Department	Online, November 11, 2019
Employee 6 at R&D Department	Online, November 12, 2019
Employee 7 at R&D Department	Online, November 20, 2019
Employee 8 at R&D Department	Online, December 19, 2019

All interviews were taken place in Berlin if not further specified

Background interviews

Professor for innovation management at Technical University	Munich, August 1, 2017
Apprentice 1 of automobile company	Munich, December 12, 2017
Apprentice 2 of automobile company	Munich, December 12, 2017
Employee 1 of automobile company 2	Berlin, April 19, 2019
Employee 2 of automobile company 2	Online, April 25, 2019
Employee of automobile company 3	Online, April 26, 2019
Research associate for engineering at a Technical University	Munich, July 16, 2019

Appendix 2: Fieldwork Locations and Events

Makeathon	**Duration**
Makeathon, December 2017	5 days

Innovation camp	**Duration**
Trade-Union Workshop, March 2019	1 day
Co-Working Space, April 2019	7 days

R&D Department	**Duration**
R&D Department, September 2019	3 days
Workshop “Future of Work”, December 2019	2 days

Background Events	**Duration**
Makerspace, May 2016	15 days
Maker Fair, August 2016	2 days
Maker Lab, November 2016	7 days
Trade-Union Conference, October 2020	3 days